

Chapter 2

Project Description

2.1 INTRODUCTION

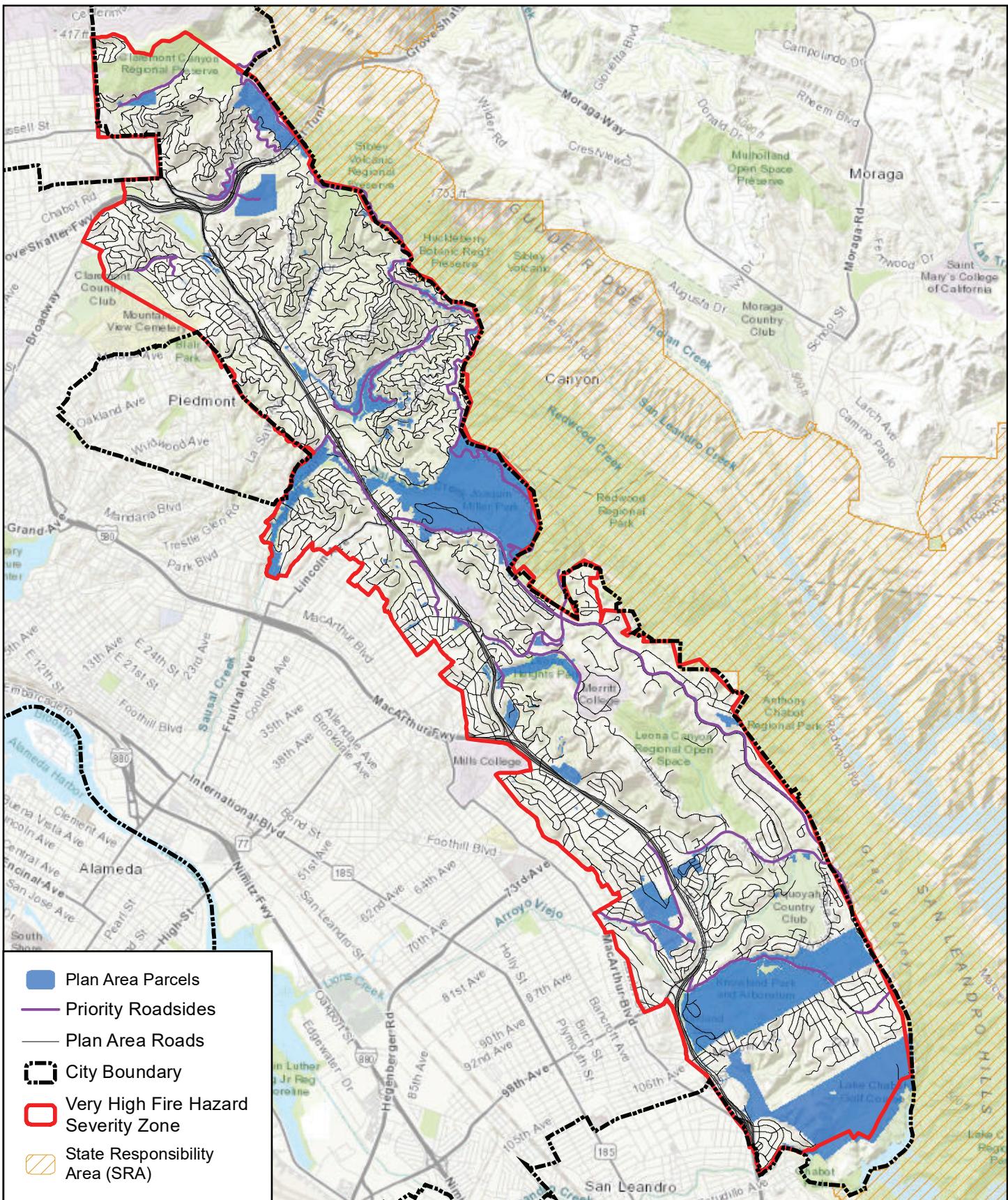
This chapter describes objectives and key components of the VMP, including specific treatment projects, vegetation techniques, necessary equipment, and the general timeline for implementing proposed treatment projects. The Executive Summary of the Draft VMP is provided in **Appendix A, Draft Vegetation Management Plan**, of this DEIR; the complete Draft VMP can be viewed at the following link: www.oaklandvegmanagement.org/wp-content/uploads/2019/11/Oakland-VMP_Revised-Draft_NOV-1-2019.pdf.VMP Area

The VMP area encompasses City-owned parcels and areas within 30 feet of the edge of roadsides located within the City's Very High Fire Hazard Severity Zone (VHFHSZ), as designated by the California Department of Forestry and Fire Protection (CAL FIRE) and defined in Section 4904.3 of the Oakland Fire Code (Oakland Municipal Code Chapter 15.12). Specifically, as shown in **Figure 2-1**, the VMP area includes 419 City-owned parcels, ranging in size from <0.1 acre to 235 acres and totaling 1,924 acres. For VMP planning purposes, parcels have been divided into the following categories: urban and residential, canyon areas, ridgeline areas, City park lands and open space, other areas, and road medians. The VMP also includes roadside areas along 308 miles of road within the City's VHFHSZ, including surface and arterial streets, State Routes (SRs) 13 and 24, and Interstate 580 (I-580). Table 2-1 summarizes the categories, sizes, and quantities of City-owned parcels in the VMP area.

Table 2-1. City-owned Parcels within the VMP Area

Parcel Category	Quantity	Total Acreage
Urban and Residential	152	51.2
Canyon Areas	89	188.7
Ridgeline Areas	11	130.2
City Park Lands and Open Space	91	1,552.9
Other Areas*	43	24.5
Medians	33	6.1
Total:	419	1,923.6

* Other areas are developed City-owned properties in the VMP area that include fire stations (nos. 6, 7, 21, 25, and 28), City facilities (parking lots, police stations), paved areas, and parks and playgrounds.



Sources: ESRI 2017, City of Oakland 2017, CAL FIRE 2019c as cited in Dudek 2019

Figure 2-1.
Vegetation Management Plan Area

Prepared by:



0 2,950 5,900 Feet

**Vegetation Management Plan
Draft Environmental Impact Report**

City parks, recreational and open space areas considered in the VMP include: Beaconsfield Canyon, Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, North Oakland Regional Sports Complex, Grizzly Peak Open Space, City Stables, Sheffield Village Open Space, Knowland Park and Arboretum, King Estate Open Space Park, Joaquin Miller Park, Tunnel Road Open Space, Marjorie Saunders Park, and Oak Knoll.

The pattern of development and land uses within the VMP area (and VHFHSZ) creates conditions that can be described as representing either a wildland urban interface or a wildland urban intermix. Areas where urban development abuts vegetative fuels are known as the wildland urban interface (WUI). This condition exists within the VMP area where structures abut City parklands and open space. Areas where the density of housing units and structures is lower and/or the space between structures consists of vegetative fuels capable of propagating fire are more typically characterized as a wildland urban intermix (Intermix). This condition exists throughout the VMP area, most commonly where smaller undeveloped lots covered by vegetative fuels are situated between structures.

2.2 BACKGROUND AND PLAN DEVELOPMENT PROCESS

2.2.1 Background

California has faced a dramatic increase in the number and severity of wildfires. Since 2000, 15 of the 20 most destructive wildfires in the state's history have occurred and ten of these have occurred since 2015. During development of the VMP, numerous significant, catastrophic wildfires have occurred in California, including several in Northern California. The 2017 Nuns, Tubbs, and Pocket Fires in Napa and Sonoma Counties collectively burned over 110,000 acres, destroyed over 6,800 structures, and resulted in 25 fatalities. The 2018 Carr Fire in Shasta County burned nearly 230,000 acres, destroyed over 1,600 structures, and resulted in 8 fatalities. Finally, the 2018 Camp Fire in Butte County burned over 153,000 acres, destroyed nearly 19,000 structures, and resulted in 85 fatalities. The 2018 wildfire season was the deadliest and most destructive wildfire season on record in California (CAL FIRE 2018). While these fires occurred under extreme climatic conditions, preliminary research indicates that proper planning and preemptive vegetation management can aid in wildfire resiliency¹.

The Oakland Hills present a complex wildfire environment that presents a significant risk to public and firefighter safety and to the built and natural environment. The region has been subject to numerous damaging wildland fires, is influenced by local extreme wind and weather conditions (including Diablo wind events), has steep and varied terrain, and encompasses a wide range of different vegetation types. This area is one of the highest risk areas in the country for devastating WUI fires. It is also the location of one of the state's most destructive historic wildfires, the 1991 Tunnel Fire which destroyed 2,900 structures, injured more than 150 people, and killed 25 people (CAL FIRE 2019). Most wildfires in Oakland have burned in the months of

¹ Wildfire resiliency generally includes adaptation strategies that can help wildfire-prone communities become more resilient to wildfire.

September, October, or November when vegetation has lower fuel moistures and Diablo winds return to the VMP area.

Of the variables that comprise the wildland fire environment (weather, terrain, and fuels or vegetation), vegetation is one variable that can be managed. As described further in Section 2.3.1, the goal of vegetation management in the VMP is not the wholesale removal of all vegetation. Instead, the VMP proposes targeted vegetation management activities to minimize the potential for ignitions, crown fires, and extreme fire behavior; create potential fire breaks; and help retain safe evacuation routes. This is accomplished by reducing and maintaining reduced fuel loads and altering the structure, composition, and spacing of retained vegetation.

Current and Recent Vegetation Management Activities led by Oakland Fire Department

OFD's Fire Prevention Bureau currently operates a vegetation inspection program that covers approximately 26,000 public and private property inspections annually in the VHFHSZ portion of the City. Inspections are mandated by City of Oakland Ordinance No. 11640. On an annual basis, fire companies and vegetation management inspectors inspect these properties to identify those that are out of compliance with the City's defensible space standards (refer to Fire Code Section 4907 of the Oakland Municipal Code Chapter 15.12). Repeat inspections are conducted until properties are brought to compliance.

OFD has been actively managing vegetation on City-owned property since 2003 to minimize wildfire hazard in the VMP area, utilizing various techniques including grazing, hand crews, and limited mechanical treatments. Approximately 3,000 goats have been utilized annually (typically between May and August) to manage fine fuels on approximately 600-1,100 acres of City-owned property, typically on larger City park land and open space (e.g., King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Sheffield Village Open Space, Shepherd Canyon, and London Road). Goats have been used in large treatment areas where manual labor is cost-prohibitive to treat vegetation in areas that are inaccessible to mowing equipment or in areas too steep for hand crews.

In addition, OFD has historically used hand labor for managing vegetation on urban and residential parcels, roadsides, and small treatment areas within larger parks or open space areas. OFD annually contracts with private contractors to manage vegetation on urban and residential parcels. The use of hand labor is focused on reducing ladder fuels², controlling highly flammable/rapidly spreading species (e.g., broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Lastly, mechanical equipment is used on an as-needed basis to grade or disk fire trails, reduce ladder fuels (e.g., small tree removal), control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing grasses), chip and spread trimmings and down material, thin vegetation, and maintain reduced or target fuel loads.

Between 2004 and 2017, OFD conducted vegetation management activities throughout the WPAD, a City-funded special assessment district that coincides with the City's VHFHSZ, which

² Ladder fuel is fuel that can carry a fire burning in low-growing vegetation to taller vegetation.

financed the costs and expenses related to vegetation management, yard waste disposal, wildfire prevention education and fire patrols in the Oakland hills. The District was disbanded in June 2017. Since 2017, OFD has continued to conduct vegetation management activities on City properties and along roads, albeit at a lesser degree than when the WPAD was in place due to funding constraints. Absent approval of the VMP, those activities are intended to continue at current levels under the Public Works/OFD annual budget. Refer to Chapter 3, Table 3.1-1 for a more detailed breakdown of goat grazing and roadside treatment activities conducted over the last 15 years.

2.2.2 VMP Development Process

Development of the VMP included a detailed field assessment of wildfire hazard, which was used to identify and classify existing vegetation community and land cover types into fuel models, and map areas with high ignition potential or where extreme wildfire behavior would be expected given current terrain and fuel conditions. VMP development also included assessment and processing of geographic information system (GIS) datasets for variables influencing wildfire hazard in the VMP area, coordination with OFD personnel, fire behavior modeling, and significant public and stakeholder outreach to better understand current vegetation management activities in the VMP area.

Field Assessments

OFD's consultant team (Horizon Water and Environment [Horizon] and Dudek) conducted a series of field assessments in support of the VMP. Field assessments were conducted to map and classify the existing vegetation communities and land cover types present in the VMP area, which include coast oak woodland, redwood, valley/foothill riparian, closed-cone pine-cypress, eucalyptus, coastal scrub, mixed chaparral, freshwater emergent wetland, perennial grassland, annual grassland, and urban land covers. Figures 4.1 through 4.10 of the VMP (see Appendix A of this DEIR) show the distribution of these vegetation communities within the VMP area.

Field assessments were conducted between December 2016 and August 2017 to evaluate existing fuel load conditions and understand general fuel hazard conditions and current maintenance practices being conducted by OFD within the VMP area. In addition, field assessments were also used to identify and classify vegetation community types into fuel models. Table 3 of the VMP summarizes how vegetation community or land cover types present in the VMP area were assigned to specific fuel models; Appendix C of the VMP provides a more detailed discussion of fuel models. Collectively, the field assessment of existing vegetation and land cover types, assessment of fuel load conditions, and identification of how vegetation types aligned with existing fuel models served as the basis for the proposed vegetation management projects described in the VMP. A list of high fire hazard plant species is included in Appendix D of the VMP (provided in Appendix A of this DEIR) and is derived from plant lists developed by the City of Oakland (2017) and Moritz and Svhra (1998) and those identified as highly flammable/rapidly spreading plants in Section 2.3.1.4 of the VMP.

Fire Behavior Model

The FlamMap (version 5.0.3) software package was used to identify portions of the VMP area that may be subject to extreme fire behavior, considering weather, fuels, and terrain variables.

FlamMap is a GIS-driven computer program that incorporates fuels, weather, and topography data in generating static fire behavior outputs, including values associated with flame length and crown fire³ activity, among others. The calculations that come from FlamMap are based on the BehavePlus fire modeling system algorithms but result in geographically distinct datasets based on GIS inputs. The FlamMap model outputs are intended to allow wildland managers to evaluate anticipated fire behavior and were used to model flame length and crown fire activity for a portion of the VMP area. A detailed discussion of the FlamMap modeling process and results are included in the VMP. This particular fire behavior modeling system was selected given its capabilities for mapping potential fire behavior using GIS. In addition, the BehavePlus software package (version 6.0.0) was used to highlight the difference in fire behavior characteristics for each of the different fuel models utilized for analyzing fire behavior for this VMP.

Public Engagement

Several public and stakeholder engagement meetings were conducted to support development of the VMP. Six workshops/meetings were conducted during development of the Draft VMP, as summarized in **Table 2-2**. A status update was provided to the Oakland City Council, Public Safety Committee on July 17, 2018. As an outcome of that meeting and at the direction of the Public Safety Committee, two additional public meetings were held in November 2018.

Table 2-2. Public and Stakeholder Engagement in the VMP Development Process

Date	Location/Group	Meeting Type
<i>Initial Public Engagement (VMP Development)</i>		
March 29, 2017	Dunsmuir Estate	Workshop to introduce the scope and purpose of the VMP and receive public input and feedback
March 30, 2017	Trudeau Center	Workshop to introduce the scope and purpose of the VMP and receive public input and feedback
June 29, 2017	Trudeau Center	Workshop to provide an update on the VMP development process and receive public input and feedback
May 23, 2018	Oakland City Hall	Workshop to present the First Draft VMP and receive public input and feedback
<i>Additional Public Engagement (Public Safety Committee)</i>		
November 15, 2018	Trudeau Center	Workshop to receive input from the public, targeted toward park stewardship and volunteer groups working on City-owned parcels
November 20, 2018	Oakland City Hall	Workshop to receive input from the public, focused on increased specificity of the VMP

³ A crown fire is a forest fire that advances, often at great speed, from treetop to treetop.

Date	Location/Group	Meeting Type
<i>Additional Stakeholder/Volunteer Input</i>		
March 22, 2019	Friends of Dimond Park	Reviewed site conditions and management recommendations in Dimond Park
March 22, 2019	Knowland Park Adopt-a-Spot	Reviewed site conditions and management recommendations in the northeast portion of Knowland Park, and along the frontage road that parallels Skyline Boulevard
March 23, 2019	Oakland Landscape Committee	Reviewed site conditions and management recommendations at the North Oakland Regional Sports Field
March 29, 2019	Friends of Joaquin Miller Park and Friends of Sausal Creek	Reviewed site conditions and management recommendations at Beaconsfield Canyon and Joaquin Miller Park
April 5, 2019	Garber Park Stewards and Claremont Canyon Conservancy	Reviewed site conditions and management recommendations at Garber Park
April 6, 2019	Friends of Sausal Creek	Reviewed site conditions and management recommendations at Dimond Canyon and Dimond Park
April 12, 2019	Friends and Knowland Park and East Bay Native Plant Society	Reviewed site conditions and management recommendations at Knowland Park
April 18, 2019	Friends of Montclair Railroad Trail	Reviewed site conditions and management recommendations at the Montclair Railroad Trail in Shepherd Canyon
May 1, 2019	Oak Knoll Neighborhood Improvement Association	Reviewed site conditions and management recommendations at King Estate Open Space Park
May 3, 2019	Shepherd Canyon Homeowners Association	Reviewed site conditions and management recommendations at Shepherd Canyon Park
May 17, 2019	Coalition to Defend East Bay Forests, Forest Action Brigade, and Hills Conservation Network	Reviewed management recommendations throughout the VMP area

Volunteers and stakeholder groups that provided input during the VMP development process are identified in Appendix K of the VMP. In addition to the identified stewardship groups in Appendix K, the Oakland Wildland Stewards (OWLS) is a coalition of stewardship groups operating in the VMP area, and individual members provided input during the stakeholder meetings.

Development of Vegetation Treatment Projects

Based on coordination with OFD personnel, fire behavior modeling, and public input received throughout the VMP development process, vegetation treatment projects were identified and prioritized based on proximity to VMP area structures, roads, ridgelines, and park access gates where fire behavior is anticipated to be extreme (high flame lengths and/or crown fires), and

where continuation of the City's goat grazing program would effectively maintain lower fuel loads. Identified priority projects total 1,366 acres within the VMP area's 1,924 total acres. The VMP also prioritizes vegetation management along 30 miles of primary access/egress routes in the VMP area. The vegetation treatment projects are provided in Section 9.2 of the VMP (see Appendix A of this DEIR). VMP treatment areas and priority rankings are described in Sections 2.3.4 and 2.3.5, below.

2.3 PROPOSED PROJECT

2.3.1 Goals and Objectives

The CEQA Guidelines call for the identification of objectives sought by a proposed project (CEQA Guidelines Section 15124[b]). A statement of objectives helps convey the reasons for considering approval of the VMP, including its intended benefits, and guides the development of a reasonable range of alternatives to evaluate in the EIR. The City has identified the following primary goals for the VMP:

- Reduce wildfire hazard on City-owned land and along critical access/egress routes within the City's VHFHSZ;
- Reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety;
- Implement practices to avoid or minimize impacts to natural resources;
- Maintain an active role in regional efforts to reduce wildfire hazard in the Oakland hills.

The objectives of the VMP are as follows:

- Reduce the likelihood of catastrophic wildfires by limiting ignition potential, reducing fuel loads, and modifying fuel arrangements on City-owned lands.
- Reduce the likelihood of extreme fire behavior within the VMP area.
- Identify and define vegetation management actions that consider site-specific vegetation type, fuel hazard, treatment effectiveness, and ongoing maintenance requirements.
- Identify and prioritize fuel treatment areas based on fuel loads and arrangements, terrain, topographic exposure, and proximity to roads and structures.
- Retain vegetation where feasible to reduce wind exposure, retain soil and surface fuel moisture, and reduce the potential for soil erosion.
- Develop management recommendations that enable OFD to make informed, adaptive decisions on an annual basis (or more often as necessary) regarding vegetation management within the VMP area, considering the benefits of treatment, potential environmental effects, and treatment costs.

- Avoid, minimize, and/or reduce potential adverse effects of vegetation management on sensitive biological resources, water resources, aesthetics, soils, and slope stability.
- Increase the ability of OFD and other responding agencies to suppress wildfire in the VMP area in order to minimize wildfire impacts to VMP area resources.
- Routinely evaluate the effectiveness and implementation frequency of vegetation management actions within the VMP area.

