5 Prescribed Fire Plan

5.1 Introduction

Prescribed fire is a land management tool that can be used to:

- Restore fire to the landscape, simulating prior natural processes;
- Reduce unnaturally high accumulations of vegetation;
- Decrease the risk and severity of unwanted wildland fires in the future;
- Lessen the potential loss of life and property;
- Control many undesirable plant species, plant diseases, and pest insects;
- Create and enhance wildlife habitat and increase availability of forage;
- Promote the growth of native trees, wildflowers, and other plants; and
- Expose mineral-rich soil and recycle plant nutrients back to the soil.

While Midpen employees ~~staff~~ would take the lead on defining the location, objectives, goals, and monitoring of the prescribed fire, CAL FIRE or another local fire agency will take the lead role in approving, conducting, and supervising all activities. Typically, designated Midpen employees ~~staff~~ are trained to provide a discrete supporting role during prescribed burns, such as suppression staff or Resource Advisors.

SELECT PRESCRIBED FIRE STAFF

Agency Administrator - Authorizes the prescribed fire and assigns Burn Boss to execute prescribed fire under predefined conditions.

Burn Boss - Ensures that all prescribed fire plan specifications are met before, during, and after a prescribed fire. Supervises all prescribed fire resources and is responsible for the safe and effective implementation of the prescribed fire.

Firing Boss - Leads ground ignition operations and is responsible for the safety and coordination of assigned resources on prescribed fire and wildfire incidents. Reports to the Burn Boss and coordinates with the Holding Specialist.

Prescribed fire activities are implemented in accordance with ~~to~~ a pre-written plan (Burn Plan) that identifies land management goals and specific fire use strategies to safely achieve those goals, with prior approval by the applicable regulatory agencies. Burn Plans address characteristics of the land being treated (like topography and vegetation type) and include carefully defined and required parameters to initiate a prescribed fire for temperature, humidity, wind, moisture of the vegetation, and conditions for the dispersal of smoke. The Burn Plans also specify how the fire will be applied, by whom, and what fire control people and equipment must be on-scene before the burn can commence. After the Burn Plan is complete and conditions are right, a prescribed burn can proceed under the supervision of a qualified Burn Boss. Low intensity fire is skillfully applied to selectively burn fuels like dead wood, brush, forest understories, and grassland.

SELECT PRESCRIBED FIRE STAFF CON'T

Holding Specialist - Supervises all resources that are responsible for ensuring the prescribed fire stays within the burn unit boundaries. Reports to the Burn Boss and coordinates with Firing Boss.

Resource Advisor - Provides professional knowledge and expertise for the protection of natural, cultural, and other resources within an incident environment.

Fire Effects Monitor - Responsible for collecting incident status information and providing this information to the Burn Boss. The information may include fire perimeter location, onsite weather, fire behavior, fuel conditions, smoke, and fire effects information needed to assess firefighter safety and whether the fire is achieving established incident objectives and requirements.

The smoke from a prescribed fire can be a nuisance, but when prescribed fire is planned and executed by fire professionals in conjunction with air quality professionals, smoke impacts can be greatly reduced. Prescribed fire is usually the ideal wildland fuel treatment method. It is very compatible with environmental goals and a cost-effective alternative to more labor intensive and time-consuming methods like mechanical or hand-clearing of vegetation (City of Austin and Travis County, 2014).

Prescribed fire is a powerful tool for Midpen. The Program includes using prescribed fire for habitat enhancement and reduction of fuel loads~~, particularly in interior areas of OSPs, away from developed roads and infrastructure~~. This PFP outlines the key elements of how Midpen will utilize prescribed fire as part of the Program. The description presented in the PFP is programmatic in nature and will be updated with additional details into the burn units, methods, locations, and planning prescriptions as they are developed.

5.2 Fire History and Prescribed Fire

5.2.1 Historic and Current Vegetation Management and Fire History

Historic and current vegetation management and fire history are described in Section 4.2.1. Today, in the absence of fire for decades, both live and dead fuels have accumulated creating higher surface fuel loads, vegetation density, and varied species composition from what was seen prior to European contact.

