

California Cooperative Forest Management Plan

Woolman at Sierra Friends Center

13075 Woolman Lane, Nevada City, CA 95959

College Park Friends Educational Association



Plan preparer: Erin Andrew, M.S., Sierra Streams Institute
Funding provided by: California Wildlife Conservation Board

Purpose of this Plan

This Multi-Agency Cooperative Forest Management Plan was developed for use in California by the California Department of Forestry and Fire Protection (CAL FIRE), the United States Forest Service (USFS) and Natural Resources Conservation Service (NRCS) using information from a national joint Forest Stewardship, American Tree Farm System (ATFS), NRCS Planning Process and the California Forest Improvement Act.

This management plan template meets management plan requirements for grant agreements and other provisions available through CAL FIRE, USFS, NRCS, and the ATFS. Signature Pages are provided to document acceptance of this management plan in meeting those requirements. Signatures are only required for that entity providing funding as requested by the landowner.

This management plan is a tool for and belongs to the landowner. This forest management plan outlines the conditions and capability of property resources, documents the landowner's objectives and decisions and identifies potential resource improvement projects. It is meant to be a flexible and educational document that considers a planning horizon of at least five years but may include objectives that require a much longer time frame.

Acknowledgements

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Certifications

Note to the landowner: This Forest Management Plan is provided as a guide to help you accomplish the objectives that you have for your forest. This Forest Management Plan will guide you in achieving the benefits of managing your forest and forest related resources. With this Forest Management Plan, you are eligible to participate in the CAL FIRE's California Forest Improvement Program (CFIP), US Forest Service's Forest Stewardship Program (FSP), the American Forest Foundation's American Tree Farm System (ATFS) and the Natural Resources Conservation Service (NRCS) programs. This plan will need to be reviewed and approved by representatives for each of the programs that are providing funding.

Landowner Certification

"I have reviewed this plan and approve its content."

Name (print or type):

Signature:

Date:

Mailing Address:

Phone number:

E-mail:

USFS Forest Stewardship Program Certification

Plan Preparer

“I certify that this Forest Management Plan meets the requirements of the federal Forest Stewardship Program.”

Plan Preparer Name (print or type):

Signature:

Date:

Stewardship Forester

“I certify that this Forest Management Plan meets the requirements of the federal Forest Stewardship Program.”

Stewardship Forester Name (print or type):

Signature:

Date:

Forest Stewardship Tracking Number

NRCS Cost Share Certification

Technical Service Provider

“I certify that this Forest Management Plan meets the requirements of the USDA-NRCS Programs and/or the Quality Criteria for forest activity plans in Section III of the USDA NRCS Field Office Technical Guide.”

Technical Service Provider Name (print or type):

Signature:

Date:

Registered Professional Forester #:

District Conservationist

“I certify that this Forest Management Plan meets the requirements of the USDA-NRCS Programs and/or the Quality Criteria for forest activity plans in Section III of the USDA NRCS Field Office Technical Guide.”

District Conservationist Name (print or type):

Signature:

Date:

ATFS Program Certification

“I certify that this Forest Management Plan meets the requirements of the American Forest Foundation’s American Tree Farm System.”

ATFS Inspecting Forester (print or type): Signature:

Date:

Inspector Number:

Certified Tree Farm Number (e.g. CA 1234):

Date of ATFS Certification:

CFIP Certifications

Plan Preparing Registered Professional Forester

“I certify that I, or my supervised designee, personally inspected this California Forest Improvement Program (CFIP) plan area, and that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards. I further certify that this plan is based upon the best available site and landowner information, and if followed, will not be detrimental to the productivity of the natural resources associated with this property.”

Name (print or type): Kevin Whitlock

Signature:

Date:

Registered Professional Forester #: 2436

Organization or Company: Under the Trees, Inc.

Mailing Address: P.O. Box 363

Phone Number: 530-559-0901

CAL FIRE Unit

“I certify that I, or my supervised designee, personally inspected this California Forest Improvement Program (CFIP) plan area, and that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards.”

Forestry Assistance Specialist Name (print or type):

Signature:

Date:

Unit & Mailing Address:

CAL FIRE State or Region CFIP Coordinator

“I certify that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards.”

CFIP Coordinator Name (print or type): Signature:

Date:

Registered Professional Forester #:

Landowner Information

Landowner(s) Name: College Park Friends Educational Association—Coleen Hedglin

Mailing Address: 13075 Woolman Ln, Nevada City, CA 95959

Phone Number: 530-273-3183

E-mail: coleenh@woolman.org

Landowner's Representative (if applicable)

Landowner's Representative Name (if applicable): Kevin Whitlock, RPF

Representative's Registered Professional Forester # (if applicable):2436

Mailing Address: P.O. Box 363

Phone Number: 530 559 0901

E-mail: underthetrees@att.net

Management Plan History

Previous management plans have been completed for this property. The first plan was a Forest Management Plan completed June 21st, 1982. A Nonindustrial Timber Management Plan was completed on September 27th 2002.

Property Facts

Public Land Survey System (PLSS) Description:

Parcel 1: S ½, SE ¼, SE ¼, SW ¼, Section 5, T16N, R8E, MDB&M

Parcel 2: S ½, SE ¼, SE ¼, SW ¼, Section 5, T16N, R8E, MDB&M

Parcel 3: S ½, SE ¼, SE ¼, SW ¼, Section 5, T16N, R8E, MDB&M and a portion of the N ½, Section 8, T16N, R8E, MDB&M

Nearest City or Town: Nevada City, California

County: Nevada

Assessor's Parcel Number(s):

Parcel 1: 004-400-050

Parcel 2: 004-400-012

Parcel 3: 004-081-059

GPS Coordinates: 39.26871842038447, -121.10246366025747

Tract and Farm Number (if applicable): N/A

Total Ownership Acreage: 237.7

Total Forested Acreage: 209.0

Does the Landowner reside on the property? No.

The property is considered gentle topography overall (grade 6% to 35%) with some steep drainages and slopes along the east, south, and west property boundaries. Elevation ranges from 2000 feet to 2200 feet.

Describe the overall slope of the property by percent of land in each of the following categories:

- Flat (grade less than 5%): 20 percent of the property
- Gentle (grade 6% to 35%): 70 percent of the property
- Steep (grade greater than 35%): 10 percent of the property

Road System

The percentage of the property accessible by road is 35%, with the total length of improved road just over 2 miles, and unimproved road is approximately 2950 feet.

Watershed Information

The property spans two watersheds according to the State Water Resources Control Board. Most of the property (235.7 acres) exists within the Rush Creek Watershed (# 5517310001). The remaining 2 acres to the southwest exist within the Little Shady Creek Watershed (#551731002).

Property History

In 1982, an FMP was written for John Woolman School by Marshall N. Palley. He includes history for the property, indicating that the area, known as the “Illinois Ravine”, was heavily mined from the 1850s to the 1930s. The large rock piles visible today along stream channels throughout the property resulted from mining activity using pickaxes and sluice boxes.

A small timber sale was reported in 1974, of 60,000 board feet.

200 acres of the property was owned by the Marshall family until the mid-forties, which they purchased for \$150 dollars. On it, they owned a ranch and mining rights. In the 1950s, the property passed hands to Stillens, which was sold in parts to Mel and Isabel Hedrick, and ultimately in its entirety by 1959. They sold half the property to the College Parks Friends Educational Association in 1962 and the remaining portion in 1968. The school was named for an 18th century Quaker, who was a peace advocate.

The recent 705-acre Jones Fire (2020) burned a large strip through the Woolman property, from Yuba River drainage up canyon, through the western half of the property, ending at Newtown Road. Infrastructure was damaged irreparably— 19 buildings were burned, including 150 acres of forest on the campus. Standing dead oak is abundant, and there remains patches of dead, burned ponderosa pine (*Pinus ponderosa*). After this fire, an existing NTMP (2-02-005-3-NEV) was used to log fire damaged trees; in total, 42 acres were treated. The west-facing hillslope was planted with ponderosa pine and Douglas-fir (*Pseudotsuga menziesii*) seedlings, and giant sequoia (*Sequoiadendron giganteum*) trees at the base. This followed a proposed timber harvest of 67 acres in 2002.

In the 1980s, Woolman properties were broken up and sold to the west, along Jones Bar road. Parcel 004-400-050 to the northwest, along Tasha Road, was acquired more recently.

The Woolman School is also known as “Sierra Friends Center” and “Camp Woolman”.

Current Property Conditions

Property Infrastructure

Structures

Buildings have not been replaced since the Jones Fire. This is due to a Nevada County requirement that a secondary egress road exist before any additional development. As of April 2023, the beginning stages are underway to establish this road.

Roads

This property is part of a Road Association with other local landowners. The gravel roads are surfaced occasionally, which improves drainage and limits erosion. In 2021, these improved roads were graded. Weed control along roads and trails is manual, with a weed eater.

Electrical Improvements

Two solar panels are present here, one at the Meeting House and another on upper campus associated with long-term rentals. The Jones Fire burned buildings and powerlines. If buildings are to be replaced they will need new electrical work. Underground utilities exist from building to building.

Water Improvements

Two wells exist on the property, which store 10k gallons at a time for domestic use. The potable water infrastructure needs to be upgraded, which is in the planning stages. The NID irrigation pond had a system installed in 2022 with the assistance of a NRCS grant. A new distribution system is needed.

Forest Resource

The forest structure at Woolman is generally conifer-hardwood, but there are distinct stand types based on vegetation and history. A small blue oak woodland is in the eastern quadrant of the property, and there is a Douglas-fir and ponderosa pine stand that was planted after the Jones Fire in 2020, on the slope facing the pond, known as "Mel's pond". Standing dead black oak (*Quercus kelloggii*) dominate the Jones fire scar on the western side of the parcel, with regeneration clumps at the bases of the dead trees, constituting an oak woodland stand.

Technicians are hired to routinely care for the property, including removal of encroaching material along trails, pruning, and burning of dead material.

Regeneration levels appear adequate in most areas, consisting primarily of oak species. Shade-tolerant incense-cedar is the dominant conifer regeneration. Ponderosa pine and grey pine (*Pinus sabiniana*) regeneration is low.

In a southeastern section of the parcel, an old road exists, which is infested with medusahead (*Elymus caput-medusae*), an annual grass. Rocks are scattered throughout this several-acre area,

Current Property Conditions

which was mined. Placer diggings are also quite concentrated along the creek through the center of the property. Mine tailings and invasives like medusahead reduce productivity of forest soils, with rocks as a physical barrier.

Primary tree species

California black oak has a range extending from western Oregon south to northern Baja California. It grows in foothills and lower mountains at 200 – 8,000 feet. It hybridizes readily with interior live oak (*Quercus wislizeni*), called “Oracle oak.” Rather than existing in black oak stands, it is most common in mixed-conifer and ponderosa pine forests as an associated species. Trees can get up to 80 feet in height, and 4 feet in diameter, though that is becoming less common. Oak are excellent wildlife trees, supporting insect, rodent, bird, and small mammal life cycles—and this tree is no exception. The wood is used for making furniture, cabinets, flooring, high-grade lumber, and for fuelwood.