2.3.2 VMP Structure and Contents

The VMP includes the following sections:

- **Section 1, *Introduction*.** This section introduces the VMP by describing its need and purpose, defining the location of the VMP area, identifying the VMP's goals and objectives, and providing a summary of the various sections of the VMP.
- **Section 2, *VMP Area Description*.** This section provides a description of the VMP area, including the climate, topography, vegetation types, fire history, and fire hazard severity zoning and wildland urban interface/intermix designations. This section also provides detailed maps of the terrain and vegetation types located in the VMP area.
- **Section 3, *Wildfire Hazard Assessment*.** This section provides a description of the wildfire hazard assessment methodology used to develop the VMP and prioritize fuel treatment areas.
- **Section 4, *Codes and Standards*.** This section describes existing City, County, and State codes and standards relevant to vegetation management activities in the VMP area or the City's VHFHSZ.
- **Section 5, *Management Plans and Programs*.** This section describes the existing land or resource management plans and programs relevant to vegetation management activities in the VMP area or the City's VHFHSZ that were consulted during development of the VMP.
- **Section 6, *Public Engagement*.** This section describes the public and stakeholder engagement efforts that were conducted during the development of the draft and revised draft VMP. This section also summarizes the key comments and recommendations that helped guide development of the revised draft VMP.
- **Section 7, *VMP Area Resources*.** This section summarizes the biological, ecological, and community resources found in the VMP area, including vegetation communities, special-status species, streams and water resources, hillslopes and soils, and community resources (e.g., buildings, districts, and other features with significant interest or value).
- **Section 8, *Vegetation Management Techniques*.** This section describes the four primary vegetation treatment techniques used to modify or remove vegetation (i.e., biological, hand labor, mechanical, and chemical) as well as best management practices (BMPs) for each technique.

- **Section 9, Vegetation Management and Maintenance Standards.** This section outlines vegetation management and maintenance standards by dominant vegetation type and specifically describes the measurable guidelines to achieve the desired vegetation condition to reduce fire hazard. This section also describes OFD's current vegetation management practices and specific recommendations for key areas based on site-specific conditions and describes the procedures to be taken by OFD for evaluating, prioritizing, and planning annual vegetation management activities. This section also includes figures depicting the parcel types and priority treatment areas (ranked as Priority 1, 2, and 3) in the VMP area.
- **Section 10, Practices to Avoid/Minimize Impacts.** This section includes additional BMPs intended to avoid or minimize potential impacts associated with vegetation treatment or removal.
- **Section 11, Plan Coordination and Partnerships.** This section describes OFD's partnerships with other City departments, other large landowners and land managers, and stakeholder and volunteer groups that routinely treat vegetation for fire hazard reduction purposes. This section includes recommendations for improving coordination with other City departments that also have an interest or otherwise manage vegetation on City-owned properties in the VMP area and improving on-going coordination with local volunteer and stewardship groups that are active in parklands or other areas in the VMP area.
- **Section 12, Plan Implementation.** This section outlines the methods for implementing the vegetation management recommendations included in the VMP over the 10-year VMP timeframe, including annual reporting and monitoring metrics, and documentation for VMP implementation performance. This section also includes an estimated range of implementation and maintenance costs associated with vegetation management techniques recommended in the VMP. Additionally, this section includes a table summarizing recommended projects by general priority (i.e., Priority, 1, 2, or 3).

2.3.3 Vegetation Management Standards

Vegetation management for fire hazard reduction would vary by location and conditions and would change over time to reflect changing conditions on the ground. Thus, management and maintenance standards described in the VMP are derived from principles of vegetation management for fire hazard reduction and are broken down by dominant vegetation community/land cover type, including grassland/herbaceous, brush/scrub, tree/woodland/forest, other combustible material. **Table 2-3** summarizes the general vegetation management standards and goals for each dominant vegetation type. Specific standards for tree-dominated vegetation types including eucalyptus, closed-cone pine-cypress, urban (acacia) and urban (mixed tree stands), oak woodland, redwood, and riparian vegetation communities are described in Section 9.1 of the VMP.

Table 2-3. Vegetation Management Standards and Goals by Dominant Vegetation Type

Dominant Vegetation Type	Vegetation Management Standards	Vegetation Management Goals
Grassland/Herbaceous (annual and perennial grasslands)	<ul style="list-style-type: none"> ▪ Heights of grasses, weeds and thistles shall not exceed 3 inches within 30 feet of habitable structures (within or outside of City-owned property). ▪ Heights of grasses, weeds and thistles shall not exceed 18 inches beyond 30 feet from a habitable structure (recommended height is below 6 inches). ▪ Leave cut grass on the ground to protect soil but must not exceed 6 inches in height. ▪ Remove or chip/spread on-site all dead or dying surface vegetation. ▪ Remove or treat/spread as mulch on site all dead branches, limbs, etc. from overstory. ▪ Spread all mulch or chipped material to a depth not to exceed 6 inches. ▪ Dispose of all removed material appropriately per City standards. 	<ul style="list-style-type: none"> ▪ Reduce vegetation height to create a shorter and more compact surface fuel layer that is less ignitable and less likely to sustain fire spread.
Brush/Shrub (mixed chaparral and coastal scrub)	<ul style="list-style-type: none"> ▪ Remove all dead brush/shrub. ▪ Remove all dead and dying growth from brush/shrub. ▪ Separate individual shrub crowns/shrub groupings horizontally from adjacent shrubs, shrub groupings, or trees by at least two times the height of the shrub crown. ▪ Groupings of shrubs should not exceed 8 feet in diameter. ▪ Vertical separation between the top of the shrub and lowest tree branch will be at least 3 times the height of the shrub crown or 8 feet, whichever is greater in locations where brush/shrub is located within the dripline. ▪ Prioritize for removal individual, isolated highly flammable trees located within brush/shrub stands. ▪ Cut shrubs at or near the ground surface and leave root systems intact to minimize soil erosion. ▪ Remove or treat/spread on site all vegetative material from brush/shrub removal or trimming. 	<ul style="list-style-type: none"> ▪ Reduce surface fuel loading and flame lengths and slow fire spread by increasing the horizontal spacing between retained shrubs. ▪ Increase the vertical spacing between shrub and tree canopies to reduce crown fire transition potential.

Dominant Vegetation Type	Vegetation Management Standards	Vegetation Management Goals
	<ul style="list-style-type: none"> ▪ Spread all chipped material to a depth no greater than 6 inches. ▪ Dispose of all removed material appropriately per City standards. ▪ Prioritize removal of highly flammable plants over fire resistant plants where brush/shrub removal is necessary. 	<ul style="list-style-type: none"> ▪ Increase the horizontal spacing between retained trees to reduce the potential for crown fire spread. ▪ Remove fuel ladders by increasing the vertical spacing between surface fuels and tree canopies. ▪ Create more fire resilient tree stands by reducing surface fuel loads, reducing ladder fuels, and reducing tree crown density through crown thinning.
Tree/Woodland/Forest (coast oak woodland, closed-cone pine cypress, eucalyptus, redwood, valley/foothill riparian, urban (acacia), urban mixed tree stand)	<ul style="list-style-type: none"> ▪ Remove all dead trees, consistent with the Oakland Fire Code. ▪ Remove all dead/dying growth and litter from trees. ▪ Prune tree crowns that extent within 10 feet of any structure or outlet of a chimney to maintain a minimum horizontal clearance of 10 feet. ▪ Prune tree crowns to maintain 13.5 feet vertical clearance above the road surface per Oakland Fire Code Section 4907.5. ▪ Prune tree limbs located less than 6 feet above the ground surface on trees located within 100 feet of habitable structures per Oakland Fire Code Section 4907.3.1.3. ▪ Vertical separation between the top of the retained shrub and lowest tree branch should be at least 3 times the height of the shrub crown or 8 feet, whichever is greater in locations where brush/shrub is located within the dripline of a tree. ▪ Leave stumps from removed trees that do not exceed 6 inches to minimize soil erosion. ▪ Remove or treat/spread all vegetative material from tree removal or trimming on site (logs no smaller than 8 inches in diameter may be retained on the soil surface). ▪ Spread all chipped material to a depth no greater than 6 inches. ▪ Maintain trail networks to facilitate access and to create breaks in surface fuels. ▪ Dispose of all removed material appropriately per City standards. ▪ Prioritize removal of highly flammable plants over fire resistant plants where tree removal is necessary. 	

Source: Appendix A of this DEIR

2.3.4 VMP Treatment Areas

The following subsections summarize current and proposed vegetation management activities by treatment area type. In general, treatment areas are organized by urban/residential parcels, canyon areas, City parks and open space areas, roadside treatment areas and medians, and other areas (e.g., parking lots, playground, urban parks) (**Figure 2-2**, sheets 1 through 10). **Figure 2-3**, sheets 1 through 6 show these treatment areas by priority (1, 2, and 3). **Table 2-8**, presented at the end of this chapter, provides more detail on proposed treatment techniques at each treatment area and proposed specific projects within those treatment areas. Note that the proposed treatment techniques listed in Table 2-8 represent those that are deemed appropriate and most conservative at the time this EIR was prepared. The information in Table 2-8 is intended to assist the City in selecting and prioritizing the ultimate treatment projects that will be included in the City's annual work plan. Section 9.2 of the VMP provides more detail about current management practices and proposed treatments for the below-described treatment areas. In this EIR, the term "current vegetation treatments" refers to those treatments that are currently conducted by the City and are represented within baseline conditions, as described in Section 3.1.2.

Urban and Residential Parcels

Urban and residential parcels are generally smaller than 1 acre in size and are distributed throughout the VMP area. These parcels are mapped as containing the following vegetation communities/land cover types: annual grassland (2.4 acres), closed-cone pine-cypress (8.9 acres), coastal oak woodland (18.4 acres), coastal scrub (2.4 acres), eucalyptus (10.7 acres), redwood (0.2 acre), urban (7.9 acres), and urban (acacia) (0.2 acre).

Current Vegetation Treatments

Current management practices for these parcels include manual vegetation treatment techniques (hand labor or mechanical) to reduce ladder fuels, control invasive species (e.g., broom), reduce surface fuels (e.g., grasses, weeds, down material), maintain reduced fuel loads, and prune tree canopies. Grazing is another treatment method typically conducted in areas where multiple City-owned parcels abut each other, creating a larger area for treatment.

Proposed Vegetation Treatments

Because all urban and residential parcels include land entirely or largely within 100 feet from existing structures, these treatment areas are considered Priority 1 treatment areas (as defined below in Section 2.3.5). All urban and residential treatment areas are classified as project URB-1 and the treatment area totals 47.5 acres. Table 2-8 summarizes proposed treatments on parcels identified as project URB-1 by dominant vegetation community type.

Canyon Areas

Canyon areas include multiple adjacent parcels that are situated within and along canyons and drainages in the VMP area. Four canyon areas are present in the VMP area, including: Garber Park, Dimond Canyon Park, Shepherd Canyon Park, Leona Heights Park, and Beaconsfield Canyon. A brief description and summary of proposed vegetation management treatments within each canyon area are provided below. Table 2-8 below and Section 9.2 of the VMP provides more detail about these treatment areas.

Garber Park

Garber Park is collectively 14.3 acres in size and situated mostly along the south side of Claremont Canyon at the bottom of Claremont Canyon (Figure 2-2, sheet 1). The park primarily consists of a north-facing slope and is mapped as containing the following vegetation communities/land cover types: coast oak woodland (13.4 acres), eucalyptus (0.7 acre), and freshwater emergent wetland (0.1 acre). There are scattered eucalyptus, acacia, and pine trees within the mapped coast oak woodland. Garber Park Stewards and the Claremont Canyon Conservancy actively conduct vegetation management efforts in this park.

Given Garber Park's position in the lower part of the canyon and its north-facing slope, fuel moistures are relatively higher and fire hazard is relatively lower compared to other areas in the VMP. However, depending on annual rainfall, conditions may be dry during the late summer and fall. The plant pathogen Sudden Oak Death (SOD) is known to be present in Garber Park (UC Berkeley 2019), increasing the potential for dead oak trees to be present in this park. Downed tree branches and other woody debris located in gullies and on slopes in the park are a fire hazard.

Current Vegetation Treatments

Current vegetation management activities conducted at Garber Park include limited flashy fuel (e.g., grasses, weeds) treatment along Claremont Avenue to minimize ignition potential through the use of hand labor or mechanical techniques.

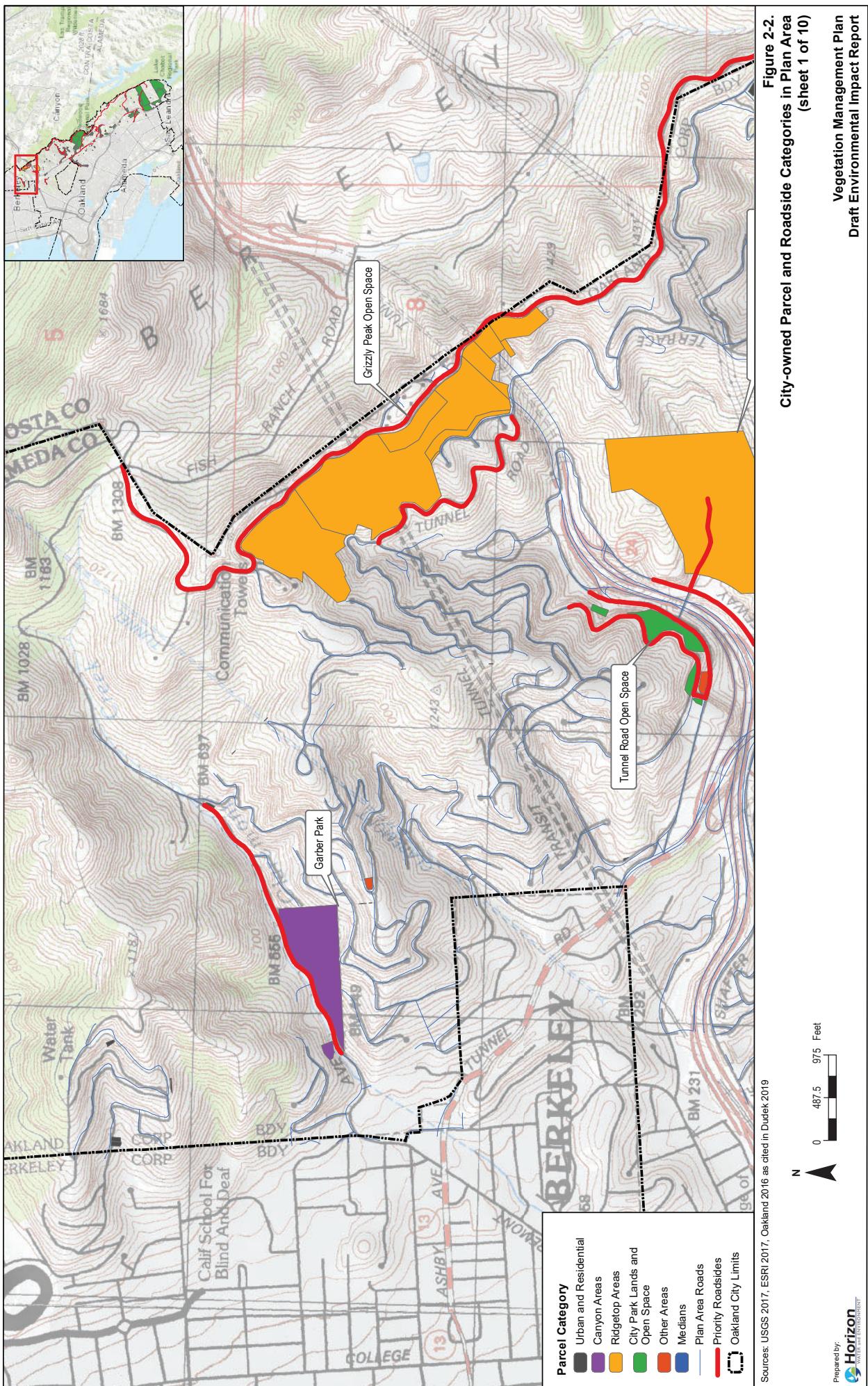
Proposed Vegetation Treatments

Through consultation with the Garber Park Stewards, the primary stewardship group that conducts vegetation management efforts in Garber Park, the following vegetation management treatments are proposed to reduce fire risk at Garber Park:

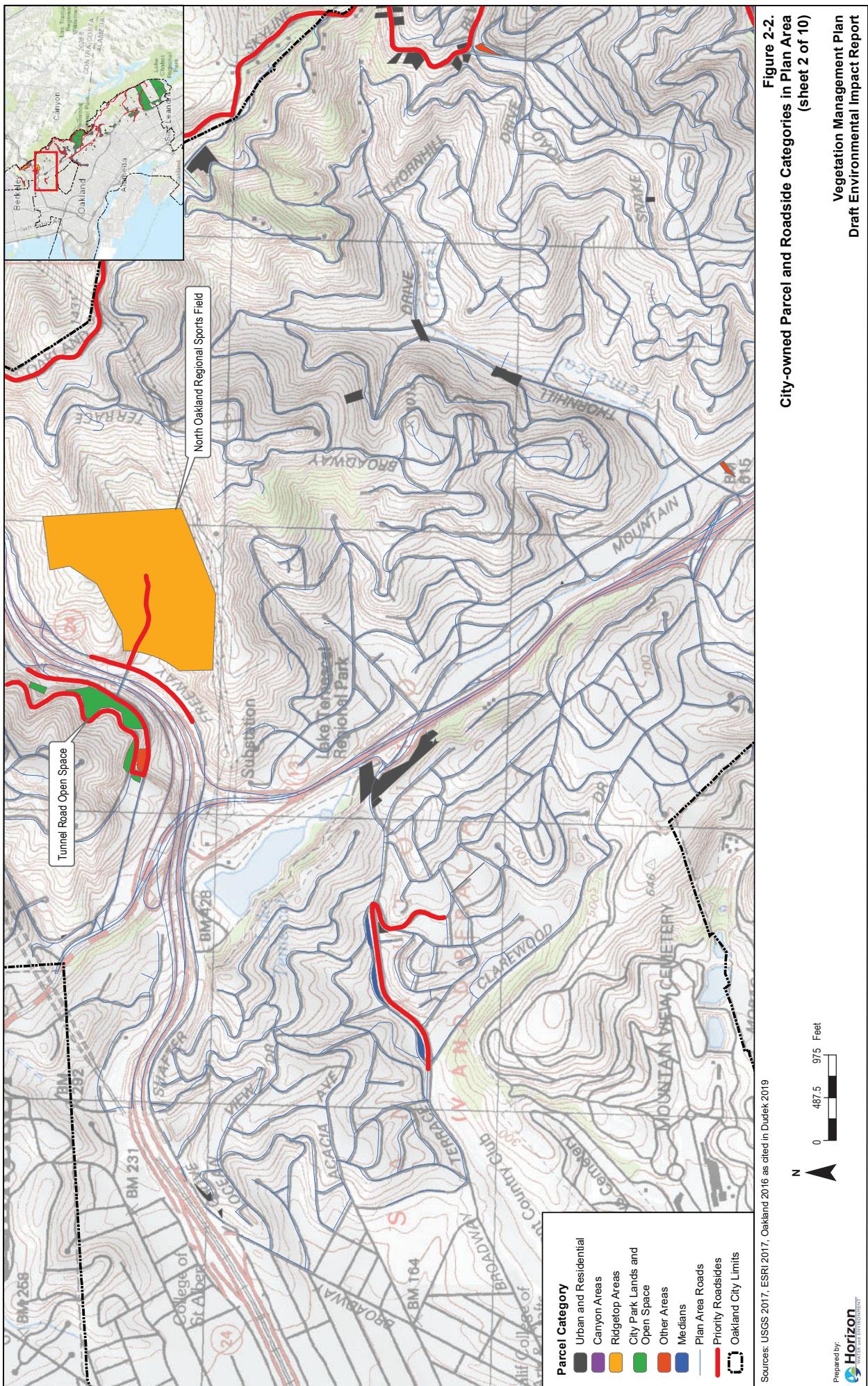
- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation.
- Clear downed wood and other debris from gullies and remove dead limbs.

Proposed specific projects at Garber Park (GAR-1, GAR-2, and GAR-3) are summarized in Table 2-8 and described below.