5.2.2 ~~Recent~~ Use and Benefits of Prescribed Fire

Prescribed burns are carefully planned for with consideration for a variety of factors, including those that affect fire behavior, specifically weather, topography, vegetation types, and historic fire regime, as well as natural and anthropogenic resources. A key difference between a wildland fire and a prescribed fire, is a wildland fire always starts out 100 percent uncontained compared to a prescribed fire that starts out fully contained. This fact correlates directly to why impacts on resources and communities are generally less for prescribed fire, comparative to a similarly sized wildland fire.

Prescribed burns are implemented under conditions to ensure the fire burns at a low severity, leaving trees and large shrubs alive, but burning the surface fuels (e.g., litter, duff, low vegetation), which limits air quality and smoke issues for neighboring communities as well as

ensuring fire fighters can maintain control. In general, two to four times more fuel is consumed during a wildland fire compared to a prescribed fire (Ottmar, 2013). During a wildland fire, fuels are generally drier, tree crowns are typically ignited, much or all of the fuel load present in an area (including live vegetation) may be consumed, and ignition generally occurs during very windy periods. Prescribed burns, however, are low intensity fires that burn less of the fuel load available, typically dead, and low-lying vegetation. Regular, low-intensity prescribed burns can reduce fuel loads that could otherwise contribute to the intensity and spread of a wildland fire (CNRA, 2018).

Many studies have been conducted on the efficacy of prescribed burns to reduce the risks associated with and that alter the behavior of subsequent wildland fire. Studies point to a short-lived effect of prescribed burning on rate of wildland fire spread generally disappearing as soon as the fuel complex regains its pre-burn structure (within 2 to 5 years after prescribed fire). The overall benefits of prescribed burning, namely in avoiding crown fire or substantially reducing the potential for its occurrence, should persist for longer periods, since the understory vegetation layer build-ups at a lower rate. Studies have found evidence of wildland fires stopped or slowed by previous prescribed fires, improved fire control operations due to the existence of fuel-reduced areas and reduced fireline intensity, effective protection of assets, and less overall demand for firefighting resources extended through 5 years after the treatments. Fuel reduction burning in the last 10 years can still influence fire behavior and assist in fire suppression, even if the most observable benefits, including on wildland fire propagation and fire suppression, were studied to occur within 2 to up to 5 years after the treatment (Fernandes & Botelho, 2003).

Wildland fires result in a greater quantity of carbon lost per acre and higher particulate matter emissions rates compared to prescribed burning and burn an order of magnitude more land than prescribed burning (CARB, 2017; Liu, et al., 2017). One study found that implementing prescribed burning, in forest classes that historically had relatively frequent fire intervals and were determined to be amendable for burning, was modeled to reduce GHG emissions by 18 to 25 percent in statewide emissions for states in the western U.S. compared to wildland fires (Wiedinmyer & Hurteau, 2010). Modeling conducted of mixed conifer forests, found that for all air pollutants, ignition of a wildland fire in an untreated area resulted in higher mean emissions compared to a prescribed fire conducted or a wildland fire ignited in an area after mechanical fuel treatment (Hyde & Strand, 2019). Although emissions from all the mechanical pre-treatment plus prescribed burn emissions with a post-treatment wildland fire were found to equal the emissions from a pre-treatment wildland fire (Hyde & Strand, 2019). Notably these emissions would be staggered and due to the ability to plan the prescribed fire during optimal weather conditions, sensitive communities would not necessarily experience the same level of smoke and air quality effects compared to a wildland fire in an untreated area.

