

3 Project Description

3.1 Introduction

The Wildland Fire Resiliency Program documents and permits the various planning efforts needed to meet Midpen's objectives for establishing wildland fire resiliency on its lands. It is meant to guide a comprehensive approach to vegetation management, including pre- and post-response activities to wildland fire on Midpen lands. The Program is a comprehensive document that includes the following components:

- **Introduction:** Provides an overview of Midpen lands, management, and purpose of the Program;
- **Background and Environmental Setting:** Describes the open space preserves and managed land system, resources, landscape, and other current site conditions;
- **Wildland Fire Resiliency Program Policies:** Identifies Midpen's Resource Management Policies (RM Policies) that require updating to support the Program;
- **Vegetation Management Plan (VMP):** Addresses creation and maintenance of fuelbreaks, fuel management zones, and defensible space zones using vegetation management techniques addressed in Midpen's IPMP;
- **Prescribed Fire Plan (PFP):** Addresses the methods and implementation of prescribed fire to manage fuel and improve ecosystem health;
- **Wildland Fire Pre-Plans/Resource Advisor Maps:** Describes the creation of Resource Advisor maps for each open space preserve (OSP) and other managed land (or groups of managed lands) that would include information on existing conditions, infrastructure, and resources constraints to aid fire suppression activities and locate sensitive resource areas that merit protection from potential damage due to fire or fire suppression activities;
- **Monitoring Plan:** Provides a framework for recording pre-project conditions, vegetation treatment response, and fuels inventories to inform future adaptive management techniques; and
- **Maximum Acreage of Annual Treatment:** Describes the maximum treatment areas by activity per year.

This Project Description incorporates the entire Program by reference and summarizes the key components necessary for CEQA analysis. The Program should be reviewed in its entirety, for a thorough understanding of all actions and components of the Program.

3.2 Program Location and Surrounding Area

3.2.1 Overview

Midpen is a public agency formed by voter initiative in 1972. Midpen's purpose is to acquire and permanently protect a regional greenbelt of open space lands, preserve and restore wildlife habitat, watersheds, viewsheds, and fragile ecosystems, and provide opportunities for low-intensity recreation and environmental education. In 2004, Midpen expanded to protect the San Mateo County Coast. Reflecting the interests of Coastside residents, Midpen's mission on the San Mateo County Coastside includes preserving the rural character and agricultural heritage of the coastside and encouraging viable agricultural use of land resources. Midpen's mission outlines the critical functions of the agency, balancing the preservation of open space with active land restoration, low-intensity public recreation, and viable agricultural use.

3.2.2 Preserve System

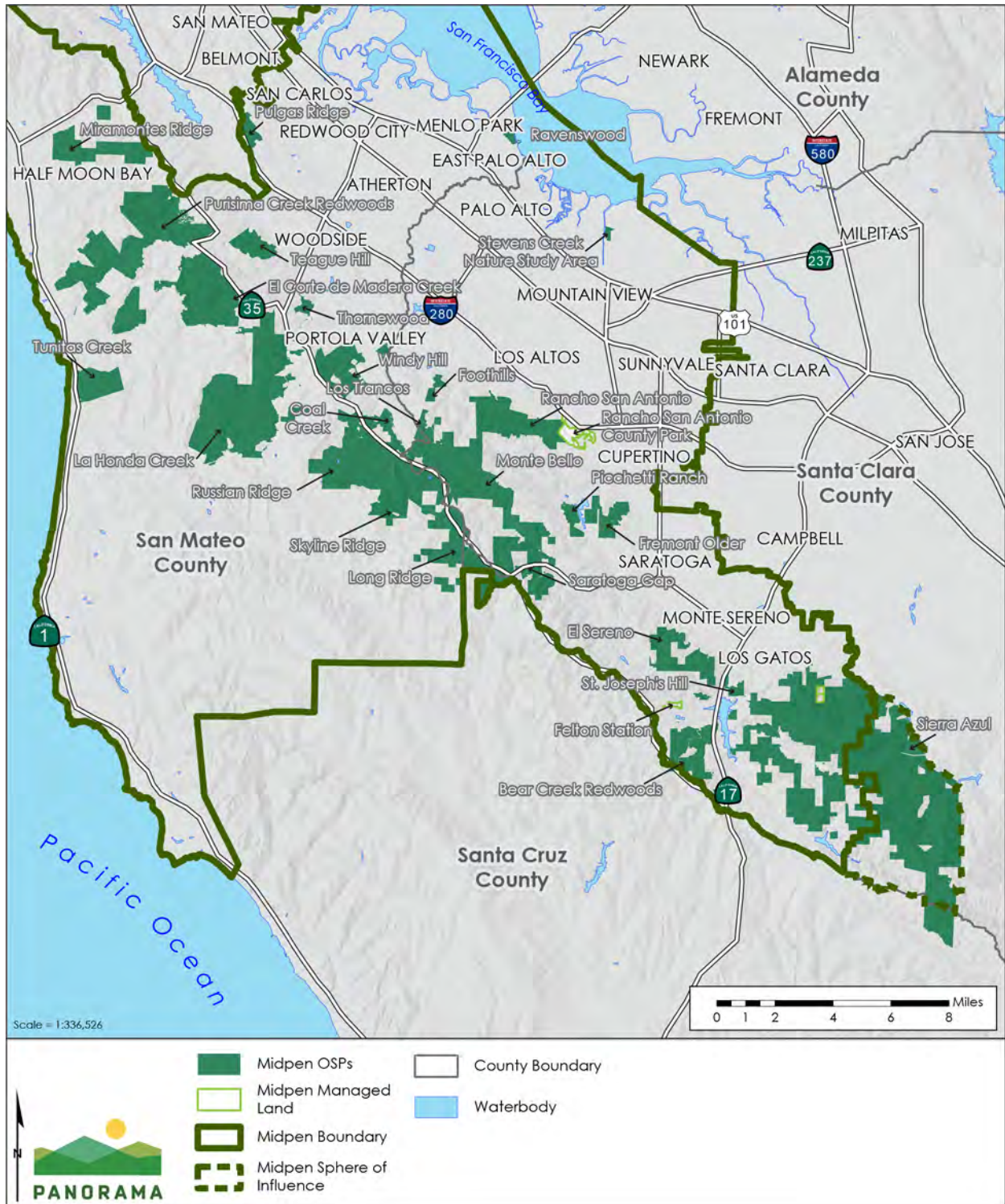
Midpen has preserved a regional greenbelt system of nearly 65,000 acres of public land and manages 26 OSPs and other land under management agreements (referred to as "Midpen lands" throughout this document) (Figure 3.2-1). The Program addresses wildland fire management across all Midpen owned and managed lands. Table 3.2-1 summarizes key information for each of the 26 OSPs and other Midpen-managed lands. As Midpen continues to expand its land holdings, the amount of vegetation management work conducted under the Program within its lands is expected to also increase. Midpen continues to actively acquire new lands to preserve as open space in perpetuity. Midpen lands depicted on maps throughout the Program EIR represent the conditions at the time of preparation. The lands covered by the Program are subject to change as Midpen continues to actively acquire new lands.

3.2.3 Nearby Communities and Development

Midpen's jurisdiction encompasses 17 cities (Atherton, Cupertino, East Palo Alto, Half Moon Bay, Los Altos, Los Altos Hills, Los Gatos, Menlo Park, Monte Sereno, Mountain View, Palo Alto, Portola Valley, Redwood City, San Carlos, Saratoga, Sunnyvale, and Woodside) and unincorporated areas in San Mateo, Santa Clara, and northern Santa Cruz counties with a combined population of over 700,000 residents. Although land uses within OSPs are predominantly natural open space and agriculture (primarily conservation grazing), many of the OSPs abut small areas of low-density residential development. The majority of land owned by Midpen is within the wildland-urban interface (WUI), which poses significant concern in the event of fire, as it combines the characteristics of wildlands (where larger fires generally occur) and developed areas (where lives, homes, and property are vulnerable).

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Figure 3.2-1 Program Location



Source: (USGS, 2013; USGS, 2016; Tele Atlas North America, Inc., 2018; Midpen, 2019a)

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Table 3.2-1 Summary of Midpen Lands

Managed Land	Acres	Description
Bear Creek Redwoods OSP	1,437	<ul style="list-style-type: none"> • Major amenities: trails open to hiking and horseback riding, stables, historical/cultural artifacts, historic complex, Upper Lake, restrooms, parking lot • Major uses: recreation, horse boarding • Primary vegetation: redwood and fir forests, oak woodland
Coal Creek OSP	508	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash • Major uses: recreation • Primary vegetation: oak woodland, grassland
El Corte de Madera Creek OSP	2,906	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and biking; coastal views; sandstone formation; picnic tables; creeks; restrooms; parking lots • Major uses: recreation • Primary vegetation: mixed evergreen and redwood forest
El Sereno OSP	1,430	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash; creeks; permit parking • Major uses: recreation, fire escape route • Primary vegetation: chaparral
Felton Station	44	<ul style="list-style-type: none"> • Not currently open to the public
Foothills OSP	212	<ul style="list-style-type: none"> • Major amenities: trail open to hiking, horseback riding, and dogs on-leash; scenic viewpoint; roadside parking • Major uses: recreation • Primary vegetation: chaparral, oak woodland
Fremont Older OSP	739	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, biking, and dogs on-leash; benches; restrooms; historic residence; parking lot and roadside parking • Major uses: recreation • Primary vegetation: chaparral, grassland, oak woodlands
La Honda Creek OSP	6,144	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and dogs on-leash; vista point; active grazing; creeks; restrooms; historic barns; residences; parking lots • Major uses: agriculture, recreation, coastal field office • Primary vegetation: redwood and oak forests, grassland
Long Ridge OSP	2,226	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash; benches; scenic vistas; ponds; creeks; roadside parking • Major uses: recreation • Primary vegetation: grassland, hardwood forest, oak savanna
Los Trancos OSP	274	<ul style="list-style-type: none"> • Major amenities: trails open to hiking and horseback riding, San Andreas fault trail, benches, creeks, restrooms, parking lot and roadside parking • Major uses: recreation • Primary vegetation: forest, grassland, oak woodland

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Managed Land	Acres	Description
Miramontes Ridge OSP	1,716	<ul style="list-style-type: none"> • Not currently open to the public • Major uses: agriculture, horse stable • Primary vegetation: coastal scrub
Monte Bello OSP	3,537	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and biking; scenic vistas; campsite; creeks; benches; restrooms; parking lot • Major uses: recreation • Primary vegetation: chaparral, forest, grassland
Picchetti Ranch OSP	308	<ul style="list-style-type: none"> • Major amenities: trails open to hiking and horseback riding, vineyard, ponds, restrooms, historic homestead and ranch, Picchetti Winery, picnic tables, parking lots and roadside parking • Major uses: agriculture/winery, recreation, small events • Primary vegetation: chaparral, oak woodland
Pulgas Ridge OSP	366	<ul style="list-style-type: none"> • Major amenities: trails open to hiking and dogs on-leash, benches, restrooms, off-leash dog area, parking lot • Major uses: recreation • Primary vegetation: chaparral, hardwood forest
Purisima Creek Redwoods OSP	4,798	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and biking; creeks; scenic vistas; picnic tables; benches; restrooms; parking lots; active grazing • Major uses: agriculture, recreation • Primary vegetation: coastal scrub, redwood forest
Rancho San Antonio OSP	3,988	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and (limited) biking; benches; water troughs; vista points; Deer Hollow Farm and ranch buildings; Foothills Field Office; historic Grant Cabin; restrooms; parking lots • Major uses: education, agriculture/farming, recreation, maintenance and patrol field office • Primary vegetation: chaparral, hardwood forest
Rancho San Antonio County Park	287	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and (limited) biking; picnic tables; benches; model aircraft field; water troughs; vista points; restrooms; parking lots • Major uses: recreation • Primary vegetation: grassland, oak woodland
Ravenswood OSP	374	<ul style="list-style-type: none"> • Major amenities: trails open to hiking and biking, benches, observation decks, boardwalk, parking lot • Major uses: recreation, commuter route • Primary vegetation: marshland
Russian Ridge OSP	3,491	<ul style="list-style-type: none"> • Major amenities: trails open to hiking, horseback riding, and biking; viewing platforms; creeks; commemorative site; restrooms; parking lots; active grazing • Major uses: agriculture, recreation • Primary vegetation: conifer forest, grassland

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Managed Land	Acres	Description
Saratoga Gap OSP	1,613	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, and biking; sandstone rock outcrops; parking lots and roadside parking Major uses: recreation Primary vegetation: oak and Douglas fir forests
Sierra Azul OSP and Easements	19,023	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash; scenic vistas; shade structures; picnic tables; water troughs; Mount Umunhum Summit; Ceremonial Space; natural/cultural interpretation restrooms; parking lots and roadside parking Major uses: recreation Primary vegetation: chaparral, oak woodland forest, serpentine grassland
Skyline Ridge OSP	2,143	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, and biking; picnic tables; Alpine Pond; Horseshoe Lake; creeks; multimedia nature tours; David C. Daniels Nature Center; Skyline field office; restrooms; parking lot Major uses: agriculture, recreation, maintenance and patrol field office Primary vegetation: grassland, mixed evergreen forest
St. Joseph's Hill OSP	270	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash; benches; scenic vistas; roadside parking Major uses: recreation Primary vegetation: chaparral, grassland, oak woodland
Stevens Creek Shoreline Nature Study Area	55	<ul style="list-style-type: none"> Major amenities: trails open to hiking and biking, parking lots Major uses: recreation Primary vegetation: wetland
Teague Hill OSP	626	<ul style="list-style-type: none"> Major amenities: trails open to hiking and horseback riding Major uses: recreation Primary vegetation: Douglas fir, oak, madrone forest
Thornewood OSP	167	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, and dogs on-leash; Schilling Lake; parking lot; historic residence Major uses: recreation Primary vegetation: oak and redwood forest
Tunitas Creek OSP	1,660	<ul style="list-style-type: none"> Not currently open to the public Major uses: agriculture Primary vegetation: coastal scrub
Windy Hill OSP	1,414	<ul style="list-style-type: none"> Major amenities: trails open to hiking, horseback riding, biking, and dogs on-leash; benches; picnic tables; Sausal pond; restrooms; parking lots and roadside parking; historic complex Major uses: recreation Primary vegetation: grassland, oak, and redwood forest

Notes:

Midpen has actively preserved nearly 65,000 acres, of which approximately 60,000 acres are managed by Midpen; the remaining acreage is managed by other park and open space entities.

3.3 Background and History of Fuel Management on Midpen Lands

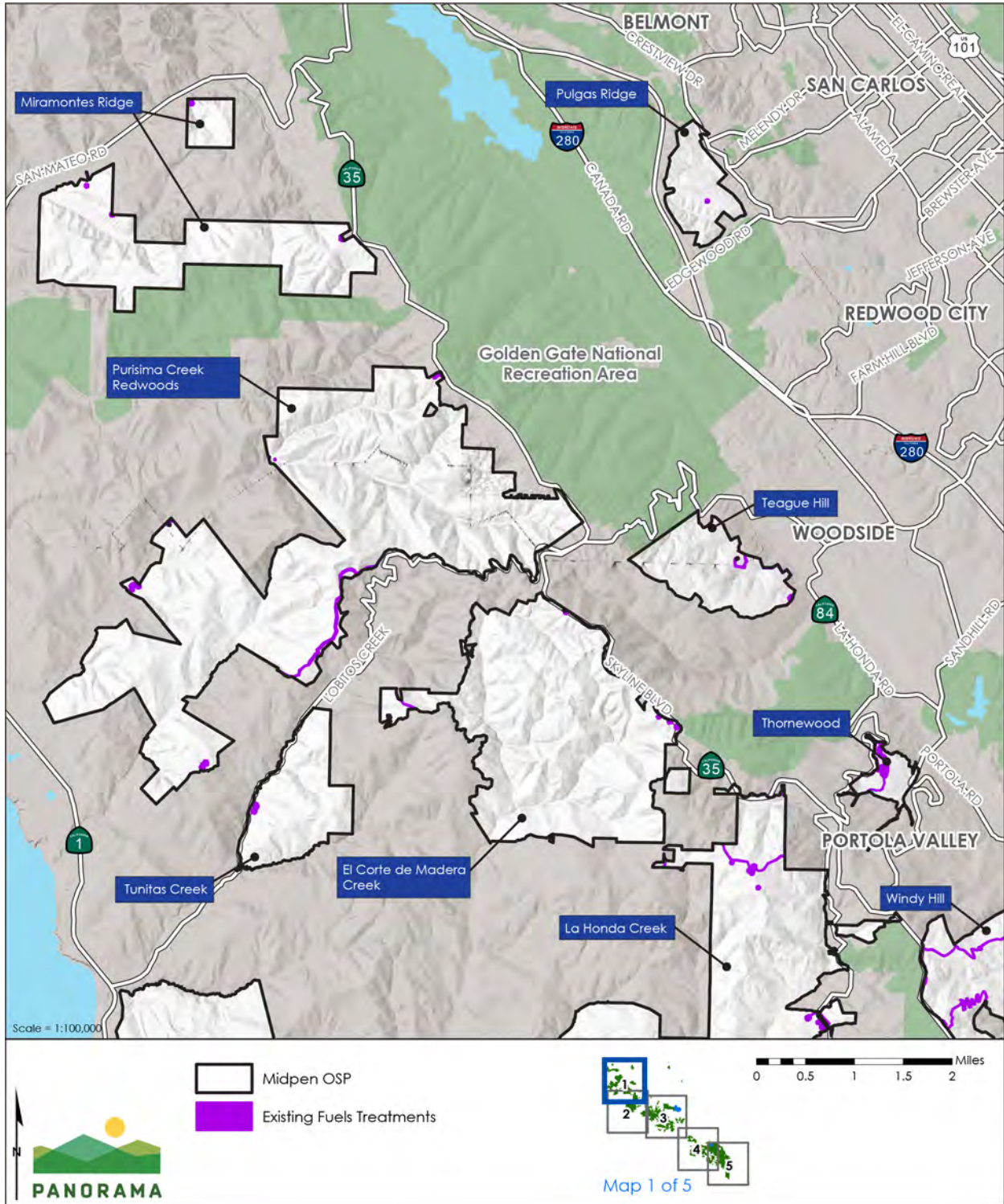
3.3.1 Overview

Prior to European contact, Native American tribes actively managed vegetation within their communities and surrounding areas using fire. These fires were lit intentionally at various times of the year to enhance vegetation growth, facilitate food collection, and improve forage for animals they hunted. Native American tribes did not actively suppress natural lightning ignitions at a landscape scale, which resulted in fires burning for days, weeks, and even months, shaping the patterns of vegetation cover and composition over the centuries (Anderson, 2013). This fire regime has been significantly altered due to fire suppression, which has been implemented by federal and state agencies throughout California for more than a century. Fire suppression has reduced biodiversity on lands that Midpen now owns or manages and has facilitated the spread of invasive plant species into grasslands and other plant communities. In the absence of decades of fire, both live and dead fuels have accumulated in some areas. This accumulation creates higher surface fuel loads, vegetation density, and varied species composition from what was seen prior to European contact. Midpen currently implements several fuel management programs across its lands, which include a wide variety of fuel management treatments that Midpen currently implements including the IPMP. Existing treatments on Midpen lands conducted according to these programs are shown in Figure 3.3-1 through Figure 3.3-5 (refer to Appendix 3.0-1 for detailed maps showing existing treatment areas). The actions related to fuel maintenance and reduction and fire management that are currently implemented include:

- Maintaining existing fuelbreaks in OSPs, including but not limited to fuelbreaks in Pulgas Ridge, Windy Hill, Sierra Azul, Saratoga Gap, and Monte Bello OSPs;
- Defensible space clearing around 117 Midpen-owned structures;
- Maintaining 47 landing zones;
- Maintaining hundreds of miles of fire roads; and
- Managing over 6,500 acres of grasslands using conservation grazing, in part to manage fuels.