Interior live oak has both tree and shrub forms. It lives in California south to northern Baja California, and grows from 1,000 – 6,200 feet. They typically occupy dry, shallower soils, in valleys, canyons, and foothills. Interior live oak grow in oak woodlands, chaparral, and oak-mixed conifer habitats. Grey pine and poison-oak are common associates. Primary wood products use is as firewood. Leaves are evergreen. Sprouts readily after fire, browsing, cutting, or other disturbances.

Canyon live oak (*Quercus chrysolepis*) takes a tree or shrub form. It is also known as “golden cup oak” due to its fuzzy yellow acorn cap. These trees are native to Oregon, California, Nevada, Arizona and Mexico, growing at 300 – 9,000 feet on shallow soils, canyon walls, cliffs, and rocky outcrops west of the Sierra Nevada. Young leaves tend to be spiny, which acts as a deterrence for herbivory, but leaves may also have smooth margins. It is used for firewood.

Blue oak (*Quercus douglasii*) is so named due to the blue tinge that leaves may have, which may become deciduous in the drier months. It is endemic to California, occurring in the Coast Range and the foothills of the Sierra Nevada. Blue oak forms woodlands, and commonly exists with grey pine and interior live oak. Nonnative annual grasses are associated species, displacing the historically native bunchgrasses. They grow at low elevations (below 3,900 feet) and are extremely drought tolerant. Native Americans used the acorns (as with other oak species) to grind and make meal.

Ponderosa pine exists in the western United States into southern Canada and Mexico, growing up to 10,000 feet elevation. They are attractive trees, with long trunks with brown-reddish plates developing as they age. The *p. ponderosa* var. *ponderosa* variety (in California) is three-needled. These trees are very fire resistant due to their thick bark and self-pruning tendency. Many animals benefit from their seeds. These trees are susceptible to bark beetles; although many are native, bark beetles can have devastating consequences in stressed trees. Tree stress is much more common in today’s fire-suppressed, drought-susceptible, overstocked stands.

Current Property Conditions

Gray pine are distinctive trees, with their narrow, often leaning trunks with sparse crowns. Like the ponderosa, they self-prune, and are dependent on fire to prepare the seed bed for germination. These trees are scattered, and commonly associated with oak understory, with dry, rocky soils and grasses, but can develop along with ponderosa pine. Gray pine is endemic to California and grows at 100 – 6,000 feet. Native Americans ate the seeds, which are high in fat and protein.

Douglas-fir is a wide-ranging tree in its native range occurring from Canada to Mexico, and east to Colorado. *P. menziesii* is considered the “coastal variety”, and *P. glauca* as the “Rocky Mountain variety”. They tolerate a variety of site conditions but thrive along creeks and streams. Their distinctive cones are up to 4 inches in length, with warm-brown to straw coloring, and 3-pointed bracts that are likened to mouse posteriors. The Sierra Nevada is the southern limit of *P. menziesii*'s range, and it grows up to 7,500 feet, with moisture as its limiting factor. Bigcone Douglas-fir (*P. macrocarpa*) has cones up to 6 inches in length and occurs in southern California. Douglas-fir has high lumber value.

Incense-cedar (*Calocedrus decurrens*) is not a true cedar from the *Pinaceae* family but is in the cypress (*Cupressaceae*) family. They are shade-tolerant, slow-growing trees that develop large, irregular crowns that may almost reach the ground. Mature trees may have upright branches (candelabra shape), with fluted base. These trees are more susceptible to fire and have proliferated in forests with fire's absence. They occur at 2,000-6,000 feet often in mixed-conifer or hardwood-mixed conifer stands in the Sierra Nevada. Their range is from northern Oregon to Baja California. These trees are used to make wooden pencils.

For a detailed discussion of individual forest stands please see the Vegetation Unit Descriptions section of this plan.

Access and Security

The property has been surveyed, as selling of land has occurred over the years. The recent timber harvest project left flagging along some of the boundaries. There are neighboring properties with private residences surrounding Camp Woolman. Several property corners are existing while others could not be relocated after the fire.

There have not been notable incidents reported of trespass. There is no known shared access to the Woolman trails with adjacent landowners.

Recreation & Aesthetics

Aesthetically, Camp Woolman is a very attractive property, with creeks, sweeping hills, meadows and beautiful trails.

Numerous recreation and retreat activities are available for staff and the public. There is a network of trails for hiking, water bodies to swim in, and fields and forests to explore and learn from during outdoor education courses. Art and activism activities are offered here, and an organic farm and composting company use this land.

Current Property Conditions



Meadow with native forbs

Soils

A soil “series” are a classification level developed by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and consist of groupings based on similar soil characteristics (soil chemistry, physical properties, formation). Erosion hazard potential and productivity values were provided (as available) by the Tahoe National Forest Soil Survey (USFS, 2002) and the Nevada County Soil Survey (1975). **Table 1 details the proportion of these soils on the property.**

The following soil series occur on the Woolman property:

Chaix series support ponderosa pine, sugar pine, incense-cedar, black oak, bear clover and manzanita. These soils are on mountains with slopes of 5 to 75 percent. Chaix is moderately deep, excessively drained soil that formed from igneous rock (mainly granite or granodiorite). Elevations are from 1,200 to 6,500 feet. Runoff is slow to rapid, with moderately rapid permeability. *Erosion hazard potential is slight to moderate.* Projected bole volume growth is 82 ft³/acre/year.

Placer diggings are areas along natural drainage ways that have been placer mined or areas along those drainageways where natural deposits and sorting of gravelly, cobbly, or stony materials has taken place.

Dubakella series support open conifer stands, with buckbrush, grasses and forbs. These soils exist on mountains, with slopes of 5 to 75 percent. Soils formed from serpentine or serpentinitic bedrock, and are at elevations of 2,200 – 4,100 feet. Has a tendency to be stoney, with rock outcrops. Dubakella soils are well drained, with medium to very high runoff, and slow permeability. *Erosion hazard potential is moderate to high.* Projected bole volume growth is 50 to 85 ft³/acre/year for ponderosa pine.

Current Property Conditions

Secca series support manzanita, sparse grey pine, some ponderosa pine, ceanothus, blue oak, grasses and forbs. Has limited grazing opportunity. These soils exist on gentle to steep mountainous terrain between 1,700 and 3,000 feet. Soils are moderately well-drained, with slow to rapid runoff. Permeability is slow. *Erosion hazard potential is slight to high.*

Sites series support coniferous forest and associated hardwoods (e.g. ponderosa pine, Douglas-fir, California black oak). These soils exist on mountains, with slopes of 2 to 75 percent at elevations of 1,650 – 3,900 feet. Soils formed from metabasic and metasedimentary rocks. Soils are well-drained, with low to moderately low permeability. *Erosion hazard potential is moderate to high.* Projected bole volume growth is greater than 225 ft³/acre/year for Douglas-fir and 165 to 225 ft³/acre/year for ponderosa pine.

Table 1. Soil types on the Woolman property, according to the Natural Resources Conservation Service (NRCS).

Soil Type	NRCS Soil Symbol	Acres
Chaix very stony loam, thick solum variant, 5-15 percent slopes	CIC	75.5
Chaix very stony loam, thick solum variant, 15 to 30 percent slopes	CID	89.4
Placer diggings	Pr	29.2
Rock outcrop-Dubakella complex, 5-50 percent slopes	RrE	0.6
Secca-Rock outcrop complex, 2-50 percent slopes	ScE	39.4
Sites stony loam, 15-50 percent slopes	SmE	3.7
Total:		237.7

Streams, Wetlands and Ponds

There are four ponds on the property: two oxidation ponds exist for wastewater treatment, a small pond for irrigation is fed by a NID (Nevada Irrigation District) ditch (Class IV) is just off of Woolman lane, which runs off into Mel’s pond, located across from the planted seedling slope. Mel’s pond is used for occasional swimming. The ponds are in relatively good condition, though Mel’s pond has some minor bank disturbance.

The “Illinois Ravine” stream is a Class I watercourse, flowing north through the property and draining into the section of Rush Creek that parallels Highway 49. Gold mine tailing mounds are evident along the banks, which are 3-6’ across and 18” to the stream bottom. Rocks and gravel line

Current Property Conditions

the bed, up to 1' in width. The gradient is < 5% along 1,785 linear feet through the property. Alder (*Alnus sp.*) are found in some spots, and ferns, ponderosa pine and Himalayan blackberry are observed frequently growing near the banks. Large-diameter fallen logs have been found over the creek to the north (12"+ dbh).

Evidence of gold mining on the property along several of the Class II drainages is also clear, with tailings along the channels. These drainages flow into Illinois Ravine with gradients up to 10%. Riparian cover varies, as the western side of the property was burned in 2020, exposing the soil. Grasses, and particularly Himalayan blackberry, have occupied the banks post-fire, casting some shade, but offers a limited cooling effect compared to tree canopy cover. Several of these channels are up to 2.5' deep with cobbly beds. Organic debris has collected in them after the fire, but the previous logging operation removed most of the larger logs. The southeastern Class III drainages in particular have a section with a channel up to 8' deep and 12' wide. This gorge is the remnant of a mining era. Gradients for the Class III drainages are approximately 5%.

Wildlife

Fish and Aquatic Species

The Illinois Ravine stream flows into and out of Mel's Pond, which contains fish, so it is possible that fish may be present seasonally in this stream. The pond on the west edge of the property adjacent to Woolman Lane was reported to have catfish (*Clarias sp.*), bluegill (*Lepomis macrochirus*) and bullfrogs (*Lithobates catesbeianus*) in it. Riparian cover is adequate along the stream and drainages, and there is ample shading.

Upland Wildlife

A wide variety of animals are known to be present in the area, including numerous bird species, mice (*Peromyscus spp.*), black bear (*Ursus americanus*), black-tailed Jackrabbit (*Lepus californica*), mule deer (*Odocoileus hemionus californicus*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and rattlesnakes (*Crotalus spp.*). Turkey young (*Meleagris gallopavo*) were spotted along a meadow edge on the property on a site visit recently, and Western bluebirds (*Sialia Mexicana*) are supported on the property through nest box installment. Acorn woodpeckers (*Melanerpes formicivorus*) have been sighted in large numbers on the western side of the property, near the farm.

Multiple habitat types exist here that can support diverse wildlife. Oak trees in particular are highly beneficial for wildlife, as their acorns are consumed by many species, and insects (particularly wasps (family *Cynipidae*)) use them to complete their life cycles. Some animals may use the trails on the property to move unencumbered (deer are known for this) – and to track prey.

Standing dead ponderosa pine have been observed, serving as snag habitat for insects and woodpeckers (subfamily *Picidae*). The drainages, ponds and creek are water sources for wildlife, and an egret (*Ardea alba*) has been spotted in Mel's pond.

Current Property Conditions

Threatened or Endangered Species

The California Department of Fish and Wildlife Natural Diversity Data Base (CNDDDB) is a source for identifying special status flora and fauna in the state. Spatially, the extent of the search using the RareFind 5 tool within CNDDDB constituted four quads (French Corral, Nevada City, Rough and Ready, and Grass Valley), which meets the requirements of identifying special status species three miles from the site. *Table 2 details the species that may exist on the property, and Table 3 explains the California Rare Plant Rank system.*

No listed species have been reported on the property, but it is possible that the listed animals here have resided or come across the property at one point. None of these species were observed during site visits from June 2022 to January 2023; however, if spotted, the RPF presiding over forest management activities should be notified so that a buffer can be established around the observation area and suitable habitat for appropriate protection measures.