Vegetation communities and special-status species respond differently to fire, with some communities and species benefitting and others experiencing negative effects or mortality. Even for species and communities that benefit, such as chaparral and coastal scrub communities (Keeley, 2008) or San Mateo woolly sunflower (*Eriophyllum latilobum*), extreme wildland fire

behavior and temperatures could damage the seedbank or cause mortality. Prescribed burning can be planned for and conducted during the optimal time of year and in suitable locations to benefit species and communities that would benefit from burning and avoid those that would not (refer to Figure 5 1 for a photo of wildflowers growing after a prescribed burn). Cultural resources may be directly or indirectly impacted by the passage of a fire. Direct or first order impacts include the effects of heat; the deposition of combustion products (e.g., tars, soot and ash); and the exposure of cultural resources to discovery. Indirect or second order effects include the destruction or redistribution of artifacts due to accelerated erosion of the burned site. In addition to prescribed burning occurring during lower temperature days, the lower fireline intensity associated with a surface fire, such as during a prescribed fire, compared to a catastrophic fire, that extends into tree crowns, would reduce vegetation mortality and damage to cultural resources, if present. If a wildland fire ignites following prescribed fire treatment, the fire may be easier to contain and suppress, and the fireline intensity may be reduced, as discussed under wildland fire risk, which would minimize effects on biological as well as cultural resources present.

Figure 5-1 Example of Vegetation After Prescribed Burning

Vegetation regrowth at Russian Ridge OSP in spring 2008 after a prescribed burn.

5.2.3 Prescribed Fire on Midpen Lands

Midpen has utilized prescribed fire as a vegetation management tool in the past, primarily in grasslands. Prescribed burns were conducted for training and ecological purposes at Sierra Azul and Russian Ridge OSPs. These prescribed fires were focused ~~in~~ primarily in annual grasslands with relatively well-developed road access and road boundaries. Midpen has not conducted a prescribed burn within the last 10 years.

5.3 Purpose and Need

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. Fire opens forests to new generations of younger trees, preserves open grasslands by reducing the spread of encroaching shrubs and/or trees, and stimulates seed germination and shoot growth in chaparral. 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.

Many Native American tribes used fire to shape the natural environment and to clear underbrush and create meadow areas attractive to deer and other animals. Open meadows improved visibility for hunting and encouraged the growth of acorn oaks and other edible plants. Subsequent implementation of fire suppression policies eliminated these benefits, reversing their positive environmental effects.

Impacts of fire suppression continue to reduce biodiversity in Midpen lands. Grasslands and oak woodlands are decreasing in extent due to invading brush and forest species. Stands of coastal scrub and chaparral have aged and are not being renewed. Dense tangles of brush and young trees have largely replaced the park-like understory beneath redwood and Douglas fir forests and mature oak woodlands described by early European explorers.

Changing climatic conditions, past land uses, and years of fire suppression have increased fuel loads and fire-prone conditions that could contribute to larger more intense wildland fires. The primary need for the PFP is to reduce live and dead fuels, particularly in areas where mechanical treatments are not feasible or effective due to access and vegetation type. Secondarily, reintroduction of fire as an ecological process can reduce potential fire risk, thus enhancing public safety, and restore ecological function and resiliency, particularly for fire adapted species.

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. Prior to the mid to late 20th century, landscapes in the San Francisco Bay Area were either managed through natural fire or through Native American practices of prescribed burning that kept fuel loads down. Prior to European contact, the spread of invasive species that alter ecosystems and increases fire risks was also much less of a concern.

The purpose of this PFP is to define the activities that Midpen will implement to reinstate prescribed fire practices on their lands that reduce wildland fire risks, while also preserving and restoring biodiversity and minimizing effects on the environment. This PFP identifies the following:

- Historic regional vegetation and fire regimes;
- History of vegetation management on OSPs and current practices;
- Locations and prioritization of prescribed fire projects;

- Planning process for undertaking prescribed fire projects;
- Methods for creating, implementing, and maintaining prescribed fire projects; and
- Best management and environmental protection measures to use during prescribed fire projects.

This PFP focuses on prescribed fire to reduce fuel loads and restore natural ecological processes in OSPs, away from the WUI and other infrastructure. Another component of the PFP will be the use of ~~cultural~~ traditional ecological knowledge burns in coordination with Native American Tribes.