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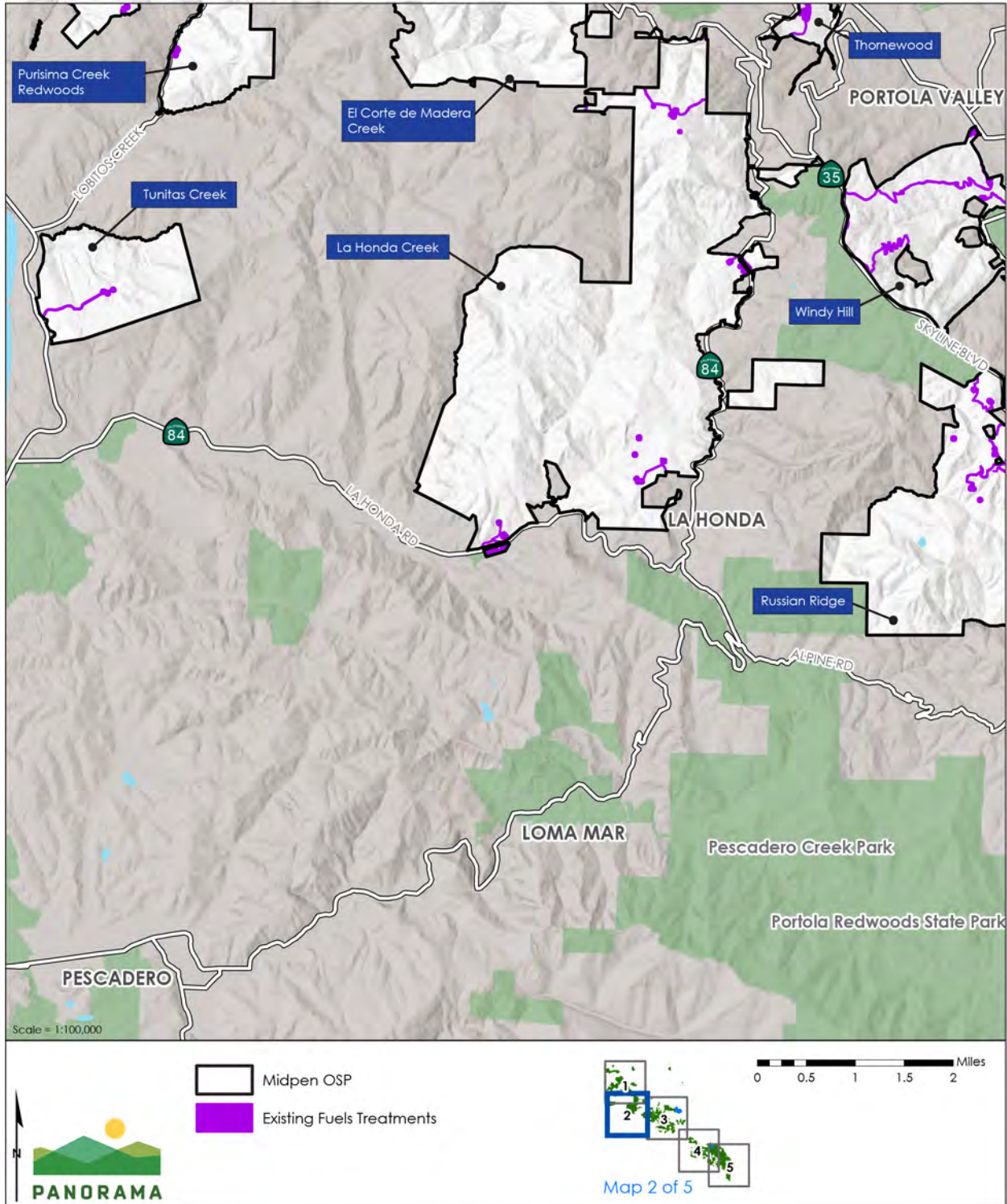
Figure 3.3-1 Existing Treatments Within Midpen Lands (Map 1 of 5)



Source: (Midpen, 2019a; Midpen, 2020a; Bay Area Open Space Council, 2017; USGS, 2020)

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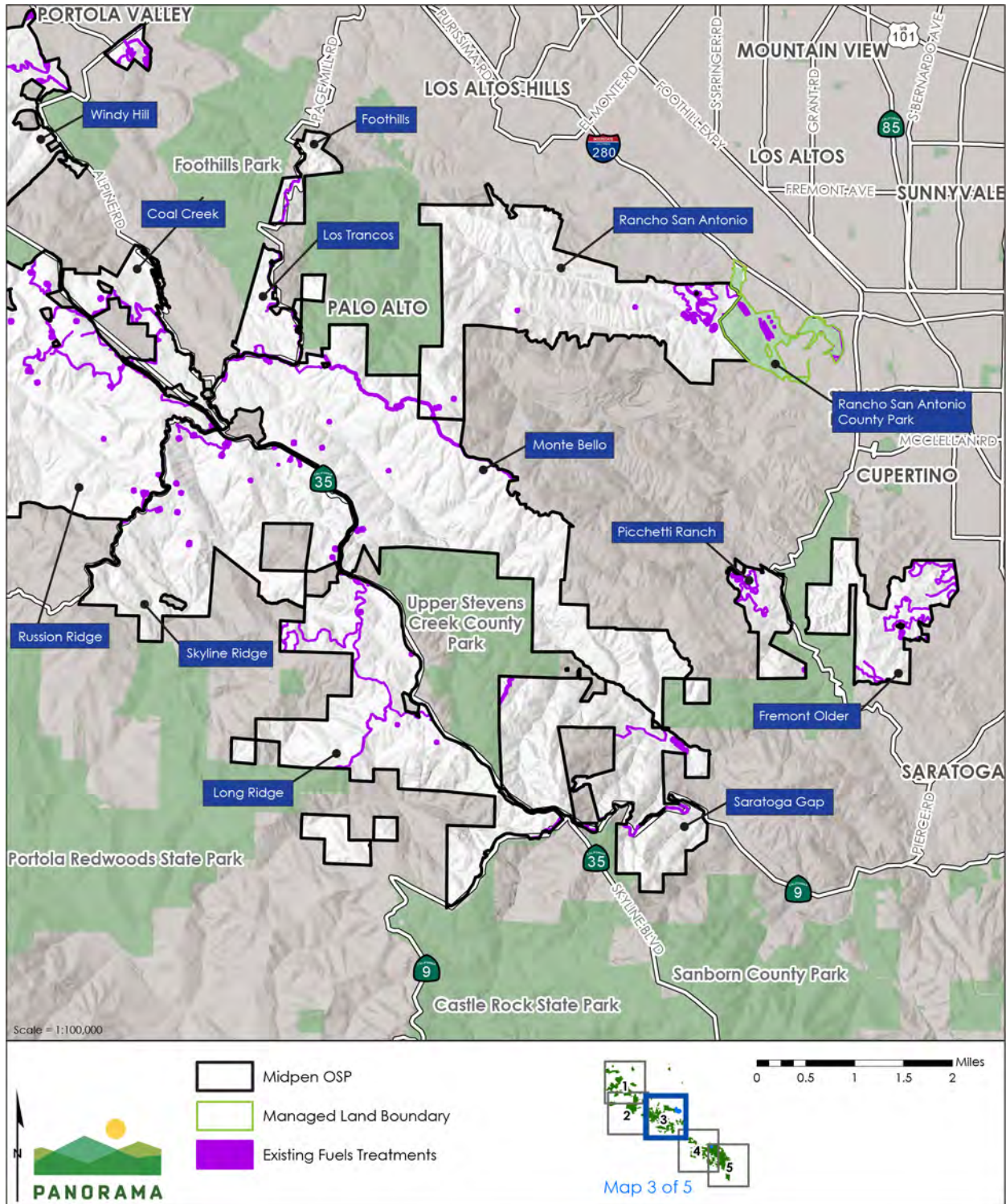
Figure 3.3-2 Existing Treatments Within Midpen Lands (Map 2 of 5)



Source: (Midpen, 2019a; Midpen, 2020a; Bay Area Open Space Council, 2017; USGS, 2020)

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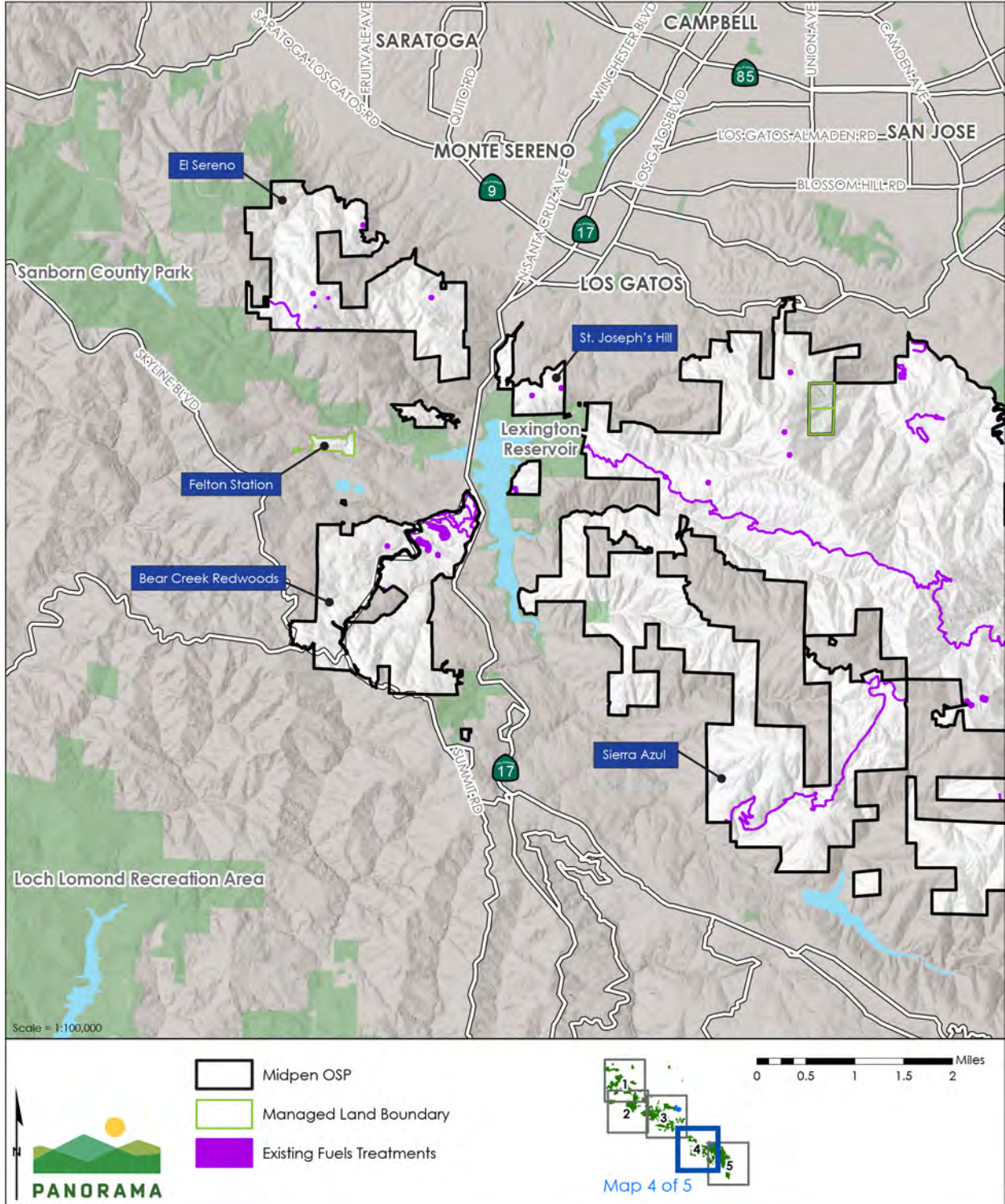
Figure 3.3-3 Existing Treatments Within Midpen Lands (Map 3 of 5)



Source: (Midpen, 2019a; Midpen, 2020a; Bay Area Open Space Council, 2017; USGS, 2020)

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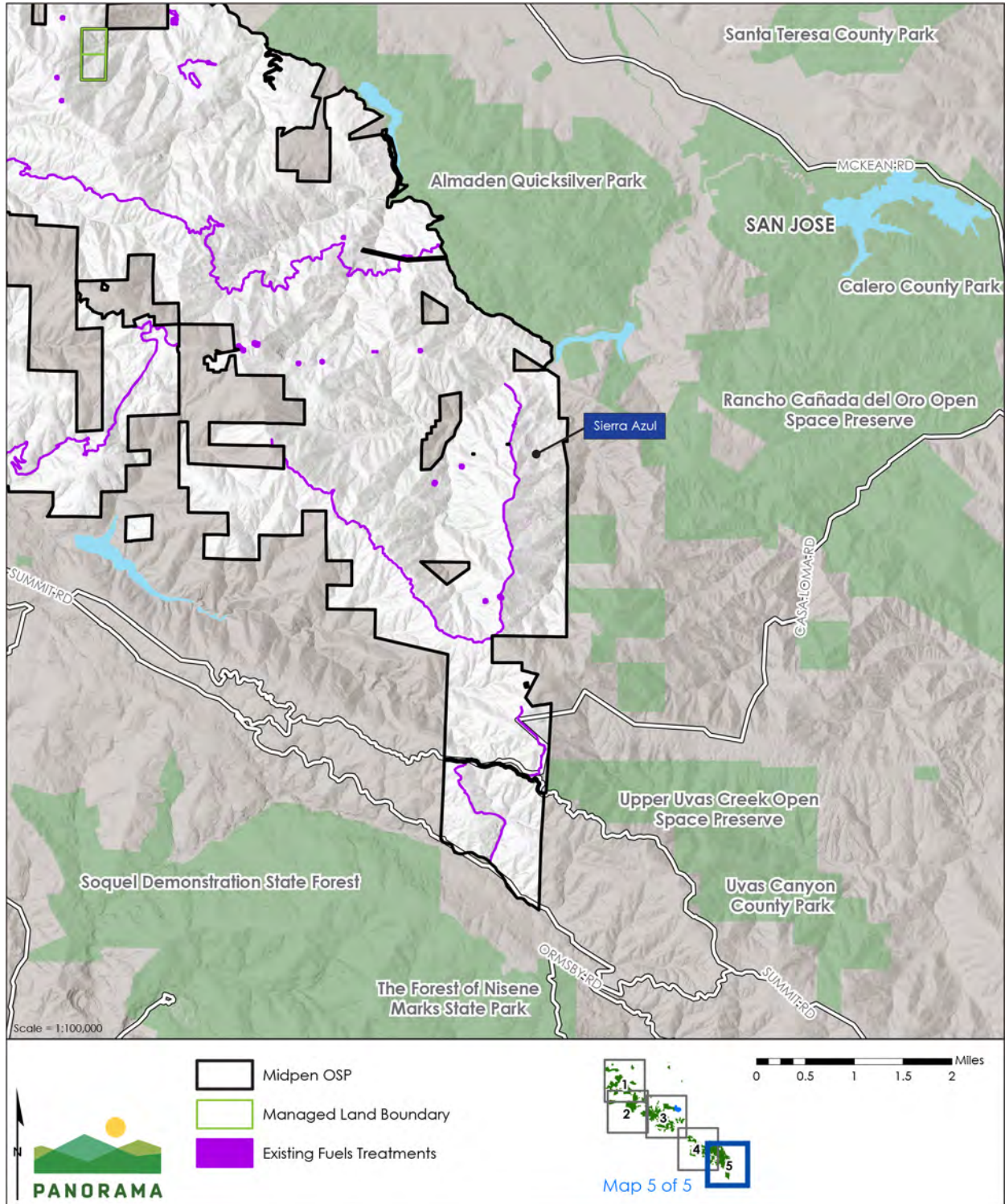
Figure 3.3-4 Existing Treatments Within Midpen Lands (Map 4 of 5)



Source: (Midpen, 2019a; Midpen, 2020a; Bay Area Open Space Council, 2017; USGS, 2020)

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Figure 3.3-5 Existing Treatments Within Midpen Lands (Map 5 of 5)



Source: (Midpen, 2019a; Midpen, 2020a; Bay Area Open Space Council, 2017; USGS, 2020)

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3.3.2 2014 Integrated Pest Management Program

Midpen's IPMP, adopted in 2014 with an addendum certified and adopted in January 2019, prescribes pest management activities on Midpen lands covering five major categories of work, including fuel management (Midpen, 2019b; Midpen, 2014b). Vegetation management prescriptions identified in the IPMP for fire management are focused on vegetation within the WUI and around structures, which under the IPMP is considered a potential "pest" that warrants control. The prescriptions aim to control this vegetation and reduce the potential rates of spread and intensity and flame lengths of wildland fires within treated area. The IPMP specifically stated that no new major fuelbreaks or fuel management activities would be implemented and the fuel management included as part of the IPMP is not intended to replace a Fuel Management Plan. The majority of the fuel reduction work conducted under the IPMP is accomplished through mechanical means, other resources such as hand crews are also employed.