Table 2. Status of plants and wildlife that could occur on the property

Wildlife Type	Scientific Name	Common Name	Federal Status	State Status	CDFW Status	CA Rare Plant Rank
Animals - Amphibians	<i>Rana boylei pop. 3</i>	foothill yellow-legged frog - north Sierra DPS	None	Threatened	-	-
Animals - Birds	<i>Aquila chrysaetos</i>	golden eagle	None	None	FP ; WL	-
Animals - Birds	<i>Strix nebulosa</i>	great gray owl	None	Endangered	-	-
Animals - Birds	<i>Strix occidentalis occidentalis</i>	California Spotted Owl	None	None	SSC	-
Animals - Birds	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	Endangered	FP	-
Animals - Birds	<i>Laterallus jamaicensis coturniculus</i>	California black rail	None	Threatened	FP	-
Animals - Birds	<i>Ardea herodias</i>	great blue heron	None	None	-	-
Animals - Insects	<i>Bombus occidentalis</i>	western bumble bee	None	None	-	-
Animals - Insects	<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	Threatened	None	-	-
Animals - Mollusks	<i>Margaritifera falcata</i>	western pearlshell	None	None	-	-
Animals - Reptiles	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
Animals - Reptiles	<i>Phrynosoma blainvillii</i>	coast horned lizard	None	None	SSC	-

Current Property Conditions

Plants - Bryophytes	<i>Mielichhoferia elongata</i>	elongate copper moss	None	None	-	4.3
Plants - Vascular	<i>Allium sanbornii</i> var. <i>sanbornii</i>	Sanborn's onion	None	None	-	4.2
Plants - Vascular	<i>Carex xerophila</i>	chaparral sedge	None	None	-	1B.2
Plants - Vascular	<i>Rhynchospora capitellata</i>	brownish beaked-rush	None	None	-	2B.2
Plants - Vascular	<i>Fritillaria eastwoodiae</i>	Butte County fritillary	None	None	-	3.2
Plants - Vascular	<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	Humboldt lily	None	None	-	4.2
Plants - Vascular	<i>Lewisia cantelovii</i>	Cantelow's lewisia	None	None	-	1B.2
Plants - Vascular	<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandegee's clarkia	None	None	-	4.2
Plants - Vascular	<i>Cypripedium fasciculatum</i>	clustered lady's-slipper	None	None	-	4.2
Plants - Vascular	<i>Brodiaea sierrae</i>	Sierra foothills brodiaea	None	None	-	4.3
Plants - Vascular	<i>Viburnum ellipticum</i>	oval-leaved viburnum	None	None	-	2B.3
Plants - Vascular	<i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	dubious pea	None	None	-	3
Plants - Vascular	<i>Clarkia mildrediae</i> ssp. <i>lutescens</i>	golden-anthered clarkia	None	None	-	4.2
Plants - Vascular	<i>Eriogonum tripodum</i>	tripod buckwheat	None	None	-	4.2
Plants - Vascular	<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	Endangered	Endangered	-	1B.1
Plants - Vascular	<i>Azolla microphylla</i>	Mexican mosquito fern	None	None	-	4.2

CDFW= California Department of Fish and Wildlife Status; this status applies to animals only. For CDFW species that do not have a designated status, they are pending status evaluations. If assigned a status, there are the following descriptors: FP (fully protected, for rare species that face possible extinction), SSC (Species of Special Concern: for vertebrates with declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction), and WL (Watch List: Previously designated SSC, but no longer merit that status, need for clarification of status). CA Rare Plant Rank: this status applies to plants only. This was originally developed by the California Native Plant Society (CNPS) to categorize and define rarity in CA flora.

Current Property Conditions

Table 3. California Rare Plant Ranking descriptions

CA Rare Plant Rank	Description
1A	Plants presumed extinct in California and rare/extinct elsewhere
1B.1	Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
1B.2	Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California
1B.3	Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California
2A	Plants presumed extirpated in California, but more common elsewhere
2B.1	Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
2B.2	Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
2B.3	Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
3.1	Plants about which we need more information; seriously threatened in California
3.2	Plants about which we need more information; fairly threatened in California
3.3	Plants about which we need more information; not very threatened in California
4.1	Plants of limited distribution; seriously threatened in California
4.2	Plants of limited distribution; fairly threatened in California
4.3	Plants of limited distribution; not very threatened in California

Invasive Species and Pests

Several noxious weeds have been observed on the property.

Himalayan blackberry (*Rubus armeniacus*) is native to Armenia and Northern Iran and is a sprawling shrub with thorns that outcompetes native vegetation due to the thickets they form. Blackberry occurs on edges and open areas on the property, and along the riparian areas.

Scotch broom (*Cytisus scoparius*) is from northern Africa and parts of Europe, introduced as an ornamental and erosion control. It grows in sunny sites, and spreads rapidly on roadsides and borders of forests. It has a seedbank that can remain dormant for up to 80 years. It also is quite flammable, increasing wildfire risk. Scotch broom exists throughout the forests at Woolman.

Medusahead (*Elymus caput-medusae*) is an annual grass native to the Mediterranean region. It grows in disturbed areas, openings in chaparral and oak woodlands, and grasslands. After seeding, their dead stems persist, inhibiting growth of native plants and increasing fire danger. A several-acre medusahead “skeleton” monoculture has been spotted on an old road for mining access, adjacent to oak woodland and a steep drainage on the southeast part of the property.

Current Property Conditions



Dead medusahead thicket in previously disturbed site



Scotch broom on forest edge

Current eradication measures include small-scale removal of the broom and blackberry over the years, particularly along the trails.

Air Resources

The Woolman property has treated unwanted vegetation over the years through composting, green waste pickup, hand cutting, chipping, and masticating – either by hired staff, assistance from volunteers, or hired contractors. Burning of brush piles has occurred, but past prescribed burning on the property has not been reported.

See the *Future Property Conditions: Air Resources Section for more information.*

Future Property Conditions

Objectives

The following goals for the property have been expressed by the Woolman Action Committee:

1. *Improve defensible space from wildfire and manage to reduce the potential for high-severity wildfire.*
2. *Promote healthy, productive forests that are beneficial for wildlife.*
3. *Mitigate the Jones Fire effects on the forestland.*
4. *Hold consideration for future timber harvesting.*

Cultivating a low-severity fire for when wildfire occurs is a goal of the Committee. This may be accomplished via mechanical means and/or through the application of prescribed fire. It is not a matter of if, but when fire will burn in the area, and preparedness via fuels reduction and defensible space improvements can buy time for fire personnel, staff and the public for ingress and egress. Additionally, low-severity fire is better aligned with the land historically and would result in ecological benefits.

Woolman staff have referred to the presence of invasive species (notably Scotch broom and Himalayan blackberry) on the property, recognizing that these species degrade the quality and health of their land, and so removal of these plants is a priority for them. Forest health, wildfire risk and wildlife habitat are interrelated, and so targeted treatments for any of the aforementioned subjects will quite likely improve the others.

After the Jones Fire, salvage logging occurred and hazard trees near roads, powerlines, trails and access points were removed. Standing dead oak and conifers remain and have continued to die post-fire to the present day. Prioritizing the removal of diseased and standing dead vegetation will clear potential hazard trees, improve aesthetics, and limit potential additional fuel loading on the forest floor. Aesthetics matter at Woolman, as it is a center for outdoor education and recreation. Ensuring that this space has a pleasing forest component benefits staff and the public who travel to be here.

Timber harvesting in select areas is an objective; however, it is not justified at this time due to the depressed pine prices. The cost to cut and transport the trees would likely be higher than the profits from the timber. Therefore it is on “hold”, to be re-evaluated after the proposed treatments in this Plan are complete, and after a few years to evaluate market performance.

Family legacy was not discussed as a specific objective from Camp Woolman, however it is understandable that maintenance of an aesthetically pleasing, healthy forest resilient to wildfire would please future generations and be beneficial in the event of a parcel sale.

This property once had livestock, but management for livestock is no longer applicable for this property. Concern has not been expressed over potential trespass, although if this does become a concern, measures can be taken to address this, including the installment of a gate at the entrance at Woolman Lane.

Future Property Conditions

Constraints and Proposed Alternatives

The project as proposed in this Plan will produce the most desired outcome to meet the landowner objectives (above), maintaining high-quality timber stands, decreasing wildland fire potential, and improving the health of forestland for the watersheds and wildlife.

The following is an explanation of options that the landowner has (in no order of importance) regarding forest management:

1. The landowner may continue with the management practices recommended in this Forest Management Plan, which align with their objectives.
2. Some land use alternatives to current use and landowner objectives include expanding farming acreage, adding more trails for recreation and managing the remaining timber resources for potential harvesting.
3. Opting to not pursue this project is an option for the landowner, but there are risks involved. Wildfire will occur in the future on the forestland of the project area, and with the same or increased contiguous, dense fuel loading, fire has the potential to carry quickly and at high severity. Non-native invasive species will continue to reduce biodiversity on the land, inhibiting growth of native trees, shrubs and understory species, ultimately reducing habitat and carbon sequestration potential. Hands-on educational opportunities within our community on the benefits of prescribed fire and other fuels treatments and stewardship learning with children would be missed.
4. The timing of the proposed project in this Plan can be delayed, but with potential risk (see above paragraph), particularly in regard to wildfire outbreak potential.
5. Another option is for the landowner to sell the property; however, this is not feasible as the landowners are not willing sellers at this time.

Economic Sustainability

This property derives income from educational activities, and Bluebird Farm and Catalyst BioAmendments are both businesses on the property. Should the landowners request a cost benefit analysis for the property, the confidential analysis will include timber management and carbon sequestration as income streams.

Smaller-scale planning of periodic timber harvests can provide increased economic benefit. This Forest Management Plan also provides for an assessment of resources and presentation of management opportunities.

Timber Yield Tax is required when landowners harvest their trees, or timber. It is based on values of local market transactions. For more information, consult the California Department of Tax and Fee Administration at <https://www.cdtfa.ca.gov/taxes-and-fees/timber-tax.htm>. After a wildfire, a portion of the forest stand loss on your property can be claimed on your federal income tax statement. Seeking tax advice from an agent is encouraged.

Future Property Conditions

Roads

Woolman currently has one access road, from Jones Bar Road to Woolman Lane. In the event that emergency evacuation is needed, this could be quite restrictive. A road for emergency access is proposed (roughly 1865 feet), to connect Woolman Lane northwest to Tasha Road. No easements or management plans would be required according to Nevada City Engineering, Inc.

For the reduction of soil erosion on roads, ensure that the roads are well constructed, and on ridgetops rather than slopes where possible. Ensuring that drainage structures have been properly sized and installed is important to prevent water erosion from the wet season. Checking culverts annually and clearing debris as needed before the rains is a good preventive measure. Properly constructed water bars are effective at limiting erosion. Rocking the road with 1 ½" gravel is an improvement to limit erosion and dust.