5.4 Prescribed Burn Units

5.4.1 Units

Burn units are discrete units of land that will be targeted under a single prescribed burn. Prescribed fire burn units will generally consist ~~be~~ of continuous vegetation types. Units are sized to allow a prescribed fire to be implemented in one operational period (typically an 8- to 12-hour shift). Unit boundaries will follow existing infrastructure (roads, trails, and disclines) where feasible and will generally be dominated by one vegetation type (e.g., grasslands, shrublands, oak woodlands). In some cases, multiple vegetation types may be burned within the same unit where fireline construction, topography, vegetation boundaries, and access constrain burning a single vegetation type. Once developed, the burn unit maps will be available in Appendix D.

5.4.2 Prioritization

Prescribed burns will generally be prioritized by vegetation type, fuels reduction value, and potential for successful implementation. Initial burns may focus ~~first~~ on re-establishing prescribed fire training areas. These areas will ~~that may~~ be used for interagency training ~~both~~ 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 will be defined in the future, but may include condition of area or burn unit in terms of forest health, presence of invasive species, 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.

5.5 Planning Process

Individual prescribed fires will be conducted under an appropriate Burn Plan. The Burn Plan would be prepared under the guidance of the appropriate approving entity, which include CAL FIRE and/or the local county fire department, and will include the BAAQMD and MBARD. Burn Plans typically specify the burn unit level approach and are prepared by a qualified person. These 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 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, or notify MBARD of the proposed prescribed burn by submitting a Smoke Management Plan and Smoke Management Permit.
- Develop ~~burn plan~~ 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.

Smoke management is an important component of the planning process. The California Air Resources Board (CARB) has adopted Smoke Management Guidelines, that will be used to create the SMP. The SMP specifies the "smoke prescription," which is an assessment of the air quality, meteorological, and fuel conditions of the proposed burn. Depending on the size and complexity of the burn, the SMP will contain some or all of the following information:

- Burner name and contact information
- Burn method and fuel type
- Nearby population centers
- Planned burn time
- Acceptable burn ignition conditions
- Contingency planning
- Burn monitoring procedures
- Location and size of the burn
- Expected pollutant emissions
- Smoke travel projections – including maps
- Duration of the burn
- Smoke minimization techniques
- Description of alternatives to burning
- Public notification procedures

Midpen may begin making final preparations for CAL FIRE or a local fire agency to carry out a prescribed burn once BAAQMD or MBARD (and if also required the local fire department) approves the Burn Plan, including the permit and SMP. For a prescribed burn conducted to enhance habitat for California red-legged frog or San Francisco garter snake, Midpen will notify USFWS in accordance with Midpen's Recovery Permit.

Midpen will organize the resources needed to conduct the burn, notifying the public and adjacent neighbors about the planned timing and specifics of the burn, and obtaining final BAAQMD or MBARD authorization to actually conduct the burn in accordance with the prior approved Burn Plan. Midpen would contact BAAQMD or MBARD up to 96 hours prior to the desired burn time to obtain a forecast of the meteorology and air quality needed to safely

conduct the burn. Midpen would continue to work with BAAQMD or MBARD and CARB until the day of the burn to update the forecast information.

BAAQMD or MBARD authorization to conduct a prescribed burn is provided for no more than 24 hours prior to the burn. The individual who is granted the authority to burn (Burn Boss) is responsible for assuring that all conditions in the approved SMP and burn permit are met throughout the burn. Once the fire has been ignited, Midpen and participating firefighting agencies must make all reasonable efforts to assure the burn stays within the approved SMP prescription. If a burn goes out of its prescription, or adverse smoke impacts are observed, the Burn Boss will implement smoke mitigation measures as described in the SMP (CARB, 2019).

5.6 Prescribed Burning

5.6.1 Overview

This section describes how prescribed burns are carried out, including pretreatment; definition of burn units; mop up; and different treatment types, equipment, personnel, and schedules.