Treatments are implemented in grasslands, shrublands, forests, and agricultural land. While the IPMP allows for some degree of vegetation management for fuel reduction, it currently only covers maintenance of existing fuelbreaks and does not allow for construction of major new fuelbreaks. Table 3.3-1 provides a summary of the existing mowing, disclines, and fuels treatments on Midpen lands under the IPMP. Note that conservation grazing on Midpen lands is not included in the IPMP as it is a stand-alone program described in the following section.

3.3.3 Conservation Grazing Program

Midpen manages approximately 6,500 acres under its current Conservation Grazing Program in collaboration with small-scale, Bay Area ranchers. Midpen uses conservation grazing to manage vegetation to enhance the diversity of native plants and animals, help sustain the local agricultural economy, foster the region's rural heritage, and for fire protection. Grazing is an effective way to reduce fuel loads. Livestock eat dry vegetation across many acres, often on steep terrain that may be inaccessible to other treatment options.

Five Midpen OSPs (La Honda Creek, Russian Ridge, Purisima Creek, Skyline Ridge, and Tunitas Creek) use conservation grazing as a method of vegetation management, including wildland fuel reduction. These OSPs are along the San Mateo County Coast. Midpen leases suitable agricultural lands to tenants with expertise in managing livestock for this purpose. All leases are subject to grazing management plans to ensure that priority resource management goals are met. A map of the conservation grazing areas is shown in Figure 3.3-6.

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Table 3.3-1 Summary of Existing Treatments on Midpen Lands Under the IPMP (Acres)

Managed Land	Shaded Fuelbreaks	Non-Shaded Fuelbreaks	Ingress/Egress Route Fuelbreaks	Disclines	Defensible Space 100-foot	Defensible Space 30-foot	Fire Management Logistics Areas ^a	Grand Total
Bear Creek Redwoods OSP	1.6	1.0	--	7.0	8.1	2.8	0.8	21.2
Coal Creek OSP	16.9	0.1	--	--	1.0	0.2	--	18.2
El Corte de Madera Creek OSP	2.4	0.1	--	--	1.0	0.2	0.6	4.3
El Sereno OSP	1.5	0.2	--	--	--	--	2.2	3.9
Felton Station	--	--	--	--	--	--	--	--
Foothills OSP	2.4	--	--	0.1	--	--	--	2.5
Fremont Older OSP	--	0.1	--	14.1	2.3	0.6	1.0	18.1
La Honda Creek OSP	7.0	1.1	--	--	13.1	3.4	3.2	27.8
Long Ridge OSP	19.1	1.7	--	--	0.9	0.2	2.7	24.6
Los Trancos OSP	0.8	--	--	4.9	--	--	--	5.6
Miramontes Ridge OSP	--	1.3	--	--	1.8	0.3	--	3.4
Monte Bello OSP	28.5	0.5	--	4.4	2.9	0.6	2.8	39.6
Picchetti Ranch OSP	0.1	--	--	5.4	2.1	0.8	1.9	10.3
Pulgas Ridge OSP	--	0.1	--	--	--	--	0.7	0.8
Purisima Creek Redwoods OSP	19.8	0.5	--	--	6.8	1.9	0.3	29.3
Rancho San Antonio OSP	2.9	0.1	--	10.1	11.5	2.8	2.8	30.2
Ravenswood OSP	--	--	--	--	--	--	--	--
Russian Ridge OSP	22.5	0.3	--	5.8	10.6	2.4	3.4	45.0
Saratoga Gap OSP	17.7	4.8	--	--	1.0	0.2	--	23.7
Sierra Azul OSP	38.4	14.4	9.1	4.6	5.3	1.4	7.2	80.4
Skyline Ridge OSP	5.6	1.6	--	0.1	10.7	2.8	0.9	21.6
Saint Joseph's Hill OSP	--	--	--	--	--	--	1.4	1.4
Teague Hill OSP	7.8	--	--	--	--	--	--	7.8
Thornewood OSP	13.8	0.2	--	--	3.1	0.8	--	17.8
Tunitas Creek OSP	--	5.2	--	--	5.2	1.2	--	11.6
Windy Hill OSP	1.3	30.7	--	3.4	4.4	1.2	1.5	42.5
Other Areas Managed by Midpen	--	11.5	--	1.5	--	--	--	13.0
Grand Total	210.0	75.2	9.1	61.5	91.8	23.8	33.3	504.6

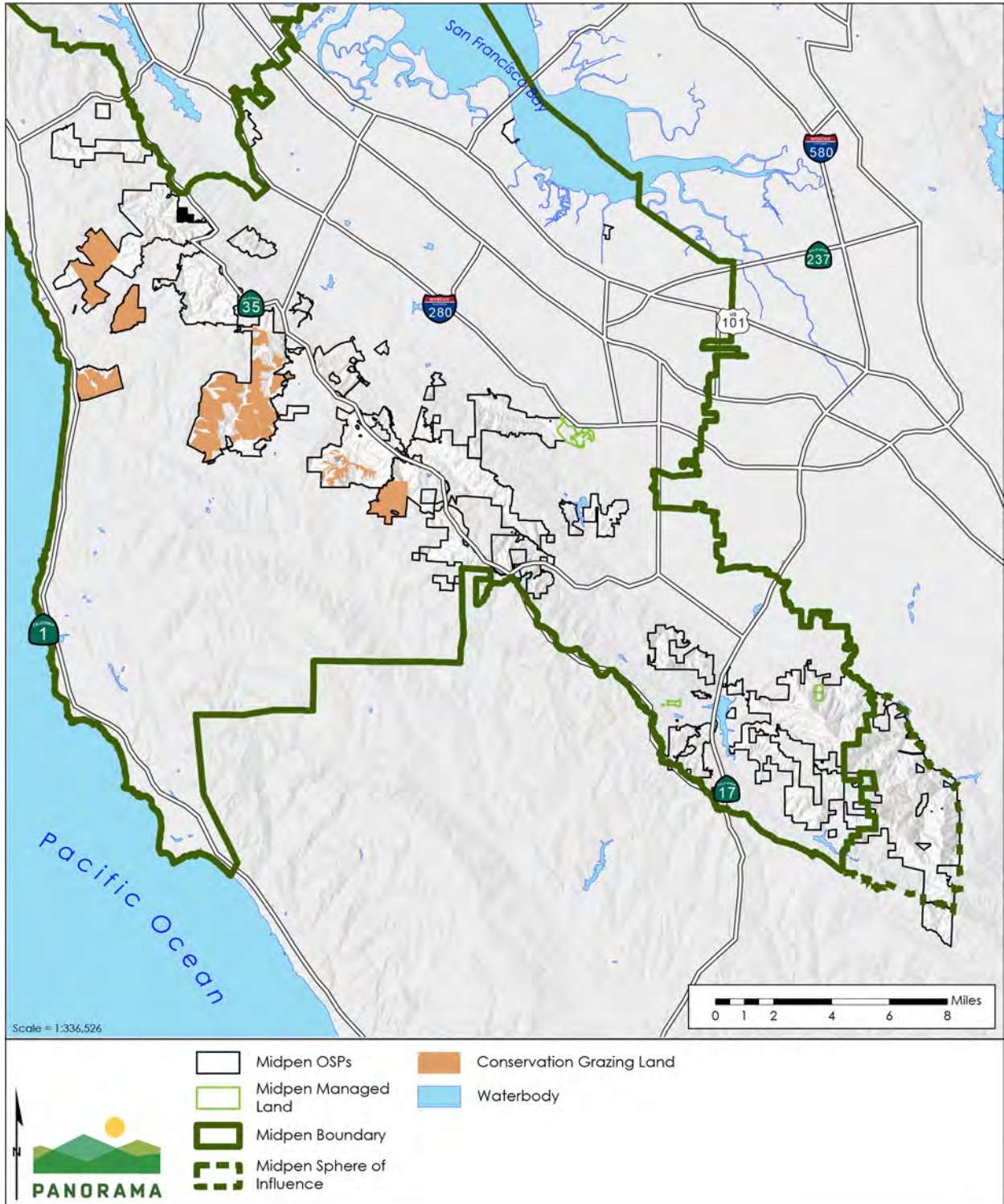
Notes:

^a Currently maintained emergency staging areas, landing zones, and other fire management logistics areas are accounted for in this category.

Depending on habitat type, maintenance of existing treatment areas is typically completed on a 3- to 5-year rotation. Numbers may not add up to the total due to rounding.

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Figure 3.3-6 Conservation Grazing Program Within Midpen Lands



Source: (USGS, 2013; USGS, 2016; Tele Atlas North America, Inc., 2018; Midpen, 2019a; Midpen, 2020b)

3.4 Program Purpose, Need, and Objectives

3.4.1 Program Purpose and Need

Wildland fire prevention, preparation, and response are a part of Midpen's land stewardship. California's fire season is now longer and more intense due in part to dense regrowth of historically logged forests, more than a century of fire suppression, increased development in the WUI, and a changing climate. To meet these current challenges, Midpen is expanding their environmentally sensitive vegetation management by developing this Program. Vegetation management on Midpen lands not only enhances ecological resiliency of the natural lands, it also reduces fire hazard for adjacent communities. Vegetation management activities can reduce the potential for severe wildland fire. A major wildland fire on unmanaged lands likely will have more substantial ecosystem, recreation, carbon, and resource impacts than the impacts from the work to manage the vegetation, based on impacts seen from other large wildland fires across the State in recent years.

The need for the Program is to identify the actions that would be undertaken to address the following current challenges facing Midpen and the surrounding areas:

- **Fire suppression and hazard.** The majority of land owned by Midpen is within the WUI and has a California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone rating of "High" or "Very High". Fire can spread rapidly throughout WUI areas via adjacent structures and/or vegetation, or by ember dispersion. The historic fire regime in the area at one time had greatly reduced much of the fuel load on the ground and significantly reduced the severity of fires within these fire-managed landscapes. The forest that has now grown back consists of a much higher density of trees, particularly Douglas-fir, that are more susceptible to fire. In addition, due to fire exclusion, fuels have accumulated within oak woodland, chamise, and grassland dominated vegetation types. Coupled with extensive development in the WUI, local fire risk is a critical regional issue that directly affects nearby communities through potential fire damage and evacuation orders and indirectly affects larger geographic regions through smoke and significant and prolonged air quality impacts. Increased development in the WUI also increases the potential for anthropogenic ignition sources.
- **Invasive species.** Invasive plants can alter ecosystem processes, such as reducing or changing seasonal food sources for wildlife, hydrological patterns, fire regimes, soil chemistry, or the genetic integrity of native species. Prominent non-native, invasive species found on the OSPs include French broom, jubata grass, and blue gum eucalyptus, which have the potential to increase the intensity and severity of wildland fires.
- **Climate change.** While the long-term ramifications of climate change are not fully understood, maintaining wildlands in a resilient state improves the ability of plants and animals to adapt to current and future changes (Micheli, Flint, Kennedy, Weiss, & Banciforte, 2010). Researchers are predicting decreases in the

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extent of redwood forests and grasslands and increases in the extent of chamise shrublands over the next 100 years along the central coast of California. The shift may be hastened by changes in fire severity and frequency and would have implications for wildlife and biodiversity, as well as emergency response (Ackerly, et al., 2016).

- **Sudden Oak Death (SOD).** Sudden Oak Death (SOD) is a prevalent disease within forested lands. SOD has killed over one million native oak and tanoak trees and infests many other forest species in one Oregon and 15 coastal California counties. Hundreds of dead tanoak trees and other symptoms of the SOD pathogen, *Phytophthora ramorum*, are commonly seen on Midpen OSPs, contributing to greater fuel loads. In 2006, Midpen began its efforts to address SOD impacts by adopting a 10-year SOD plan to map oak trees on Midpen OSPs that are potentially resistant to the SOD pathogen, treat a selected number of specimen oak trees, and establish collaborative funding for SOD research to help guide land management decisions (Midpen, 2014a). SOD threatens to degrade the more than 47,000 acres of hardwood forest in the region, of which 18,000 acres occur in Midpen OSPs (refer to Figure 3.4-1). Since 2000, SOD has spread from what is believed to be its initial core in Long Ridge, Saratoga Gap, and Skyline Ridge OSPs in a northerly and easterly direction primarily as a result of weather conditions. Midpen employees continue to conduct research, monitor, and manage SOD in accordance with the IPMP.

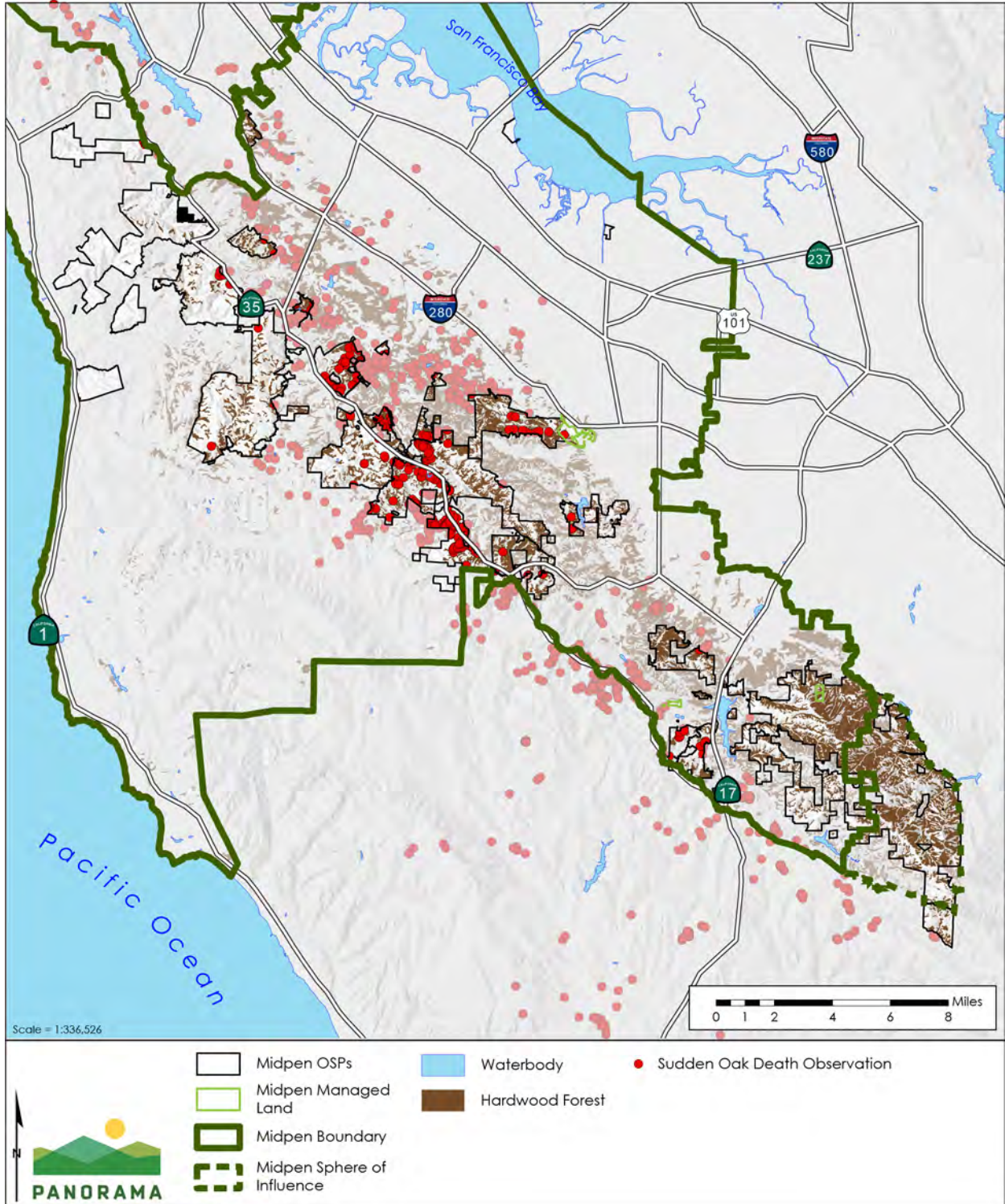
3.4.2 Program Objectives

The objectives of the Program are as follows:

1. Manage vegetation (including invasive fire-prone trees) to establish healthy, resilient, fire-dependent or fire-adapted ecosystems, furthering Midpen's mission to protect and restore the diversity and integrity of the ecological processes on Midpen lands and facilitate healthy post-fire recovery.
2. Integrate Native American traditional ecological knowledge practices of natural resource management, particularly as they relate to prescribed fire, that promote ecological resiliency and enhance biodiversity.
3. Manage vegetation and infrastructure on Midpen lands to reduce wildland fire risks, improve wildland fire fighting capabilities and coordination, and improve overall safety to reduce the harmful effects of wildland fire on people, property, and natural resources.
4. Provide an adaptive framework for periodic review of and revisions to Midpen decisions in response to a changing climate, improved knowledge, and improved technology. This framework also considers competing Midpen priorities, capacity, funding and fiscal sustainability, and partnerships to determine the location, scale, and timing of future vegetation management activities.