Noxious weeds often develop in disturbed areas, such as roadsides. On and off-road vehicles (OHVs) can transport the seeds from roads to other areas. Targeting weeds on and along roadsides is a relatively manageable process opposed to trekking through the backcountry and is encouraged to limit spread as soon as they are identified. Washing of vehicle tires and undercarriages, particularly with OHVs and land-altering machinery prior to any construction or fuel treatment activities is a best management practice.

It is highly advisable that a Forest or Civil Engineer be consulted before any future road building is undertaken on the property.

Trail construction and maintenance should follow the same guidelines as for roads, except that high use trails will be built with a maximum slope of 6%. Mulching of trails with fir needles, forest litter, or some other suitable material will help reduce erosion.

Rolling dips or water bars should be maintained on all traveled roads within the property. They should also be installed on older roads and trails, which have evidence of erosion occurring. Water breaks should not exceed the following standards (based on a moderate Erosion Hazard Rating):

- <11% Gradient – 200'
- 11-25% Gradient – 150'
- 26-50% Gradient – 100'
- >50% Gradient – 75'

Water breaks should be located to allow water to be discharged into some form of vegetative cover, rocks or other non-erodible material and should be constructed to provide for unrestricted discharge at the lowest end of the water break so that water will be discharged and spread in such a manner that erosion will be minimized.

Water breaks should be cut diagonally a minimum of six inches into the firm roadbed or skid trail and should have a continuous firm embankment of at least six inches in height at the lower edge of the water break cut.

Avoid using roads during wet periods if such use would likely damage the road drainage features.

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Consider gates, barricades, or signs to limit use of roads during the winter period (Nov. 15th - April 15th) or other wet periods.

Culvert & Ditches

Culverts and ditches must be kept free of debris and obstructions. Ditches on newly constructed and/or graded roads may require frequent cleaning and checking after each major storm until re-vegetation has occurred. While clearing ditches, follow these guidelines:

- Leave grass in the ditch unless it has filled with sediment and is no longer functioning.
- Avoid undercutting the road shoulders and banks.
- Check culverts for blockage by debris.
- Do not leave a berm on the side of the road; berms will channel water down the road.

Existing Road Practices

Identify and prioritize mitigation measures for existing roads that cause resource or watershed impacts. Mitigation measures may include any of the following:

- a) Relocating road segments that adversely impact soil or water resources.
- b) Reconstructing road segments to modify, improve, or restore road drainage.
- c) Improving roads with deferred maintenance needs to current standards.
- d) Improving stream crossings to accommodate bedload and debris and provide for aquatic habitat and passage.
- e) Hardening road surfaces (that is, running surface or inside ditches) to prevent the generation of fine-grained surface material and/or armor portions of the road prism subject to concentrated runoff.
- f) Putting roads in storage, while maintaining hydrologic and geomorphic functionality of drainage features.
- g) Closing roads seasonally to protect water resources.
- h) Restoring surface and subsurface hydrologic properties by removing roads from sensitive environments including riparian areas and meadows. May include relocation or decommissioning.
- i) Permanently closing roads that cause significant adverse impacts to soil or water resources.
- j) Decommissioning or converting unnecessary roads to other uses, such as trails. Assess risk of impact to water quality by decommissioning, placing road in storage, or converting to other use, and various treatments for each option.
- k) The road system should be inspected prior to the summer season; problem areas should be identified and corrected.
- l) Maintain road surfaces to dissipate intercepted water in a uniform manner along the road by

Future Property Conditions

out-sloping with rolling dips, in-sloping with drains, or crowning with drains. Where feasible and consistent with protecting public safety, utilize out-sloping and rolling the grade (rolling dips) as the primary drainage technique.

- m) Adjust surface drainage structures to minimize hydrologic connectivity by:
 - a. Discharging road runoff to areas of high infiltration and high surface roughness.
 - b. Armoring drainage facility outlet as energy dissipater and to prevent gully initiation.
- n) Clean ditches and drainage structure inlets only as often as needed to keep them functioning. Prevent unnecessary or excessive vegetation disturbance and removal on features such as swales, ditches, shoulders, and cut and fill slopes.
- o) Minimize diversion potential by installing diversion prevention dips that can accommodate overtopping runoff.
 - a. Place diversion prevention dips downslope of crossing, rather than directly over the crossing fill, and in a location that minimizes fill loss in the event of overtopping.
 - b. Armor diversion prevention dips when the expected volume of fill loss is significant.
- p) Maintain road surface drainage by removing berms, unless specifically designated otherwise.
- q) Install and preserve markers to identify and protect drainage structures that can be damaged during maintenance activities (that is, culverts, subdrains, and so forth).
- r) When grading roads or cleaning drainage structure inlets and ditches, avoid undercutting the toe of the cut slope.
- s) Grade road surfaces in accordance with road management objectives and assigned maintenance level. Grade only as needed to maintain a stable running surface and adequate surface drainage.
- t) Accompany grading of hydrologically connected road surfaces and inside ditches with erosion and sediment control installation.
- u) Enforce pre-haul maintenance, maintenance during haul, and post haul maintenance (putting the road back in storage). Require the commercial operator to leave roads in a satisfactory condition when project is completed.
- v) Restrict or prohibit road use during periods when such use would likely damage the roadway surface or road drainage features.

Fire Protection

Wildfire in our area is typically human-caused. Developing defensible space around our homes and applying appropriate forest management practices can limit or shape the impact that wildfire has.

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Understory thinning and burning.

There are also forested areas where the crowns of the overstory trees are touching and/or intermingled. If understory ladder fuels were to carry fire into the canopies of these trees, under the right circumstances a crown fire would result. Such fires are difficult to control and could move rapidly through dense canopies, pushed by the winds that are common during the summer. Most crown fires require surface fires to maintain the heat necessary to advance. If understory vegetation is adequately thinned or burned with a controlled, low-intensity flame, the likelihood of a crown fire developing or advancing will be reduced.

Management practices:

- All dead and dying vegetation should also be removed from the thinning zones.
- Undesirable plant species should be removed from the thinning zones due to their susceptibility to wildland fire.
- All burning shall be in compliance with CAL FIRE and the Northern Sierra Air Management District laws and regulations. *See the Air Resources section for more information.*

Fuel modification along roads and trails

In addition to providing travel routes, roads and trails can act as firebreaks for certain types of fire providing control points for fire suppression. But roads and trails are also a common location for fire ignitions. Fuel modification along roads and trails can reduce the availability of fuels for such ignitions as well as slow the rate of spread and reduce fire intensity once fuels are ignited. This increases the time before fires build up enough energy to become difficult to control and increases the effective response time for fire control resources. Working with neighbors to accomplish vegetation management along roads can be an excellent way to pool resources and efficiently complete the work.

Management practices:

- Remove and treat limbs, residual slash, windfalls, live roadside brush, and small trees within, or protruding into, the designated brushing limits (minimum 10 feet along the shoulder on both sides of the road).

Pile Burning Requirements

- Only dry, natural vegetative material such as leaves, pine needles and tree trimmings may be burned.
- The burning of trash, painted wood or other debris is not allowed.
- Do NOT burn on windy days.
- Piles must be no larger than four (4) feet in diameter and in height. Vegetative slash can be added to the pile as it burns down. Small piles burn with less danger of scorching the crowns of the residual leave trees.
- Clear a 10-foot diameter down to bare soil around all piles.
- Have a shovel and a water source nearby.
- An adult is required to be always in attendance of the fire(s).

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- Cover piles with waterproof tarp /paper prior to winter
- Take all preventative measures to reduce/eliminate scorching of nearby green trees.
- Burn permits - Prior to burning the Landowner shall acquire all necessary burn permits. The Northern Sierra Air Quality Management District may also have permitting requirements, such as a smoke management plan prior to burning.

Forest Resource

The transition of forests over time is known as forest succession, and the species that regenerate after a fire or some other major disturbance event are known as “pioneer” species. The shrubs, grasses, forbs and stump sprouts are present as part of this natural succession process, as the stand begins the reinitiation phase.

One area that could benefit from planting was identified east of the soccer field, above faculty housing. There is a small mound with decadent trees that could be planted with native species ([see Recommended Treatments map](#)). As with the conifer plantings in Stand 6 (by Mel’s Pond), monitoring and addressing resource needs after planting is very important to ensure success. Thinning competing vegetation and irrigation are common practices that address the needs of plantings. On a larger scale both of these practices may not be feasible, but at Woolman, pulling, cutting, or spraying encroaching vegetation with a targeted herbicide is encouraged at the conifer planting site. The thinning is not required *now*, especially on the west side of the planting hill where there is more mulch but it will be in a few years’ time.

Forest management in the form of thinning ladder fuels and reducing overall forest density will improve forest health and resilience to stressors. Currently, the stands are overstocked with small-diameter biomass; with maintenance, this ensures protection of the forest component, and therefore, habitat and biodiversity protection. Climate refugia sites developed on the project area will serve as habitat in predicted drought conditions and will retain microclimatic factors needed to sustain existing flora and fauna. *See Planned Management Activities for more information.*



Stand 3 on Woolman. Note the dense shrubbery and potential ladder fuels.

Future Property Conditions

Access and Security

The best way to prevent timber theft, vandalism, and trespass is to protect your property with the following simple steps: Mark forest boundaries. Most property boundaries in forests are obscure, giving timber thieves a good excuse for removing trees through unauthorized logging. Your forest boundaries should be clearly marked with a combination of ownership signs, paint marks, posted signs, flagging, and fencing, where appropriate. Posted signs should be placed conspicuously, without creating a visual nuisance.

Posting property marks a boundary and provides an added measure of protection through state law providing a landowner's right to prohibit trespassing for any purpose. Any signs you post must be properly placed and maintained. Signs must be at least 11 inches square, include the owner's name and address, and be placed not more than 660 feet apart.

At least one sign must be set on each side of the protected area and on each side of each corner. Ideally, extra signs are placed so that one is visible wherever the boundary is crossed. Landowners must replace illegible signs within a year. If forest property boundaries are made clear, the crime of timber theft is both more pronounced and easier to prosecute.

1. Know who the adjacent property owners are. Invite neighboring property owners to double check and agree to property line. If any areas are in question, hire a professional survey crew to set the property line. Mark the line with flagging or paint only after agreed upon or professional survey. Too often, adjacent property owners play boundary tag, removing, and posting boundary limits when the other is not around. This may actually encourage timber theft activities. Discuss boundary markers, your views toward hunters, and any plans either of you may have for cutting firewood and/or cutting timber. Trees on the property line belong to both landowners, whether or not the line is marked as a boundary. Accordingly, removal of a tree on or near a boundary line could be construed as theft. If differences with adjoining landowners cannot be resolved, agree to a "buffer" zone in which neither landowner will harvest without further discussion and/or establish a tree-by-tree agreement.
2. Patrol your property. Forest owners should make a habit of actively patrolling the boundaries of their forestland. If there is logging activity in the vicinity, the patrols should be increased.
3. Keep in touch with neighbors about activities on their properties. Let each other know when you may plan to have any outsiders working on your property.
4. Mow and trim the grass and brush along the roadways on your property, to demonstrate a presence. Neglected or "abandoned" properties may be more tempting to a timber thief.
5. Install a chain or gate across any roads entering your property. Such a deterrent will help keep honest people honest, and dishonest people out.