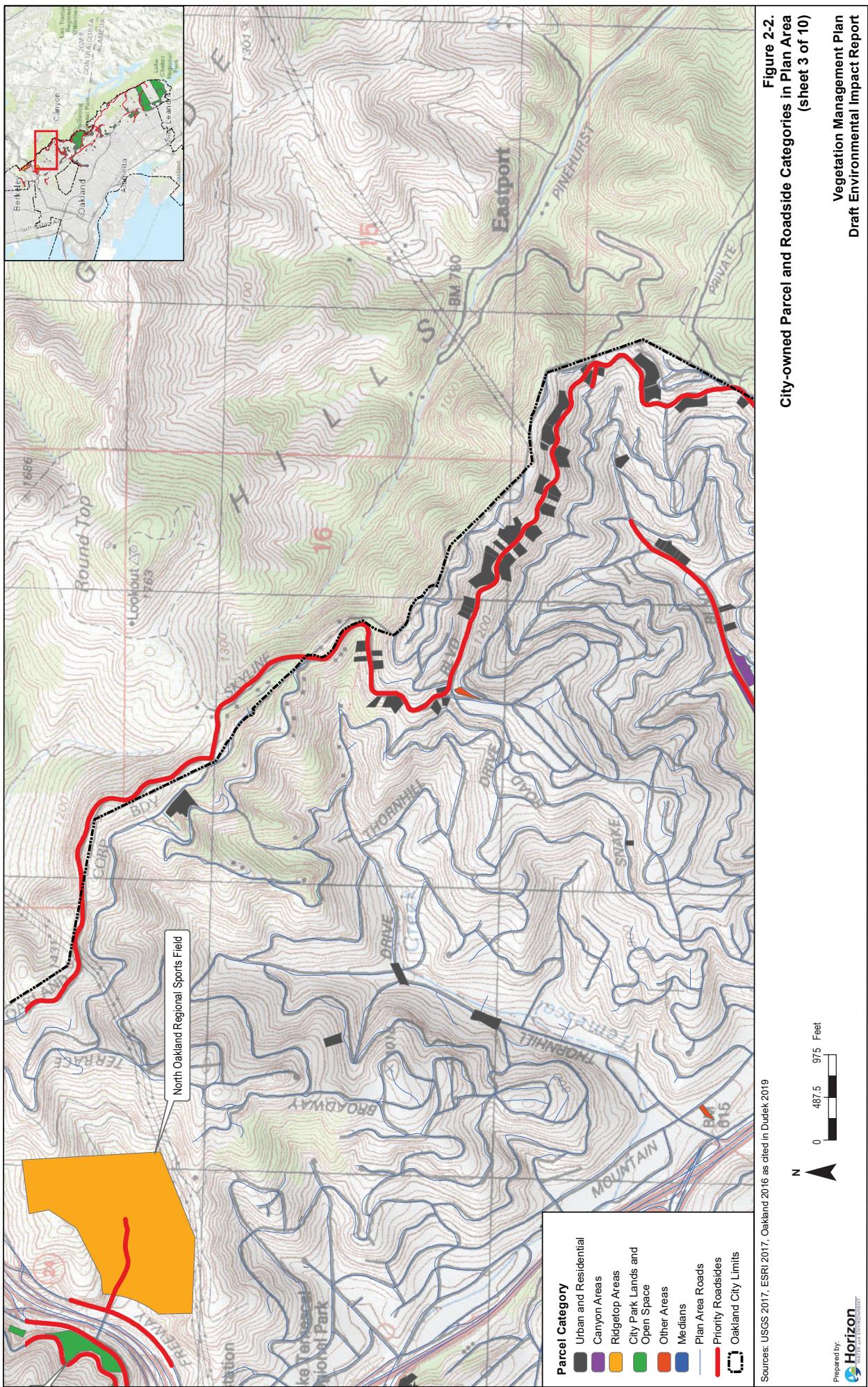
- **GAR-1:** Manage vegetation along adjacent roadside (Claremont Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based



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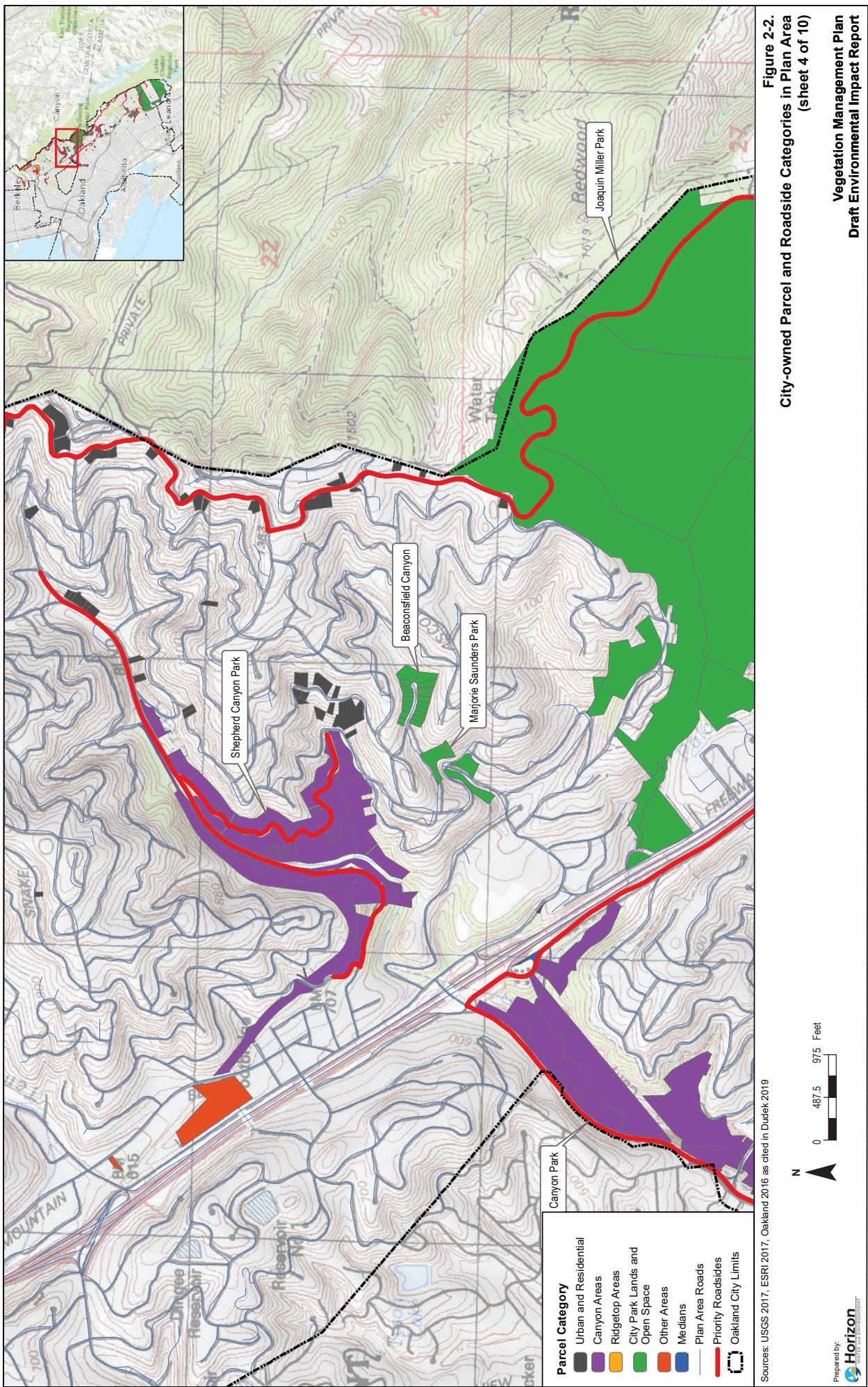


Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 4 of 10)

Vegetation Management Plan
Draft Environmental Impact Report

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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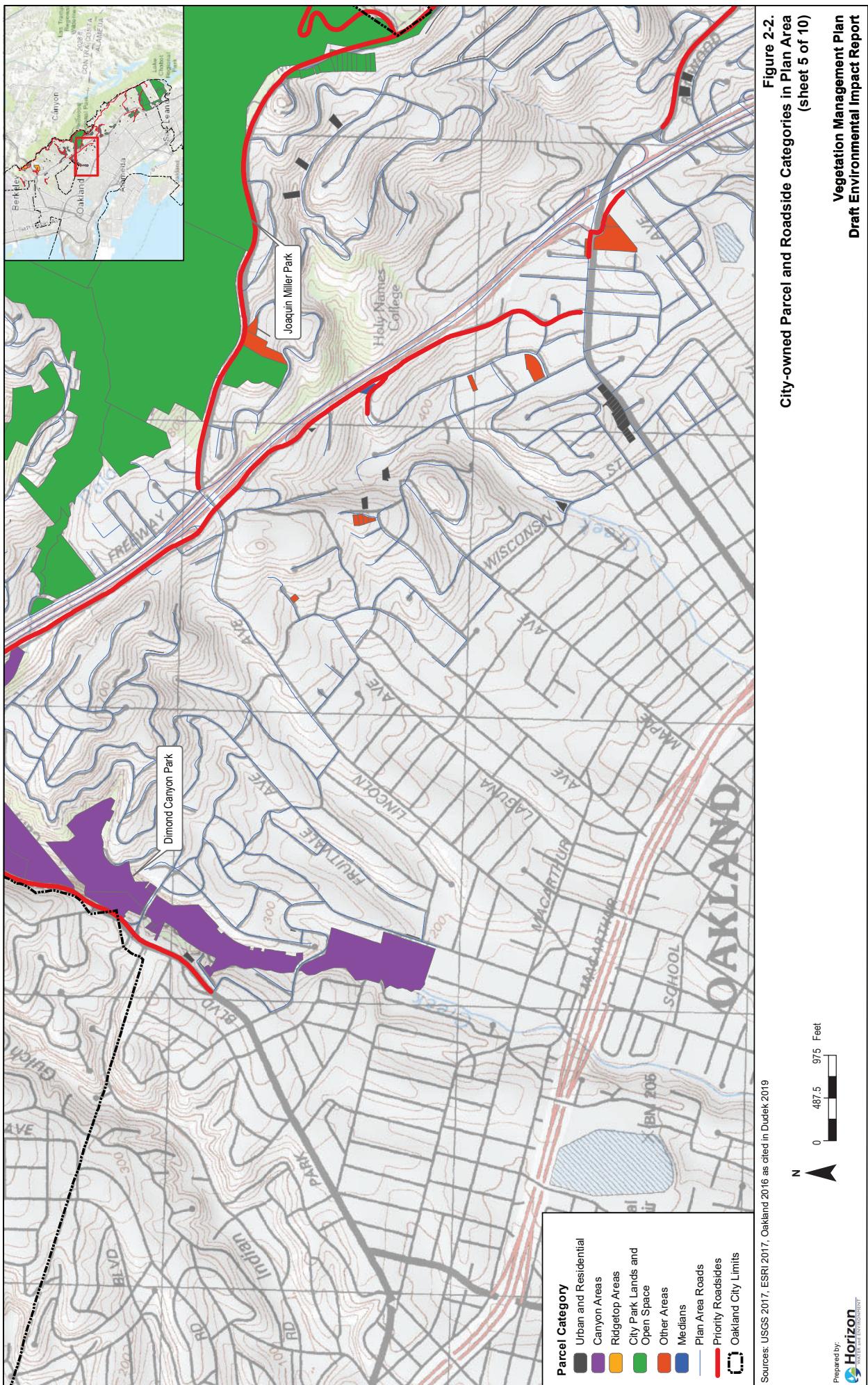
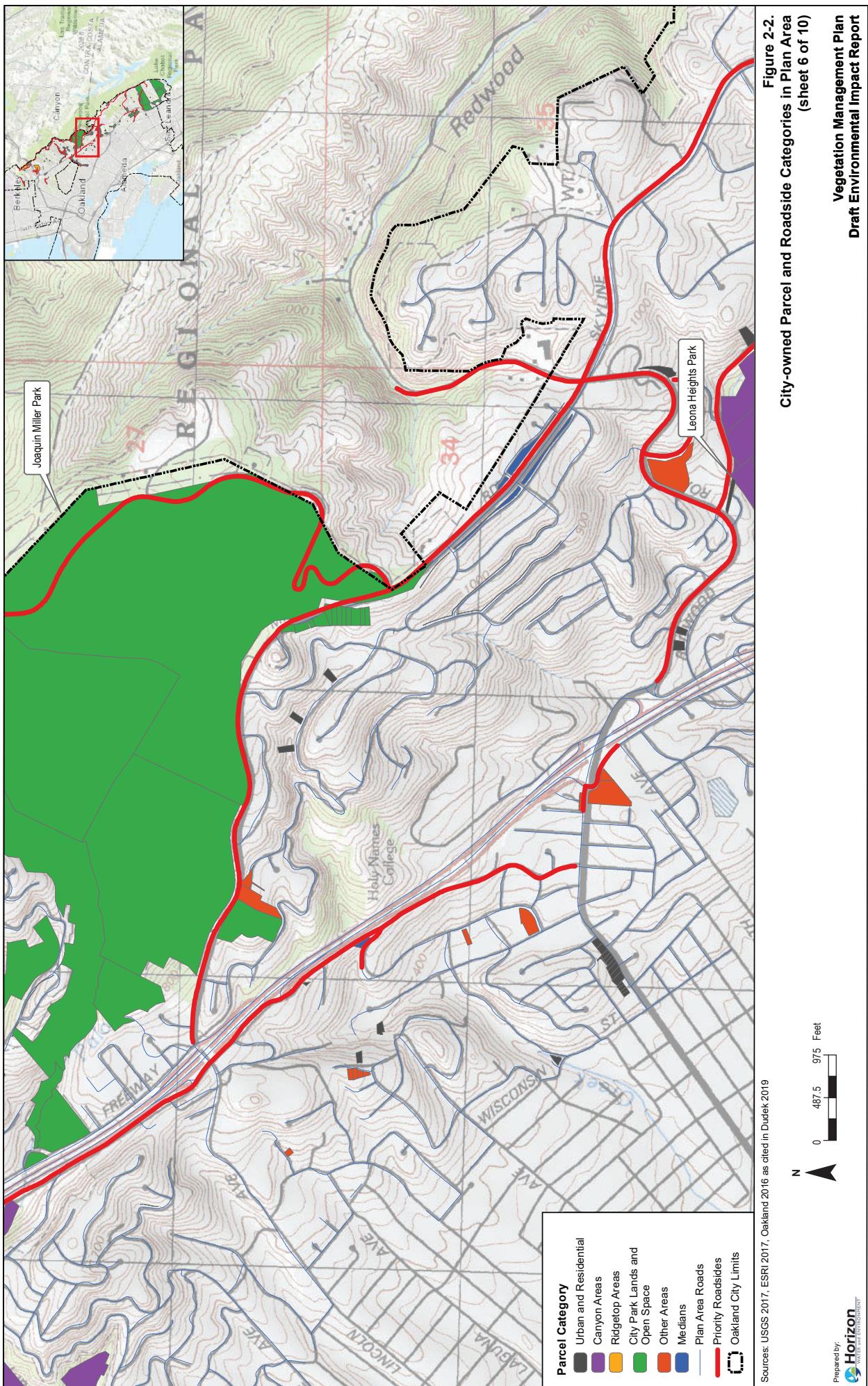


Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
(sheet 5 of 10)

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Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

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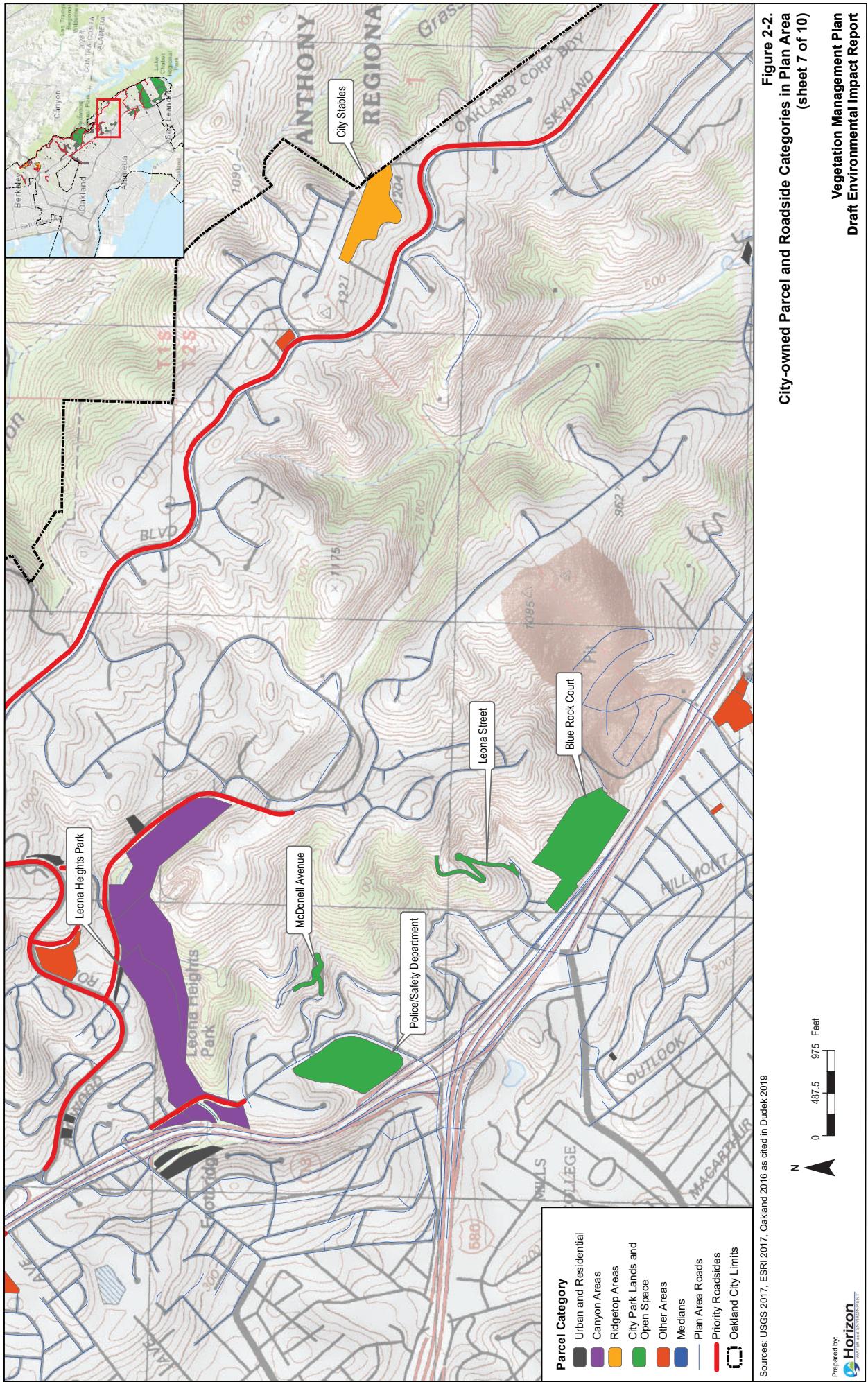
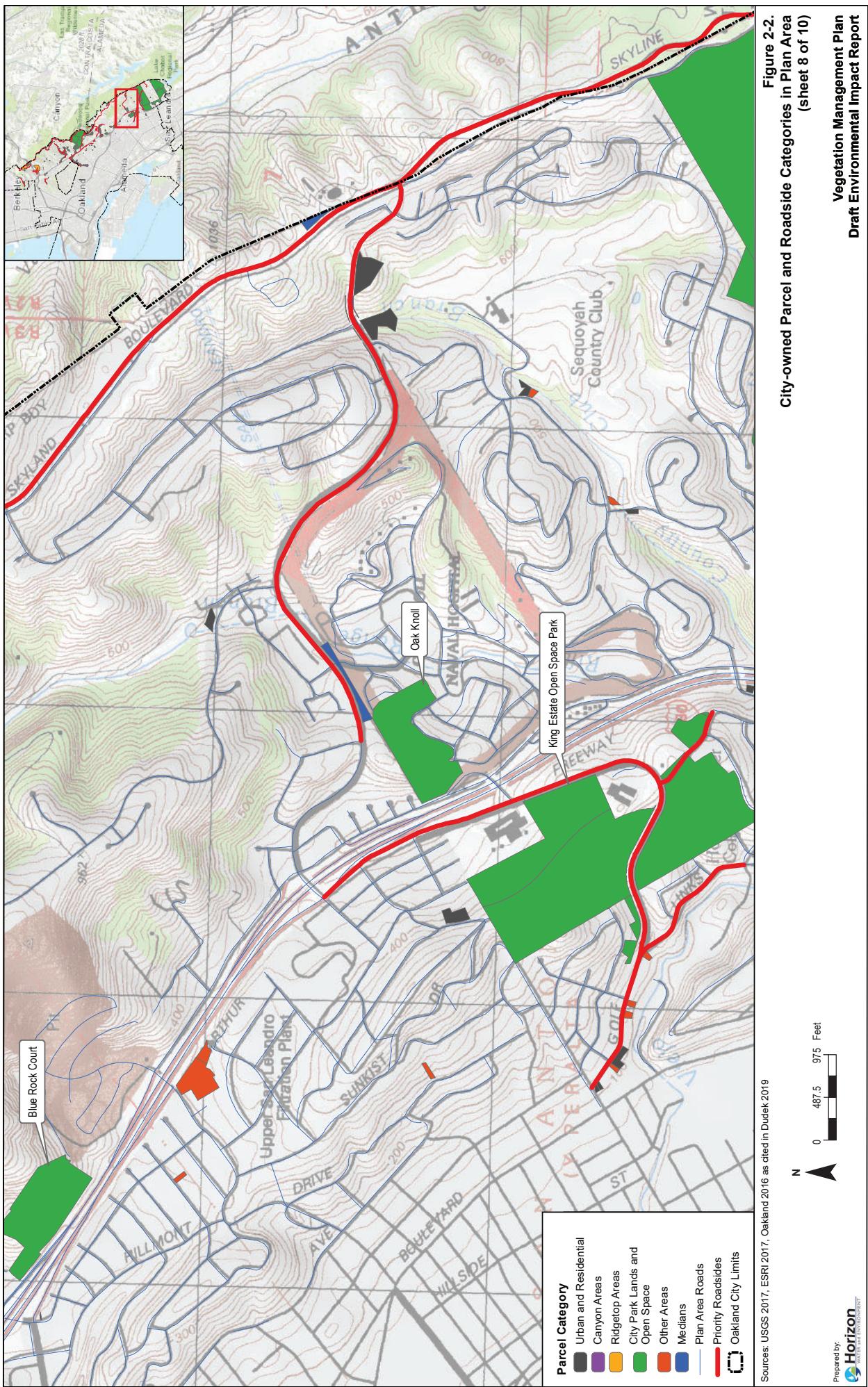