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Figure 3.4-1 Sudden Oak Death Observations in 2016 Within and Surrounding Midpen Lands



Source: (USGS, 2013; USGS, 2016; Tele Atlas North America, Inc., 2018; Midpen, 2019a; Midpen, 2016a; Midpen, 2018a)

3.5 Description of the Program

3.5.1 Overview of Program Components

The Program would guide a comprehensive approach to vegetation management, including pre- and post-response activities to wildland fire on Midpen lands, and integrates the following four plans:

- **3.5.2 Vegetation Management Plan:** Addresses creation and maintenance of additional fuelbreaks, fuel management zones, and defensible space zones using vegetation management techniques identified in Midpen's IPMP.
- **3.5.3 Prescribed Fire Plan:** Addresses the methods and implementation of prescribed fire to manage fuel and improve ecosystem health.
- **3.5.4 Wildland Fire Pre-Plan/Resource Advisor Maps:** Describes the creation of Resource Advisor maps for each OSP and other managed land (or groups of managed lands) that include information on existing conditions, infrastructure, and resources constraints that can aid fire suppression activities and locate sensitive resource areas that merit protection from potential damage due to fire or fire suppression activities.
- **3.5.5 Monitoring Plan:** Provides a framework for recording pre-project conditions, vegetation treatment response, and fuels inventories to inform future adaptive management techniques.

The VMP and the PFP are the primary plans within the Program that could result in physical effects on the environment. The Wildland Fire Pre-Plan includes potential new infrastructure to support wildland fire response that could also result in physical effects on the environment. Each plan and the specific strategies and activities to be implemented are described in this section. The tools and techniques used to implement the strategies are then defined in detail in the following section.

3.5.2 Vegetation Management Plan

Overview

The need for vegetation management is primarily to reduce the presence of unnaturally high fuel loads and secondarily to manage vegetation near ignition sources (e.g., WUI, roads), thus reducing the intensity and harmful impacts of fires. Vegetation management may help to restore ecosystem fuel loads closer to pre-fire suppression conditions through the removal of dead and accumulated vegetation and treatment of forest disease and invasive species.

The purpose of the VMP is to define the suite of vegetation management activities that Midpen may implement to reduce the potential for and severity of ecologically-catastrophic wildland fires while also preserving biodiversity and minimizing the environmental effects. The VMP focuses on what is referred to as "non-fire" vegetation management. Only manual, mechanical, prescribed herbivory, and limited chemical methods of vegetation management are considered in this VMP. The best approach for managing fire risk and reducing fuel loads using non-fire

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vegetation management methods on Midpen lands is to focus active management in areas that are affected by disease infestations and/or heavy, dense vegetation, as well as focus efforts near potential ignition sources (including along roads), and adjacent to critical infrastructure.

The VMP describes (1) treatments to enhance ecosystem resiliency, and (2) vegetation management work that facilitates fire management, reduces fire ignitions, and minimizes the intensity of wildland fires to reduce damage to ecological functions, which also serves to enhance public safety. Vegetation management on easements over Midpen lands is the responsibility of the easement holder unless there is a cost-share agreement in place. Pacific Gas and Electric (PG&E) is also responsible for their own vegetation management activities along transmission lines under the jurisdiction of the California Public Utilities Commission (CPUC) and General Order (GO) 95.

Types of Vegetation Management Areas

Overview

The Program expands Midpen's ability to create and treat new ecologically-sensitive vegetation management areas (VMAs) as resources allow. VMAs are categorized in two main ways depending upon the general goal of the treatment; ecosystem resiliency VMAs and enhanced fire management VMAs. Key types of VMAs include Fuel Reduction Areas (FRAs), fuelbreaks, and defensible space, which are described in detail below. Typical fuel treatment locations and sizes to be implemented under the VMP are summarized in Table 3.5-1. Existing treatments shown in Figure 3.3-1 through Figure 3.3-5 and described in Section 3.3 fall within the categorization of the VMAs described below.

Ecosystem Resiliency VMAs

FRAs

FRAs are the type of VMA that enhances ecosystem resiliency, which would be locations where fuels are manually or mechanically removed but not to the same extent as fuelbreaks. These areas would be less permanent than fuelbreaks and would typically be implemented in more natural areas where fuel load reduction achieves a combination of habitat enhancement goals and wildland fire risk reduction. Fuel ladders and surface fuels would be greatly reduced in FRAs, and overstory and understory vegetation would be spatially separated so that a ground fire would not, under normal fire conditions, burn too hot and/or climb into the canopy and turn into a crown fire. Examples of where FRAs could be implemented include in oak woodlands adjacent to a non-shaded fuelbreak where understory fuels are removed and overtopping conifers, such as Douglas fir, are removed, or in grasslands where shrubs are removed. FRAs can also enhance public safety when created near the WUI and/or adjacent to existing fuelbreaks.

Refugia

Prior to the creation of an FRA, a Midpen-approved biologist may designate sites within the FRA as "refugia" areas, which are areas where certain activities are prohibited, such as use of motorized equipment or artificial light. The purpose of these areas is to give wildlife a place to safely retreat to during implementation of FRA treatment.

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Table 3.5-1 Typical Treatment, Sizes, and Locations

Type of Treatment	Maximum Treatment Size	Summary of Treatment Locations
Shaded Fuelbreaks	≤100-foot Fuelbreak	Along specified roads and trails, and around structures
Non-Shaded Fuelbreaks	≤60-foot Fuelbreak	Around selected meadows, grasslands, and parking lots; and along evacuation and other routes
Evacuation Routes, Critical Infrastructure, Fire Management Logistics Fuelbreaks	200-foot Fuelbreak ^a	Around designated evacuation routes, driveways for emergency egress, landing areas, staging areas, water tanks, communication locations, driveways for emergency egress, and sensitive resources
Target Hazards Fuelbreaks	300-foot Fuelbreak	Around schools, mobile home parks, assisted living facilities, camp sites, and community centers
Fire Agency Recommended Fuelbreaks	Variable	Near residential uses at specific locations as recommended by fire agencies
Ingress/Egress Route Fuelbreaks	≤30-foot Fuelbreaks	Around designated Wildland Type 3 fire engine routes
Disclines	Variable	Around selected meadows, grasslands, and parking lots and along evacuation and other routes
Midpen Structures and Facilities Defensible Spaces	30-foot and 100-foot Defensible Space	Around Midpen structures and facilities
Fire Management Logistics Areas ^b	200-foot Fuelbreak	Around staging areas and landing zones
Eucalyptus and Acacia Removal	Variable	Within eucalyptus and acacia groves
Fuel Reduction Areas	Variable	Within native forests or woodland areas of at least 100 acres

Notes:

^a Includes some smaller ≤40-foot fuelbreaks around driveways.

^b The size of existing or proposed emergency staging areas, landing zones, and other fire management logistics areas would be variable.

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Enhanced Fire Management VMAs

Fuelbreaks

Overview. Enhanced fire management VMAs include various types of fuelbreaks. Fuelbreaks are linear strips of land where trees, vegetation, and dead material have been reduced or removed. These areas can slow and even stop the spread of a wildland fire because fewer fuels are present to combust. Fuelbreaks also provide firefighters with zones to take a stand against or control the spread of a wildland fire, or retreat from fire if the need arises. Fuelbreaks can reduce fire intensity and severity. Usually, fuelbreaks are strategically located considering terrain, existing roads, communities, critical infrastructure, presence of potential ignition sources, fire management logistics areas, evacuation routes, target hazards, sensitive resources, or other locations identified by fire agencies or Midpen employees as detailed by specific fuelbreak type in Table 3.5-1. Fuelbreaks vary in width. The two broad types of fuelbreak treatments are shaded and non-shaded fuelbreaks, as described below.

Shaded Fuelbreaks. A shaded fuelbreak is an area where the tree canopy is thinned to reduce the potential for a fire to move quickly through and/or to reduce fire spread into or through the canopy. Enough tall tree canopy would be retained to maintain shade, reduce the potential for rapid re-growth of shrubs and sprouting hardwoods, minimize erosion, and minimize habitat alteration. Ladder fuels and woody understory vegetation are thinned out. A shaded fuelbreak can be created manually or by using mechanical techniques (heavy equipment). Shaded fuelbreaks require follow-up maintenance along roads that includes annual mowing in grasslands adjacent to the road, clearance of brush and dead vegetation, and removal of ladder fuels to the canopy in forested areas. Herbicides may also be sparingly applied to control resprouting species.

Widths of fuelbreaks would vary depending on the presence of sensitive resources, the location of habitat transitions, slope, expected fire behavior, the features or infrastructure that need protection, and the capacity to create and maintain the fuelbreak (refer to Table 3.5-1 for a description of the types of fuelbreaks and maximum widths).

Non-Shaded Fuelbreaks. A non-shaded fuelbreak is a swath of land where fuels are reduced in areas without a tree canopy, typically at a change in vegetation type, such as from forest or shrubland into grassland, or within grasslands. Heavy equipment is used for construction, except on steep slopes, where manual treatments are employed. Non-shaded fuelbreaks are often implemented near structures where professional fire agency personnel deem they are critical for fire safety or necessary to meet defensible space requirements. Herbicides may also be sparingly applied in non-shaded fuelbreaks to control invasive plants.

Ingress/Egress Route Fuelbreaks. An ingress/egress fuelbreak is a zone located on both sides of roads identified as critical for emergency vehicle passage, usually designed to accommodate a smaller Wildland Type 3 fire engine. Vegetation management in this zone improves access and reduces radiant heat during a wildland fire, allowing improved firefighter access. These fuelbreaks are typically cleared of all understory vegetation for 10 to 30 feet from road edges

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(on either side), using primarily manual and mechanical techniques initially, and then mowed annually.

Disclines

Disclines are a type of vegetation treatment that is conducted using a tractor attachment with a series of metal discs to disturb soil 6 to 12 inches deep. By turning over the soil and leaving mostly a dirt surface, a discline is intended to slow or stop fire progression. Midpen employees have previously documented disclines stopping ignitions on Midpen lands. A discline is typically placed along the perimeter of undeveloped land, ranches, and roadways. Herbicides may be sparingly applied to control invasive species. To avoid or reduce potential impacts to ground-dwelling species and surface erosion, disclines would only be installed in limited locations after a thorough evaluation of benefits and consequences.

Defensible Space

Defensible space is the area immediately surrounding a structure where vegetation management measures to reduce fuels are implemented, providing the key point of defense from an approaching wildland fire, or defense against escaping structure fires. Fuel loads are reduced within 100 feet of structures. The 100 feet of defensible space is subdivided into three zones. Zone 0 involves removal of all vegetation within 5 feet of structures, typically by hand or small equipment, and allows only non-flammable hardscaping or similar techniques. Zone 1 involves removal of all dead matter and dense fuels within 30 feet of buildings, decks, and other structures using primarily manual and mechanical techniques. Zone 2 involves mowing, removal of ladder fuels, and thinning of vegetation extending from 30 to 100 feet out from buildings and structures (California Government Code 51182 and PRC Sections 4290 and 4291).

Under the VMP, maintenance of defensible space would continue to occur on an annual basis around an estimated 117 Midpen-owned structures. The work would be performed by Midpen employees and/or by residential, commercial or agricultural/rangeland tenants. Defensible space around private property, including private homes located adjacent to Midpen lands, is the responsibility of the person or entity that owns, leases, controls, operates, or maintains the building or structure. Midpen works with communities, fire safe councils, and local fire agencies who wish to perform fuel reduction on Midpen lands to permit ecologically sensitive work by other parties.

Fire Management Logistics Areas

Emergency fire management logistics areas, such as emergency staging areas and landing zones, are key during a wildland fire where fire suppression resources may safely park, gather crews, or land a helicopter. Fire management locations may also serve as a temporary refuge area during a wildland fire. Landing zones allow helicopters to land in the event of an emergency. These areas would continue to be maintained annually or bi-annually via mowing with a tractor or brushcutter at 47 locations on Midpen lands. A 200-foot-wide fuelbreak around these logistics areas would be constructed or existing fuelbreaks expanded out to 200 feet using the methods described above.

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Eucalyptus and Acacia Removal

Fallen eucalyptus leaves create dense carpets of flammable material, and the tree bark peels off in long streamers that drop to the ground. The debris from eucalyptus provide large amounts of fuel that draws ground fires up into the leaves, creating massive, fast-spreading "crown fires" in the upper story of eucalyptus forests. The leaves from some species of acacia contain resin and flammable oils, which can encourage fires. Eucalyptus and acacia trees may be removed from locations where they could pose a fire hazard. The potential areas within which removal could occur are shown in Figure 3.5-1. Approximately 200 acres of eucalyptus are mapped in the Program area; however, not all eucalyptus have been mapped so the total acreage is greater. These trees are removed using manual and mechanical methods. Limited herbicides may be applied to control re-sprouting from cut stumps. Replanting of native trees and vegetation would be conducted as appropriate with consideration for the type of vegetation community that should be in the area. Advisement from fire agencies in regards to fuel loads would also be considered prior to replanting.

Riparian Habitat within Enhanced Fire Management VMAs

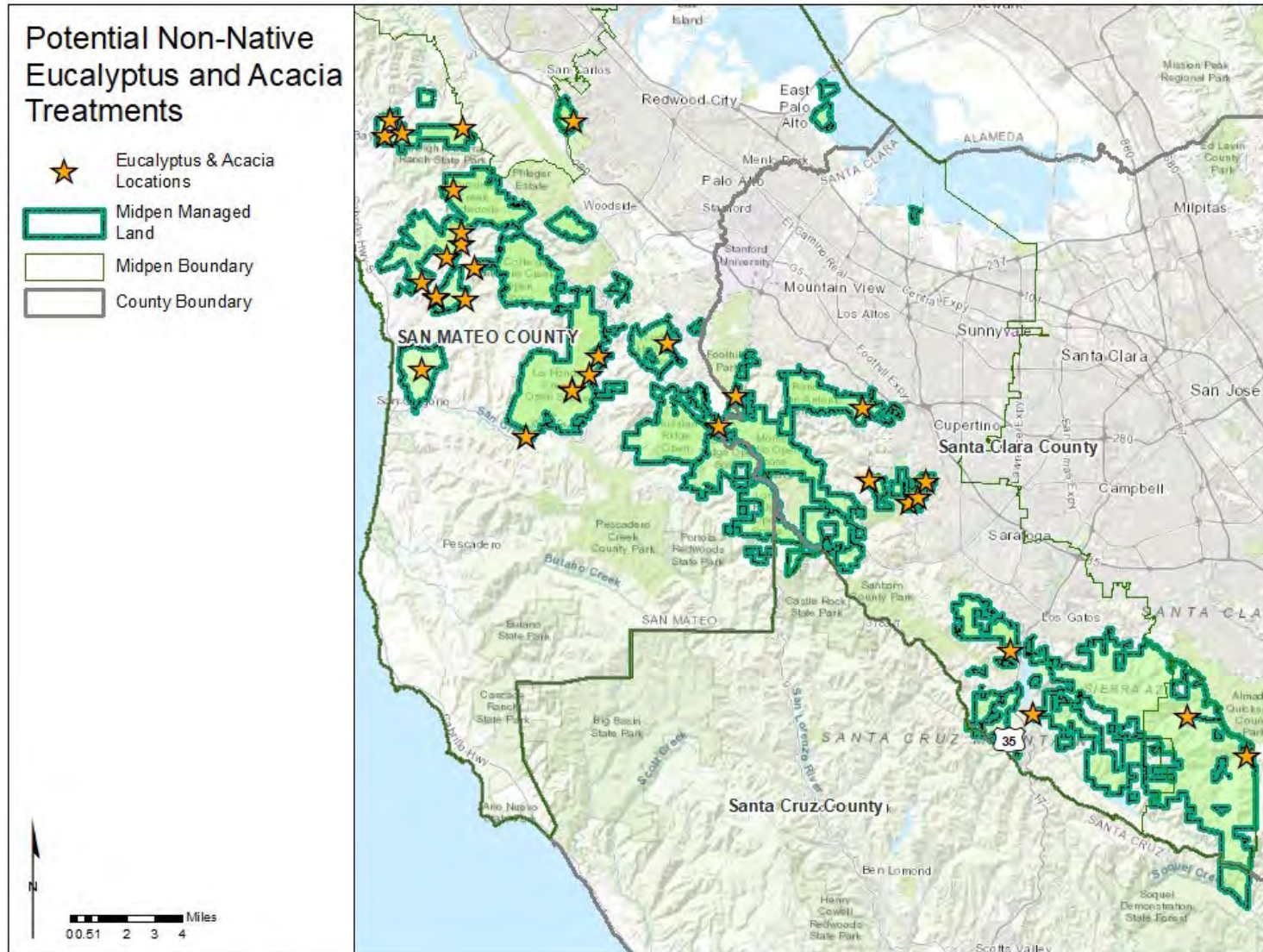
Any enhanced fire management VMAs that fall within or cross riparian areas would be modified such that the vegetation treatments performed would be limited to FRA-level management. A Midpen-approved or professional biologist would evaluate any areas where enhanced fire management VMAs (e.g., fuelbreaks) cross into riparian habitat and design the treatments to avoid loss of riparian habitat function and retain or improve habitat functions. Considerations could include, but are not limited to:

- Retain at least 75 percent of the overstory and 50 percent of the understory canopy of native riparian vegetation within the limits of riparian habitat. Retain native riparian vegetation in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of treatment activities.
- Limit treatments to removal of uncharacteristic fuel loads (e.g., removing dead or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the riparian vegetation types.
- Avoid removal of large, native riparian hardwood trees.
- Trees to be removed will be directed away from adjacent streams or waterbodies when cut and piled outside of the riparian vegetation zone (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding large woody material to a stream to enhance fish habitat)
- Avoid vegetation removal that could reduce stream shading and increase stream temperatures.

Typically, work in riparian corridors would be conducted by hand methods. Limited equipment may be used in cases where it would cause less disruption and/or is needed to achieve habitat and fire management objectives.