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Recreation & Aesthetics

This property has much to offer in terms of recreation and aesthetics. However, noxious weeds do limit the potential for forest development and flowering understory plants, and can be unsightly. Monitoring and prompt removal will limit spread. Planting with a native grass and forb mix can enhance vegetative beauty.

Regular trail maintenance should continue for the property, to remove fallen limbs and debris.

Post-fire, standing dead trees, fallen limbs, and scorched bare earth can be unappealing for some. But fire is part of a natural process with these forests, and succession will occur. Removing standing dead trees and planting are measures that can be taken to visually “clean up” the forest and reduce future fuels.

Soils

As most of the organic nutrients of the soil are found in the surface leaf litter and in the top few inches of soil, disturbance to this zone should be kept at a minimum to ensure continued productivity of the soil. It is important to provide for replenishment of the nutrients in this zone, especially following removal of vegetation. This can be done by retaining a mixture of conifers and hardwoods as this enhances leaf litter decomposition and by allowing foliage and limbs of trees and shrubs that are cut to rot into the ground as these portions of the plants contain the majority of the nutrients in the plants.

The most obvious cause of soil degradation and consequent loss of soil productivity is from soil erosion. Soil erosion is a constantly occurring natural event which can be greatly aggravated by human disturbance. In mountainous areas road building, vegetation removal, and fire are the main causes of accelerated erosion. Whenever soil is exposed to rainfall impact and/or water is concentrated on bare soil, erosion will increase. For these reasons, it is best to maintain a continuous vegetative cover or at least minimize disturbance to the ground cover (leaf and twig cover).

In general, roads are known to be the main contributors of sediment to stream systems. Sediment is eroded primarily because of drainage structures which have been improperly sized, installed, constructed, and/or maintained. Drainage structure failures are more often caused by high rainfall from summer thunderstorms which overload or plug them than from winter rainfall. This can be alleviated to a degree by installing culverts of adequate size, installing trash racks on culverts, keeping culvert inlets free of debris, constructing waterbars and rolling dips of a sufficient depth so they will not fill up with sediment or debris, and keeping them cleaned out.

Another source of sediment is from rill or gully erosion from road surfaces. Gully erosion most often occurs because of improper sloping of roads which concentrates water on the road surface or in inboard ditches, inadequate water barring for the road gradient and soil type, inadequate maintenance of water-bars which allows water to broach them, and/or rutting of the road surface (and broaching of water bars) by driving on it when it is wet. Rill erosion occurs for the above reasons plus inadequate vegetation on cut banks and fill slopes.

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Most of the above causes of erosion can be minimized through regular maintenance of roads. Drainage structures should be checked periodically during the summer but especially after severe thunderstorms. Before the winter rain period all drainage structures should be inspected, cleaned out, and repaired. Ideally these should be inspected periodically during the winter. It will soon be evident where the problem spots are and corrective measures can then be taken.

Soil disturbance from fuels management activities, including mastication, could result in the introduction and spread of noxious weeds into areas that are currently not infested, as well as the potential spread of existing infestations into new areas. Invasive weeds can increase fire hazards and have adverse effects on native plant communities and the wildlife that depend on them, and on the value of agricultural lands. The most aggressive exotic plants degrade natural areas because they can exclude native species, displace natural communities, promote faunal change, reduce biological diversity, disrupt ecosystem processes, alter fire frequencies, reduce recreational values, threaten endangered species, and fundamentally alter the unique character of California.

The tires or undercarriage of vehicles and equipment working in infested areas can inadvertently pick up and transport noxious weed seed and/or stolons. Erosion control measures such as use of contaminated straw bales and seed can also result in the inadvertent introduction of new invasive plants to the project area, which can in turn spread into adjacent undisturbed woodlands or adjacent agricultural lands or residences.

Forest landowners who wish to practice good stewardship on their lands need to assess the potential negative impact of their management activities on soil and water resources both on and off their property. Soil and water conservation is focused on the prevention of erosion and off-site movement of sediments, nutrients, and pesticides, the maintenance of normal water levels in wetlands, and the reduction of flood flows into estuaries.

It is necessary to monitor soil productivity to detect significant changes caused by management actions. Maintaining soil productivity also requires restoring or improving soils in areas where they have been degraded. Controlling soil erosion, compaction, and maintaining the nutrient balance during timber harvest, reforestation, and vegetative manipulation is vital to long-term soil productivity and protection of down-stream water quality. Practices include maintaining ground cover to reduce soil loss and limiting heavy equipment use on soils during wet weather.

If practices are not performed properly, they have the potential for significant topsoil and nutrient loss. This often results in reduced productivity and increased off-site water pollution. Additionally, the cumulative effects of drainage projects in a region often result in reduced water storage capacity and increased downstream flooding, as well as reduced fish/wildlife habitat and species diversity.

Soils are an important environmental variable in that they reflect many of the processes that shape the natural landscape. They are good indicators of the parent geologic formations beneath them and thus can aid in defining geologic strata. Soils are also the products of topography, hydrology, climate and flora, which allow them to be used as general environmental indicators.

To minimize soil compaction, rutting, and gullyng with resultant sediment production and loss of soil productivity, tractor operations should be limited to periods when the soil moisture content

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is sufficiently low that excessive rutting or other soil damage does not occur.

Mechanical slash treatment involves the use of heavy equipment to clear an area of unwanted vegetation or planting obstructions. This may be as simple as masticating brush and small trees, or as major as completely clearing a site of undesirable trees and brush with a dozer. When mechanical treatment is necessary, consider these guidelines:

- Avoid removing the forest's litter layer as much as possible on slopes. This can be done by hand clearing, mastication, or using a raised dozer blade to move only woody material and avoid soil gouging. Do not expose more than 50% of the soil surface.
- Do not operate under wet soil conditions.
- Stabilize bare soil areas on cleared sites with a temporary cover crop.

Streams, Wetlands and Ponds

Forest management activities have the potential to affect the hydrologic, soil, and aquatic resources by causing soil disturbance, altering vegetative cover, and changing local drainage patterns. The effects of the proposed management activities are most closely related to the harvesting and reforestation techniques used. Ground-based mechanical systems have the highest potential impacts. Applying effective Best Management Practices (BMPs) are recommended in this case to reduce the magnitude of the effects to soil, water, and aquatic resources. In addition, management requirements were developed to avoid sensitive watershed areas or minimize soil/water/aquatic concerns. The primary concern to water quality is the impairment of beneficial uses due to an increase of fine sediment caused by accelerated erosion from the proposed projects. In this case, the risk of direct effects to forest soils, water quality, and aquatic species is expected to be low in the projects proposed because project design minimizes activities that might otherwise have an impact to these resources.

Best Management Practices (BMPs) to be used:

Effectiveness of the BMPs in mitigating direct and indirect effects is largely related to proper implementation and the magnitude of climatic events the first several seasons after project completion. There is a risk that heavy precipitation or rain or accumulations of snow could overwhelm erosion control structures and render them ineffective. The increased sediment delivery to channels would occur only during rare events and for short periods of time where overland flow from disturbed areas occurs. BMPs have been selected below using specific information regarding soil, slope, geology, and climate conditions typically found in the project area.

To ensure recognition and protection of areas related to water-quality protection, delineate on a sale-area map or a project map any of the following: 1. Location of stream courses and riparian zones to be protected, including the width of the protection zone required for each stream. 2. Wetlands (meadows, lakes, springs, and so forth) to be protected. 3. Boundaries of harvest units. 4. Specified roads. 5. Roads where log hauling is prohibited, or restricted. 6. Structural improvement. 7. Area of different skidding and/or yarding method application. 8. Sources of rock for road work,

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riprapping, and borrow materials. 9. Water sources that are available for purchasers' use. 10. Other features that are required by contract provisions. 11. Site preparation/fuel treatment. The watercourses throughout the property are classified as Class I, II III and IV. To protect the quality of water in these creeks care needs to be taken to prevent sediment and debris from entering them. A buffer of undisturbed vegetation, leaf litter, and soil needs to be maintained on either side of the creeks to act as a sediment filter strip and to protect stream banks from erosion.



Illinois Ravine Stream in December

- Class I buffers should be a minimum of 75 feet wide on slopes up to 30%, 100 feet wide on 30-50% slopes, and 150 feet wide on slopes greater than 50%.
- Class II buffers should be a minimum of 50 feet wide on slopes up to 30%, 75 feet wide on 30-50% slopes, and 100 feet wide on slopes greater than 50%.
- Class III buffers should be a minimum of 25 feet wide on slopes up to 30%, 50 feet wide on slopes greater than 30%.
- Class IV buffers should be determined from on-site inspection by an RPF. Nevada Irrigation District (NID) should be contacted for vegetation management along class IV watercourses.

Management activities proposed in vicinity of a watercourse will require appropriate buffering and protection measures per the California Forest Practice rules. These are based on the size, seasonality, habitat, and other conditions of the watercourses. The buffer zone includes Equipment Limitation Zones (ELZ) where heavy machinery may only be operated under very specific provisions, or Watercourse and Lake Protection Zones (WLPZ), where only hand-work may be done.

In general, conservation practices for riparian habitat and wetlands include promoting the growth of native vegetation and refraining from the use of vehicles or other equipment in the area. Even wetland areas or fens can be damaged by foot traffic and should be kept to a minimum. Road crossings should be inspected on a regular basis especially after large storm events (once

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they dry out); appropriate steps should be taken to repair or maintain their function as costs for repair can quickly escalate and more damage can happen downstream, especially with increase sedimentation from a washed-out road.

Use of heavy equipment for release and follow-up operations shall be restricted as follows:

- a) No operations on excessively wet or saturated soil conditions as defined in the California Forest Practice Rules;
- b) No equipment shall be used within 50' of any stream or lake transition line without approval from a responsible agency. Streams and watercourses shall be flagged prior to the start of operations; and
- c) No equipment shall cross watercourses except Class III watercourses that are entirely dry at the time of operations without an approved CDF&W Lake & Stream Alteration agreement.

Hand cutting within 50' of a watercourse shall follow the following guidelines:

- a) Watercourse protection measures for shade canopy retention and soil stability shall be followed as described in the Forest Practice Rules;
- b) All riparian vegetation found along streams and lakes, and within marshes, wet meadows, and other wet areas shall be retained and protected;
- c) Other vegetation shall be left as necessary to maintain stream temperatures;
- d) All snags within the stream and lake protection zone and all live trees and snags with visible evidence of use as nesting and roosting by rare, threatened, or endangered bird species shall be left undisturbed; and
- e) All areas below the stream and lake transition line of watercourses shall be kept free of slash and debris. Accidental deposits shall be immediately removed, consistent with the requirements found in the Forest Practice Rules.

Wildlife

Managed forests promote biodiversity. Thinning ladder fuels and reducing overall forest density will not only improve forest health and resilience to stressors but develop habitat for wildlife. Forest stands on this property are overstocked with small-diameter biomass; with maintenance, this ensures protection of the forest component, and therefore, habitat and biodiversity protection. Additional measures that can be taken to improve habitat include:

- *Incorporate brush piles.* Brush piles offer perches for birds and cover for small animals. Brush piles should have the largest materials at the bottom, with the smallest-diameter brush at the top. Piles that are close to water are appealing to wildlife, and in openings where there is otherwise not much forest cover.
- *Retain snags.* "Snags" are trees that are dead or dying. Snags are excellent for wildlife, as they offer cavities for nesting, limbs for perching, and numerous insects. "choice" snags

Future Property Conditions

are trees that have cavities, loose bark, limbs, and signs of insect presence (holes, sawdust-like frass, galleries under bark). Leaving 9-12 snags/acre with preference for at least 18" diameter trees greater than 20' in height is a good rule of thumb.