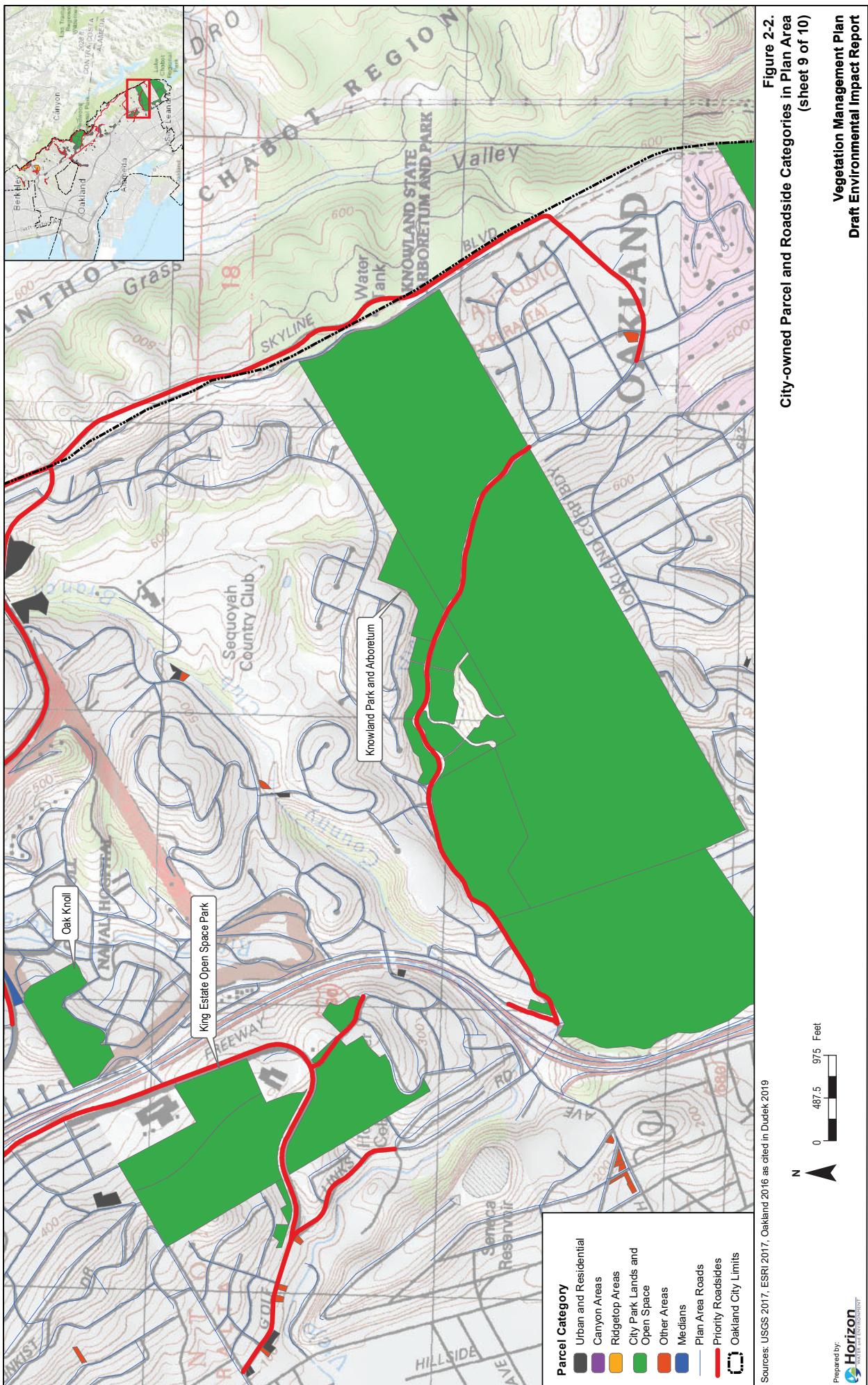
Figure 2-2.
City-owned Parcel and Roadside Categories in Plan Area
 (sheet 7 of 10)

Sources: USGS 2017, ESRI 2017, Oakland 2016 as cited in Dudek 2019

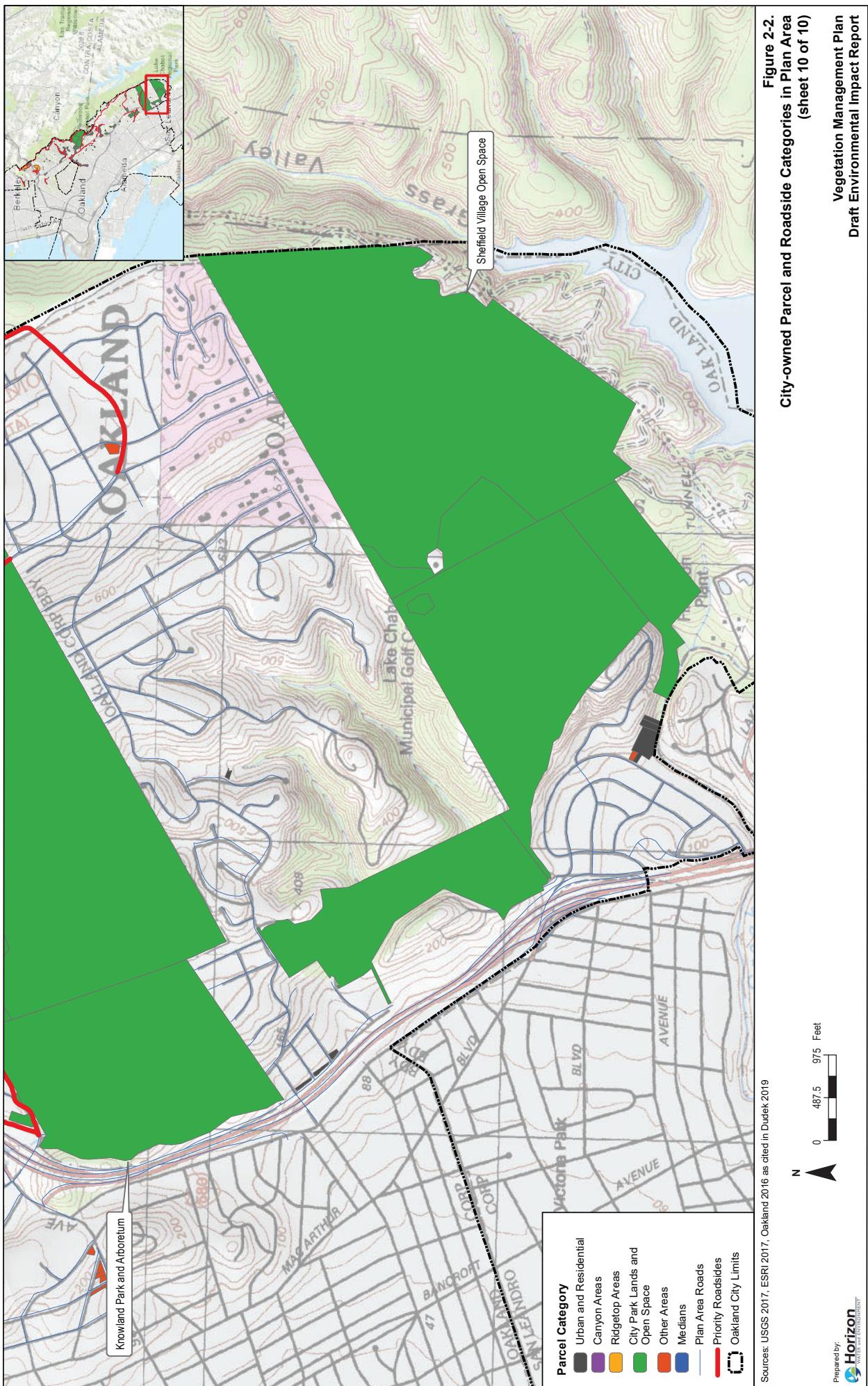
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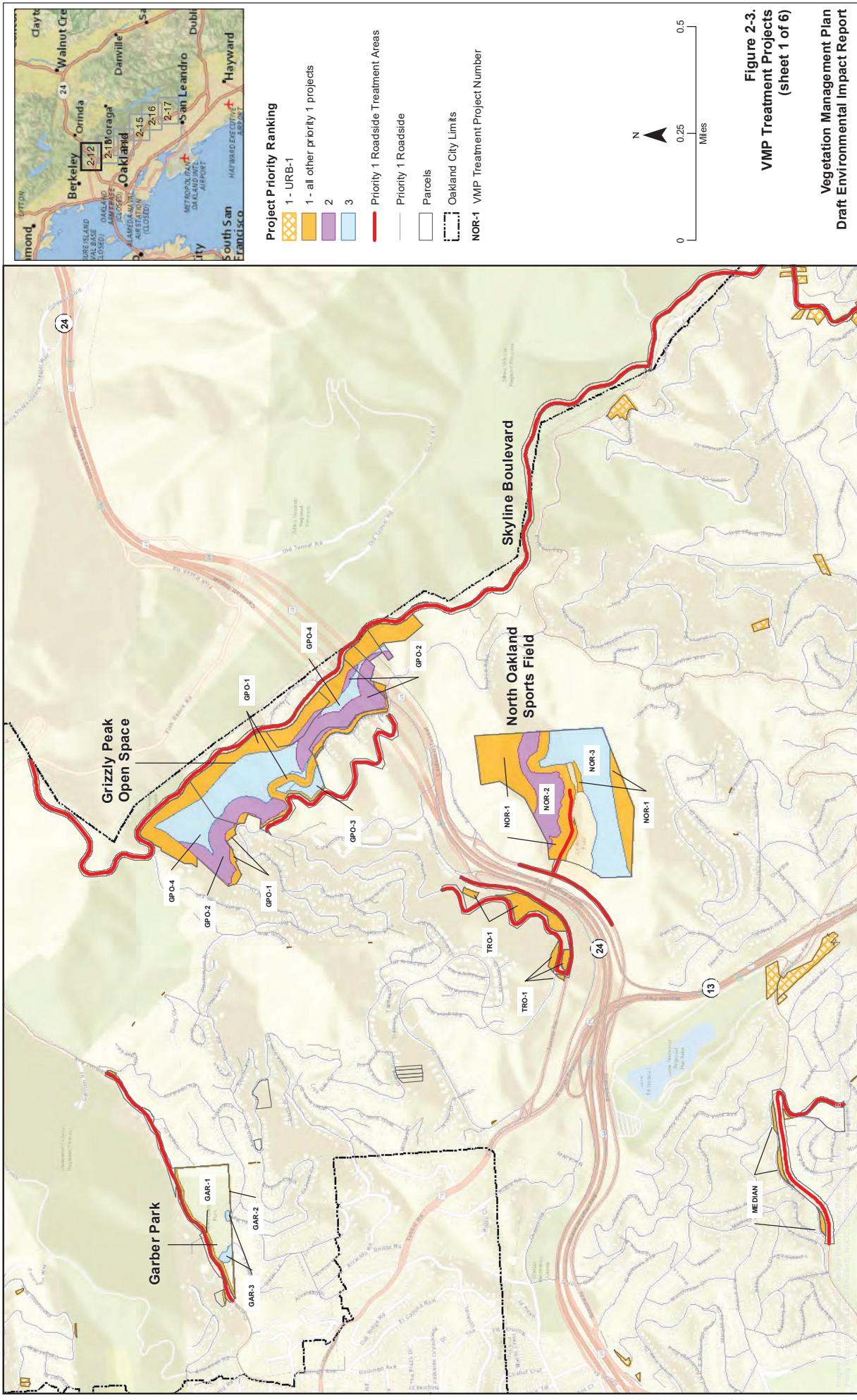
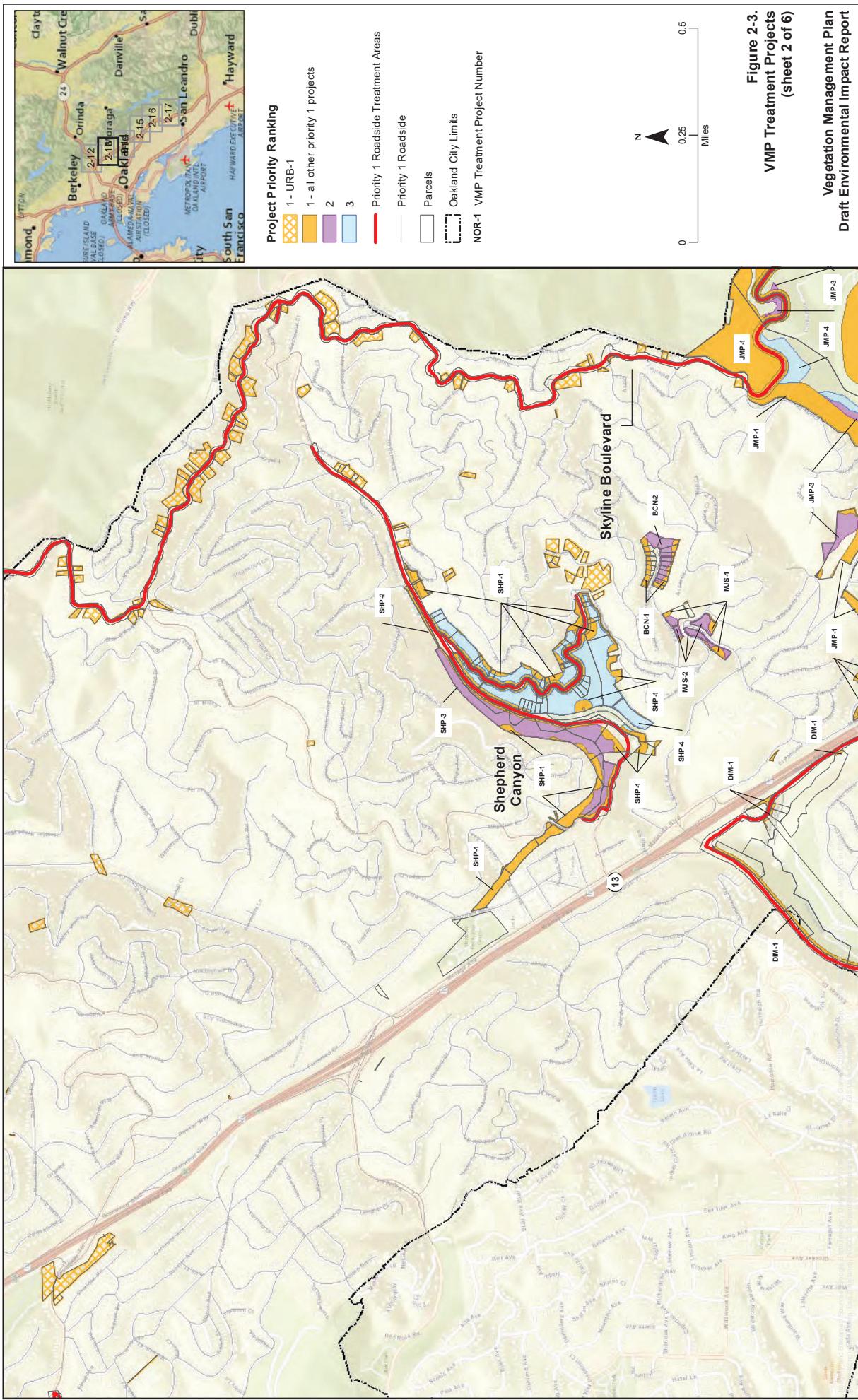


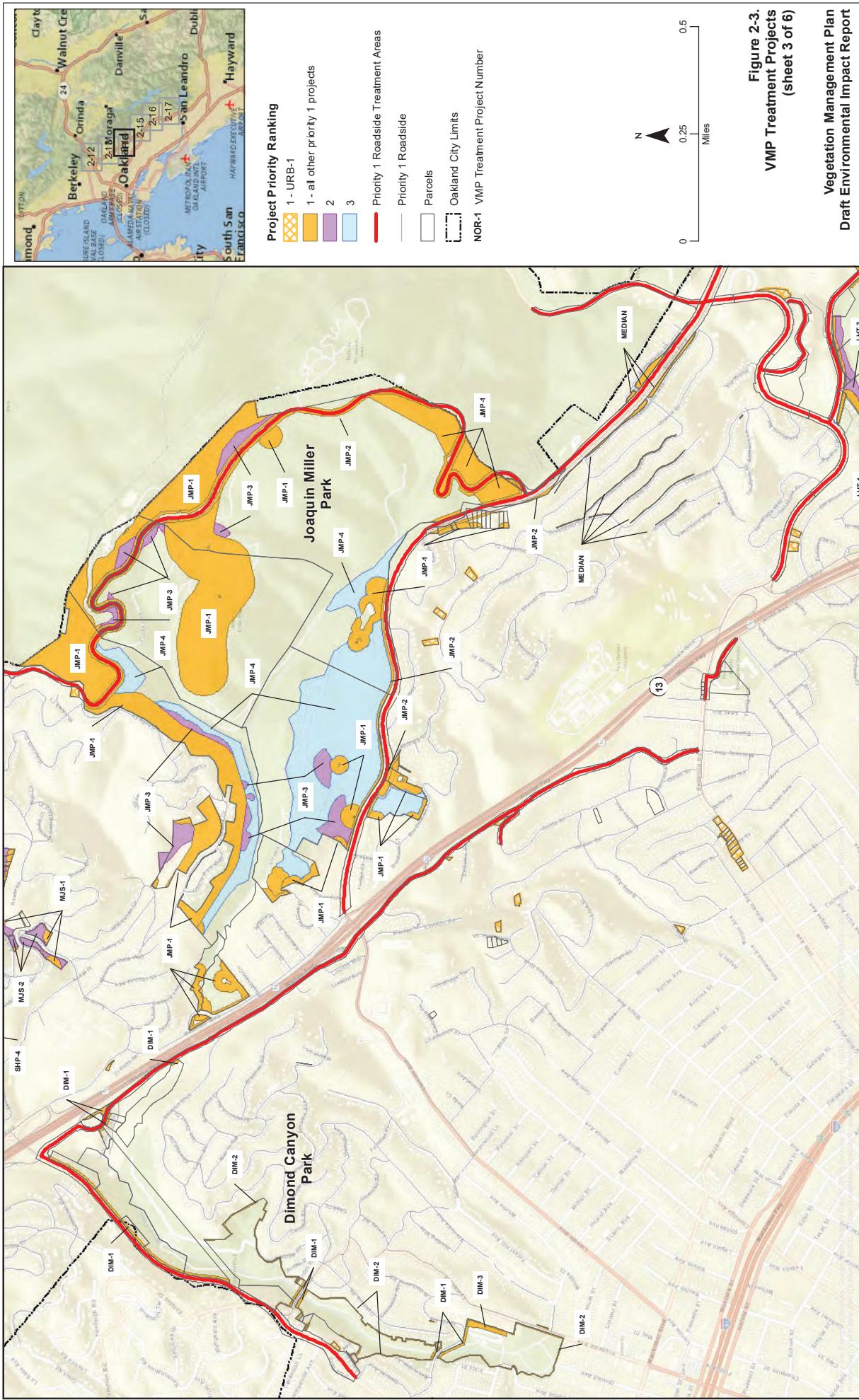
Figure 2-3.
VMP Treatment Projects
(sheet 1 of 6)

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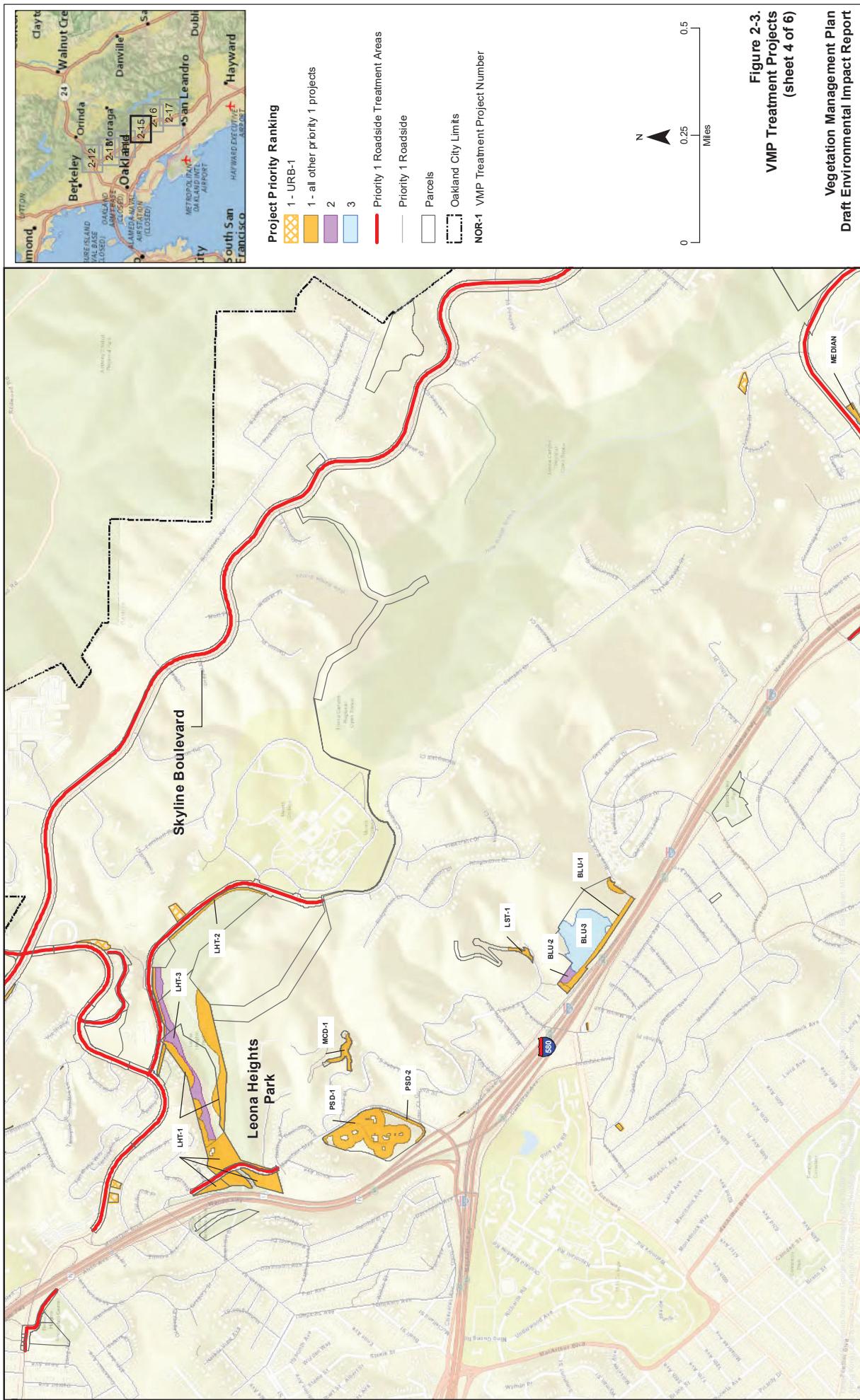