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Figure 3.5-1 Potential Locations Where Eucalyptus and Acacia Removal Could Occur



Source: (USGS, 2013; USGS, 2016; Tele Atlas North America, Inc., 2018; Midpen, 2019a)

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Creation of New VMAs

Areas Within which New VMAs Could be Defined

The potential areas within which new VMAs could be established in the future under the Program are identified in Figure 3.5-2 through Figure 3.5-6 (refer to Appendix 3.0-1 for detailed maps showing potential treatment areas). The areas shown are meant to represent the “envelope” within which the VMAs can be created. The actual acreages and areas of VMAs created are likely to be less than the full envelope shown.

Several criteria are used to determine this “envelope” of potential VMA locations, as presented in the Program, Section 4.4.3: Method of Prioritizing the Establishment of New VMAs. New FRAs (i.e., ecosystem resiliency VMAs) could be created within native forests or woodland areas of at least 100 acres in size. Criteria considered to develop the envelope of potential enhanced fire management VMAs (e.g., fuelbreaks) include whether fuel treatments would facilitate fire suppression activities and ingress/egress safety for fire responding agencies, their personnel, and fire suppression equipment. Other criteria include whether the area is adjacent to or near existing or planned fuel treatment areas as identified by fire agencies. Fuel treatments within up to 300 feet of important structures (i.e., school, hospital, nursing home) are also important.

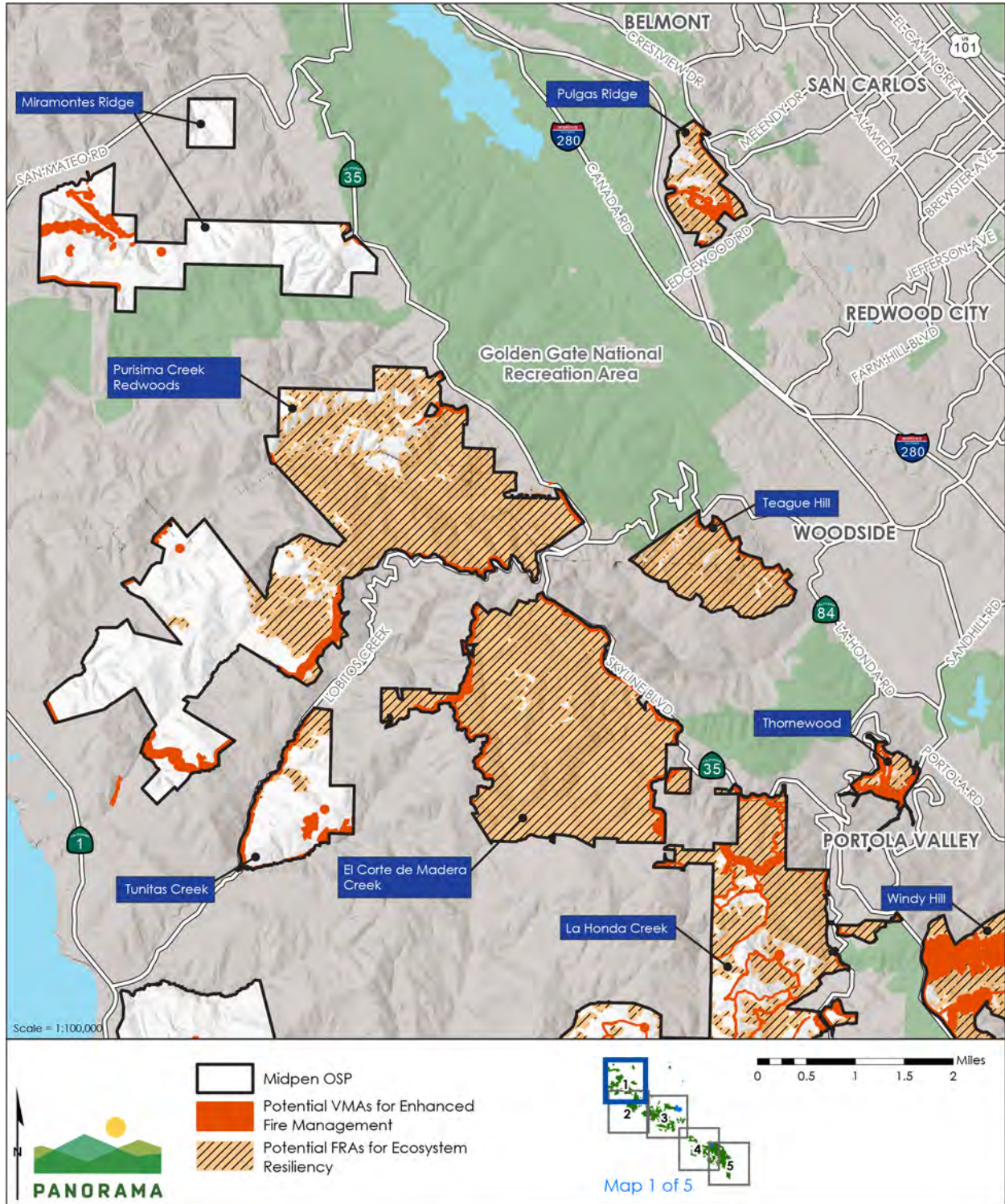
Prioritization of New VMA Creation

Vegetation management techniques to create new VMAs involve reducing the density of vegetation and strategically opening areas to reduce fire spread and improve fire management and response. Creation of VMAs (including FRAs) each year would be prioritized in accordance with detailed ranking methods, as presented in the Program, Section 4.4.3: Method of Prioritizing the Establishment of New VMAs. Prioritization of VMAs is established by assigning points for those specific factors detailed in the Program. The areas with the most points receive the highest priority ranking (e.g., Tier 1). VMAs to be treated each year would be identified through a prioritization process and defined in an Annual Work Plan. Midpen’s ability to adequately maintain VMAs over the long-term is also factored into the decision-making process for where to create new VMAs. The initial highest priority VMAs, in accordance with the prioritization criteria, are summarized in Table 3.5-2.

With new land acquisitions and/or changing environmental, operational, and other factors, annual priorities may change. Midpen anticipates targeting as many of the higher priority VMAs as soon as possible, but dependent on available resources. Tier 1 and Tier 2 VMAs would be prioritized for creation first. Contiguous lower prioritized VMAs may be created simultaneously with Tier 1 and Tier 2 VMAs for efficiency.

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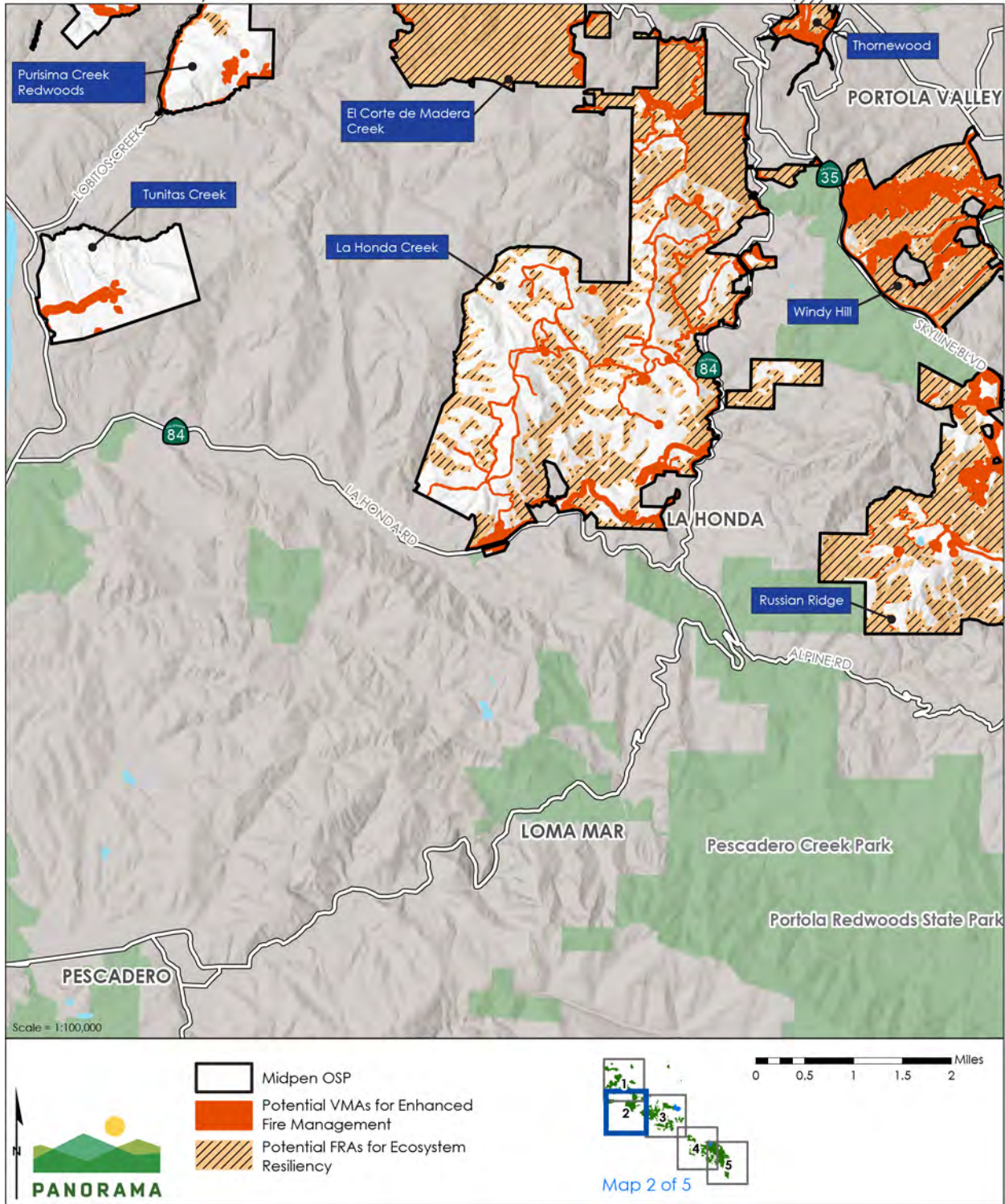
Figure 3.5-2 Potential Areas Within which New VMAs Could be Established (Map 1 of 5)



Source: (Midpen, 2019a; Midpen, 2020c; Midpen, 2020d; Bay Area Open Space Council, 2017; USGS, 2020)

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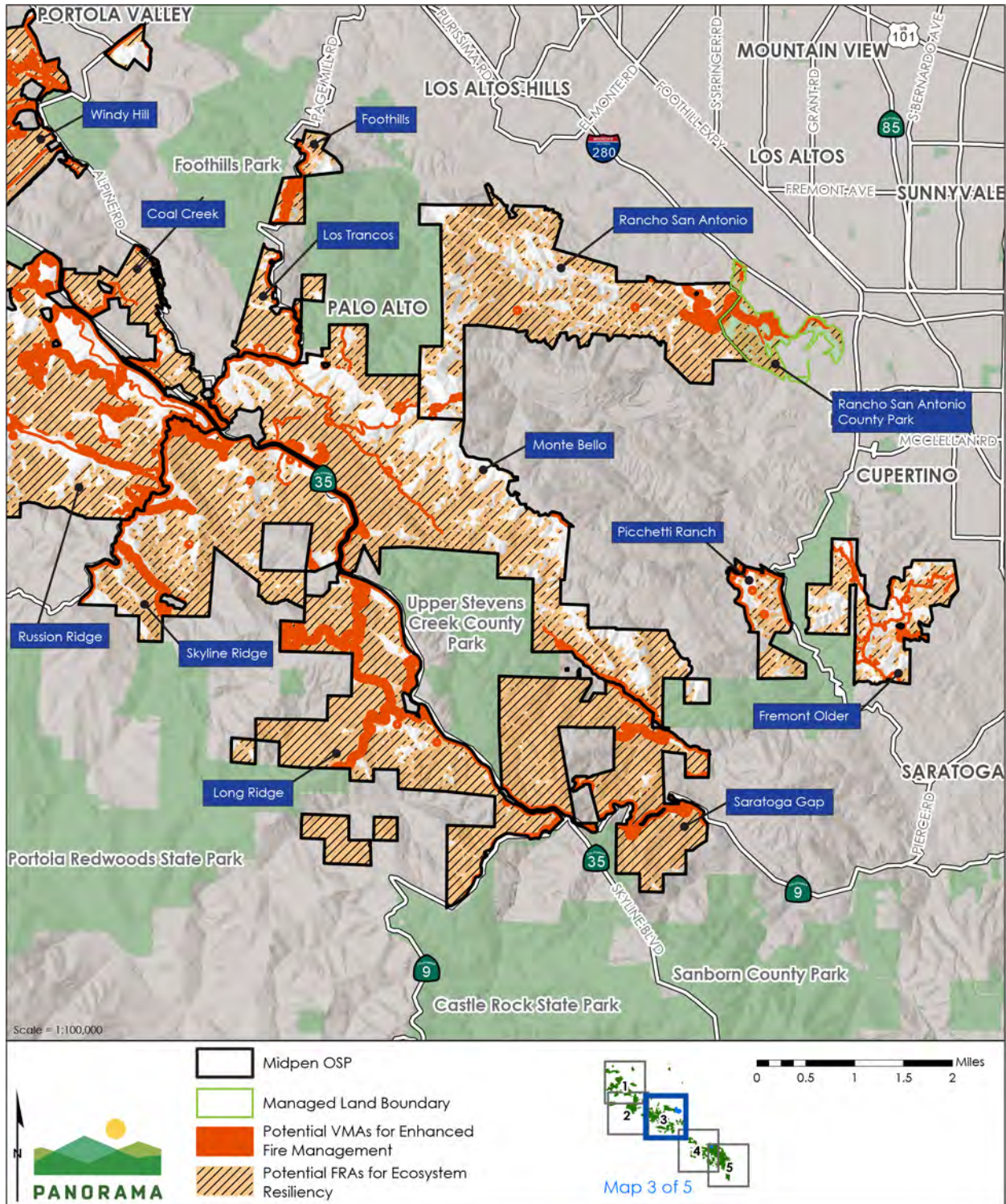
Figure 3.5-3 Potential Areas Within which New VMAs Could be Established (Map 2 of 5)



Source: (Midpen, 2019a; Midpen, 2020c; Midpen, 2020d; Bay Area Open Space Council, 2017; USGS, 2020)

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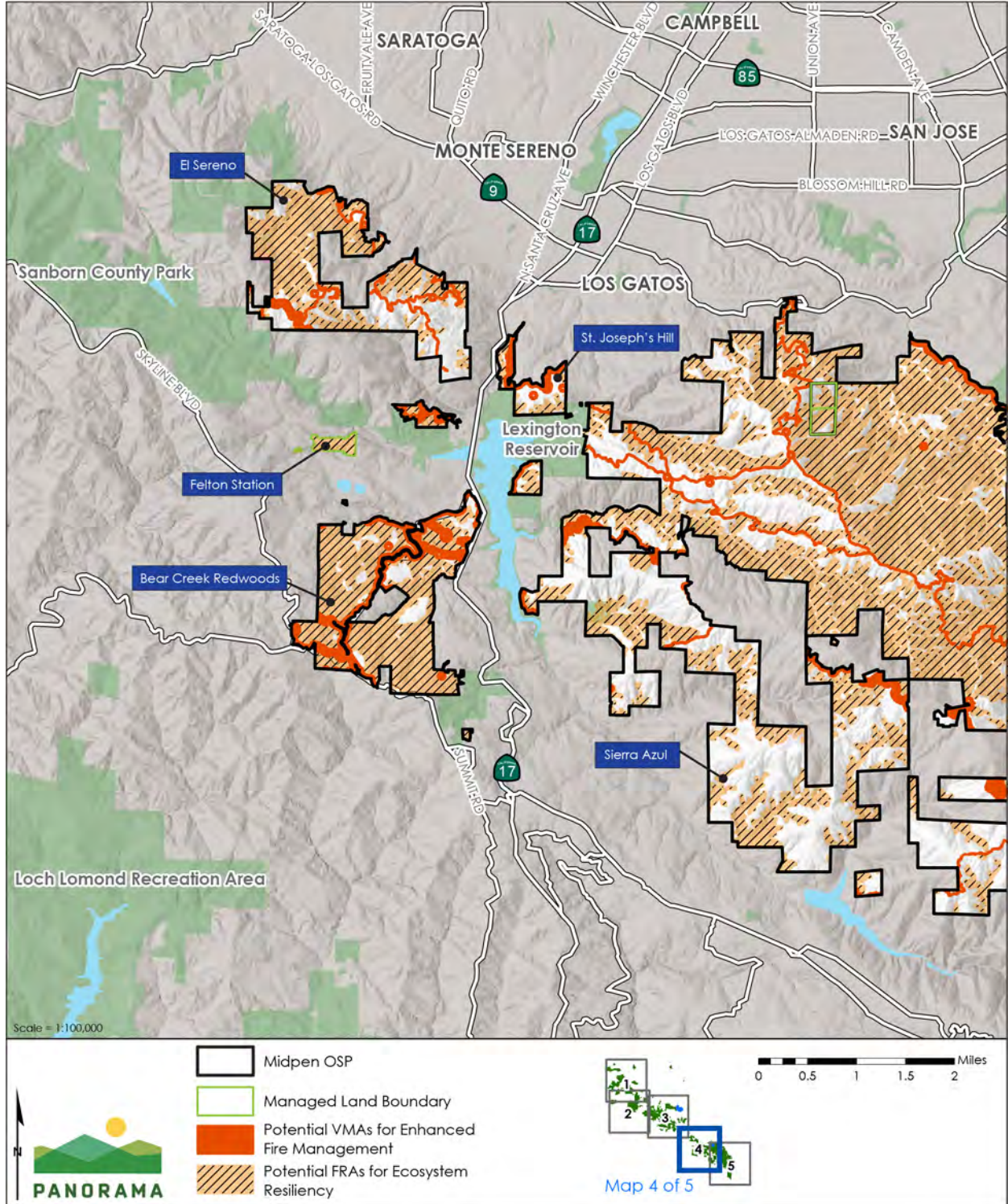
Figure 3.5-4 Potential Areas Within which New VMAs Could be Established (Map 3 of 5)