- *Put up nest boxes.* Nest boxes encourage nest sites for wildlife where they may otherwise not be present.
- *Exclude livestock from riparian areas.* Using fencing to prevent browsing and trampling of soils and streams can restore vegetation, which provides cover and food for wildlife. Streams with shaded water are cooler and reduce evaporation which benefits aquatic species.
- *Promote habitat connectivity.* Habitat connectivity refers to two or more areas of undeveloped habitat that are connected to each other in an otherwise isolated area. These areas are also referred to as "wildlife corridors". These strips or patches of connectivity can attract wildlife and enable them to travel or dwell with a sense of safety.
- *Add water sources where feasible and protect pools.* Incorporating bird baths or above/in-ground holding ponds are activities that support wildlife needs. Allow water to naturally pool and protect those pools from vehicles and heavy recreational use to limit erosion, maintain the water quality, and be a great source for drinking, dwelling or breeding- even if they are temporary.
- *Plant grasses, forbs, and trees.* Herbaceous cover benefits many animals, including when the cover is in forest openings. Snakes, raptors, turkey, sparrow and foxes are some of the many animals that use these openings for hunting, feeding, and cover (Brittingham, 2016). Planting native bunchgrass is also a great idea. For example, deergrass (*Muhlenbergia rigens*) is easy to grow, and does well in almost any soil (California Native Plant Society, n.d.). Native trees offer seed sources and cover that animals in the foothills are adapted to, and fruit trees attract numerous animals, including deer and bear (Brittingham, 2016).

Invasive Species and Pests

Tree diseases are common, varied, and often occur concomitantly. Diseases may be caused by biotic pathogens, including fungi. The mistletoe plant is a defoliator of trees (commonly oak), and insects can cause injury and potentially death. Drought, wind, smog, frost, flooding, high temperatures, fire and lightning cause tree damage, and the stress from these events can prompt attack by bark beetles.

Bark beetles

Many bark beetles are native species, fulfilling ecological roles- thinning forests, facilitating decomposition, and serving as a food source for wildlife. However, dense stands coupled with drought can snowball into extensive bark beetle outbreaks. Generally, trees that are more spaced out are not competing as much for water and sunlight and are less stressed. Forest thinning, tree watering, and removing dead trees around your property are preemptive management tools that

Future Property Conditions

can limit bark beetle outbreak severity and the range of the beetles. There are hundreds of species of bark beetles found in the conifer forests of the West particular to different tree parts, from cones to tiny branches to the main stems of their hosts (US Forest Service CA Forest Insect and Disease Training Manual, 2015).

Common beetles in forests of the Sierra Nevada include the pine engraver beetle (*Ips pini*), mountain pine beetle (*Dendroctonus ponderosae*, red turpentine beetle (*Dendroctonus valens*), and Douglas-fir beetle (*Dendroctonus pseudotsuae*). If it is suspected that trees are impacted by beetles (pitch tubes, small holes through the bark, or boring dust and/or frass), a forestry professional or the Nevada County Department of Agriculture can be consulted for further assistance. *For more information, see the attached factsheet from the US Forest Service.*

Bark beetle infestation is evident on ponderosa pine trees on the property, but not at a large scale. Unfortunately, not much can be done when infestation is in progress or has occurred, but preventive measures are addressed via the thinning practices recommended in this Plan.

Invasive plants

Monitoring for aggressive noxious weeds is necessary for action to occur as soon as they are spotted. Weed prevention also includes washing equipment and vehicles before entering the property (particularly if returning from areas where weeds were identified) and after use.

There are many methods of weed control, and the following are common.

- *Mechanical control* is generally the physical action of pulling, cutting or burning the plants.
- *Chemical control* is the killing or injury of plants through application of herbicides or other chemicals. Some chemicals are available for public use at garden stores or nurseries, whereas others have restricted uses and should only be applied by a certified applicator.
- *Controlled grazing* (commonly via goats, sheep and cattle)
- *Biological control* (the application of naturally-occurring host-specific insects, mites of pathogens (CAL IPC, 2023)).
- *Competitive planting* (seeding and planting native plants before, during or after invasion)
- *Physical barriers* (tarps, mulch to suppress growth)

For more weed removal options, consult the California Invasive Plant Council's Weed Control User Tool: <https://weedcut.ipm.ucanr.edu/#gsc.tab=0>

To address the invasive plant species identified on the property, see Table 4.

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Table 4. Guidelines for treatment of invasive plant species on the property

Species	Proposed Initial Treatment Options	Follow-up Treatment Options
Medusahead (<i>Elymus caput-medusae</i>)	Spray with Fluazifop-P-butyl or Imazapyr	Maintain the chemical treatment options.
Scotch broom (<i>Cytisus scoparius</i>)	Hand pull in winter or spring and/or cut at the base in the months of May-October. Treat cut stumps with Triclopyr.	Maintain the chemical treatment options or continue pulling plants.
Himalayan blackberry (<i>Rubus armeniacus</i>)	Hand pull in spring or late fall, when soil is moist. May apply Triclopyr or Glyphosate.	Re-treat when new, sprouting leaves are fully expanded.

Air Resources

According to the California Air Resources Board (2022), particulate matter (PM) at 2.5 microns or less can be inhaled into the deepest parts of the lung, as they are very small. Smoke from wildfires are mostly of this sized particle, and can aggravate existing health problems and increase the risk of heart attack or stroke. Carbon monoxide is also produced from wildfires, and in highest concentrations with smoldering material.

Residential landscape debris burning of vegetation is allowed during certain times of the year. Debris burning is limited to dry, woody, natural vegetation that can be burned within the permissible burn day and with limited smoke production.

The Air Quality Management District issues burn permits for the purpose of regulating particulate matter release. All burning must be in compliance with CAL FIRE and the Northern Sierra Air Management District (Nevada County) laws and regulations in order to mitigate as many negative impacts on air quality as possible. Consult CAL FIRE for the current burn day status AND the Northern Sierra Air Management District (Nevada County).

- CAL FIRE Burn Permits: <https://burnpermit.fire.ca.gov/current-burn-status/>
- Northern Sierra Air Management District: <https://myairdistrict.com/index.php/burning-info/burn-day-status/>

Check to see if burn permits are required. The burning must occur on the property where the vegetation grew.

Alternatives to burning biomass include cutting up and scattering the material by hand, or using mechanical means to chip or masticate it. This is not actually removing the materials from the site, but rather reconfiguring it. Composting, if on a small scale, is a feasible option. Waste Management of Nevada County has a greenwaste pickup program. They can be contacted at: (530) 274-3090.

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The Nevada County Fire Safe Council has a chipping and shredding program. You can submit a request at https://clienthub.getjobber.com/client_hubs/0ea7b196-f50e-4e4b-9a3a-f2f6486280f3/public/work_request/new?source=social_media

Climate Considerations and Carbon Sequestration

Thinning to increase carbon storage

Thinning of ladder fuels and smaller trees has been shown to lead to a net carbon gain due to decreased competition for larger trees (which are known to accumulate more carbon per growth year than smaller trees) and reduced likelihood of catastrophic wildfire that fully consumes and volatilizes all carbon back into the atmosphere (Hurteau et al., 2011; Hurteau and North, 2010). Thinning on this property may have a similar effect, particularly if follow-up treatments are done over the years. There is a carbon cost to implementation, however, including emissions from heavy equipment and from burning of any fuels that are not chipped or removed in some other way. There are many carbon calculators on the internet that can help give landowners a sense for carbon impact. This tool is from the US Forest Service, the CarbonPlus Calculator:

<http://www.itreetools.org/forestcarboncalculator/>

Reforestation with climate-smart species

Planting trees can add carbon storage potential to the property. Areas where large patches of invasive species are removed can be planted with native species. Sourcing plants grown with seed locally or within one's seed zone has been a standard recommendation, to give the plants adapted to your area a better chance of success. Our seed zone is 525, as depicted in this Seed Zone Map: <https://www.fire.ca.gov/media/oxgkjqdf/catreeseedzones.pdf>

However, there are additional considerations for the success of your plantings based on projected drought and drier conditions with climate change. An approach to consider:

1. Planting using seeds adapted to drier, hotter conditions originating from lower elevation may have greater success in respect to climate change (Young et al. 2020, North et al. 2018), *and*:
2. Having different seed sources for a given species will promote genetic variation, which may benefit your future trees and forest to be more resilient to stressors.

Additional research supports planting not in the traditional rows, or "pines in lines", format when we traditionally think about plantations, but rather, in clumps with openings between them, emulating historic patterns and reducing potential fire severity (Larson and Churchill 2012, North et al. 2018).

In sum, different seed sources from further south or downslope could be a climate-smart choice. Variation is key. As always, forestry professionals are available to discuss these kinds of

Future Property Conditions

questions. They can also recommend species to plant that are appropriate for your soils, elevation, topography, and projected climate conditions.

You may be eligible for financial assistance with procuring seedlings and planting labor through the nonprofit One Tree Planted at <https://onetreepanted.org/>.

Family Legacy

Conservation easements are voluntary agreements with a nonprofit, land trust or government agency determining what activities can and cannot be performed on a landowner's property for conservation purposes, into perpetuity.

Finding a local land trust organization could be a next step for those wishing to explore this option further to see what the details and requirements are.

Forest Legacy Program

A conservation program called the California Forest Legacy Program helps to protect and manage, for future generations, environmentally important forest areas that are threatened by conversion to non-forest uses. The program may only purchase a conservation easement from a landowner that is willing to sell their development rights for their forested property. Another program is the Federal Forest Legacy Program, which has the same overall objectives but differs based on the source of funding, property requirements, and application timeline.

Livestock

This property formerly had cattle. At this time, the landowners do not want livestock, though the property could support them.

Part of the responsibility of owning animals is to ensure that they do not cause environmental degradation (e.g., contribute significantly to erosion, denude landscapes, and contaminate water bodies). Consult the NRCS Conservation Practice Standards page, where you can look up a specific activity regarding farming and livestock and find best management practices:

<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>

Vegetation Unit Descriptions

Forest Stands

Forest stands were delineated using aerial photos, topography, and forest type. Eight stands were identified on the Woolman property. Aspect varies quite a bit for these stands, as the terrain is hilly. Data was collected using a modified Forest Inventory and Analysis (FIA) protocol developed by the US Forest Service, using variable-radius plots. The Forest Vegetation Simulator (FVS) is a US Forest Service software that calculates stand-level data and can simulate different forest management scenarios. FVS was used to determine tree species ratios per stand and stocking levels. **See Table 5 for 2022 stocking information and Figure 6, which includes diameter distribution per species for the property.**

Site index is based on measuring the height and deriving the age of dominant and co-dominant trees in the forest stand, and relating this to a standard base age, for example fifty (50) years. Site class, usually numbered in Roman numerals from I (best) to V (worst) is a grouping of site indexes used when the California Forest Practice Rules apply to commercial timber-harvesting operations. Site Index is determined by measuring tree heights and using increment borings of dominant trees to determine tree age, and then using Dunning (1942) Site Classifications for the Sierra Nevada. The estimated growth rates for the stands were obtained by calculating the differences in merchantable board feet per acre per year over a 10-year span.