Figure 2-3.
VMP Treatment Projects
(sheet 4 of 6)

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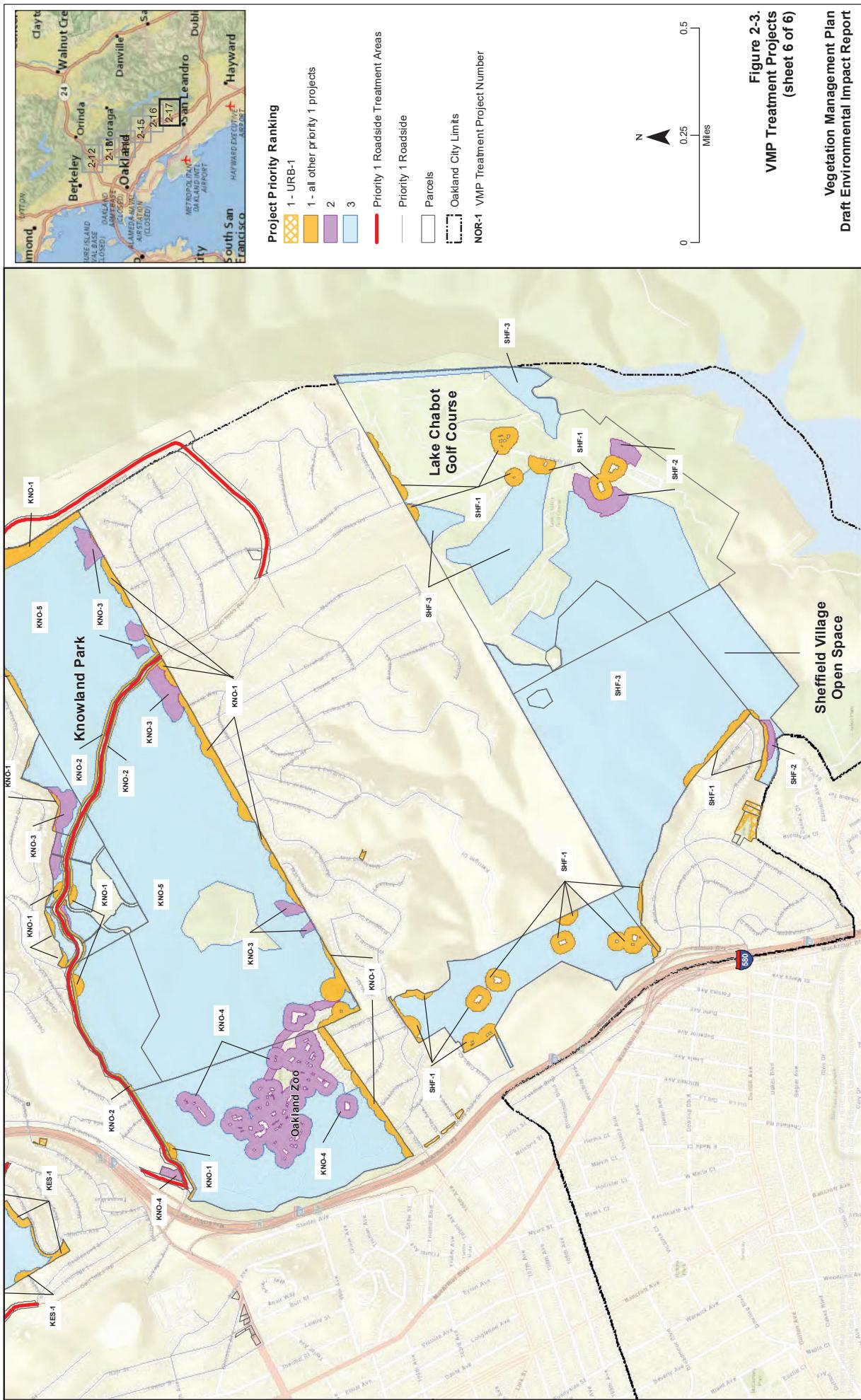


Figure 2-3.
VIMP Treatment Projects
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on field observations, but not to exceed 30 feet. Specifically, trees hanging down on powerlines are a fire hazard and should be prioritized for treatment.

- **GAR-2:** Manage vegetation within 10 feet of the south and east property boundary line to facilitate firefighter access according to the standards outlined in Section 9.1 of the VMP.
- **GAR-3:** To manage fuel loading rates, remove eucalyptus trees from two locations along the southern park boundary, retaining lower fire risk trees.

Dimond Canyon Park

Dimond Canyon Park is collectively 74.7 acres in size and is situated along Sausal Creek, south of SR 13. The park includes the creek channel and some upland areas and is mapped as containing the following vegetation communities/land cover types: coast oak woodland (50.5 acres), coastal scrub (0.3 acre), eucalyptus (1.3 acres), redwood (5.5 acres), and urban (17.1 acres). It is primarily surrounded by residential development, with Park Boulevard forming its boundary in the northeast corner and Monterey Boulevard forming its boundary along the north. Leimert Boulevard and El Centro Avenue also bisect the park. Dimond Canyon Park includes both the undeveloped areas north of El Centro Avenue and the more developed Dimond Park. Friends of Sausal Creek, and Friends of Dimond Park, and Oakland Trail are stewardship groups which actively conduct vegetation management efforts in Dimond Canyon Park. Given its position along Sausal Creek, fuel moistures along the lower portion of the park are relatively higher and the fire hazard relatively lower compared to other VMP areas. Drier and more hazardous fire conditions exist in the park's upland areas farther from the creek. Two fires have occurred within Dimond Canyon within the past three years. Dead stone pines present on the south-facing hillslope west of Lyman Road in the southern portion of Dimond Park represent a potential fire hazard, as do dead acacia trees present in several areas. Fire behavior modeling resulted in primarily surface fire throughout the property, although small pockets of active crown fire were modeled in the coastal oak woodland area along Park Boulevard with grass/shrub understory and in a few small areas within the drainage with high slope gradients.

Current Vegetation Treatments

Current vegetation management practices are primarily limited to roadside treatment along Park Boulevard and Monterey Boulevard through use of hand labor or mechanical techniques.

Proposed Vegetation Treatments

Through consultation with the stewardship groups Friends of Sausal Creek and Friends of Dimond Park, both of which actively conduct vegetation management efforts in Dimond Canyon Park, the following vegetation management treatments are proposed to reduce fire risk for Dimond Canyon Park:

- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation. Trail maintenance should seek to provide unobstructed (horizontal and vertical) access for people traveling on foot.
- Continue to monitor the park for dead or dying trees, and remove dead or dying trees where they pose a fire hazard.

Proposed specific projects at Dimond Canyon Park (DIM-1, DIM-2, and DIM-3) are summarized in Table 2-8 and described below.

- **DIM-1:** Manage vegetation along adjacent roadsides (Park Boulevard, Monterey Boulevard, Leimert Boulevard, El Centro Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.
- **DIM-2:** Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1 of the VMP.
- **DIM-3:** Manage vegetation in the area between the parking lot located to the east of the pool and the adjacent residential structures (approximately 50 feet in width).

Shepherd Canyon Park

Shepherd Canyon Park is collectively 57.9 acres in size and is situated along Shepherd Creek in Shepherd Canyon, northeast of SR 13. The park includes the creek channel and some upland areas and is mapped as containing the following vegetation communities/land cover types: annual grassland (2.0 acres), closed-cone pine-cypress (1.5 acres), coastal oak woodland (31.9 acres), eucalyptus (16.6 acres), and urban (5.9 acres). This park also includes the Montclair Railroad Trail property that runs south from Montclair village, then bends east and then northeast into Shepherd Canyon, southeast of the Snake Road pedestrian crossing. Significant amounts of broom exist in the park, primarily along Shepherd Canyon Road and the Montclair Railroad Trail. The broom is primarily surrounded by residential development and is bounded primarily on the west by Montclair Railroad Trail.

Given its position along Shepherd Creek, fuel moistures along the lower portions of the park are relatively higher and fire hazard relatively lower than other VMP areas; however, drier and more hazardous conditions exist in the park's upland areas, moving up the slopes above the canyon floor. Fire behavior modeling resulted in active and passive crown fire concentrated along the western side of Shepherd Canyon Road where broom exists beneath eucalyptus tree canopies and surface fire throughout the remainder of the property. Dead and dying trees in the park (e.g., near Bishops Court and near the Escher fire road) also represent a potential fire hazard. Homeless encampments also pose an ignition risk.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Shepherd Canyon Road through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing throughout the park to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 9 acres of the park are currently grazed annually. Much of the park falls within the 100-foot buffer from existing structures or within 30 feet of existing roads.

Proposed Vegetation Treatments

Stewardship groups that actively manage vegetation in Shepherd Canyon Park include the Friends of Sausal Creek, Shepherd Canyon Homeowners, and the Friends of Montclair Railroad

Trail. The following vegetation management treatments were developed in consultation with these stewardship groups to reduce the fire risk at Shepherd Canyon Park:

- Maintain the existing trail networks to facilitate access and to create breaks in surface vegetation. Existing fire roads (e.g., the Escher fire road) should be treated to maintain access;
- Manage vegetation consistent with the schedule for clearance of private parcels in the same geographic area, if feasible.

Proposed specific projects at Shepherd Canyon Park (SHP-1, SHP-2, SHP-3, and SHP-4) are summarized in Table 2-8 and are described below.

- **SHP-1:** Manage vegetation within 100 feet of structures and within 150 feet of the park access gate according to the standards outlined in Section 9.1 of the VMP.
- **SHP-2:** Manage vegetation along adjacent roadsides (Shepherd Canyon Road, Escher Drive, Snake Road, and Bagshotte Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.
- **SHP-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.
- **SHP-4:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads. Grazing should be conducted later in the season after perennial grasses go to seed.

Leona Heights Park

Leona Heights Park is collectively 42.3 acres in size and is situated along Horseshoe Creek, a tributary to Lion Creek, south of Redwood Road and Campus Drive and east of SR 13. The park includes Horseshoe Creek, a constructed drainage along the Horseshoe Creek alignment in the upstream (east/southeast) end of the park, and some upland areas and also extends south of the Merritt College parking lot located west of Campus Drive. The downstream portion of the creek is more natural, with earthen bed and banks. Leona Heights Park is mapped as containing the following vegetation communities/land cover types: annual grassland (0.3 acre), coastal oak woodland (25.7 acres), eucalyptus (2.1 acres), redwood (13.8 acres), and urban (0.5 acre). The park is largely inaccessible given its steep terrain, with the exception of some trails. The Friends of Leona Heights Park stewardship group has historically been active in vegetation management efforts in Leona Heights Park, and more recently the Oakland Trails group has also been working in the park.

Fire behavior modeling indicate active and passive crown fire in coastal oak woodlands in upland areas in the eastern and northern portions of the park and primarily surface fire within redwood stands along the drainage bottom. Some isolated active crown fire was modeled in areas with steep slope gradients while only surface fire was modeled in the managed eucalyptus and oak stands at the park's western edge.

Current Vegetation Treatments

Current vegetation management practices are limited to roadside treatment along Campus Drive through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing in the lower portion of the park (approximately 9 acres) to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. A portion of the park is within 100 feet of existing structures along its northern and western boundaries.

Proposed Vegetation Treatments

Proposed specific projects at Leona Heights Park (LH-1, LH-2, and LH-3) are summarized in Table 2-8 and described below.

- **LHT-1:** Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within the current 9-acre management area according to the standards outlined in Section 9.1 of the VMP.
- **LHT-2:** Manage vegetation along adjacent roadside (Campus Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.
- **LHT-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.

Beaconsfield Canyon

Beaconsfield Canyon is collectively 4.3 acres and is located at the end of Keswick Court, southeast of Shepherd Canyon Park. Beaconsfield Canyon is mapped as containing the following vegetation communities/land cover types: closed-cone pine-cypress (1.4 acres), coastal oak woodland (1.4 acres), and coastal scrub (1.5 acres). Active and passive crown fires were modeled in coastal scrub where overstory trees are present. Surface fire only was modeled throughout the remainder of the property. The Friends of Beaconsfield Canyon Park stewardship group is active in vegetation management efforts on the Beaconsfield Canyon property.

Current Vegetation Treatments

Current vegetation management activities that occur at Beaconsfield Canyon include annual goat grazing of seasonal weeds and grasses on approximately 2-3 acres of hillside. The frequency of goat grazing activities depends on observed springtime growth. The Friends of Sausal Creek and Beaconsfield Canyon Volunteers stewardship groups also conduct an annual volunteer clean-up event that involves hand-removing invasive plant species such as French broom, Himalayan blackberry, and other invasive plants present. Members of these stewardship groups conduct ongoing plant removal by hand throughout the year as part of their stewardship activities.

Proposed Vegetation Treatments

Through consultation with the Friends of Sausal Creek and the Beaconsfield Canyon Volunteers, the following vegetation management treatments were developed for this property:

- Manage vegetation within 100 feet of structures according to standards outlined in Section 9.1 of the VMP.
- Implement brush and tree thinning in areas exhibiting extreme fire behavior and within 300 feet of structures according to standards outlined in Section 9.1 of the VMP.

These proposed specific projects at Beaconsfield Canyon (BCN-1 and BCN-2) are summarized in Table 2-8.

Ridgetop Areas

Ridgetop areas are single parcels or a group of multiple adjacent parcels that are situated at or near the summit of the Oakland Hills in the VMP area. Ridgetop areas present relatively higher fire hazard conditions due to typically lower fuel moistures and the potential for high or erratic winds during wildfire events. The VMP area includes three ridgetop areas where proposed vegetation management treatments have been identified: North Oakland Regional Sports Field, Grizzly Peak Open Space, and the City Stables property (see Figure 2-2, sheets 1, 2, and 7). Establishing fuel breaks at ridgetops is common practice and typically helps moderate fire behavior and provides important fire suppression control points. A brief description and summary of proposed vegetation management treatments within each ridgetop area is provided below. Table 2-8 below and Section 9.2 of the VMP provide more detail about these ridgetop treatment areas.

North Oakland Regional Sports Field

The North Oakland Regional Sports Field property is collectively 53.6 acres in size and is situated to the south of SR 24 immediately south of the Caldecott tunnels. The North Oakland Regional Sports Field property is mapped as containing the following vegetation communities/land cover types: coastal oak woodland (22.0 acres), coastal scrub (2.1 acres), eucalyptus (19.8 acres), urban (9.1 acres), and valley-foothill riparian (0.6 acre). The Oakland Landscape Committee is active in vegetation management efforts on the North Oakland Regional Sports Field property.

The property is characterized by a secondary eucalyptus stand (along the generally south- and west-facing slopes) in the northern and eastern portions of the site, which burned in the 1991 Tunnel Fire, and a coastal oak woodland stand in the southern half (along the more northerly facing slopes). The eucalyptus stands have a substantial understory of French broom and other highly flammable/rapidly spreading species. The lower, central portion of the property includes a tributary to Temescal Creek, ball fields, and a dirt access road that extends from Broadway in the west, through the eucalyptus stand, toward homes above on Skyline Boulevard. Public use as well as homeless encampments in the lower and upper portions of the property are a potential ignition source. Fire behavior modeling conducted for the VMP resulted in an active crown fire throughout most of the property's tree-dominated vegetation (eucalyptus and coastal oak woodland) and surface fire concentrated in managed areas along the property's dirt access road and in the area between the sports field and the eucalyptus stand.

Current Vegetation Treatments

Current management practices are limited to roadside treatment along the property's dirt access road (using hand and mechanical techniques) to reduce ladder fuels, control invasive

species, and to maintain surface fuel loads. Goat grazing also occurred in 2018 and 2019. The property is beyond 300 feet from existing residential structures but includes restroom facility, snack bar/eating area, and wooden bleachers at the ball fields.

Proposed Vegetation Treatments

Through consultation with the Oakland Landscape Committee, the following vegetation management treatments are proposed to reduce fire risk at this property:

- Maintain the site's dirt access road in a serviceable condition, improving roadside drainage where erosion and gullying have deteriorated access road.
- Implement measures to prevent unauthorized vehicle access to the property's dirt access road.
- Continue to manage vegetation via grazing to maintain fuel loads and minimize ignition potential.

Potential specific projects at North Oakland Sports Field (NOR-1, NOR-2, and NOR-3) are summarized in Table 2-8 and described further below.

- **NOR-1:** Manage vegetation according to the standards outlined in Section 9.1 of the VMP in the following locations: within 30 feet of the site's dirt access road, within 300 feet of ridgelines, within 150 feet of the park access gate, and within the existing managed area north of the ball fields and parking areas.
- **NOR-2:** Given the upper portion of the property's ridgeline location and the potential for ember generation resulting from crown fire, implement thinning recommendations in the property's eucalyptus stand beyond that treated under project NOR-1 according to the standards outlined in Section 9.1 of the VMP.
- **NOR-3:** To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodland communities, retaining lower fire risk trees.

A phased mosaic approach to Projects NOR-1 and NOR-2 may be appropriate, where 3-5 acres are thinned at a time, and follow-up maintenance occurs. This would limit the impacts to potential soil erosion, biological resources, and also moderate the overall cost over a longer planning period. This approach has been implemented on an approximately 5-acre section of the lower south-facing hillslope.

Grizzly Peak Open Space

The Grizzly Peak Open Space property is collectively 64.5 acres in size and is situated along the southwest side of Grizzly Peak Boulevard, southeast of Marlborough Terrace. The property generally extends between Grizzly Peak Boulevard at the top of the slope down to Bay Forest Drive, Tunnel Road, Buckingham Boulevard, and Westmoreland Drive at the slope bottom. The Grizzly Peak Open Space property is mapped as containing the following vegetation communities/land cover types: closed-cone pine-cypress (25.7 acres), coastal oak woodland (3.2 acres), coastal scrub (33.3 acres), eucalyptus (0.6 acre), and urban (1.6 acres).

The property extends across a steep, southwest-facing slope and abuts residential structures, community assets (communications facility), and a main access/egress route (Grizzly Peak Boulevard). Scenic views from the property increase human presence along Grizzly Peak Boulevard, including at roadside turnouts, and this increases potential ignition sources. Fire behavior modeling resulted in torching of tree canopies along the upper, northeastern portion of the property and active crown fire along the lower, southwestern portion of property in pine and eucalyptus stands. Fire behavior modeling reveals a potential for extreme fire behavior. The upper and lower portions of the property are within 100 feet of existing structures and much of the property is within 300 feet of structures.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Grizzly Peak Boulevard through the use of hand labor or mechanical techniques, hand labor or mechanical treatment along Bay Forest Drive in the lower portions of the property, and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads.

Proposed Vegetation Treatments

The following vegetation management treatments are proposed to reduce fire risk at Grizzly Peak Open Space:

- **GPO-1:** Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within 30 feet of Tunnel Road and Bay Forest Drive according to standards described in Section 9.1 of the VMP.
- **GPO-2:** Implement brush and tree thinning in areas exhibiting extreme fire behavior and within 300 feet of structures according to standards described in Section 9.1 of the VMP.
- **GPO-3:** To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodlands, retaining lower fire risk trees.
- **GPO-4:** Continue to implement grazing practices on the remainder of the property to maintain fuel loads.

These proposed specific projects at Grizzly Peak Open Space (GPO-1, GPO-2, GPO-3, and GPO-4) are summarized in Table 2-8.

City Stables

The City stables property is 7.4 acres, located along Skyline Boulevard, and dominated by grassland. The property is largely within 10 feet of existing structures and includes one of the City's remote automated weather stations. Fire behavior modeling resulted in no extreme fire behavior on this property. The property is currently leased to a private contractor who retains responsibility for vegetation management.

Current Vegetation Treatments

Vegetation management on this parcel is focused on reducing surface fuels (e.g., grasses, weeds) and maintaining fuel loads using hand labor, mechanical techniques, or grazing.

Proposed Vegetation Treatments

If the current lease expires within the timeframe of the VMP and the City regains management responsibility, the City would resume management of vegetation on the entire property according to the standards described in Section 2.3.4 above.

No proposed specific projects have been identified on this property at this time.