5.6.2 Implementation

Planning and Preparation

Creation and Maintenance of Control Lines

Where feasible and effective, existing control lines (also known as firelines) including paved roads, dirt roads, trails, and disclines will be utilized for control lines. These existing lines may 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 burn. 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. In fire suppression, a blackline denotes a condition where there is no unburned material between the fireline and the fire edge. New firelines will be constructed to standards described in the Burn Plan, but typically will be 1-foot to 6-foot wide, depending on location, vegetation type, and type of equipment used to construct the line. Hose lays may be used along firelines at the discretion of the Burn Boss, or as described in the unit-level Burn Plan. Temporary firelines may be rehabilitated as needed once the prescribed fire is declared out by the Burn Boss.

Safety Precautions

The unit-level Burn Plan will describe burn unit safety, including potential hazards and mitigations. These precautions can include, but are not limited to, managing individual firefighter safety through proper equipment (including respiration), training, and hydration. Mitigating risks of potential falling live and dead trees or managing vehicle and human traffic within the proximity of the burn will be considered.

Prescribed Burning ~~by Unit~~ Implementation

The prescribed fire will be ignited in the planned burn units ~~Units will be ignited~~ using approved ignition devices, which can include equipment such as a drip torch or hand-held flare ("fusee"). The Burn Plan will describe the general ignition pattern such as a strip head fire, dot ignition, or other, with discretion given to the ~~burn boss~~ 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. Mop up is when firefighters extinguish or remove burning material near the control lines. Select snags or trees may need to be taken down because of fire inside their trunk. Logs may need to be trenched to prevent ~~their~~ rolling after an area has burned. Putting out any flames or stirring up a hot spot that is smoking is also done. The work starts 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 may remain on site for extended periods of time (overnight). Mop up work is generally performed ~~done~~ all the way around a fire's edge. Mop up will be conducted using hand crews, equipment, hose lays, or other method as described in the unit-level Burn Plan.

Rehabilitation

Rehabilitation consists of the decommissioning of control lines as well as follow-up weed control after a prescribed fire. Control line decommissioning is generally limited to the manual re-distribution of duff and brush back into the previous cleared lines. This spreads native seed back into the lines to facilitate natural revegetation. It also provides erosion control and discourages the formation of social trails. Because some weed seeds are stimulated by fire or become readily established in post-fire settings, prescribed burn sites will be patrolled by Midpen EDRR crews for 1 to 5 years as needed following a burn event to identify the need for weeding or additional restoration work.

5.6.3 Treatment Types and Methods

Physical Control

The prescribed fire will be controlled using methods and resources described in the unit-level Burn Plan under the direction of the Burn Boss. Control ~~methods can include, but are not limited to~~ will 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 may have limited mechanical pre-treatment to improve firelines or operational safety. Treatments may include, but are not limited to mowing, mastication, chipping, falling of snags, and brushing of roads. These treatments will generally follow those described in Chapter 4: Vegetation Management Plan.

Pre-treatment includes:

- Removal of live limbs of trees up to 10 feet above the ground to minimize the potential for fire to spread to the canopy;
- Scattering and/or mastication of accumulated dead and decadent woody brush;
- Top-cutting and on-site scattering of green brush (particularly broom) a minimum of 60 days before the burn event to cure, which facilitates horizontal fire spread during the event and reduces smoke production; and
- Installation of control lines (approximately 1- to 6-foot-wide bands where vegetation has been cleared to expose mineral soil) where natural control lines such as roads, trails, or water bodies are unavailable.

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

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

Pile burning is a method of biomass disposal that uses fire to eliminate piles of dried plant material. Piles vary in size from 5 to 10 feet in diameter and 4 to 6 feet in height. Piles are constructed in concert with brush or weed removal and are placed in openings away from power lines and tree canopies to allow for safe ignition at a later date. The composition of piles varies with vegetation type, and could consist of chaparral species, broom, as well as hardwoods and conifer limbs. The total volume of material allowed to be pile burned in a year ~~will be determined in the future~~ is addressed under the VMP.

Pile burning occurs between November and May under the direction of Midpen employees ~~staff~~ on days when weather conditions meet the specifications of the BAAQMD ~~permit~~ and MBARD. Multiple piles may be burned on a single day. Drip torches are used to start ignitions, with fuel use limited to 10 gallons or less per day. Midpen employees ~~staff~~ 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.