Stand 1 consists of 63 acres of hardwood-conifer forest, with 36% interior live oak, 13% black oak, 15% blue oak, 12% ponderosa pine, 11% incense-cedar, 6% canyon live oak, 7% grey pine, and .05% Douglas-fir. The oldest cored age from the stand was determined from a dominant ponderosa pine at 170 years. This site is rocky with evidence of past mining, with a high manzanita component in the understory, grasses and forbs in gaps. This stand is impenetrable in some areas, as the vegetation is quite dense. Regeneration is adequate, consisting of oak species. Site information suggests Site Class IV (Dunning, 1942). The projected basal area growth rate is 178 board feet/acre/year.

This unit is along the eastern boundary, with elevation up to 2100 feet. Slopes were averaged from the plots to 11 percent. This unit has a trail network through it for recreation, and steep ravines likely from gold mining. Soils are Chaix very stony loam and Secca-Rock outcrop complex. *For detailed soil descriptions, see the preceding soil section and Table 1.* This stand did not burn in the 2020 Jones fire unlike some of the other Woolman stands, and does not have other fire history recorded.

*The general objective for this stand is to let it be as-is, with the exception of trail maintenance work. **See Table 6 for recommended practices.***

Stand 2 consists of 4 acres of blue oak woodland, with 73% blue oak, 18% interior live oak, 5% black oak, and 4% ponderosa pine. This stand has some open areas with a high grass component in the understory, and areas dense with whiteleaf manzanita. Toyon, hawthorn (*Crataegus sp.*) hollyleaf redberry and poison oak are also found here. Oaks are primarily regenerating, and regeneration is generally low. Site information suggests Site Class IV (Dunning, 1942). The projected growth rate is 95 board feet/acre/year.

Vegetation Unit Descriptions

This small unit is in the eastern section of the property, surrounded by Stand 1. Elevation is up to 2100 feet, with west-facing slopes averaged to 11 percent. Soils are Chaix very stony loam. This stand was not impacted by the Jones Fire and does not have other fire history recorded.

The general objective for this stand is to let it be as it is and allow succession to occur unaided.

Stand 3 consists of 44 acres of hardwood-conifer, with a diverse species assemblage: 30% ponderosa pine, 15% canyon live oak, 13% interior live oak, 13% black oak, 10% blue oak, 9% incense-cedar, 8% madrone, and 2% grey pine. Whiteleaf manzanita, toyon, Scotch broom and poison oak are abundant in the understory. Incense-cedar is regenerating in this stand with oaks. Regeneration is adequate. Large down woody debris is present. The oldest cored age is from a dominant grey pine at 157 years. Site information suggests Site Class III (Dunning, 1942), and the projected growth rate is 271 board feet/acre/year.

This unit is long, running through the middle of the stand north-south. Slopes are 5 percent, generally north-facing, with elevation up to 2100 feet. It includes recreation trails and a creek, which drainages feed. Soils are Secca-Rock outcrop complex, Placer diggings, Sites stony loam, and Chaix very stony loam. This stand was unaffected by the Jones Fire.

The general objective for this stand is to thin it, using a combination of hand and mechanical thinning to promote forest heterogeneity. Prescribed burning is an objective as well.

Stand 4 is a 19-acre ponderosa pine stand with multiple tree species: 58% ponderosa pine, 17% incense-cedar, 11% interior live oak, 6% black oak, 4% other hardwoods, 2% bigleaf maple, 1% madrone and 1% canyon live oak. There are some large ponderosa pine near the creek in this stand. The oldest cored age from the stand was obtained from a dominant incense-cedar cored at 109 years. Site information suggests Site Class III (Dunning, 1942), and the projected growth rate is 223 board feet/acre/year. Alder occurred on the plots, along with bigleaf maple— uncommon occurrences in other stands. Bracken fern and blackberry are found near the stream.

This unit is located in the south-central portion of the property and has the primary creek with three ephemeral drainages feeding into it. Soils are Chaix very stony loam and Placer diggings. Slopes are 5 percent, north-facing, with elevation up to 2100 feet. This stand was impacted by the Jones Fire and burned with mixed-severity. Scorch marks are evident on trees. Most mature trees survived, whereas understory and mid-story trees (primarily oaks) died.

The general objective for this stand is to thin it, using a combination of hand and mechanical thinning to promote forest heterogeneity.

Stand 5 is an 18-acre hardwood-conifer stand that experienced patchy fire mortality from the Jones Fire. Composition consists of 50% blue oak, 20% black oak, 20% grey pine, and 10% interior live oak, with an open understory of grasses and Western redbud. Regeneration is poor on this site, but germination may improve post-fire. Site information suggests Site Class IV (Dunning, 1942). Growth rates are projected to be 60 board feet/acre/year.

This unit is located along the southern property boundary, east of the seedling planting site. Soils are Secca-Rock outcrop complex and Placer diggings. Slopes are 13 percent, north-facing, and reach up to 2200 feet in elevation.

Vegetation Unit Descriptions

The general objective for this stand is to leave it alone, to allow natural regeneration post-fire to develop.

Stand 6 is an 8-acre conifer-hardwood stand that was planted in the winter of 2020/2021 after a salvage logging operation post-Jones Fire. A few mature seed trees were left. Shrubs of black oak, manzanita, hollyleaf redberry and Scotch broom are present. Species consist of 32% ponderosa pine, 18 % Douglas-fir, 18% incense-cedar, 9% blue oak, 9% interior live oak, 9% other species and 5% black oak. Regeneration is adequate. Site information suggests Site Class IV (Dunning, 1942). Seedlings are estimated to be around 3 years of age, with projected growth rates of 67 board feet/acre/year.

The unit is located in the southern portion of the property, on a northwest-facing slope up to 2100 feet. Soils are Chaix very stony loam and Secca-Rock outcrop complex.

The general objective for this stand is to monitor it annually, removing competing vegetation.

Stand 7 is a 51-acre hardwood-conifer stand that burned in the Jones Fire. It is comprised of 35% interior live oak, 20% blue oak, 15% ponderosa pine, 14% black oak, 10% grey pine, 3% Douglas-fir and 2% madrone, with Western redbud, coffeeberry (*Frangula californica*) lupine (*Lupinus sp.*), yerba santa (*Eriodictyon californicum*), grass and toyon in the understory. Many oak trees are standing dead, with sprouts at their bases. With the oak resprouting, regeneration is likely adequate. Site information suggest Site Class IV (Dunning, 1942), and the projected growth rate is 90 board feet/acre/year. The oldest cored age is taken from a codominant ponderosa pine at 72 years.

This stand is located along the western boundary of the parcel, and was burned almost in its entirety from the fire with the exception of the southwest corner. The slopes are 10 percent, generally east-facing, up to 2150 feet. Soils are Chaix very stony loam and Secca-Rock outcrop complex.

The general objective for this stand is to remove fallen and standing dead oak, while retaining high-quality snags for wildlife benefit.

Stand 8 is an 8-acre ponderosa pine stand, with numerous mature trees – some of which died from the fire. It is comprised of 68% ponderosa pine, 15% black oak, 9% blue oak, 4% canyon live oak, 2% incense-cedar and 2% interior live oak, with an understory of tall grass, lupine, coffeeberry, honeysuckle (*Lonicera sp.*) and poison oak. There are oak sprouts, but regeneration is poor overall. This understory is potentially slowing regeneration of tree species due to competition, but seedlings may eventually catch up with stand succession. Site information suggests Site Class III (Dunning, 1942), and the projected growth rate is 265 board feet/acre/year. The oldest cored age is taken from a dominant ponderosa pine at 102 years.

This stand abuts the northernmost edge of the property, just south of Nishinam Gulch Road. The Jones Fire burned this stand in 2020, some pockets more severely than others. Slopes are 8 percent, east-facing, up to 2,000 feet. Soils are Chaix very stony loam and Placer diggings.

The general objective for this stand is to remove dead ponderosa pine snags northeast of the oxidation ponds.

Vegetation Unit Descriptions

Table 5. 2022 stand stocking information for the Woolman property. IC= incense-cedar, PP= ponderosa pine, GP= gray pine, IO= interior live oak, CY= canyon live oak, BL= blue oak, BO= black oak, BM= bigleaf maple, DF= Douglas-fir, MA= madrone, OH= other hardwoods, OS= other softwoods

Stand	Acres	% Slope	Species	Basal Area (ft ²)	Gross Bf/Ac	Stems/acre	QMD (in.)
1	63	11	IC, PP, IO, CY, BL, GP, BO, DF	91	4221	2555	2.6
2	4	11	BL, BO, PP, IO	83	1232	1494	3.2
3	44	5	IC, PP, GP, CY, BL, BO, IO, MA	70	6473	2772	2.1
4	19	5	IC, PP, BO, IO, CY, MA, BM, OH	154	19178	2021	3.7
5	18	13	BO, GP, BL, IO	37	731	475	3.8
6	8	5	PP, IO, BL, BO, IC, DF, OS	2	103	1364	0.5
7	51	10	DF, PP, GP, BL, BO, IO, MA	49	1428	2866	1.8
8	8	8	IC, PP, CY, BL, BO, IO	112	18528	1449	3.8

Woolman Diameter Distribution

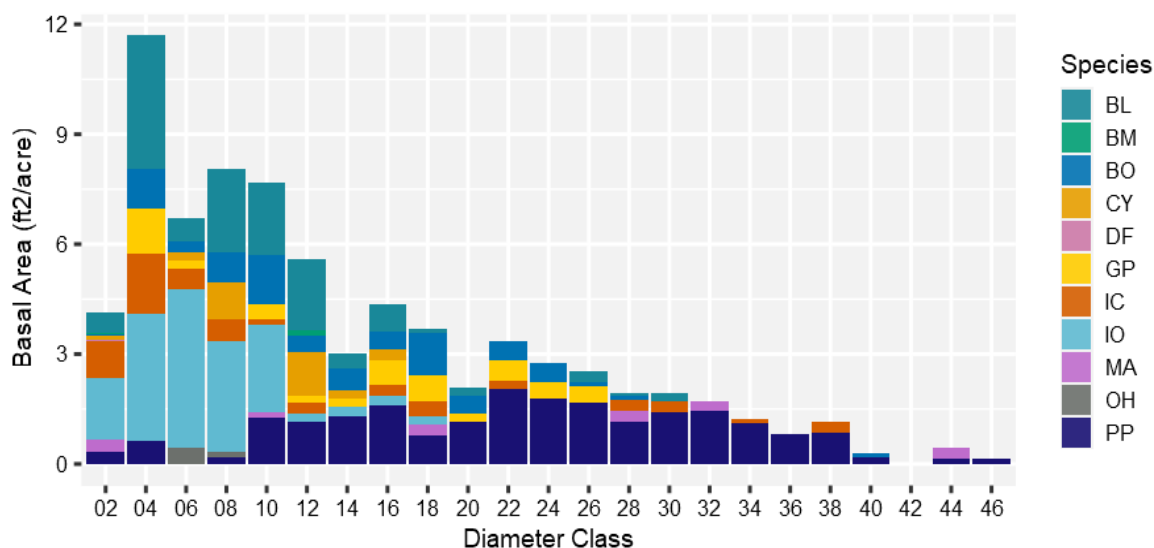


Figure 6. Distribution of species at Woolman based on 2-inch diameter classes. IC= incense-cedar, PP= ponderosa pine, GP= gray pine, IO= interior live oak, CY= canyon live oak, BL= blue oak, BO= black oak, BM= bigleaf maple, DF= Douglas-fir, MA= madrone, OH= other hardwoods, OS= other softwoods

Vegetation Unit Descriptions

Basal Area (BA) is the area of a cross-section of a tree at 4.5 feet above the ground, and can be summed per species by diameter groupings, or classes, to highlight trends in the forest structure. For all stands inventoried, the BA is highest in the 4" diameter class, with blue oak and interior live oak contributing more than the other species. Oaks are the primary regenerating species in this stand, as seen in the 2" diameter class. Ponderosa pine represents the most basal area of any single species after the 20" class (with the exception of a higher madrone BA in the 44" class), which makes sense considering that oaks do not get as large.