City Park Lands and Open Space

City park lands and open space areas are collections of multiple adjacent parcels, and are characterized by numerous vegetation types, and typically present high fire hazard conditions due to terrain, vegetation, and increased human presence resulting in increased ignition potential. The VMP area includes four primary park lands and open space areas: Sheffield Village Open Space, Knowland Park and Arboretum, Joaquin Miller Park, and King Estate Open Space Park. A brief description and summary of proposed vegetation management treatments within each of these areas are provided below. Table 2-8 below and Section 9.2 of the VMP provides more detail about these treatment areas.

Sheffield Village Open Space

Sheffield Village Open Space is collectively 455.4 acres in size and is situated at the southeastern-most portion of the VMP area, at the southern end of Golf Links Road and at the northwestern end of Lake Chabot. The property includes the Lake Chabot Golf Course but given the low fire hazard condition of the golf course, no treatments are proposed for that portion of the property. The Sheffield Village Open Space area also includes the historic Dunsmuir Estate. Sheffield Village Open Space is mapped as containing the following vegetation communities/land cover types: annual grassland (59.4 acres), closed-cone pine-cypress (5.9 acres), coastal oak woodland (143.9 acres), coastal scrub (59.3 acres), eucalyptus (27.9 acres), perennial grassland (0.8 acre), and urban (158.1 acres).

Fire behavior modeling resulted in active crown fire in coastal scrub (where overstory trees are present), oak stands with a heavy shrub understory, and isolated areas within oak woodlands with grass understory where slope gradients are high, and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include grazing throughout the property (excluding the golf course and developed/landscaped portions of the Dunsmuir Estate) to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Portions of the southern edge of the property fall within the 100-foot and 300-foot buffers from existing structures. On-site structures include those in the Dunsmuir Estate portion of the property (at the end of Peralta Oaks Court).

Proposed Vegetation Treatments

Vegetation management treatments proposed at this property to reduce fire risk include maintaining the existing trail/road networks to facilitate access and to create breaks in surface vegetation.

Proposed specific projects at Sheffield Village Open Space (SHF-1, SHF-2, and SHF-3) are summarized in Table 2-8 and described below.

- **SHF-1:** Manage vegetation within 100 feet of structures, including those in the Dunsmuir Estates portion of the property, and within 150 feet of park access gates, according to the standards outlined in Section 9.1 of the VMP.
- **SHF-2:** Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1 of the VMP.
- **SHF-3:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.

Knowland Park and Arboretum

Knowland Park and Arboretum is collectively 473.5 acres in size and is situated in the southeastern portion of the VMP area. The property extends between Interstate 580 in the southwest and Skyline Boulevard in the northeast and is bisected by Golf Links Road. The property includes the Oakland Zoo at the southwestern edge and a newly constructed gondola between the zoo and a hilltop near the center of the property, where an additional fenced zoo exhibit is now located. The Knowland Park and Arboretum property is mapped as containing the following vegetation communities/land cover types: annual grassland (102.9 acres), mixed chaparral (also known as maritime chaparral) (8.1 acres), closed-cone pine-cypress (9.1 acres), coastal oak woodland (162.0 acres), coastal scrub (61.8 acres), eucalyptus (12.1 acres), freshwater emergent wetland (0.2 acre), perennial grassland (12.5 acres), redwood (0.2 acre), and urban (104.9 acres).

Views from the water tank located along Skyline Boulevard near the property's northeastern boundary increase human presence and thereby increase potential ignition sources. In addition, the Oakland Zoo's "California Trail" operations, including overnight campgrounds, as well as unauthorized motorized vehicle use within the park may increase ignition potential at Knowland Park. Fire behavior modeling resulted in active crown fire in the coastal scrub and chaparral stands in the central and eastern portions of the property (where overstory trees are present) and in the eucalyptus stands in the western portion of the property and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Golf Links Road through the center of the property through the use of hand labor or mechanical techniques and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 350 acres of the property are currently grazed annually. Grazing is currently rotated every two years in a checkerboard approach so all areas are covered. The Friends of Knowland Park stewardship group actively conducts vegetation

management efforts on the Knowland Park and Arboretum property and have worked with the City's grazing contractor to help minimize impacts on rare plants within the park through exclusion fencing and active management of the goat herd. Most of this property includes lands within 100 and 300 feet from existing structures.

Proposed Vegetation Treatments

The following vegetation management treatments were developed through consultation with the Friends of Knowland Park to reduce fire risk:

- Maintain the existing trail/road networks to facilitate access and to create breaks in surface vegetation.
- Implement measures to prevent unauthorized vehicle access (including two-wheel motorized vehicles) to the property's dirt access roads.
- Install signage at park entrances indicating that Knowland Park and Arboretum is a City of Oakland park, and notifying visitors of Park rules, including that campfires, fireworks, and other fire hazardous activities are prohibited.
- Grass heights following grazing treatment should be targeted to between 4-6 inches in height.
- Goats should be excluded from sensitive areas, such as rock outcrops and the emergent wetland.
- Where feasible, shrubs such as coffeeberry (*Frangula californica*), toyon (*Heteromeles arbutifolia*), and gooseberry (*Ribes* spp.) should be protected from goat grazing.

Proposed specific projects at Knowland Park (KNO-1, KNO-2, KNO-3, KNO-4, and KNO-5) are summarized in Table 2-8 and described below.

- **KNO-1:** Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 300 feet of ridgelines, which encompasses the area within 30 feet of known human congregation/activity areas along Skyline Boulevard according to the standards outlined in Section 9.1 of the VMP.
- **KNO-2:** Manage vegetation along adjacent roadside (Golf Links Road). Treatment width should be based on field observations, but not to exceed 30 feet.
- **KNO-3:** Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1 of the VMP.
- **KNO-4:** Manage vegetation within 100 feet of on-site structures in the zoo portion of the property and within 100 feet of the zoo/open space interface to minimize ignition potential and modify potential fire behavior near this developed portion of the property.
- **KNO-5:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.

Joaquin Miller Park

Joaquin Miller Park is 454.9 acres in size and is situated in the southeastern portion of the VMP area. The property extends between Joaquin Miller Road in the south, Skyline Boulevard in the east, Castle Drive in the west, and the Oakland Hills ridgeline in the north. Skyline Boulevard runs along the park's western edge then through the northern portion of the park where it exits at the park's northern corner. The southern portion of the park is more developed and includes access roads, parking areas, the Woodminster Amphitheater, a dog park, a nursery, and several structures (including the Community Center, Ranger Station, the historic Joaquin Miller house, Sequoia Lodge, Sequoia Arena, and the Metropolitan Horseman's Association Clubhouse). The northern portion of the park is less developed but includes numerous trails and dirt roads. Many of the fire roads within the park have not been maintained and are no longer accessible to vehicles due to vegetation growth.

Joaquin Miller Park is mapped as containing the following vegetation communities/land cover types: annual grassland (15.0 acres), closed-cone pine-cypress (109.3 acres), coastal oak woodland (88.0 acres), coastal scrub (5.8 acres), eucalyptus (62.0 acres), redwood (121.0 acres), urban (42.8 acres), urban (acacia) (6.6 acres), urban (mixed tree stand) (3.7 acres), and valley/foothill riparian (0.8 acre). In recent years, Monterey pine trees in the park have been reaching the end of their lifespan and dying, contributing to fuel load in the park.

Known areas for potential ignitions include a roadside turnout area that is prone to garbage and debris dumping from cars along Skyline Boulevard approximately 800 feet up from its intersection with Joaquin Miller Drive, a congregation area at the intersection of Castle Drive and Skyline Boulevard, and a congregation area that has experienced bonfires located at the top of Woodside Glen Court. Fire behavior modeling resulted in active and passive crown fire within the northern and central portions of the park within non-managed oak, pine, eucalyptus, and acacia stands. Active and passive crown fire also modeled within the acacia and mixed tree stands within the southern (lower) portions of the park and only surface fire modeled within redwood stands and throughout the lower, developed and managed portions of the park (except acacia and mixed tree stands). Recently, there has been a die-off of acacia trees in several areas of the park, which represents a potential fire hazard. Trees located along Joaquin Miller Road and Skyline Boulevard could pose obstacles to egress if they fall across these roads during a fire.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Joaquin Miller Road along the entire southern edge of the park and along Skyline Boulevard through the park using hand labor or mechanical techniques. Vegetation is also managed by hand labor or mechanical techniques in the areas adjacent to the dirt parking lot to the west of the Chabot Space and Science Center, at the WUI along the park's northwestern boundary, and around structures, the dog park, and the amphitheater in the developed portion of the park. Fire trails within the center of the park are cleared, and vegetation within 20 feet of the trails managed via hand labor. Oakland Trails volunteers, in collaboration with the Oakland Department of Public Works, have typically conducted the majority of trail maintenance work in the park. Adopt a Spot volunteers and groups such as Friends of Sausal Creek and Friends of Joaquin Miller Park maintain vegetation at adopted spots. Grazing is also conducted throughout the park in light, flashy fuel areas (grasslands, disturbed areas) to reduce and maintain surface fuel loads.

Approximately 150 acres of the property are currently grazed annually. Fire behavior modeling reveals a potential for extreme fire behavior in the property's pine, eucalyptus, acacia, and mixed tree stands. Much of the southern and western portions of the park's perimeter fall within the 100-foot and 300-foot buffers from existing structures.

Proposed Vegetation Treatments

The following vegetation recommendations, management treatments, and avoidance measures were developed in consultation with the Friends of Sausal Creek and the Friends of Joaquin Miller Park, stewardship groups to reduce fire risk in the park:

- Remove dead trees along roadsides along the perimeter of the park. Dead trees along roadways are high risk for fire ignition.
- Maintain the existing fire trail/dirt road network to facilitate access and to create breaks in surface vegetation.
- Avoid treatment within the pallid manzanita restoration area adjacent to the Chabot Space and Science Center and on both sides of Skyline Boulevard near the Redwood Glen Trailhead, approximately 500 feet west of the Roberts Park main entrance (this is known as the "Big Trees" pallid manzanita population). Also avoid treatment activities in pallid manzanita planting areas adjacent to the nursery.
- Avoid treatment on serpentine roadcuts, in particular the serpentine slopes at the intersection of Joaquin Miller Road and Skyline Boulevard. Rare plants including Tiburon buckwheat are known to occur in this location. Rare plant locations along these serpentine slopes extend along Joaquin Miller road approximately 300 feet northwest from the intersection and along Skyline Boulevard approximately 400 feet from the intersection.
- Removal of acacia and pine seedlings saplings can be targeted in treatment areas.
- Avoid treatment in identified memorial tree planting sites.
- Avoid treatment within the emergent wetland located in the northern portion of Joaquin Miller Park.
- Implement measures to prevent unauthorized vehicle access to the park's dirt access roads.

Potential specific projects at Joaquin Miller Park (JMP-1, JMP-2, JMP-3, and JMP-4) are summarized in Table 2-8, and described further below.

- **JMP-1:** Manage vegetation within 100 feet of on and off-site structures, within 300 feet of ridgelines, within 150 feet of park access gates and within 30 feet of known human congregation/activity areas along Skyline Boulevard and the top of Woodside Glen Court according to the standards outlined in Section 9.1 of the VMP.

- **JMP-2:** Manage vegetation along adjacent roadsides (Joaquin Miller Road, Skyline Boulevard, and Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.
- **JMP-3:** Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1 of the VMP.
- **JMP-4:** Continue to manage vegetation via grazing in flashy fuel areas to maintain fuel loads.

King Estate Open Space Park

The King Estate Open Space Park is collectively 81.3 acres in size and is situated southwest of Interstate 580, south of 82nd Avenue, and bisected by Fontaine Street. The King Estate Open Space Park property is mapped as containing the following vegetation communities/ land cover types: annual grassland (61.1 acres), coastal oak woodland (12.0 acres), coastal scrub (4.3 acres), and urban (4.0 acres). The Oak Knoll Neighborhood Improvement Association is active in vegetation management efforts on the King Estate Open Space Park. The Association has assisted in grazing operations, identifying exclusion areas on the steep western slopes to minimize erosion and slope stability impacts.

Ignitions at King Estate Open Space Park are of concern given the proximity and density of homes in the adjacent neighborhoods and in consideration of large areas of ignitable grasses on the site. Use of fireworks on and around the property is prevalent in the weeks leading up to July 4th annually, with the most fireworks risk occurring on the eve and night of July 4th. Acacia trees located along the western perimeter of the property, and unmaintained vegetation on adjacent private properties to the south and areas owned by Oakland Unified School District also represent a high fuel load. Fire behavior modeling resulted in isolated active crown fire only in coastal scrub where overstory trees are present, and surface fire only throughout the remainder of the property.

Current Vegetation Treatments

Current vegetation management practices include roadside treatment along Fontaine Street and Crest Avenue through the use of hand labor or mechanical techniques, and grazing throughout the property to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. Approximately 88 acres of the property are currently grazed annually. The perimeter of the property falls within the 100-foot and 300-foot buffers from existing structures.

Proposed Vegetation Treatments

The following vegetation management treatments were developed in consultation with the Oak Knoll Neighborhood Improvement Association to reduce fire risk in the park:

- Maintain the existing trail/road networks to facilitate access and to create breaks in surface vegetation.
- Implement measures to prevent unauthorized vehicle access to the property's dirt access roads.

- Coordinate with Oakland Unified School District regarding vegetation management on adjoining property, where appropriate.
- Coordinate with private property owners regarding vegetation management on adjoining property, where appropriate.
- Avoid or minimize grazing on the steep western slopes to minimize erosion and slope stability impacts.
- Install signage at park entrances indicating that King Estate Open Space Park is a City of Oakland park, and notifying visitors of Park rules, including that campfires, fireworks, and other fire hazardous activities are prohibited.

Proposed specific projects at King Estate Open Space Park (KES-1 and KES-2) are summarized in Table 2-8 and are described further below.

- **KES-1:** Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 30 feet of Fontaine Street and Crest Avenue according to the standards outlined in Section 9.1 of the VMP.
- **KES-2:** Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads and minimize ignition potential, particularly prior to the 4th of July holiday.

Other Open Space Areas

Other small City-owned parcels or groups of parcels that are not otherwise classified above but exhibit similar vegetation conditions and are currently managed by the City are summarized below. Current management practices include roadside treatment through the use of hand labor or mechanical techniques, and hand labor treatment, mechanical treatment, or grazing throughout each area to reduce ladder fuels, control invasive species, and reduce and maintain surface fuel loads. The City proposes to continue managing these parcels in accordance with the standards described above in Section 2.3.3. Proposed specific projects at these parcels are summarized in Table 2-8.

- **Blue Rock Court.** This parcel is 15.4 acres and is located immediately north of I-580, northwest of Blue Rock Court. Fire behavior modeling resulted in active and passive crown fire in the eucalyptus stand, surface fire only throughout the remainder of the property.
- **Leona Street.** This parcel is 1.9 acres and is a road extension at the east end of Leona Street. Fire behavior modeling resulted in surface fire only in coastal oak woodland and annual grassland. Active crown fire in eucalyptus stand at the property's southern end.
- **McDonnell Avenue.** This parcel is 1.1 acres and is a road extension at the east end of McDonnell Avenue. Fire behavior modeling resulted in surface fire only.
- **Police/Safety Department Property.** This parcel is 11.3 acres. Fire behavior modeling resulted in surface fire only.

- **Tunnel Road Open Space.** This parcel totals 4.0 acres and is along Tunnel Road, west of SR 24. Fire behavior modeling resulted in surface fire only.
- **Marjorie Saunders Park.** This park totals 3 acres and is along Ascot Drive, southeast of Shepherd Park. Fire behavior modeling resulted in active and passive crown fire in the eucalyptus stands and surface fire only throughout the remainder of the property. The Friends of Sausal Creek and Piedmont Pines Neighborhood Association actively conduct vegetation management efforts at this park.
- **Oak Knoll.** This property totals 15.7 acres and is northeast of Mountain Boulevard and south of Keller Avenue. Fire behavior modeling resulted in surface fire only throughout the property.

Other Areas

Other City-owned properties in the VMP area that are not otherwise classified above include stations (nos. 6, 7, 21, 25 and 28), City facilities (parking lots, police stations), and developed parks and playgrounds (e.g., Montclair Park). This classification includes 43 properties encompassing 24.5 total acres. These properties are mapped as urban land cover types, fall entirely or largely within the 100-foot buffer from existing structures, and present a low fire risk as they are developed with irrigated and maintained landscaping. No current vegetation management activities are conducted on these parcels and no additional vegetation management treatments are identified for these parcels. However, should conditions change (e.g., property abandoned and landscape vegetation dies) and hazardous conditions observed during annual field assessments, vegetation management treatments would be the same as those identified for urban and residential parcels (described above).

Roadside Treatment Areas and Medians

Roadside treatment areas include the area of land within 30 feet of the roadside edge (edge of pavement) for all roads in the VMP area. The length of all roads in the VMP area totals 308 miles. A portion of these are considered main access/egress routes, which total 30 miles. Medians are similar to roadside treatment areas as they are located along roads in the VMP area but differ in that they are distinct parcels owned by the City. In the VMP area, there are 32 parcels classified as medians, totaling 5.8 acres. Annual vegetation management along roads and medians is focused on reducing ladder fuels, controlling invasive species (e.g., broom), maintaining fuel loads, reducing surface fuels (e.g., grasses, weeds), and pruning tree canopies for vertical clearance through the use of hand labor or mechanical techniques and grazing. Priority roadsides (30 miles) and all medians are considered Priority 1 treatment areas; the remaining roadside areas (278 miles) are considered Priority 2 treatment areas. These areas would be managed in accordance with the standards described in Section 2.3.3, above.

While the vegetation management needs vary year to year depending on precipitation and other site-specific factors, the City would likely treat priority roadsides (Priority 1 treatment areas) at least every 3 years and possibly more frequently. It is anticipated that the remaining roadside areas (Priority 2 treatment areas) would be treated every 3-5 years.

2.3.5 Priority Ranking of VMP Treatment Areas

The VMP includes a treatment prioritization system to prioritize vegetation treatment areas and projects into three different categories (Priority 1, 2, and 3) based on proximity to structures in the VMP area, ridgelines, and park access gates; areas along critical access/egress routes; areas subject to increased ignition potential; and areas that exhibit the potential for extreme fire behavior. Priority 1 areas are intended to be prioritized first. Once all Priority 1 areas have been completed or scheduled and budget allows, Priority 2 areas will be completed. Once all Priority 1 and 2 areas have been completed or scheduled and budget allows, Priority 3 areas will be completed. The VMP treatment areas (described in Section 2.3.4 above) were prioritized based on the treatment prioritization categories outlined below.

Priority 1 areas and the relevant annual vegetation management activities include the following:

- Areas within 100 feet of structures or critical infrastructure (e.g., water supplies, communications facilities) to provide defensible space for existing structures and reduce fire intensity at the WUI. This buffer is consistent with state level standards for defensible space (Public Resources Code [Pub. Res. Code] Section 4291) and may be reduced based on field observations.
- Areas within 30 feet from roadside edges (including City-owned medians) along major access/egress routes to reduce potential for wildfires generated by human activity (e.g., sparks, catalytic converters, tossed cigarettes). This activity also enhances greater egress and ingress in the event of an emergency and may be reduced based on field observations.
- Areas within 300 feet of ridgelines to reduce fuel loads and ladder fuels where high and erratic winds have potential to occur. Buffer distance is consistent with community fuel and structure protection standards (14 Cal. Code Regs. 103 [c][6], Diablo Firesafe Council 2015).
- Areas within 150 feet of park access gates to promote firefighter safety.
- Areas where vegetation management activities would enhance regional fuel breaks for more effective containment and suppression activities should a wildfire occur.
- Areas within 30 feet around known historic sources, areas, or sites of ignition to minimize wildfire ignitions originating from human activity.

Priority 2 areas and the relevant annual vegetation management activities include the following:

- Areas within 30 feet from roadside edges along all other roads in the VMP area not identified as Priority 1.
- Areas between 100 feet and 300 feet from structures where modeled fire behavior exhibits crown fire or flame lengths over 8 feet in order to minimize extreme fire behavior and reduce spotting potential from crown fires that may ignite vegetation or structures not adjacent to the fire. Buffer distance is consistent with community fuel

and structure protection standards (14 Cal. Code Regs. 103 [c][6], Diablo Firesafe Council 2015).

Priority 3 areas and the relevant annual vegetation management activities include the following:

- Areas currently managed by the City's goat grazing program, that are not identified for management under Priorities 1 and 2, to maintain lower fuel loads within larger park lands or open space areas.
- Areas with rapidly spreading species (including such plants as French broom, Scotch broom, pampas grass, and jubata grass) in oak woodland vegetation communities to reduce fuel loading rates.

2.3.6 Vegetation Management Techniques

Different vegetation management techniques may be more effective at reducing, removing, or altering vegetation, depending on vegetation type, location, condition, and configuration. Given the dynamic nature of vegetation, a single treatment technique or management approach may not be appropriate for one site over time; therefore, an adaptive approach that provides more flexibility to adjust and select management techniques based on conditions on the ground is the preferred long-term approach. The goal remains to maintain vegetation conditions in accordance with the desired vegetation management standards, but the specific methods may evolve over time. Below is a description of the four categories of vegetation management techniques (biological, hand labor, mechanical, and chemical) that would be used under the VMP. This EIR evaluates each of these techniques for their application in the VMP area.