Source: (Midpen, 2019a; Midpen, 2020c; Midpen, 2020d; Bay Area Open Space Council, 2017; USGS, 2020)

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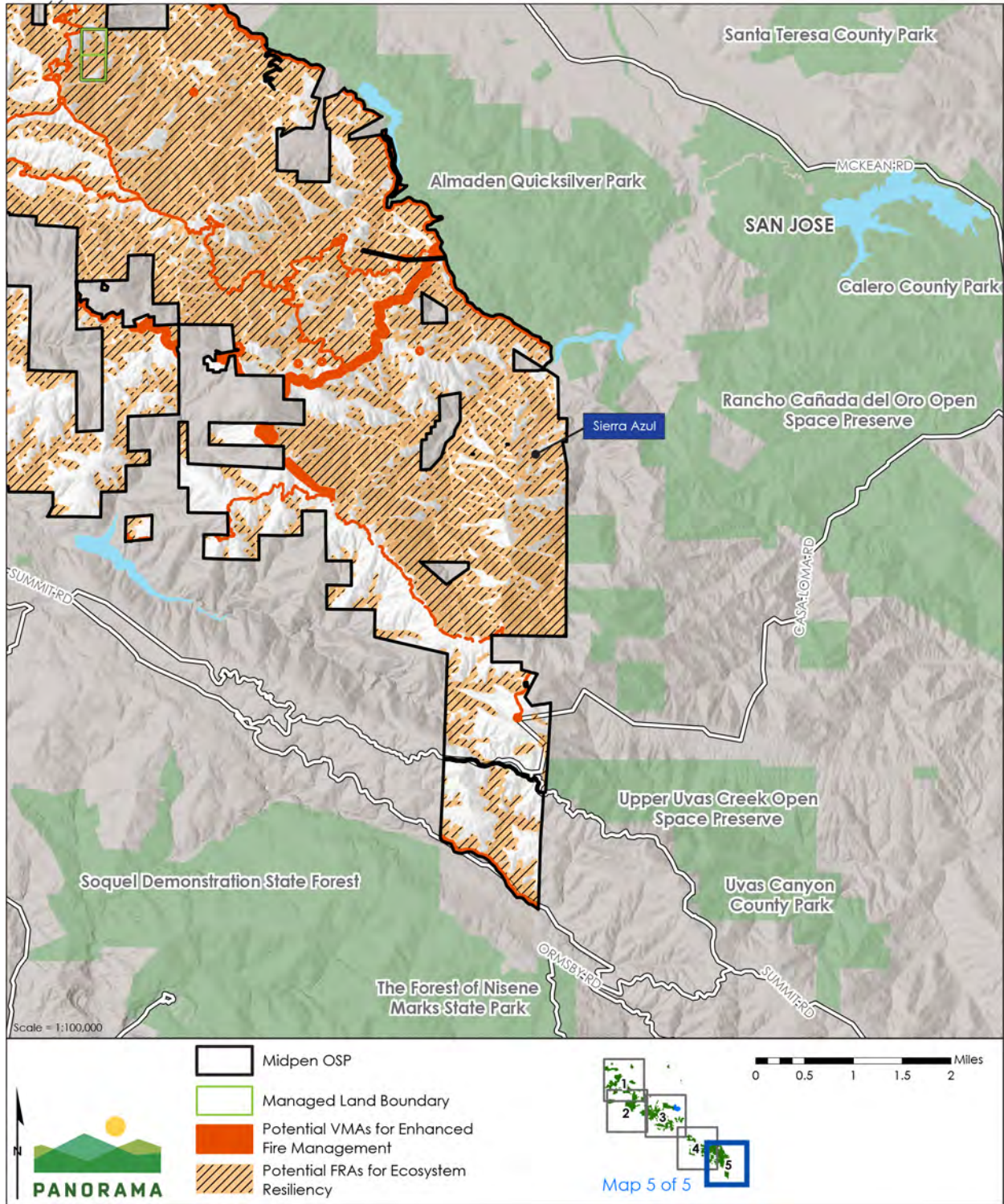
Figure 3.5-5 Potential Areas Within which New VMAs Could be Established (Map 4 of 5)



Source: (Midpen, 2019a; Midpen, 2020c; Midpen, 2020d; Bay Area Open Space Council, 2017; USGS, 2020)

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Figure 3.5-6 Potential Areas Within which New VMAs Could be Established (Map 5 of 5)



Source: (Midpen, 2019a; Midpen, 2020c; Midpen, 2020d; Bay Area Open Space Council, 2017; USGS, 2020)

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New VMA Creation Methods

Generally, vegetation management methods implemented to create new VMAs involve reducing the density of vegetation and strategically opening areas to reduce spread and improve fire management and response. At key locations, shrubs, small trees, and grass that can act as fuel ladders, allowing a surface wildland fire to travel up into the tree canopy, can be removed or reduced in density. Grasses can be mowed or grazed to manage fuel loads. Small trees and shrubs can be thinned, leaving larger diameter trees with often thick fire-resistant bark and promoting late-seral forests.

Table 3.5-2 Priority VMAs on Midpen Lands (Acres) – Excludes Ecosystem Resiliency FRAs

Managed Land	Tier 1	Tier 2
Bear Creek Redwoods OSP	23.4	37.5
Coal Creek OSP	38.5	21.7
El Corte de Madera Creek OSP	0.8	9.1
El Sereno OSP	1.3	5.4
Felton Station	--	--
Foothills OSP	--	0.3
Fremont Older OSP	--	0.8
La Honda Creek OSP	19.5	23.9
Long Ridge OSP	114.1	96.7
Los Trancos OSP	--	3.7
Miramontes Ridge OSP	0.3	0.4
Monte Bello OSP	25.1	36.9
Picchetti Ranch OSP	--	0.8
Pulgas Ridge OSP	0.2	6.8
Purisima Creek Redwoods OSP	2.9	76.4
Rancho San Antonio OSP	0.4	14.8
Ravenswood OSP	--	--
Russian Ridge OSP	74.3	38.8
Saratoga Gap OSP	0.5	2.2
Sierra Azul OSP	0.9	38.5
Skyline Ridge OSP	49.3	50.5
St. Joseph's Hill OSP	--	0.3
Stevens Creek Shoreline Nature Study Area	--	--

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Managed Land	Tier 1	Tier 2
Teague Hill OSP	18.6	4.1
Thornewood OSP	43.8	4.2
Tunitas Creek OSP	--	0.4
Windy Hill OSP	98.8	50.1
Other Areas Managed by Midpen	1.5	6.8

Notes:

Numbers may not add up to the total due to rounding.

Tier 1 and Tier 2 refer to the highest importance VMAs that should be created first.

Cyclical Maintenance of VMAs

Vegetation management would be performed periodically to keep VMAs (e.g., FRAs, fuelbreaks, and defensible space) functional over time. Maintenance of existing VMAs (shown in Figure 3.3-1 through Figure 3.3-5) and new VMAs would occur under the Program. The maintenance requirements of the VMAs (are related to the structure and composition of the vegetation retained within and surrounding it. VMAs with large numbers of perennial, fast-growing weeds in or adjacent to them require more frequent maintenance than those without. VMAs that border or traverse largely intact ecosystems still dominated by native species can be maintained with low-intensity brushing, performed as needed based on field inspections. VMAs that are bordered or traversed by degraded ecosystems dominated by weeds need a different and more intensive maintenance prescription to reduce the spread of weeds in the VMA and into surrounding areas.

The time between treatments depends on how fast the vegetation in the fuelbreak grows, if invasive species colonize the disturbed area (Midpen, 2014b; Midpen, 2019b), the likelihood of an ignition and fire spread, and/or the proximity to buildings and other high value assets. VMAs that aid fire management typically involve periodic maintenance to operate as intended. If not regularly maintained, the level of effort and cost required to re-establish the desired conditions of the VMA begins to approach the same level as new construction. FRAs are maintained as needed.

Cyclical maintenance would be performed using combinations of different treatment techniques to ensure that the maintenance work is efficient and performed in a timely manner while minimizing ecological impacts. Techniques include a combination of cutting with heavy equipment, mowing, and/or use of hand tools, as well as on-site mastication, mulching, and pile burning. Some chemical methods may also be used in very limited circumstances. Midpen would adopt specific strategies to perform maintenance of VMAs within their lands and would communicate with adjacent landowners or land managers to maintain effective management of fuelbreaks along the perimeter of OSPs.

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Vegetation Management Treatment Methods

Vegetation Management Toolbox

Vegetation would be managed primarily manually, mechanically, with prescribed herbivory (using goats, sheep, or other livestock to reduce fuels in a specific area), and to a significantly limited extent, herbicides. Invasive species are prioritized over removal of native species. Table 3.5-3 identifies the treatment actions and estimated maximum annual application of each vegetation management treatment under the VMP. Specific vegetation management treatments are determined by Midpen employees who take into consideration location of treatment, the biology of the plant species being treated, availability of resources, and/or presence of non-target species.

Table 3.5-3 VMA Treatment Methods and Estimated Maximum Annual Application

Treatment Type	Treatment Method	Typical Method of Application	Purpose	Maximum Annual Application
Manual and Mechanical	Mowing and Cutting	Tractor, brushcutter, chainsaw, skid steer with mounted head, jawz implement, pole pruner	Removal of vegetation for VMA treatment	See Table 3.6-1
	Discing and Cutting	Tractor, pole pruner	Discline creation	
	Masticating	Skid steer, tractor	Removal of vegetation for VMA treatment	
	Pulling	Backhoe, excavator	Removal of vegetation for VMA treatment, hazard tree removal	
	Chipping	Chipper	Biomass disposal	
	Pile Burn	Water truck, leaf blower, drip torch	Biomass disposal	
Mechanical	Flaming	Propane torch	Invasive non-native species treatment in VMAs	
	Mowing	Tractor, skid steer with mounted head, brushcutter	Invasive species treatment in VMAs	
Chemical Application	Glyphosate Round-up Promax	Cut-stump	Invasive species or SOD removal in VMAs; Removal of vegetation for VMA treatment	2 gallons concentrate
		Spot spray	Treatment of defensible space	5 gallons concentrate

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Treatment Type	Treatment Method	Typical Method of Application	Purpose	Maximum Annual Application
	Clethodim, Aminopyralid, and Clopyralid	Spot spray	Invasive plant control in VMAs	2 gallons concentrate per chemical type
	Imazapyr	Spot spray	Invasive plant control in VMAs	0.5 gallons concentrate
		Cut-stump	Invasive plant control/SOD in VMAs	0.25 gallons of concentrate
	Triclopyr BEE/TEA	Cut-stump	Invasive species or SOD removal in VMAs; Removal of vegetation for VMA treatment	5 gallons of concentrate
		Spot Spray	Invasive species in VMAs or treatment of defensible space	10 gallons of concentrate
Prescribed herbivory	Livestock	Livestock foraging	Pre-treatment of VMAs	100 acres

Treatment Types and Methods

Manual

Manual methods would involve use of power and non-powered hand tools. Vegetation management tasks would include lopping, pruning, and girdling trees or large single-stem shrubs. Loppers, hand pruners, hand saws, hatchets, pulaskis, machetes, brush hooks, and brush axes may be used to manually remove vegetation. Powered hand tools would also be used, including brushcutters (metal blade), string trimmers (monofilament plastic line), and chainsaws, and may also include power pole saws and hedge trimmers. Ground crews with brushcutters and chainsaws would work where heavy equipment cannot reach, generally more than 30 feet from a road edge and on slopes exceeding 30 percent. Chainsaws would be used to limb or remove individual trees or shrubs. Brushcutters would be used where stem diameters are less than 5 inches at cut level or where the vegetation is predominately herbaceous. Cutting of herbaceous vegetation, including grasses and very young seedlings, would be performed with string trimmers.

Mechanical

Mowing and brushcutting are the primary methods of mechanical vegetation treatment. Motorized heavy machinery would be mounted with various mowing, mulching, chipping, and masticating heads for larger scale vegetation removal projects and cyclical maintenance tasks. Heavy, renewable diesel-powered equipment includes excavators, backhoes, skid-steers, and tracked chippers, and tractors. Equipment operates both on-road and off-road. Any equipment used off-road is normally track-mounted to minimize soil disturbance and compaction. The mowing or grinding heads and chippers reduce material to a size that does not require pile

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burning. Articulating arms are used to extend reach both outward and up so equipment can primarily stay on existing roads. A backhoe or excavator may push or pull down individual small trees (typically less than 8 inches diameter at breast height [DBH]) either with the arm or with a cable or chain attached to the arm. Grass would usually be mowed with tractors.

Heavy equipment is transported to an access point along an existing service road. Use of traditional heavy equipment is generally restricted to sites with 30 percent slopes or less and unsaturated soils. Special equipment may be able to work on slopes up to 60 percent. To maintain public safety, road guards, signage, and temporary closures are used when equipment operates in close proximity to recreational roads and trails.

Green flaming (propane flaming) would also be used during VMA creation to address broom and other invasive non-native species seedlings. Flaming is usually conducted during light rains or on wet days when forest litter or grassland thatch is not likely to catch fire. Additional precautions are implemented at the time of use, including bringing truck-mounted or backpack water tanks, and operating with more than one person on site.

Biomass disposal can be conducted through several methods. A masticator would be used primarily for fuelbreaks, but also sometimes for brushing around structures, roads, parking lots and brush removal in grasslands. Masticators leave behind mulch and pieces of shattered wood. A chipper would be used to reduce branches and other woody material to chips and dispersed on site in brush or forest covered areas. Chips may also be hauled off-site and utilized as ground cover or erosion control in other areas. Midpen may set up permanent composting sites for stock piling of chipped material. These sites would be located at or near field offices. Compost may be used at other project sites to amend soils and chips used as mulch. Pile burning is another method of biomass disposal that would use mechanical methods and fire to eliminate piles of dried plant material. Piles would be created in concert with brush or weed removal and placed in openings, away from power lines, and tree canopies to allow for safe ignition at a later date. Under the VMP, the total volume of material burned in piles in a year would not exceed 500 tons. Pile burning would occur between November and May under the direction of Midpen employees on days when weather conditions meet the specifications of the Bay Area Air Quality Management District (BAAQMD) permit. Multiple piles may be burned on a single day. Prior to burning, a biological monitor would inspect slash piles prior to ignition to determine whether the pile needs to be taken apart and put back together again, or if wildlife are unlikely to be present. Drip torches or other approved ignition devices are used to start pile ignitions, with fuel use limited to 10 gallons or less per day. Midpen employees would remain on-site with fire suppression equipment, including a water supply (e.g., tender), to ensure safety and to extinguish embers by each workday's end.

Chemical Application

Limited chemical control (herbicide) would be used for stump and spot spray treatment during creation and maintenance of VMAs. Broadcast spraying is not allowed under the IPMP nor the VMP. Chemical treatment methods used within VMAs include any method approved under the IPMP (including, but not limited to stump spray and/or spot spray). Trees or large shrubs that

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require removal within the inner 30 feet of defensible space as well as stubborn woody plants in disclines and fuelbreaks would likely be treated with an application of herbicide to the cut stump. Spot treatments of vegetation within VMAs with other herbicides, as identified in Table 3.5-3, could also be used to the volume limits specified. Spot-spraying with herbicide is sometimes conducted within the inner 30-foot defensible zone, especially next to buildings and fences where it is difficult to operate a brushcutter or mower safely without damaging the structure or equipment.

Herbicides allowed are only those identified in the IPMP EIR and Addendum (Midpen, 2014b; Midpen, 2019b), or that may be approved by Midpen in the future through further addendum processes. Invasive species would be prioritized for removal over native species on Midpen lands. Environmental and public protection measures, certification, the requirements to have a Pest Advisor, and other best management practices (BMPs) are incorporated by reference into the VMP.

Prescribed Herbivory

Midpen has employed both sheep and goats on a small-scale experimental basis for weed control purposes with limited success (prescribed herbivory). Prescribed herbivory under the VMP, with sheep, goats, or cattle, could be used as pre-treatment, typically in shrubland and forest understory, prior to using other techniques. Prescribed herbivory for pre-treatment may require the installation of temporary fencing where natural barriers are not present and temporary or permanent water facilities and other infrastructure (tanks, corrals, fences etc.) as well as the deployment of guard animals and/or a shepherd.

Vegetation Management Strategies by Vegetation Type

Grasslands

Mowing would be used to reduce potential fire spread and increase suppression efficiency in grasslands. Grasses in VMAs would be reduced in height to less than 4 to 6 inches and not cleared to mineral soil to minimize soil erosion. Non-native and/or non-local shrubs and trees, decadent native trees and shrubs (i.e., old plants with a substantial number of dead limbs and twigs), and conifers under 8 inches DBH may be removed entirely. In some instances, limited dead and or downed material may be left in place as a habitat feature if it poses little overall fire risk. Cyclical mowing of grasses in defensible space areas and other ignition zones (around parking lots and picnic areas) would typically be performed annually.

Removal of encroaching woody material would typically occur once every 3 to 5 years in fuelbreaks, depending on the rate of regrowth. The maintenance of VMAs would be based on site-level assessments and implemented to maintain vegetation within the range of desired conditions using previously described tools and techniques. The work would be accomplished by top-cutting with power tools, such as string trimmers and brushcutters, with the infrequent use of chainsaws and heavy equipment with mower heads mounted on articulating arms. Disposal of woody cut material (slash) less than 1-inch DBH would be performed by lopping and scattering. Larger stemmed material would be chipped on-site and removed from the work area or piled and burned on-site after curing for a minimum of 60 days. Removed vegetation

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would remain within Midpen lands, but may be trucked out of the area in which the work was conducted in. In some instances, limited dead and or downed material would be left in place as habitat features if it poses little overall fire risk. Herbaceous vegetation would not be mowed during the creation of FRAs.