Prescribed Burn Types

Ecosystem Restoration Burns
Generally, all prescribed burns will provide ecosystem restoration benefits. In cases where small areas may not passively revegetate, these sites may be seeded with native species, under the advice of a Midpen Resource Advisor.

~~Cultural Resource~~ Traditional Ecological Knowledge Burns
~~Cultural~~ Traditional ecological knowledge resource burns may 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 should be planned and implemented in collaboration with local Tribal Representatives.

Training Burns
Prescribed burns may be used for training by Midpen employees ~~staff~~ as well as cooperating agencies. Training burns can 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 can be used to train personnel on wildland fire suppression tactics. Training burns can be ~~done~~ performed as stand-alone burns or in conjunction with any prescribed burn under the direction of the Burn Boss.

Prescribed Natural Fire
The details of implementing prescribed natural fire are only conceptual at this time and will only be applicable under limited circumstances. In the case of multiple ignitions, such as multiple lighting 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 allowing firefighters to make tactical decisions such as lighting backfires or choosing a better location for a dozer line. 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 will never dictate suppression tactics but only identify areas that do not require protection from the effects of a wildland fire.

5.6.4 Equipment and Personnel

The specific equipment and personnel needed to conduct a burn will be described in the unit-level Burn Plan. General types of equipment would be similar to those listed for the VMP and may include fire engines of different sizes (depending on cooperating agency or contractor equipment), fire hose, hand tools, chainsaws, and approved ignition devices. In some cases, contingency equipment may include a plow, small Bobcat, or bulldozer. Additional aerial equipment may include helicopters of different sizes if needed for implementation or contingency.

5.6.5 Schedule and Timing for Implementation

Midpen anticipates conducting one to two prescribed burns during the first three to five years of the Program. After year five, Midpen may implement as much as three burns a year. Burns will 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 a 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.

5.7 Best Management Practices Incorporated into the Plan

Burn Plans may incorporate additional unit-level BMPs, as needed to address local resource protection or other concerns at the unit level. These BMPs include specific precautionary actions to minimize the potential for erosion following a burn, reduce smoke during a burn, control the burn, and preserve important biological layers that exist at and below the ground surface.

The following prescribed fire BMPs could be included in a Burn Plan (USEPA, 2019):

- Develop and implement a smoke management plan in accordance with current relevant local, CAL FIRE, and BAAQMD or MBARD guidelines;
- Develop and implement a firing plan that best meets unit-level resource objectives for vegetative cover;
- Utilize existing roads and trails for firebreaks where safe and feasible;
- Build waterbars and stabilize constructed firelines as needed to reduce direct erosion into streams;
- Limit use of mechanical equipment for fireline construction in riparian areas;
- Protect against excessive erosion or sedimentation to the extent practicable;
- Avoid:
  - Using fire-retardant chemicals[3] in riparian zones and over watercourses, and prevent their runoff into watercourses;
  - Applying chemicals in streamside management zones or wetlands;
  - Cleaning application equipment in watercourses or locations that drain into watercourses;

[3] Note that fertilizers and fire retardants contain high amounts of both nitrogen and phosphorus. These compounds can accelerate eutrophication (a process whereby water bodies are choked by overabundant plant life and algae due to higher levels of nutrients such as nitrogen and phosphorus).

  - Constructing waterbars in firelines that divert surface runoff directly into streams;
- Comply with applicable local, state, and federal regulations regarding the transport, handling, storage, application, and disposal of ~~pesticides~~ herbicides, fire retardants, and fertilizers;
- Monitor weather conditions such as rain, wind speed, temperature, and humidity during application to prevent drift, volatilization, and surface water runoff;
- Carefully handle and dispose of oil and fuel for equipment and vehicles. Spills, leaks, empty containers, and filters are potential sources of soil and water contamination if improperly managed; and
- Develop and implement a spill contingency plan identifying all actions to be taken in the event of a chemical spill, including phone numbers for federal, state, and local agencies that must be notified.