Biological Techniques (Grazing)

Grazing is the primary biological vegetation management technique that uses livestock (e.g., goats, cattle, sheep) to reduce the fuel loading of live herbaceous growth, shrubs, and new growth of trees and prevent the expansion of brush/scrub into grasslands. Grazing is an effective method in large treatment areas where manual labor would be cost-prohibitive as well as in areas that are inaccessible to mowing equipment or in areas too steep for hand crews. Typically, grazing is conducted from late spring through the end of summer to reduce fine fuels prior to the onset of peak fire season. Grazing may or may not be necessary to conduct each year depending on the intent. For example, if the intended purpose of grazing is to reduce grass or other flashy fuels, it should be conducted annually but if the intended purpose is to control shrubs or maintain understory fuels, it may not need to be conducted every year.

Different livestock have different grazing habits and not all livestock are ideally suited for grazing in all areas. Animal selection is determined during the development of a site-specific grazing management plan. Grazing management plans consider site-specific conditions, specify management objectives and standards, and identify animal stocking rates and use levels (typically measured in pounds per acre of residual dry matter), grazing season, and monitoring requirements and performance criteria. To control livestock movement and prevent overgrazing, soil compaction, and resource damage, professional herders and portable electric fences are generally used. In addition, other less impactful vegetation management techniques (e.g., hand labor) may be needed in conjunction with grazing to protect riparian zones, retained

plants, and sensitive biological and cultural resource areas, and to minimize erosion and avoid the movement of invasive plants and pathogens.

In the Oakland Hills, goat grazing has been successfully used for reducing fine fuel loads in grasslands, brushlands, and beneath tree canopies at the following areas: King Estate Open Space Park, Joaquin Miller Park, Knowland Park, Dunsmuir Estates (Sheffield Village Open Space), Shepherd Canyon, and London Road. Approximately 3,000 goats have been utilized on an annual basis (typically between May and August) to manage fine fuels on approximately 600 to 1,100 acres. Unlike other livestock, goats browse on woody vegetation (e.g., tree leaves, twigs, vines, and shrubs) and consume materials up to 6 feet above the ground, creating and maintaining a vertical separation between surface vegetation and the lower limbs of overstory trees.

Hand Labor Techniques

Hand labor techniques involve pruning, cutting, or removing trees, shrubs, and grasses by hand or using handheld equipment. Other hand labor treatments involve bark pulling, removing dead wood and litter, and mulching. Hand labor allows for selective management, pruning, thinning, or removal of targeted vegetation and is most effective for spot application on small areas or areas with difficult access or areas with sensitive species. The use of hand labor is focused on reducing ladder fuels, controlling highly flammable/rapidly spreading species (e.g., French broom), reducing surface fuels (e.g., grasses, weeds, down material), thinning vegetation, maintaining fuel loads, and pruning tree canopies. Compared to other vegetation management techniques such as using heavy mechanical equipment or grazing, hand labor techniques typically have a lower potential for adverse environmental effects because the work is specifically targeted and implemented, although heavy foot traffic associated with hand labor can result in surface soil compaction and increase erosion potential. Hand tools include, but are not limited to, shovels, Pulaski hoes, McLeod fire tools, weed whips, chainsaws, handsaws, machetes, pruning shears, and loopers. Hand labor generates debris that is either removed from the site or is chipped/cut down and scattered on site.

Hand labor has been used in the VMP area for managing vegetation primarily on urban and residential parcels as well as along roadsides, in small treatment areas, and within larger parks or open space areas. Typical hand labor techniques to reduce fuel loads that may be used in the VMP area include line trimming, branch pruning/removal, hand-pulling and gathering, clearance pruning, mosaic thinning and dripline thinning, black plastic coverage, and mulch application. Refer to Section 8 of the VMP for a more detailed description of the hand labor techniques listed above.

Mechanical Techniques

Mechanical techniques include fuel reduction methods that use motorized heavy equipment to remove or alter grass/herbaceous material (e.g., mowers, diskers) or woody material (e.g., masticators, feller-bunches). Mechanical treatment techniques rearrange vegetation structures, compact or chip/shred material, reduce ladder fuels, control highly flammable/rapidly spreading species, reduce surface fuels (e.g., mowing), and move material to staging areas for either reuse, off-site disposal, or composting; or burn piles. Currently, the City disposes of mechanically removed vegetation at approved and licensed composting facilities. In some instances, two or more pieces of mechanical equipment may be used together, or one piece of mechanical

equipment may be used independently. Mechanical equipment is used on an as-needed basis in combination with other treatment techniques described in this section.

Mechanical equipment is typically used to manage uniform fuels in large areas. Constraints to mechanical equipment use include steep slopes, dense tree cover that prohibits access, saturated soils, and dry, high-fire hazard weather conditions where equipment use could result in ignition. Mechanical equipment is also typically not used for selective plant removal due to the large size of equipment. Typical mechanical equipment techniques to reduce fuel loads include grading, mowing, disking, mechanical cutting/crushing, chipping, tree removal, yarding, and creating fire and fuel breaks.

Grading work would occur infrequently as this work is typically needed to create bladed firebreaks. Under the VMP, existing roads and trails would mostly be used as firebreaks. Mowing, mechanical cutting/crushing, use of a masticator, and chipping activities involve minimal compaction, rutting, or tire churning work. The typical depth of ground disturbance associated with these techniques is 6 inches belowground.

Disking is a technique whereby plant material is cut and mixed with surface soil to create a barrier of discontinuous fuel and bare earth to stop fire spread. Disking involves use of a tractor with a tow behind. Disked firebreaks are typically 12 feet wide and result in ground disturbance of up to 1 foot belowground. Yarding is the process of transporting cut trees, or portions thereof, from the cut location to a landing or staging area for subsequent treatment or transport off site. Yarding involves use of a tractor and may result in ground disturbance of 6-12 inches.

The City has used all of the aforementioned mechanical treatment techniques to manage vegetation for fire hazard reduction purposes.

Chemical Techniques (Herbicide)

Chemical techniques involve the use of herbicides to kill vegetation or prevent growth and are typically used in combination with other types of fuel reduction treatments, such as mowing, trimming, pruning, and grazing. Herbicides have a high kill rate and prevent treated plants from setting seed. They can be applied selectively, minimizing impacts to seeds of other species residing in the soil. Application of herbicides and other chemicals is typically performed by hand and can include sponging, spraying, or dusting chemicals onto unwanted vegetation. Hand application is effective for small treatment areas. The cut-and-daub treatment is another method that is effective for larger highly flammable/rapidly spreading plants, such as large trees and shrubs, to control regrowth and kill the portion of the plant remaining belowground. This treatment method involves cutting the plant stalks or trunks and then directly applying the herbicide with a brush, sponge, or hand sprayer with a cloth tied around the nozzle to the cambium layer of the freshly cut stump or stem. Because there is direct access to the cambium, the amount of herbicide used on each stump is small. This method minimizes the potential for adverse effects associated with herbicide contacting other plants surrounding the treatment area or coming into contact with a water surface. Under the VMP, the City would typically use the cut-and-daub treatment method where large trees have been removed (primarily eucalyptus and acacia). A backpack sprayer would be used to apply herbicides on surface fuels such as French broom, Scotch broom, pampas grass, and jubata grass.

Herbicides must be applied by a licensed and trained professional to ensure proper and safe use, handling, and storage of chemicals to treat vegetation. Herbicides are only applied by a prescription prepared by a licensed pest control advisor in accordance with federal, state, and local regulations and labeled specifications. Typically, 2-3 workers licensed and trained to apply herbicides would conduct this activity.

Herbicides are classified into two general types: pre-emergent and post-emergent. Pre-emergent herbicides are sprayed directly onto the ground and prevent plants from germinating and/or growing. However, pre-emergent herbicides may affect other desired species residing in the soil. Post-emergent herbicides are applied directly onto the plants.

In 2005, the Oakland City Council adopted Resolution 79133, which directed City staff to investigate modifying the City's Integrated Pest Management (IPM) Ordinance to allow the selective use of glyphosate and triclopyr for managing vegetation for wildfire hazard reduction purposes. However, no staff recommendation or environmental review has been completed since that time; thus, herbicides have not yet been used for vegetation management on City-owned property or along roadsides in the VMP area. In the VMP, the City proposes to allow the selective use of glyphosate (Accord or Rodeo formulation)⁴, triclopyr, and imazapyr. For more information about the use of glyphosate, see Section 3.8, "Hazards and Hazardous Materials," in Chapter 3 of this DEIR.

Table 2-4 summarizes the type of herbicides that may be typically applied in late summer/ fall, VMP treatment areas where herbicides may be applied, targeted vegetation types, quantities per acre, maximum quantity used per acre annually, and application frequency.

⁴ While use of glyphosate is proposed, some recent studies have indicated that the Roundup formulation of glyphosate may be toxic to humans. Out of an abundance of caution, the Roundup formulation of glyphosate is not proposed for use within the VMP area.

Table 2-4. Summary of Targeted Vegetation Types, VMP Treatment Areas, and Quantities Where Herbicides May Be Used

Targeted Vegetation Type	VMP Treatment Area Where Herbicides May be Used	Quantity Per Acre	Maximum Quantity of Herbicide Used per Acre Annually	Frequency of Herbicide Application
Eucalyptus	BLU-1, BLU-2, DIM-3, GAR-3, GPO-1, GPO-2, GPO-4, JMP-1, JMP-2, JMP-3, JMP-4, KNO-1, KNO-2, KNO-3, KNO-4, KNO-5, LHT-1, LST-1, MEDIAN, MJS-1, MJS-2, NOR-1, NOR-2, NOR-3, OKN-2, PSD-1, PSD-2, SHF-1, SHF-2, SHF-3, SHP-1, SHP-2, SHP-3, SHP-4, URB-1, Roadsides	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
French Broom	JMP-1, JMP-2, JMP-3, JMP-4, SHP-1, SHP-2, SHP-3, URB-1, Roadsides, and where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Scotch Broom	JMP-1, JMP-2, JMP-3, JMP-4, SHP-1, SHP-2, SHP-3, URB-1, Roadsides, and where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Acacia	JMP-1, JMP-3, JMP-4, Roadsides	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Triclopyr: 2 gallons/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Pampas Grass	Where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year Imazapyr: 0.25 gallon/acre per year	2 times per year
Jubata Grass	Where observed	Glyphosate: 0.94 gallon/acre	Glyphosate: 8 quarts/acre per year	2 times per year

Note: Types of herbicides that may be used at select VMP treatment areas include glyphosate (Accord or Rodeo formulation), triclopyr, and imazapyr.

2.3.7 Equipment Needed for VMP Treatments

Various types of equipment would be needed to conduct the VMP treatment projects. The types of equipment that would be used are listed in **Table 2-5** below.

Table 2-5. Types of Equipment Used for VMP Treatments

Vehicle/Equipment Type	Fuel Type	Applicable VMP Treatment Activities
Light duty automobile (car/light truck)	Gasoline	All treatment activities (assumed for workers)
Heavy truck	Gasoline	Manual and mechanical tree/shrub/grass removal
Water truck	Gasoline	Manual and mechanical tree/shrub/grass removal
All-terrain vehicle	Diesel	Goat grazing
Chainsaw	Gasoline	Manual and mechanical tree removal Manual shrub removal
Rotary Mower	Gasoline	Mechanical and manual shrub/grass removal
Small Wheeled Tractor	Diesel	Mechanical shrub removal
Wheeled Tractor	Diesel	Mechanical shrub/grass removal
Crawler Type Tractor	Diesel	Mechanical shrub removal
Weed Whip	Gasoline	Manual grass removal
Skidder	Diesel	Mechanical tree removal
Loader	Diesel	Mechanical tree removal
Chipper	Gasoline	Manual and mechanical tree removal Manual shrub removal
Chipping Equipment	Gasoline	Mechanical shrub removal
Excavator	Diesel	Mechanical shrub removal
Masticator	Diesel	Mechanical tree removal
Feller-buncher	Diesel	Mechanical tree removal

2.3.8 Access to Treatment Areas

Access to VMP treatment areas would occur via existing access roads, City roads, and trails. No new access routes would be created to perform proposed VMP treatment projects.

Most vegetation treatment activities would not require any trail closures. However, depending on the treatment techniques employed, some temporary trail closures may be needed within the following parks/open space areas: Dimond Canyon Park, Garber Park, Joquin Miller Park, King Estate Open Space Park, Knowland Park and Arboretum, North Oakland Sports Field,

Sheffield Village Open Space, and Shepherd Canyon Park. Within most of these areas, limited trail closures could last 1-5 days. However, at North Oakland Sports Field, proposed treatments may require the dirt access road/trail off Skyline Boulevard to be closed 2-4 weeks.

2.3.9 Construction Personnel

The VMP would result in an increase in OFD's current level of maintenance activities within the VMP area above baseline conditions, as described in Section 3.1.2. While the number of personnel to conduct VMP treatment projects would vary year to year, the estimated number of personnel required at each project site is typically 10-15 construction workers and one employee from OFD's Vegetation Management Unit. The maximum number of workers at a given site would be 18 workers. Worker estimates by VMP treatment project are summarized in Table 2-8.

2.3.10 Schedule and Timing for Implementing VMP Treatments

The VMP does not include a specific timeline for conducting proposed vegetation treatment projects identified in Section 2.3.4. The timeline for implementing VMP treatment projects would be dependent upon several variables including results of annual field assessments, targeted vegetation type requiring treatment, and budget available.

Vegetation management activities would occur year-round, as needed, subject to the limitations set forth in the mitigation monitoring and reporting program; however, given the variable nature of vegetation through changes in weather and season, the timing for certain treatments would be confined to specific months for optimization purposes, to reduce the fire danger, and to avoid or minimize impacts to special-status species (e.g., nesting birds). For example, treatments in grasslands should occur when grass cures or dries out. Mechanical removal of vegetation should also be conducted when the weather is not too dry or windy as some mechanical equipment has potential to ignite fires. Additionally, treatments intended to control or avoid the spread of high fire risk plants (e.g., broom, pampas/jubata grass, insect pests) is important. For certain vegetation types, treatment should occur before the timing of seeding of fire-resistant plant species and avoid periods when invasive or highly flammable species are in seed. Table 10 in the VMP summarizes treatment timing considerations for minimizing seed spread of high fire risk plants. Additionally, as described in Section 3.4, "Biological Resources," the timing of vegetation treatment activities would also take into consideration presence of nesting birds and special-status plant and animal species.

Vegetation management activities would primarily occur during weekdays (Monday through Friday); however, some occasional weekend work may be required.

2.3.11 Amount of Vegetation Management Activities Conducted Annually

For the purposes of this EIR, **Table 2-6** summarizes the estimated maximum annual amount of vegetation treatment activities that would occur in a given year (by acreage and technique type). The estimated values in Table 2-6 are based on vegetation management activities conducted by the City over the last 15 years. This EIR assumes the City may conduct goat grazing on up to 1,100 acres per year and that a combination of hand labor and mechanical treatment

methods would be employed at roadside treatment areas for up to 500 acres. Roadside treatment acreages, such as manual grass removal, are included within the individual categories below.

Table 2-6. Estimated Maximum Areas for Vegetation Treatment Activities

Vegetation Treatment Activities	Maximum Estimated Annual Area (acres)
Manual removal of trees (using chainsaws, chippers)	20
Manual removal of shrubs (using chainsaws, rotary mower, chipper)	145
Manual grass removal (rotary mower)	375
Mechanical tree removal (e.g., using feller/buncher, chainsaw, masticator, loader, skidder, chipper)	5
Mechanical shrub removal (e.g., using tractor, masticator, rotary mower)	5
Mechanical grass removal (e.g., rotary mower, tractor)	5
Goat grazing	1,100
Herbicide treatment for trees	20
Herbicide treatment for shrubs	15
Herbicide treatment for grasses*	0

* Herbicide treatment for grasses is proposed only for spot treatment of pampas/jubata grass; this treatment is captured in the "Herbicide treatment for shrubs" category.

2.3.12 Annual Work Plan Development Process

As described in Section 12 of the VMP, OFD would assess vegetation conditions in the VMP area in the winter or early spring months. Under the VMP, the timing of field assessments would vary each year and would be dependent upon weather conditions such as annual rainfall, number of hot and dry days, etc. The assessments would identify the level of effort necessary to treat vegetation as well as which vegetation management techniques would be most effective. The timing of vegetation management treatments would be determined based on the results of the field assessments. Typically, treatments would begin in the spring and early summer months, but timing may be adjusted according to weather conditions (e.g., temperature, precipitation) or other site-specific factors. Vegetation treatments may also be conducted more than once annually, depending on the site conditions and results of the field assessment. Treatment method selection is dependent upon the dominant vegetation type being treated and on the condition of vegetation observed during field assessments. Note that the treatment methods by treatment area (as described in Section 2.3.4 and Table 2-8) were initially derived based on assessments completed in developing the VMP. Such methods are subject to change based on future field observations.

After conducting field assessments, OFD would develop an annual work plan that identifies priority treatment areas, vegetation treatment techniques, implementation timing, resource needs and availability, funding sources, and monitoring and tracking needs. Following development of the annual work plan, the City will review the work plan with a qualified

biologist to identify sensitive resources within the treatment areas. Through this environmental screening process, the City will identify where avoidance and minimization measures will be required to avoid or minimize adverse effects to those resources. Recommended vegetation management treatments would vary by parcel type, as summarized in Section 2.3.3. Treatment areas would be prioritized based on the criteria described in Section 2.3.5. The number of projects identified in the annual work plan would be dependent on factors such as the climatic and hydrology conditions of the current and preceding year, as well as budget. In addition to the priority ranking criteria described in Section 2.3.5, the order in which areas or properties are ranked would be dependent upon the level of hazardous conditions and availability of resources (e.g., areas exhibiting more hazardous conditions would be treated first).

The annual work plan is an internal, working document that may be modified throughout the year due to various factors including field conditions, weather, vegetation growth, contractor or crew completion rates, staff and resource availability, treatment techniques, permit acquisition needs and emergency conditions, among others. As part of the annual work plan development process, OFD would coordinate with local volunteer/park stewardship groups, other City departments, and other agencies or landowners, as appropriate.

2.3.13 Annual Monitoring and Reporting

OFD would monitor and inspect vegetation conditions and treatment activities in the VMP Area throughout the year and develop an Annual VMP Report by February 28 summarizing the results of vegetation management activities, monitoring efforts, quantifying the number of parcels inspected and acreage treated, documenting annual expenditures associated with VMP projects completed the prior year, identifying any additional resource needs, and summarizing any pertinent issues identified and addressed during vegetation management activities. The Annual VMP Report would identify any proposed future changes to vegetation management activities conducted in the VMP Area and would be submitted to the Oakland City Council for review and comment.

The value of monitoring and adaptive management is the gathering of empirical information from treatment sites (before, during, and after treatment) that can help refine the approaches to vegetation treatment that better meet site-specific project objectives, provide effective wildfire risk reduction, and protect the environment. The Annual VMP Report includes elements that would aid in program implementation, help assess program effectiveness, and provide feedback for adaptive decision-making. Such elements under the VMP include but are not limited to:

- introducing independent science into the VMP activities,
- geospatially tracking later vegetation treatment projects,
- monitoring implementation of techniques and mitigation measures to document compliance, and
- monitoring the effectiveness of treatments in achieving desired fuel conditions and other objectives applicable to a treatment project.

The VMP annual report would provide metrics on the implementation performance of the VMP, including but not limited to, the following:

- Actual acreage treated vs. planned treatment acreage identified in the annual work plan. Subdivide treated acreage into two categories: (1) meets treatment standard immediately following treatment; (2) partially meets treatment standard immediately following treatment.
- Hours of annual pre-treatment site assessments performed by OFD.
- Hours of active treatment work inspections performed by OFD.
- Hours of post-treatment monitoring performed by OFD.
- Budget expended on vegetation management and associated tasks.

OFD would track performance of the VMP through geospatial mapping tools. Geospatially mapping of completed VMP treatment projects would support the annual monitoring and reporting process described above.

2.4 ADAPTIVE MANAGEMENT

The VMP would be implemented using an adaptive management approach. The results of the VMP's monitoring efforts contained in the Annual VMP Report would be used to determine which vegetation management activities or techniques are effective or ineffective; if there is a need to change or modify treatment techniques (among those described in Section 2.3.6), if there is a need to adjust the timing, duration, or priority of treatments on a specific property or within the VMP area; among other factors. OFD would document the results of monitoring efforts and make note of recommended changes to vegetation management activities or treatment methods. OFD would use the data contained in the Annual VMP Report to develop the Annual Work Plan for the subsequent year. If at any time the scope or impacts of the Project go beyond or differ from what is considered in this document, the City will evaluate whether to prepare supplemental environmental documentation under CEQA.

2.5 COORDINATION WITH STAKEHOLDERS AND VOLUNTEER GROUPS

Outreach to stakeholders and volunteer groups was conducted during VMP development, as summarized in Section 6 of the VMP. The VMP recommends continued and ongoing coordination between OFD and local volunteer and stewardship groups that are active in parklands or other portions of the VMP area. The VMP recognizes that effective communication and coordination is the responsibility of both OFD and local stewardship groups, with each making an effort to keep the other party informed and updated.

The following communication protocols are recommended to maintain coordination between OFD and local stewardship efforts.

OFD will identify a point of contact for communication and coordination purposes with local park stewardship groups. The Vegetation Management Unit of the Fire Prevention Bureau of OFD will be responsible for this outreach and can be contacted at 510-238-7388 or wildfireprevention@oaklandca.gov. Similarly, each park stewardship group will identify a point of contact for coordination with OFD. OFD will maintain an updated list of the points of contact, including names, telephone numbers, and email addresses. If there is a change in status regarding the point of contact for either OFD or a local stewardship group, each party is responsible for contacting OFD to update the contact list.