Shrublands (Coastal Scrub, Chaparral)

Shrubs would be removed or thinned until spacing between individual shrubs or shrub islands is more than double the height of the canopy (e.g., for shrub canopies 6 feet in height, 12-foot gaps would be created). Along property boundaries, shrubs may be completely removed to a width that reduces direct flame contact from adjacent developed properties, to a maximum of 100 feet. To create or maintain the required gap size, all target invasive species, dead shrubs, conifers, and chamise would be removed only as necessary. In some instances, limited dead and or downed material may be left in place as habitat features if it poses little overall fire risk (e.g., dusky footed woodrat middens, single snags, logs). Rare native species may be pruned but would not be removed in their entirety. Removal of shrubs would be accomplished by top-cutting with hand tools such as chainsaws and brush cutters, and with cutting or masticating heads mounted on heavy equipment. All stumps would be flush cut as low as possible parallel to the slope of the ground surface. Only resprouting target weed species would be completely uprooted, if herbicides are not applied. Uprooting would be minimized on steep slopes. Disposal of the cut material would be performed by chipping, pile burning, or lopping and scattering. Cyclical maintenance in shrublands would typically be performed once every 3 to 4 years, though high densities of weeds may necessitate annual maintenance. The maintenance schedule of VMAs in shrublands would be based on site-level assessments and implemented to maintain vegetation within the range of desired conditions using previously described tools and techniques.

Oak Woodlands and Mixed Hardwood Forests

Understory shrubs, target weeds, and target conifers less than 12 inches DBH would be removed. Depending on the site, more trees may need to be removed to reduce unnatural high densities of trees and to promote late seral conditions. For retained trees, dead limbs up to 12 feet above ground may be removed. Live limbs up to 12 feet above the ground or up to one third of the tree's total live foliage may also be removed. Select snags (standing dead trees) or limited downed woody debris may be retained for wildlife habitat, but snags or other material that pose a high risk of firebrand production in a fire event may be removed. Fuel reduction would be accomplished with hand tools and with cutting or masticating heads mounted on heavy equipment. Disposal of the cut material would be performed by chipping, pile burning, or scattering. Downed trees over 6 inches in diameter would be bucked in place; limbs would be removed; and the main trunk would be cut into lengths sufficient to ensure contact with the ground, chipped, or removed from the work area, if feasible. Cyclical maintenance in woodlands or forests would typically be performed once every 5 years (5 to 10 years or more in FRAs, if needed), though high densities of weeds may necessitate annual maintenance.

These treatments are aimed at removing the flammable understory vegetation to reduce the overall fuel load, as well as to decrease the chance of a crown fire and to preserve the woodland

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by removing ladder fuels. This treatment type would create a more open, shaded site as shrubs are removed and smaller herbaceous plants and ferns are retained.

Coniferous Forests

In some coniferous areas, mainly in dense Douglas fir and mixed hardwood forests, reducing the fuel load may require thinning of smaller, mid-canopy trees where densities are high. The trees would be felled and their branches removed for chipping, hauling, or pile burning. The trunks, if small enough, would be chipped, hauled, or pile burned as well. If trunks cannot be chipped or hauled, they may be left standing and pruned for wildlife habitat or cut trunks would be left on the ground. The number of trees to be removed would depend upon the location and site characteristics.

Agricultural Landscapes

Mowing and brush thinning would occur along agricultural service roads that could become ignition sources for adjacent natural areas. Conservation grazing (under the existing Conservation Grazing Program) would continue to be used to reduce fuel loads in grassland areas.

Tree Removal

Individual tree removal may be considered in specific locations to reduce the production of firebrands and spotting during wildland fires and thus reduce risks to public safety. Non-native trees may be removed if they compromise the integrity of a native tree. The IPMP allows for 50 to 100 hazard trees to be removed per year. The VMP would allow up to 50 additional trees to be limbed or removed entirely per year for fire hazard reduction as well as the eucalyptus and acacia tree removal described above. For example, scattered live trees (<10 inches DBH) or SOD-killed trees may be removed at ridgetop locations that are vegetated mainly with grass or chaparral. The removal and disposal of these trees would be conducted as previously described. In some instances, trees may be left in place as a habitat feature until its use by a native species is complete (e.g., wait to fell a tree with a known raptor nest until fledglings have left the nest). Midpen will adhere to local regulations regarding heritage, significant, or protected trees.

3.5.3 Prescribed Fire Plan

Overview

Periodic fires historically were a part of natural ecological processes on Midpen lands; as a result, many species evolved with fire adaptations and need periodic fire for renewal. Without fire, fire-adapted communities are eventually replaced by forest, resulting in a reduction of biodiversity and habitat complexity. Fuel in unburned areas can build up to such a high level that when a wildland fire occurs, it can have devastating effects. Prescribed fire helps to restore ecosystems closer to pre-fire suppression conditions through the removal of dead and accumulated vegetation and treatment of forest disease and invasive species.

The purpose of the PFP is to define the activities that Midpen would implement to reinstate prescribed fire practices on their lands in order to reduce wildland fire risks, while also

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preserving and restoring biodiversity and minimizing effects on the environment. The PFP focuses on reducing fuel loads and restoring natural ecological processes in OSPs. The PFP also includes the use of traditional ecological knowledge burns in coordination with Native American tribes.

The description presented in the PFP is programmatic in nature at this time and would be updated with additional details into the burn units, methods, locations, and planning prescriptions as they are developed. Additional review under CEQA is anticipated once the PFP is updated.

Prescribed Burn Units

Burn units are discrete units of land that would be targeted under a single prescribed burn. Burn units are being identified for locations across Midpen lands and generally consist of continuous vegetation types. Burn units are sized to allow a prescribed fire to be implemented in one operational period (typically an 8- to 12-hour shift). Prescribed burns would generally be prioritized by vegetation type, fuels reduction value, and potential for successful implementation. Initial burns may focus on re-establishing prescribed fire training areas. These areas would be used for interagency training on live fire and simulated fires, in an effort to improve resource coordination between Midpen and its neighboring local, state, and federal fire agencies who may participate in future burns. Considerations for prioritization of prescribed burns would be defined in the future, but may include: condition of area or burn unit in terms of forest health, amount of invasive species invasion, and extent of fuel loads; location and ability to manage the burn; and type of vegetation with consideration for improvement of ecosystem function through prescribed burning.

Prescribed Fire Process

Overview

Prescribed fire activities would be implemented in accordance with a pre-written plan (Burn Plan) that identifies land management goals and specific prescribed fire use strategies to safely achieve those goals, with prior approval by the applicable regulatory agencies. Burn Plans specify weather parameters for burning, personnel and equipment needed for implementation/mop up/patrol, contingency plans, smoke management, and post burn monitoring. Before burning is allowed, Midpen must complete the following planning steps:

- Notify BAAQMD or MBARD of the proposed prescribed burn by submitting the Prescribed Burning Smoke Management Plan (SMP; Form Rx-1) form at least 30 days prior to burning.
- Develop Burn Plan in conjunction with CAL FIRE and local fire agency.
- Ensure both the smoke management plan and burn permit are issued and approved.
- Ensure burn is conducted on a permissive burn day as determined by BAAQMD or MBARD.

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While Midpen employees would take the lead on defining the location, objectives, goals, and monitoring of the prescribed fire, CAL FIRE or another local fire agency would take the lead role in approving, conducting, and supervising all prescribed fire activities. Prescribed fires would involve planning and pretreatment; definition of burn units; and mop up.

Planning and Pretreatment

Where feasible and effective, existing control lines (also known as firelines) including paved roads, dirt roads, trails, and disclines would be utilized for control lines. These existing lines would be improved by clearing accumulated vegetation on or near the lines; removing dead trees that may fall on, near, or across lines; blacklining; and widening. Blacklining involves pre-burning of fuels adjacent to a control line before igniting a prescribed fire. Blacklining is usually done in heavy fuels adjacent to a control line during periods of low fire danger to reduce heat on holding crews and lessen chances for spotting across the control line. New firelines would be constructed to standards described in the Burn Plan, but typically would be 1-foot to 6-foot wide, depending on location, vegetation type, and type of equipment used to construct the line. Hose lays could be used along firelines at the discretion of the burn boss (a qualified person who supervises all prescribed fire resources and is responsible for the safe and effective implementation of the prescribed fire), or as described in the unit-level Burn Plan. Temporary firelines could be rehabilitated as needed once the prescribed fire is declared out by the burn boss. The unit-level Burn Plan would describe burn unit safety, including potential hazards and mitigations.

Prescribed Fire Implementation

The prescribed fire would be ignited in the planned burn units using approved ignition devices, which may include equipment such as a drip torch or hand-held flare (“fusee”). The Burn Plan would describe the general ignition pattern such as a strip head fire, dot ignition, or other, with discretion given to the burn boss to use the pattern they deem most appropriate given local vegetation and weather conditions. The prescribed fire is allowed to burn to the control lines that define the burn unit.

Mop Up

Mop up is the process by which the prescribed fire is safely put out. Firefighters would extinguish or remove burning material near the control lines during mop up work. Select snags or trees may need to be taken down because of fire inside their trunk and logs may need to be trenched to prevent rolling after an area has burned. Firefighters would also put out any flames or stir up smoking hot spots. The work would start as soon as possible along the back or cooler sides of an active fire. Dependent upon multiple factors (i.e., fire behavior, weather forecast), some crew members could remain on site for extended periods of time (overnight). Mop up work would generally be performed all the way around the edge of a fire. Mop up would be conducted using hand crews, equipment, hose lays, or other methods as described in the unit-level Burn Plan.

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Rehabilitation

Rehabilitation would consist of the decommissioning of control lines as well as follow-up weed control after a prescribed fire. Control line decommissioning would generally be limited to the manual re-distribution of duff and brush back into the previous cleared lines to facilitate natural revegetation. It also would provide erosion control and discourage the formation of social trails. Because some weed seeds are stimulated by fire or become readily established in post-fire settings, prescribed burn sites would be patrolled by Midpen's Early Detection Rapid Response (EDRR) crews for 1 to 5 years as needed following a burn event to identify the need for weeding or additional restoration work.

Treatment Types and Methods

Physical Control

The prescribed fire would be controlled using methods and resources described in the unit-level Burn Plan under the direction of the burn boss. Control would be accomplished by or with hand crews, fire engines, hose lays, portable pumps, backpack pumps, and hand tools. Aerial support, such as a helicopter with the ability to drop water, on more complex burns may be utilized as well.

Mechanical Pre-Treatment

Burn units could have limited mechanical pre-treatment to improve firelines or operational safety. Treatments could include, but are not limited to mowing, mastication, chipping, falling of snags, and brushing of roads. These treatments would generally follow those described in the VMP. Pre-treatment could involve removal of live tree limbs, scattering dead and decadent woody brush, top-cutting and scattering of green brush, and installation of control lines, as needed.

Limbing, scattering, and masticating dead material and top-cutting of green material could occur many months to days prior to the burn event, depending on the larger project goals and site conditions. The work would be accomplished with a combination of heavy equipment, power tools, and hand tools. Control line installation would occur within a few weeks or days of the burn event and would be accomplished with heavy equipment or hand tools.

Pile burning, as described under the VMP, could be used to remove cut or dead vegetative material where chipping, hauling, or decomposition are not feasible. Piles could be constructed of vegetative material, covered (to keep dry) and burned when conditions are wet. Depending on the surrounding vegetation and under the advice of a Midpen Resource Advisor, the charred remains could be raked out and the site would be allowed to passively revegetate and/or would be directly seeded with native Santa Cruz Mountain plants.

Prescribed Burn Types

Ecosystem Restoration Burns

All prescribed burns would provide ecosystem restoration benefits. In cases where small areas may not passively revegetate, these sites could be seeded with native species, under the advice of a Midpen Resource Advisor.

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Traditional Ecological Knowledge Burns

Traditional ecological knowledge burns could be conducted to protect, restore, or facilitate improved production of or collection of specific plants, trees, or seeds. The use of prescribed burning for cultural resources would be planned and implemented in collaboration with local Tribal representatives.

Training Burns

Prescribed burns could be used for training by Midpen employees as well as cooperating agencies. Training burns could be conducted without ignitions (i.e., “mock burns”) allowing personnel to coordinate under a unified command, test communications, equipment interoperability, and contingency response prior to conducting live burn activities. Live burn activities could be used to train personnel on wildland fire suppression tactics. Training burns could be performed as stand-alone burns or in conjunction with any prescribed burn under the direction of the burn boss.

Prescribed Natural Fire

Prescribed natural fire is the process of allowing a naturally ignited fire to burn in a controlled manner or area. The details of implementing prescribed natural fire are only conceptual at this time and would only be applicable under limited circumstances. In the case of multiple ignitions, such as multiple lightning fires, Midpen may need to work with an incident management team to prioritize fire suppression activities on Midpen lands. If there are designated natural areas where a resource could benefit from fire, suppression efforts may be aided by allowing the wildland fire to burn through these areas. Limited equipment, aircraft, and crews can be deployed to stop the wildland fire at the best locations to protect public safety rather than trying to protect natural areas that would benefit from a fire. This type of burn would never dictate suppression tactics but only identify areas that do not require protection from the effects of a wildland fire.

3.5.4 Wildland Fire Pre-Plans/Resource Advisor Maps

Overview

Wildland Fire Pre-Plans and Resource Advisor Maps (referred to as Wildland Fire Pre-Plan henceforth) are map-based documents that can aid CAL FIRE and other firefighting agencies in their efforts in the event of a wildland fire. The maps would help firefighters better understand the operational environment, including where different types of apparatus can access (e.g., Wildland Type 3 fire engines); potential fire management locations; where firefighting resources are located, such as hydrants, water tanks, and ponds; specific buildings or structures needing protection; and where sensitive resources are located that should be protected, if possible. The plans and mapping efforts also identify where additional infrastructure may be needed to support firefighting efforts and critical site-specific information regarding escape routes, including the location of stable bridges, passable roads, gates, and water sources. The pre-plans and maps also indicate where bulldozer lines could be created that may reduce environmental impacts in the event of an emergency, recognizing that firefighting agencies, in consultation

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with Midpen as landowner, would need to take the actions they deem necessary to protect human life and property.

The pre-plan for each of Midpen's managed lands would include a detailed map over an aerial image of the area, with a legend. Each map would be accompanied by a short document that describes the roads and trails, the other resources for firefighters, the natural resource protection, the sensitive resources in the managed land, and who maintains the plan. Midpen would prepare and complete all maps by 2022 and updates would be performed as needed to ensure the accuracy of the mapping.

Identification, Improvement, and Installation of Infrastructure to Improve Firefighting Capabilities of Local and State Firefighting Agencies

Overview

During the preparation of each Pre-Fire Plan and Resource Advisor Map and during the subsequent reviews of existing plans and maps, additional infrastructure to improve firefighter response may be identified as needed. The process for planning and installing new infrastructure would involve the development of detailed design plans, additional environmental review (if needed), contracting, and implementation. Assumptions were made regarding the types of infrastructure that may be needed in any one year, as detailed in Table 3.6-1, and the general areas within Midpen lands that the infrastructure may be installed or improved in. Based on the inventory of existing infrastructure, approximately one third of the OSPs may require some new, expanded, or upgraded infrastructure. This Program EIR addresses the addition of infrastructure at a programmatic level. Additional CEQA review, tiered from this EIR, may be needed depending on the project.

Roads and Access

Improvements on existing road rights-of-way or potentially new access roads in areas where adequate access is lacking could be identified. Existing access roads may be widened to allow for larger fire trucks, turnarounds created, and roads extended. Road surfaces may also be graded, and material placed on the surface to create a safer surface for travel by emergency vehicles.

Water Storage Tanks

Water storage tanks may be built in areas where needed and where construction is feasible. Water storage tanks would be sized to store adequate water for firefighting, be accessible, easily connected to the equipment that would use them. Water tanks may be filled from existing water supply sources, wells, pumps, or water tender trucks, as appropriate for the local conditions. Stored water may be treated to limit growth of mold and algae with tank systems sealed to exclude entry of insects and animals. Water storage tanks may also be filled by trucking in water, where access to existing water infrastructure is not available.

Water Supply Pipelines, Hydrants, and Pumps

Water supply infrastructure includes underground pipelines that supply water storage tanks or hydrants. All permanent pipelines that may need to be added to OSPs would be approved for

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use in fire service systems and designed for the expected water pressures. Where needed, new hydrants on new or existing pipelines may be added as well as permanent or temporary pumping stations to ensure flow from hydrants or pipelines during firefighting activities. Aboveground temporary pipelines or fire hoses may be used to fill water tanks that are not readily accessible by a water tender or water supply lines. Typically, the water would need to be chlorinated to avoid mold and clogging of pumps.

Staging and Landing Areas

Additional staging/fire management locations and landing areas may be needed in some OSPs or other managed lands. Where possible, these areas would be level, and away from water bodies, sensitive habitats, and riparian corridors. These areas would be constructed to the size needed for expected staging or landing needs, and the appropriate surface treatment (such as mulch or chip) would be applied. Erosion and drainage control would also be installed as needed.

3.5.5 Monitoring Plan

The Monitoring Plan requires monitoring of site conditions before, during, and after treatments or fire events to determine if Program objectives are being met, and if and how vegetation treatment methods should be refined to reach those objectives. Monitoring requirements would vary depending on the activity undertaken and the conditions in the area where the activity is to occur. Individual monitoring protocols would be determined on a case-by-case basis for each project at the discretion of professional Midpen employees and/or as required by mitigation. The Monitoring Plan defines the monitoring scale and monitoring parameters, the methods of monitoring/monitoring protocols, the monitoring prescriptions, and reporting and adaptive management. The Monitoring Plan is an important component of the Program; however, its implementation would not entail any physical effects to the environment and is not covered any further in this Program EIR.

3.6 Program Implementation

3.6.1 Annual Implementation

The maximum annual acreages of activities to be implemented under the Program are identified in Table 3.6-1. Midpen's objective is to gradually increase annual treatment areas, depending on funding sources and availability of work crews, while minimizing negative impacts to natural resources. The total areas treated yearly would vary based on staffing capacity, funding availability, partnerships, and other resources, but would not exceed the maximum allowable annual treatment by activity, as indicated in the table, below. At least initially, Midpen would focus on creating VMAs for enhanced fire management within the priority VMAs shown in Table 3.5-2.