During the annual work plan development process, OFD will reach out to the local park stewardship groups (through the point of contact) to solicit input or feedback on current vegetation management needs in the specific park, as well as potential treatment options, treatment timing, local site conditions, and previous vegetation management efforts conducted on site. This coordination is especially important when a new contractor is selected to conduct vegetation management activities within a park. Coordination with the park stewardship group may include a site visit by OFD and/or the new vegetation management contractor.

When OFD has a clearer understanding of the timing for vegetation management work in a specific park, the OFD point of contact will provide this schedule update to the identified point of contact for that park.

Similarly, volunteer/park stewardship groups must contact OFD prior to implementing vegetation management actions within the VMP area. Key things for local stewards to update the OFD on include the location and extent of stewardship actions. This is an important step to minimize the potential for steward projects to potentially conflict with City plans or goals for vegetation management.

Volunteers and stakeholder groups that provided input during the VMP development process are identified in Appendix K of the VMP. In addition to the identified stewardship groups in Appendix K of the VMP, the Oakland Wildland Stewards (OWLS) is a coalition of stewardship groups operating in the VMP area.

2.6 VMP BEST MANAGEMENT PRACTICES

The VMP includes BMPs that are intended to avoid or minimize potential impacts associated with vegetation treatments proposed. These are described in Section 10 and Appendix I of the VMP. For the purposes of this DEIR, some applicable BMPs are presented as mitigation measures as they are intended to minimize adverse environmental impacts of the VMP.

2.7 ANTICIPATED PERMITS AND APPROVALS REQUIRED FOR THE VMP

Table 2-7 identifies potential permits and approvals that may be required to implement certain VMP treatment projects or parts of the VMP.

Table 2-7. Anticipated Regulatory Permits, Approvals, and Consultations

Agency	Permit / Approval / Consultation
Federal Agencies	
U.S. Army Corps of Engineers	Clean Water Act Section 404 permit (if any activities result in the discharge of dredged or fill material into jurisdictional waters of the U.S.)
U.S. Fish and Wildlife Service	Endangered Species Act compliance may be required if biological surveys reveal that the project could result in take of a covered species.
State Agencies	
California Department of Transportation	Encroachment permit
California Department of Fish and Wildlife	Trustee agency for the VMP. Approval may be required if there is incidental take of any state-listed species.
Regional	
San Francisco Bay Regional Water Quality Control Board	Section 401 Water Quality Certification and/or Waste Discharge Requirements (for activities that occur within waters of the State)
Local	
City of Oakland	Creek Protection Permit for VMP activities within Creekside Properties
	Tree removal permits, as necessary for individual projects
	Grading permits, as necessary for individual projects

Table 2-8. VMP Treatment Projects and Proposed Vegetation Management Techniques

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Gather Park							
GAR-1	1	Manage vegetation along adjacent roadside (Claremont Ave) and near trailheads, entry points to minimize ignition potential. Treatment should be based on field observations, but not to exceed 30 ft. Trees hanging down on power lines are a fire hazard and should be prioritized for treatment.	Coast Oak Woodland	1.34	Hand labor – grass removal	1	1
			TOTAL	1.34			
GAR-2	1	Manage vegetation within 10 feet of the south and east property boundary line to facilitate firefighter access according to the standards outlined in Section 9.1.	Coast Oak Woodland	0.43	Hand labor – shrub removal	18	1
			Eucalyptus	0.04	Hand labor – tree removal	1	
GAR-3	1	To manage fuel loading rates, remove eucalyptus trees from two locations along the southern park boundary, retaining lower fire risk trees.	Eucalyptus	0.66	Mechanical – tree removal	10	1
			TOTAL	0.66			

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Grizzly Peak Open Space							
GPO-1	1	Manage vegetation within 100 ft of structures, within 300 feet of ridgelines, and within 30 feet of Tunnel Road and Bay Forest Drive according to maintenance standards in Section 9.1.	Closed-cone Pine Cypress Coast Oak Woodland Coastal Scrub Eucalyptus Urban	28.50 1.62 10.37 2.83 1.43	Hand labor – tree removal Hand labor – tree removal Hand labor – shrub removal Hand labor – tree removal N/A	1 18 5 2	9
GPO-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	Closed-cone Pine-Cypress Coastal Scrub Eucalyptus	19.06 8.30 10.43 0.34	Mechanical – tree removal Mechanical – shrub removal Mechanical – tree removal	2 18 1	
GPO-3	3	To reduce fuel loading rates, remove eucalyptus trees and other rapidly spreading species from oak woodlands, retaining lower fire risk trees.	Coast Oak Woodland	1.62	Mechanical – tree removal	18	1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
GPO-4	3	Grazing	TOTAL Closed-cone Pine-Cypress Coastal Scrub Eucalyptus Urban	19.90 7.01 12.46 0.22 0.21	Goat grazing Goat grazing Goat grazing Goat grazing N/A	1-2 10 1	6 10 1
Tunnel Road Open Space							
TRO-1	1	Continue to manage vegetation via grazing throughout the property to minimize ignition potential from adjacent roadways.	TOTAL Annual Grassland Coast Oak Woodland Urban	4.44 1.25 2.73 0.47	Goat grazing Goat grazing Goat grazing N/A	1-2 3	1 3
North Oakland Sports Field							
NOR-1	1	Manage vegetation according to the standards outlined in Section 9.1 in the following locations: within 30 feet of the site's dirt access road, within 300 feet of ridgelines, within 150 feet of the park access gate, and within the existing managed area north of the ball fields and parking areas.	TOTAL Coast Oak Woodland Coastal Scrub Eucalyptus Urban	21.51 5.11 0.47 12.06 3.87	Hand labor – tree removal Hand labor – shrub removal Mechanical – tree removal N/A	4 18 3	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
NOR-2	2	Given the upper portion of the property's ridgeline location and the potential for ember generation resulting from crown fire, implement thinning recommendations in the property's eucalyptus stand beyond that treated under project NOR-1 according to the standards outlined in Section 9.1.	Eucalyptus	7.76	Mechanical – tree removal	10	2
NOR-3	3	To reduce fuel loading rates, remove eucalyptus trees and other highly flammable/rapidly spreading species from oak woodland communities, retaining lower fire risk trees.		TOTAL	18.65		
			Coast Oak Woodland	16.87	Mechanical – tree removal	10	4
			Coastal Scrub	1.62	Mechanical – shrub removal	1	1
			Urban	1.16	N/A		
<i>Shepherd Canyon Park</i>							
SHP-1	1	Manage vegetation within 100 feet of structures and within 150 feet of the park access gate according to the standards outlined in Section 9.1.		TOTAL	13.23		
			Closed-cone Pine-Cypress	0.37	Hand labor – tree removal	1	1
			Coast Oak Woodland	6.00	Hand labor – tree removal	18	4
			Eucalyptus	5.93	Hand labor – tree removal	4	4
			Urban	0.93	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
SHP-2	1	Manage vegetation along adjacent roadsides (Shepherd Canyon Road, Escher Drive, Snake Road, and Bagshotte Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	Closed-cone Pine-Cypress Coast Oak Woodland Eucalyptus	9.26 0.24 6.58 2.39	Hand labor – tree removal Hand labor – tree removal Hand labor – tree removal	18 5 2	1 1 1
SHP-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	Annual Grassland Coast Oak Woodland Eucalyptus	0.05 0.21 2.79 7.31	Hand labor – grass removal Hand labor – tree removal Mechanical – tree removal	N/A 1 18	N/A 1 2
SHP-4	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads. Grazing should be conducted later in the season after perennial grasses go to seed.	Urban Annual Grassland Closed-cone Pine-Cypress Coast Oak Woodland Eucalyptus	11.78 0.21 2.79 1.48 1.79 0.88 16.16 0.98	Hand labor – grass removal Hand labor – tree removal Mechanical – tree removal N/A Goat grazing Goat grazing Goat grazing Goat grazing	1 1 2 1 1 13 1	1 1 2 1 1 13 1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Beaconsfield Canyon							
BCN-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	Closed-cone Pine-Cypress Coast Oak Woodland Coastal Scrub	0.61 0.78 0.28	Hand labor – tree removal Hand labor – tree removal Hand labor – shrub removal	1 1 1	
BCN-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL Closed-cone Pine-Cypress Coastal Scrub	1.67 0.81 1.17		18 10 1	
Marjorie Saunders Park							
MJS-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL Closed-cone Pine-Cypress Coast Oak Woodland Eucalyptus	0.87 0.04 0.1 0.72	Hand labor – tree removal Hand labor – tree removal Hand labor – tree removal	1 18 1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
MJS-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL Closed-cone Pine-Cypress Eucalyptus	1.81 0.15 1.66	Mechanical – tree removal Mechanical – tree removal	10 1 1	
Dimond Canyon Park			TOTAL Coast Oak Woodland Eucalyptus	3.42 2.21 0.06	Hand labor – tree removal Hand labor – tree removal Hand labor – tree removal	2 18 1	
DIM-1	1	Manage vegetation along adjacent roadsides (Park Boulevard, Monterey Boulevard, Leimert Boulevard, El Centro Avenue) and near trailheads/entry points to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	Redwood Urban	0.18 0.97	Hand labor – tree removal N/A	1 N/A	
DIM-2	1	Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1.	TOTAL Coast Oak Woodland Coastal Scrub Urban	2.47 2.18 0.03 0.25	Hand labor – tree removal Hand labor – tree removal N/A	2 18 1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
DIM-3	1	Manage vegetation within 10 feet of property boundary lines where the park abuts residential structures to facilitate firefighter access according to the standards outlined in Section 9.1.	TOTAL	0.68			
			Urban	0.68	Hand labor – tree removal	18	1
Joaquin Miller Park							
			TOTAL	117.32			
			Annual Grassland	6.06	Hand labor – grass removal	1	
			Closed-cone Pine-Cypress	56.37	Hand labor – tree removal	38	
			Coast Oak Woodland	15.62	Hand labor – tree removal	11	
			Coastal Scrub	0.72	Hand labor – shrub removal	1	
			Eucalyptus	17.73	Hand labor – tree removal	18	
			Freshwater Emergent Wetland	0.10	N/A		
			Redwood	9.52	Hand labor – tree removal	7	
			Urban	9.20	N/A		
			Urban (acacia)	0.94	Hand labor – tree removal	1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
JMP-2	1	Manage vegetation along adjacent roadsides (Joaquin Miller Road, Skyline Boulevard, and Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.	Urban (mixed) Valley/foothill Riparian	0.83 0.22	Hand labor – tree removal N/A	1 1	1
JMP-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL Annual Grassland Closed-cone Pine-Cypress Coast Oak Woodland Eucalyptus Redwood Urban Urban (mixed)	18.23 0.36 6.14 2.60 2.68 4.05 2.06 0.34	Hand labor – grass removal Hand labor – tree removal N/A N/A	1 1 5 18 2 2 3 1 5	1
			TOTAL	13.82	Mechanical – grass	1	18
			Closed-cone Pine-Cypress Coast Oak Woodland	3.52 1.05	Mechanical – tree removal Hand labor – tree removal	1	1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
JMP-4	3	Continue to manage vegetation via grazing in flashy fuel areas to maintain fuel loads	Coastal Scrub	1.95	Mechanical – shrub		1
			Eucalyptus	2.88	Mechanical – tree removal		1
			Redwood	0.01	Mechanical – tree removal		1
			Urban	0.03	N/A		
			Urban (acacia)	2.25	Mechanical – tree removal		1
			Urban (mixed)	2.00	Hand labor – tree removal		2
			TOTAL	68.31			
			Annual Grassland	8.53	Goat grazing		7
			Closed-cone Pine-Cypress	13.81	Goat grazing		11
			Coast Oak Woodland	14.11	Goat grazing		11
			Coastal Scrub	0.62	Goat grazing		1
			Eucalyptus	6.33	Goat grazing		5
			Redwood	5.62	Goat grazing		5
			Urban	17.06	Goat grazing		14
			Urban (acacia)	1.73	Goat grazing		2

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
LHT-1	1	Manage vegetation within 100 feet of structures, within 300 feet of ridgelines, and within the current 9-acre management area according to the standards outlined in Section 9.1.	Annual Grassland Coast Oak Woodland Eucalyptus Redwood Urban	0.28 7.07 2.08 3.74 0.41	Hand labor – grass removal Hand labor – tree removal Hand labor – tree removal Hand labor – tree removal N/A	1 5 2 3 1	
LHT-2	1	Manage vegetation along adjacent roadsides (Campus Drive) to minimize ignition potential. Treatment width should be based on field observations, but not to exceed 30 feet.	Coast Oak Woodland Redwood Urban	1.14 0.39 0.33	Hand labor – tree removal Hand labor – tree removal N/A	18 18 1	
LHT-3	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.	TOTAL Coast Oak Woodland Redwood	13.57 3.49 0.29		18 18 1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
<i>McDonnell Avenue</i>							
MCD-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL Coast Oak Woodland Urban	0.95 0.55 0.40	Hand labor – tree removal N/A	18	1
<i>Police/Safety Department Property</i>							
PSD-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.	TOTAL Eucalyptus Urban	7.17 4.27 2.90	Hand labor – tree removal N/A	18	3
PSD-2	1	Manage vegetation along adjacent roadside (Mountain Boulevard). Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL Eucalyptus	0.54 0.54	Hand labor – tree removal	18	
<i>Leona Street</i>							
LST-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1	TOTAL Coast Oak Woodland Eucalyptus	0.38 0.16 0.22	Hand labor – tree removal Hand labor – tree removal	18	1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
<i>Blue Rock Court</i>							
BLU-1	1	Manage vegetation within 100 feet of structures and within 30 feet of fire access road along southern property edge according to the standards outlined in Section 9.1.	Annual Grassland Coast Oak Woodland Eucalyptus Urban	2.40 0.32 1.28 0.04	Hand labor – grass removal Hand labor – tree removal Hand labor – tree removal N/A	1 18 1 18	1 1 1 1
BLU-2	2	Implement brush and tree thinning recommendations in areas exhibiting extreme fire behavior and within 300 feet of structures according to the standards outlined in Section 9.1.		TOTAL Eucalyptus Urban	0.47 0.45 0.02	Mechanical – tree removal N/A	18 1
BLU-3	3	Implement thinning recommendations in the property's eucalyptus stand beyond that treated under project BLU-2 according to the standards outlined in Section 9.1.	Annual Grassland Coast Oak Woodland Eucalyptus	6.35 0.11 6.24	N/A Hand labor – tree removal Mechanical – tree removal	18 1 2	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
Oak Knoll							
OKN-1	1	Manage vegetation within 100 feet of structures according to the standards outlined in Section 9.1.		TOTAL	1.23		
			Annual Grassland	0.18	Hand labor – grass removal	18	1
			Coast Oak Woodland	0.28	Hand labor – tree removal		1
			Urban	0.77	N/A		
			TOTAL	14.51			
			Annual Grassland	2.75	Goat grazing	3	
			Coast Oak Woodland	0.15	Goat grazing	1-2	1
			Eucalyptus	1.28	Goat grazing		1
			Urban	10.33	N/A		
King Estate Open Space Park							
KES-1	1	Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 30 feet of Fontaine Street and Crest Avenue according to the standards outlined in Section 9.1.		TOTAL	15.57		
			Annual Grassland	8.99	Mechanical – grass	2	
			Coast Oak Woodland	3.81	Hand labor – tree removal	18	3
			Coastal Scrub	0.04	Hand labor – shrub removal		1
			Urban	2.73	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
KES-2	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads and minimize ignition potential, particularly prior to the 4th of July holiday.	TOTAL Annual Grassland Coast Oak Woodland Coastal Scrub Urban	65.63 52.07 8.19 4.23 1.14	Goat grazing Goat grazing Goat grazing N/A		41 2 4 N/A
<i>Knowland Park and Arboretum</i>							
KNO-1	1	Manage vegetation within 100 feet of structures, within 150 feet of park access gates, and within 300 feet of ridgelines, which encompasses the area within 30 feet of known human congregation/activity areas along Skyline Boulevard according to the standards outlined in Section 9.1.	TOTAL Annual Grassland Closed-cone Pine-Cypress Coast Oak Woodland Coastal Scrub Eucalyptus Perennial Grassland Urban	28.43 10.16 1.43 5.66 3.16 2.71 0.02 5.28	Mechanical – grass Hand labor – tree removal Hand labor – tree removal Hand labor – shrub removal Hand labor – tree removal Hand labor – grass removal N/A	2 1 4 18 2 1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
KNO-2	1	Manage vegetation along adjacent roadside (Golf Links Road). Treatment width should be based on field observations, but not to exceed 30 feet.	TOTAL	8.39			
			Annual Grassland	0.64	Hand labor – grass removal	1	
			Coast Oak Woodland	6.12	Hand labor – tree removal	5	
			Coastal Scrub	0.49	Hand labor – shrub removal	18	
			Eucalyptus	0.56	Hand labor – tree removal	1	
			Urban	0.58	N/A		
KNO-3	2	Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1.	TOTAL	14.01			
			Annual Grassland	0.10	Hand labor – grass removal	1	
			Closed-cone Pine-Cypress	0.02	Hand labor – tree removal	1	
			Coast Oak Woodland	3.22	Hand labor – tree removal	18	
			Coastal Scrub	10.65	Hand labor – shrub removal	3	
KNO-4	2		TOTAL	32.10			
			Annual Grassland	2.29	Mechanical – grass	18	
			Coast Oak Woodland	2.11	Hand labor – tree removal	2	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
		Manage vegetation within 100 feet of on-site structures in the zoo portion of the property and within 100 feet of the zoo/open space interface to minimize ignition potential and modify potential fire behavior near this developed portion of the property.	Eucalyptus	0.26	Hand labor – tree removal	1	1
			Urban	27.44	N/A		
			TOTAL	368.13			
KNO-5	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.	Annual Grassland	87.92	Goat grazing	69	69
			Closed-cone Pine-Cypress	7.61	Goat grazing	6	6
			Coast Oak Woodland	144.34	Goat grazing	112	112
			Coastal Scrub	47.45	Goat grazing	37	37
			Eucalyptus	8.54	Goat grazing	7	7
			Freshwater Emergent Wetland	0.17	N/A		
			Mixed Chaparral	7.92	Goat grazing	7	7
			Perennial Grassland	12.51	Goat grazing	10	10
			Redwood	0.18	Goat grazing	1	1
			Urban	51.48	N/A		

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
<i>Sheffield Village Open Space</i>							
SHF-1	1	Manage vegetation within 100 feet of structures, including those in the Dunsmuir Estates portion of the property, and within 150 feet of park access gates, according to the standards outlined in Section 9.1.	Annual Grassland	1.60	Hand labor – grass removal	1	
			Closed-cone Pine-Cypress	0.15	Hand labor – tree removal	1	
			Coast Oak Woodland	5.17	Hand labor – tree removal	4	
			Coastal Scrub	1.20	Hand labor – shrub removal	18	
			Eucalyptus	3.32	Hand labor – tree removal	3	
			Perennial Grassland	0.04	Hand labor – grass removal	1	
			Urban	12.45	N/A		
				TOTAL	6.14		
SHF-2	2	Manage vegetation within 300 feet of structures in areas that exhibit extreme fire behavior according to the standards outlined in Section 9.1.	Annual Grassland	0.02	Hand labor – grass removal	1	
			Coast Oak Woodland	1.83	Hand labor – tree removal	2	
			Coastal Scrub	3.70	Hand labor – shrub removal	2	
			Eucalyptus	0.08	Hand labor – tree removal	1	

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
			Urban	0.51	N/A		
			TOTAL	288.34			
			Annual Grassland	57.04	Goat grazing	45	
			Closed-cone Pine-Cypress	5.74	Goat grazing	5	
SHF-3	3	Continue to manage vegetation via grazing throughout the remainder of the park to maintain fuel loads.	Coast Oak Woodland	129.35	Goat grazing	18	101
			Coastal Scrub	53.85	Goat grazing	42	
			Eucalyptus	21.80	Goat grazing	17	
			Perennial Grassland	0.81	Goat grazing	1	
			Urban	19.76	N/A		
<i>Urban and Residential Parcels</i>							
URB-1	1	Maintain vegetation within the entirety of all urban and residential parcels according to standards in Section 9.1.	TOTAL	47.50			
			Annual Grassland		Hand labor – grass removal	1	
			Closed-cone Pine-Cypress		Hand labor – tree removal	6	
			Coast Oak Woodland		Hand labor – tree removal	18	
			Coastal Scrub		Hand labor – shrub removal	11	
							1

VMP Treatment Project No.	Priority	Management Actions	Dominant Vegetation Type	Acres	Proposed Vegetation Management Technique	Maximum No. Maintenance Personnel	Duration of Vegetation Management Activities (est. days)
<i>Medians</i>							
MEDIAN	1	Management includes reducing ladder fuels, controlling rapidly spreading species (e.g., broom), maintaining fuel loads, reducing surface fuels (e.g., grasses, weeds), and pruning tree canopies for vertical clearance.	TOTAL Annual Grassland Closed-Cone Pine-Cypress Coast Oak Woodland Eucalyptus Urban	5.66 0.93 0.53 1.22 0.02 2.97	Hand labor – grass removal Hand labor – tree removal Hand labor – tree removal Hand labor – tree removal N/A	1 1 18 1 1	