Midpen anticipates conducting one to two prescribed burns during the first three to five years after establishment of the detailed PFP, anticipated to be completed in 2022. After year five of

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the detailed PFP implementation, Midpen could implement as much as three burns a year. A typical burn would be conducted on 50 acres, but the size would vary depending on many factors. The installation of infrastructure improvements identified in each Wildland Fire Pre-Plan and Resource Advisor Map would be implemented at a rate of two to three projects per year.

Table 3.6-1 Maximum Annual Treatments

Activity	Treatment Type	Create New or Maintain Existing	Maximum Annual Treatments (Acres)
Vegetation Management Plan			
Shaded Fuelbreaks	Manual, mechanical, herbicide, pile burn, prescribed herbivory	New	50
		Maintain	100
Non-Shaded Fuelbreaks	Mechanical, herbicide, pile burn, prescribed herbivory	New	5
		Maintain	80
Evacuation Routes, Critical Infrastructure, Fire Management Logistics Fuelbreaks	Manual, mechanical, herbicide, pile burn, prescribed herbivory	New	400
		Maintain	400
Target Hazards Fuelbreaks	Manual, mechanical, herbicide, pile burn, prescribed herbivory	New	20
		Maintain	20
Fire Agency New Recommended Fuelbreaks	Manual, mechanical, herbicide, pile burn, prescribed herbivory	New	100
		Maintain	N/A ^a
Ingress/Egress Route Fuelbreaks	Mechanical, herbicide, pile burn, prescribed herbivory	New	25
		Maintain	25
Disclines	Mechanical, herbicide	New	10
		Maintain	60
Midpen Structures and Facilities Defensible Space	Manual, mechanical, herbicide, pile burn	New	As needed
		Maintain	175
Fire Management Logistics Areas	Manual, mechanical	New	100
		Maintain	30
Eucalyptus and Acacia Removal	Manual, mechanical, herbicide	New	20 ^b
		Maintain	10
Fuel Reduction Areas	Manual, mechanical, herbicide, pile burn, prescribed herbivory	New	500
		Maintain	500
Prescribed Fire Plan			
Prescribed Burn (upon completion of a detailed PFP)	Manual, mechanical, prescribed burn	New	500

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Activity	Treatment Type	Create New or Maintain Existing	Maximum Annual Treatments (Acres)
tiered off the programmatic description provided here)			
Wildland Fire Pre-Plan			
Spur Road and Access Road	Manual, mechanical, herbicide	New	1.5 ^c
Staging and Landing Areas	Manual, mechanical, herbicide	New	5
Water Storage Tanks	Manual, mechanical, herbicide	New	0.1
Water Supply Pipelines, Hydrants, and Pumps	Manual, mechanical, herbicide	New	0.1
Total		New	1,737
		Maintain	1,400
Notes:			
^a Fire agency recommended fuelbreaks are maintained under the applicable category.			
^b An average of 55 trees and a maximum of 105 trees over 8 inches DBH per acre could be removed.			
^c Assumes up to 1 mile of 12-foot-wide roads.			

3.6.2 Equipment

Various types of equipment would be used to implement Program activities. While much of the equipment listed in Table 3.6-2 is conservatively shown to be run on gas or renewable diesel, Midpen is incrementally increasing its use of electric equipment to replace as much gas-powered equipment as possible. All listed equipment could eventually be electric powered when suitable equipment and technology is made available. The specific equipment needed to conduct a prescribed burn would be described in the unit-level Burn Plan, and additional aerial equipment may include helicopters of different sizes if needed for implementation or contingency. Equipment used for construction and installation of firefighting infrastructure could include those identified below, but additional types of equipment may be needed, dependent on the type of infrastructure.

3.6.3 Access

Access to conduct Program activities would be entirely from existing roads and trails. No new access roads are included as part of the Program to implement VMP or PFP activities; however, the creation of potential new access roads could be identified as infrastructure improvements in Wildland Fire Pre-Plans/Resource Advisor Maps. Access to work sites, in some cases, would not be directly from maintained trails and roads and would be achieved by creating skid trails, which include foot trails or using former trails that have grown over and can be cleared. Sensitive habitats, creeks, and wetlands would be avoided. Clearing of skid trails would not occur when soils are wet. The skid trails would not be graded or scraped. Skid trails would be rehabilitated following use, which involves de-compacting soils, removing skid lines, distributing surrounding litter/duff back on-site, and obscuring entrance points with brush.

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Table 3.6-2 Typical Equipment Used for Program Activities

Vehicle/Equipment Type	Fuel Type ^a
Light duty automobile (car/light truck)	gasoline
Heavy truck	gasoline or renewable diesel
Water truck/tender	renewable diesel
Van/medium truck	gasoline
Wildland Type 6 fire engine	renewable diesel
Wildland Type 3 fire engine	renewable diesel
All-terrain vehicle (ATV)	gasoline or renewable diesel
Chainsaw	gasoline (25:1 or 50:1 with 2-stroke oil) or electric
Brushcutter	gasoline or electric
Stringtrimmer	gasoline or electric
Power pole saw	gasoline or electric
Leaf blower	gasoline or electric
Chipper	renewable diesel
Skid steer loader ^b	renewable diesel
Backhoe ^b	renewable diesel
Excavator ^b	renewable diesel
Tractor ^c	renewable diesel
Crane	renewable diesel
Generator	gasoline or renewable diesel
Drip torch	gasoline and diesel (1:4)
Propane torch	propane

Notes:

- ^a Any of this equipment could also be electric powered, where available.
- ^b May be used with masticator or mower head.
- ^c May be used with disc harrow attached.

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3.6.4 Personnel

Personnel needed to conduct various Program activities varies widely dependent upon the project, activity, treatment types, and the year of implementation. The number of workers by treatment type and method is summarized in Table 3.6-3. The scale of the Program activities that could be completed each year would depend on annual staff capacity, funding, partnerships, and other resource availability and would need to be balanced with other Midpen priorities that further the mission, annual Board-approved Strategic Goals and Objectives, and Vision Plan. The specific personnel needed to conduct a prescribed burn would be described in the unit-level Burn Plan. Workforces and personnel needed to install new or improved infrastructure under the Wildland Fire Pre-Plans would vary by project and additional crew may include biological or cultural resource monitors.

The range of workers needed for each Program activity are described in Table 3.6-4. Up to 100 workers, not including additional required prescribed fire or pile burn contingency resources, may be conducting vegetation management activities in a single day, but generally, only a few crews would be operating simultaneously. This number may be increased at Midpen’s discretion for implementation or safety reasons.

Table 3.6-3 Personnel Needed to Implement Each Treatment Type and Method

Treatment Type	Treatment Method	Crew Size (Average)	Crew Size (Minimum and Maximum)
Manual and Mechanical	Masticating	5	2-10
	Mowing	5	2-10
	Cutting ^a	5	2-10
	Discing	5	2-10
	Pulling	5	2-10
	Pile Burning	15	10-30
	Flaming	2	1-4
Chemical Application	Glyphosate Round-up Promax; Clethodim; Aminopyralid; Clopyralid; Imazapyr; Triclopyr BEE/TEA	8	1-15
Prescribed Herbivory	Livestock	4	2-8
Burning	Prescribed Burning	50	15-100
Construction and Installation		5	2-10
Traffic Control		4	2-8
Notes:			
^a Chipping is conducted by the same crews as cutting. No additional crew members are needed.			

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Table 3.6-4 Personnel Needed to Implement Program Activities

Activity	Treatment Type	Crew Size (Average) ^a	Crew Size (Minimum and Maximum) ^a
Vegetation Management Plan			
Shaded Fuelbreaks	Manual, mechanical, chemical application, prescribed herbivory	15	2-30
Non-Shaded Fuelbreaks	Mechanical, prescribed herbivory	15	2-30
Evacuation Routes, Critical Infrastructure, Fire Management Logistics Fuelbreaks	Manual, mechanical, chemical application, prescribed herbivory	15	2-30
Target Hazards Fuelbreaks	Manual, mechanical, chemical application, prescribed herbivory	15	2-30
Fire Agency New Recommended Fuelbreaks	Manual, mechanical, chemical application, prescribed herbivory	15	2-30
Ingress/Egress Route Fuelbreaks	Mechanical, chemical application, prescribed herbivory	15	2-30
Disclines	Mechanical, chemical application	5	2-10
Midpen Structures and Facilities Defensible Space	Manual, mechanical, chemical application	15	2-30
Fire Management Logistics Areas	Manual, mechanical	5	2-10
Eucalyptus and Acacia Removal	Manual, mechanical, chemical application	5	2-10
Fuel Reduction Areas	Manual, mechanical, chemical application, prescribed herbivory	15	2-30
Prescribed Fire Plan			
Prescribed Burn	Manual, mechanical, prescribed burn	50	15-100
Wildland Fire Pre-Plan			
Spur Road/ Access Road/ Staging and Landing Areas	Manual, mechanical, chemical application	5	2-10
Water Storage Tanks	Manual, mechanical, chemical application	5	2-10
Water Supply Pipelines, Hydrants, and Pumps	Manual, mechanical, chemical application	5	2-10

Notes:

^a Crew numbers do not include traffic control as this is location dependent.

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3.6.5 Schedule and Timing

Work would generally occur during daylight hours, typically from 7:00 am to 7:00 pm. Program activities would occur year-round with certain tools and techniques confined to specific months due to limitations such as the wet season, species protection requirements, permitting restrictions, and official fire season as determined by Midpen’s Chief Ranger or Area Superintendent, as detailed in Table 3.6-5. Prescribed burns would be prioritized based on factors such as location, vegetation type, and complexity, with implementation being dictated by local conditions on the ground. Prescribed burns typically occur from June through November, but other times of year may also be considered. The prescription for any prescribed burn is a set of conditions that considers the safety of the public, fire staff, and probability of meeting the burn objectives. Environmental conditions considered include but are not limited to, windspeed, fuel moisture levels, air temperature, and relativity humidity. Other considerations could include species protection requirements and permitting restrictions. Scheduling and timing for Program activities would be dependent on annual staff capacity, funding, partnerships, and other resource availability and would need to be balanced with other Midpen priorities that further the mission, annual Board-approved Strategic Goals and Objectives, and Vision Plan.

Table 3.6-5 Summary of Typical Timing for Each Treatment Type and Method

Treatment Type	Treatment Method	Typical Timing of Work
Manual and Mechanical	Masticating	April through December
	Mowing	April through December
	Cutting	April through December
	Discing	April through July
	Pulling	April through December
	Chipping	April through December
	Pile Burning	October 31 to Mid-May (wet season)
	Flaming	December through March
Chemical Application	Glyphosate Round-up Promax; Clethodim; Aminopyralid; Clopyralid; Imazapyr; Triclopyr BEE/TEA	Spring and Summer
Prescribed Herbivory	Livestock	Year-round
Burning	Prescribed Burning	June through November ^a
Construction and Installation		Year-round

Note:

^a Although prescribed burning can occur during June through November, many factors in addition to time of year are considered prior to initiating and conducting a burn.

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3.6.6 Applicable Best Management Practices

Midpen has developed BMPs for the IPMP, which apply to the Program as well. All IPMP BMPs apply to this Program and are incorporated here by reference. Midpen has several other manuals and policies with measures and BMPs that apply to Program activities including the Maintenance Operations Manual (MO Manual), Regulations for Use of Midpeninsula Regional Open Space District Lands (LU Regulations), Safety Manual, and RM Policies as well as several BMPs for sensitive species (Midpen, 2019c; Midpen, 2014c; Midpen, 2016b; Midpen, 2014d). Refer to Appendix 3.0-2 for the BMPs used in the analysis. The most recently updated IPMP BMPs as well as other Midpen manuals and policies would apply to this Program in any given year. The most recent IPMP BMPs and other Midpen manuals and policies referred to throughout the Program EIR are available from Midpen upon request.

3.6.7 Annual Planning

Midpen would prepare an Annual Work Plan identifying those treatment areas to be created and maintained in each coming year, with consideration for the higher prioritization areas. At least initially, Midpen would focus on creating VMAs for enhanced fire management within the priority VMAs. The total areas treated annually would vary but would not exceed the maximum annual treatment by activity, as indicated in Table 3.6-1. The objective is to gradually increase annual treatment areas, depending on funding sources and availability of work crews, while minimizing negative impacts to natural resources.

3.6.8 Annual Reporting and Adaptive Management

Reporting would be performed in an annual report to the Board of Directors and on a project-by-project basis for larger scale projects. Individual reports would be prepared for larger scale projects and/or activities that are completed. The annual report would be a synthesis of all vegetation management activities over the calendar year, fire event monitoring (if occurred), and reporting on larger-scale, on-going, or cyclical monitoring. Adaptive management recommendations would be made in the annual report.

Adaptive management strategies would be included in the annual planning and monitoring process. Adaptive management recommendations would be comprised of the following actions:

- Monitoring biological stressor indicators.
- Monitoring management activities and, if warranted, revise approaches or actions.
- Continuing to work with surrounding land management agencies and the public to foster education, research, and volunteer efforts.
- Utilizing new methods and technologies that increase efficiency, reduce costs, and reduce impacts on the environment from fuel management activities.

3.7 Updates to Board-Approved Resource Management Policies to Support the Program

Midpen's Board-adopted RM Policies guide the ongoing management of the natural resources on Midpen lands. Resources covered under the policies include plants, animals, water, soil, terrain, geologic formations, and historic, scenic, and cultural features. A policy analysis was conducted as part of the Program development to ensure that the RM Policies best support the Program objectives and goals. The policy analysis revealed that the goals and components of the Program are generally supported by the RM Policies, however, specific updates to the RM Policies should be made to better address wildland fire management and ecosystem resiliency.

The specific proposed text revisions are available in the Wildland Fire Resiliency Program Resource Management Policies Analysis and Recommendations Report. Making changes to the Board-approved RM Policies is considered a discretionary action, and as such, is subject to CEQA. This Program EIR also addresses the environmental impacts of making these policy changes. The changes would be made upon certification of this Program EIR and approval of the Program. A summary of the key changes is as follows:

- Adding ecosystem resiliency to the Wildland Fire Management policies, including an objective to identify acceptable levels of environmental change that allows for establishment and maintenance of resiliency at the landscape level;
- Adding language to address post-fire restoration and response;
- Adding language regarding the indigenous use of fire and objectives to coordinate with tribes on prescribed burning practices and incorporate traditional ecological knowledge practices of prescribed fire for desired outcomes;
- Adding language that defines and supports programmatic planning efforts to implement wildland fire resiliency activities and address regulatory barriers;
- Adding language acknowledging the adopted Community Wildfire Protection Plans (CWPPs) for San Mateo and Santa Clara Counties and consideration of supporting the CWPPs implementation actions that are consistent with Midpen practices;
- Adding language that defines and describes the importance of adaptive management and decision-making flexibility to respond to ecological feedback;
- Adding an objective to identify the focus of non-fire fuel management actions versus prescribed fire actions;
- Adding an objective to adopt new emerging technology into management methods;
- Allowance for landscape visual changes for fuels management under Scenic and Aesthetic Resource policies; and
- Updates to the Climate Change policies that acknowledges the actions and related tradeoffs that should be considered to avoid large, catastrophic carbon emissions (and major ecological impacts) from large destructive fires, such as selective fuel clearance and controlled prescribed burns.

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3.8 Permits and Approvals

Activities or projects carried out under the Program may require permits from resource agencies or local jurisdictions before the work can commence. Table 3.8-1 summarizes some of the permits that may be required.

Table 3.8-1 Potential Permits or Approvals Needed for the Program

Agency	Approval or Notification	Component of Program
U.S. Army Corps of Engineers	Clean Water Act, Section 404, Nationwide Permit 14	Impacts to jurisdictional waters of the U.S., such as for stream crossings for equipment or infrastructure.
U.S. Fish and Wildlife Service	Endangered Species Act Biological Opinion and Take Authorization	If any activities could result in take of a threatened, endangered, or candidate species.
California Department of Fish and Wildlife	Trustee agency for CEQA review	During CEQA compliance process.
	1602 Streambed Alteration Agreement	For impacts to riparian areas or any stream crossings.
	2081 Incidental Take Permit or Consistency Determination	If any activities could result in the death of a state listed species.
California Department of Transportation	Encroachment permits	For encroachment on Caltrans right-of-way.
	Transportation permits	For oversize or overweight vehicles traveling on Caltrans right-of-way.
California Coastal Commission (sought through applicable county planning and building department)	Coastal Development Permit or an exemption	For vegetation management or other development in the Coastal Zone.
California Department of Forestry and Fire Protection	Burn Permit	For any prescribed burn activities.
Bay Area Air Quality Management District	Prescribed Burning Smoke Management Plan (Form Rx-1)	For any prescribed burn activities.
	Open Burning Regulation 5 Notification Form	For any pile burn activities.
Monterey Bay Air Resources District	Smoke Management Plan and Smoke Management Permit	For any prescribed burn activities over 10 acres.
	Prescribed Burn Permit	For any prescribed or pile burn activities.
	Section 401 Water Quality Certification	If a Section 404 permit is needed.

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Agency	Approval or Notification	Component of Program
San Francisco Regional Water Quality Control Board or Monterey Regional Water Quality Control Board	National Pollutant Discharge Elimination System (NPDES) General Permit	For ground disturbing impacts over 1 acre in size.
	Waste Discharge Requirement	For impacts to waters of the state that are not waters of the U.S.
Local Public Works Departments, Building Departments (San Mateo County, Santa Clara County, Santa Cruz County, and local cities)	Various types of encroachment, building, planning, or grading permits	For encroachment into roadways to perform work, for any new fire protection infrastructure that may be needed.
	Local tree protection and brush removal permits based on local ordinances of various counties and cities	For impacts on trees and brush.
	Transportation/ oversize or overweight permits	For oversize or overweight vehicles traveling on local rights-of-way.