Planned Management Activities

After the Jones Fire, dead trees were removed and salvage-logged, but more trees have since died, leaving more snags on the landscape than necessary from an ecological and aesthetic standpoint. Particularly on northwest campus, many dead oak snags are present, and ponderosa pine snags are visible northeast of Mel's pond. Additional mortality is visible along the eastern curve of Woolman Lane by Catalyst Compost and the adjacent creek. Removal of the standing dead is recommended. Retention of some material in the form of brush piles up to 6 feet high, relatively near water, is desirable habitat for birds and small mammals.



Dead and dying ponderosa pine to the south

Managing for “clumpiness” (or breaking up of forest cover, with clumps of trees separated by variable-sized gaps) has been linked to both increased forest resilience to fire and increased habitat quality for wildlife (Larson and Churchill, 2012; Fertel et al. 2022). A guiding principle towards development of these gaps and clumps is the natural range of variation (NRV), or forest structure pre-colonization in the western United States (USDA Forest Service, 2019). The spatial structure of fire-frequent forests visited by low and moderate – intensity fires consist of three elements: openings, widely-spaced single trees, and tree clumps. Thinning here will incorporate this approach into management on Woolman for landscape-scale forest heterogeneity. A combination of hand-thinning and mastication should be utilized to comply with forest practice rules and circumvent rocky soils.

Zones of relatively high-water availability on the proposed thinning sites will be unthinned, and serve as the groups of trees needed to achieve spatial variation. These will also be “climate refugia” sites, offering habitat for wildlife. These areas refer to zones of high relative water availability, which could be critical for drought-stressed sites now and under future climate change conditions (Mclaughlin et al. 2017).

A burn plan was completed in March of 2022 for the property, which includes details such as site preparation, burning parameters, who to notify, and necessary permits. This plan can be implemented after thinning is completed to prep the site for prescribed fire. Low-intensity

Planned Management Activities

controlled fire reduces fuels, controls species composition (e.g. blackberry and broom), opens growing space for a greater diversity of native flowering species, and improves the health of residual trees. Virtual and in-person training resources are available to guide the public. *See the additional professional resource section below.*

Ongoing management activities include the need for continued fuel abatement. *Due to the tendency for oaks to sprout after thinning, spraying the stumps with herbicide is recommended to reduce the rapid development of ladder fuels.* Prompt removal of Scotch broom sprouts and Himalayan blackberry is necessary also. Continue to monitor the property for noxious weeds.

This project is not anticipated to generate any income from forest products in the very near future; however the price of pine can be evaluated at a later date to determine if a harvest is economical. Consult with a forestry professional when harvesting is being considered.

Table 6. Recommended practices for the Woolman property.

Date	Recommended Practices/Description	Location	Desired Future Conditions
2023-2026	Removal of diseased and standing dead trees remaining after the Jones Fire; Retain high quality snags and strategically placed wood piles for wildlife.	Stands 3,4,7,8 (9 acres)	Improved safety for people and infrastructure; Reduction of forest fuels that may carry high severity wildfire; An aesthetically pleasing forest component recovering after wildfire
2023-2026	Masticate and hand-thin ladder fuels up to 6" DBH using a heterogeneous approach, leaving clumps, gaps, and individual trees; Stump spray oaks and noxious weed sprouts	Stands 3 and 4 (45 acres)	Spatially heterogeneous forestland with reduced ladder fuels; Improved forest health and wildfire resilience
2023-2026	Roadside thinning	Stand 7 (1 acre; 2700 linear feet)	Reduced likelihood of hazard trees falling and more defensible space
2023-2033	Apply prescribed fire according to the completed burn plan; Explore community learning opportunities with the Yuba Bear Burn Cooperative to accomplish this.	Stands 3 and 4 (8 acres)	Reduced wildfire risk; Improved forest health and diversity of native grasses and forbs

Planned Management Activities

Date	Recommended Practice(s)/Description	Location	Desired Future Conditions
2023-2033	Monitor the planted seedlings on the north hillslope; remove competing vegetation as necessary.	Stand 6 (8 acres)	A healthy mixed-conifer forest stand.
2023-2033	Monitor trails and continue trail maintenance practices	All trails throughout the property	Recreational value of the property is maintained; Ensured safety for people and infrastructure
2023-2033	Monitor for any new noxious weeds on the property. Clean boots and equipment to avoid transporting seeds	Entire Property (237.7 acres)	Maintain native grass and forb cover in forest understory

Required Permits and Monitoring

A burn permit from the Northern Sierra Air Quality Management District (NSAQMD) is required for any burn over 1 acre. Additional information on the specific fees and conditions of permitting is available by calling the NSAQMD at 530.274.9360 and requesting ‘the outdoor burning specialist’. Rules and conditions are complex, and changeable, and calls to the AQMD in advance of a planned burn day are highly suggested to get clear and current information. Placer County RCD may offer financial assistance to cover part of the smoke permit or smoke management plan. You do not have to live in Placer County to be eligible.

Although monitoring is generally a useful tool after project implementation, if grant funds are awarded from the Wildlife Conservation Board (WCB) for the implementation of these recommendations, monitoring is required. A Landowner Access Agreement will be developed and signed by Woolman and Sierra Streams Institute (SSI), the grant applicant. This agreement essentially requires the landowner to uphold the outcome that has been met on the property, and to not drastically change the property to undo the goals of this project. SSI and the landowner will acknowledge that if the parcels are selected for monitoring by WCB and are not found to have upheld a degree of forest maintenance, SSI would be held financially responsible to WCB. The landowner would have an obligation to inform the new landowner of the Access Agreement if the home is sold. This agreement is not recorded or on file with the County Assessor’s office.

If funds are not awarded, monitoring is still highly encouraged. Monitoring can inform the landowner on the effectiveness of treatments and if follow-up is warranted. Monitoring can vary from informal, with general observations, to more thorough (e.g., the development of a complete research report).

California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA)

Forest management activities including conservation practices may impact special environmental and/or cultural values such as threatened or endangered species and archaeological sites. Landowners need to know their locations and what they can do to protect them. Environmental and cultural reviews by regulatory agencies are required when a ground practice is proposed, and a permit and/or government assistance becomes part of the project.

A CEQA document exists on behalf of Woolman School; an NTMP was completed in 2002 for 127 acres (NTMP#: 2-02-005-3-NEV). This NTMP is the CEQA document that will cover the proposed activities for the Woolman property.

Additional CEQA/NEPA Notification for Ground Practices

Any future ground practice to implement this plan using public entity reimbursement funds requires a signed CAL FIRE CFIP Environmental Checklist, to comply with CEQA, or an NRCS CPA-52 Checklist, to comply with NEPA. The checklist must be filled out by an RPF or Certified Planner.

Along with this checklist a process of “discovery” or survey for unknown values along with a discussion of possible mitigations is required. The site specific environmental/cultural documentation will need to be completed with the schedule of activities, project map and project specifications.

As part of the above process, project notification must be provided to the following Agencies:

- County Planner
- CA Department of Fish and Wildlife
- Regional Water Quality Control Board
- If the project adjoins public land (for example, the US Forest Service, US Fish and Wildlife Service, BLM, National, State, or local parks, etc.) notify that agency
- If the project adjoins a State Highway, notify CALTRANS
- If the project is in the Coastal Zone, notify the Coastal Commission
- If the project will cause ground-disturbance, notification must also be provided to:
 - Native American Heritage Commission
 - Tribal contacts
 - Local Historical Society

Professional Assistance

Contacts

CAL FIRE Forestry Assistance Specialist (FAS)

David Ahmadi - david.ahmadi@fire.ca.gov (El Dorado, Nevada, Placer, Sacramento, Sierra, Sutter, Tahoe Basin, Yuba Counties)

Nevada County Resource Conservation District - <https://www.ncrcd.org/>

Phone: (530) 272-3417, ext. 5529 or 5530

Monday-Friday 7:30am-4pm

113 Presley Way, Suite 1, Grass Valley, CA 95945

Placer County Resource Conservation District - <https://placerrcd.org/>

Phone: 530-390-6680

Email: info@placerrcd.org

Mailing Address: 11641 Blocker Dr. #120, Auburn, CA 95603

University of California Division of Agriculture and Natural Resources - <https://ucanr.edu/>

UC Cooperative Extension Forest Advisors

Ricky Satomi (Sutter, Yuba, Butte, Nevada Counties)

Phone: (530) 822-6213

Email: rpsatomi@ucanr.edu

Rob York (Statewide), Kristen Shive (Statewide)

(530) 333-4475

Email: ryork@berkeley.edu

Email: kshive@berkeley.edu

UC Cooperative Extension Placer and Nevada Counties - <https://ceplacer.ucanr.edu/>

Phone: (530) 273-4563, Email: cenevada@ucdavis.edu

Tuesday and Thursday, 8am-12pm and 12:30pm-4:30pm

255 South Auburn Street (Veterans Memorial Hall), Grass Valley, CA 95945

Toolkit

Sierra Streams Institute (SSI) is currently working up a Jones Bar Area Toolkit binder and resources on their website for private landowners, which includes forest health information, factsheets, contractors, and grant information (listed below). You may request information about this at info@sierrastreamsinstitute.org.

Yuba Bear Burn Cooperative

Working with Nevada County's Prescribed Burn Association, Yuba Bear Burn Cooperative (YBBC) is a great resource to learn about prescribed fire and to gather volunteers to apply fire. To sign up on their listserv, go to <https://calpba.org/yuba-bear-burn-cooperative>. YBBC planning resources are also available: <https://calpba.org/rx-burn-planning>.

Professional Assistance

Grants

The following grants may be available and are worth exploring for implementation:

1. Environmental Quality Incentives Program (EQIP)

This USDA-run program applies to landowners (or renters) who manage land for agriculture or non-industrial private forest land.

- Minimum acreage: no
- Cost share: yes*
- Prescribed burning covered: yes

Factsheet: <https://www.nrcs.usda.gov/sites/default/files/2022-06/EQIP-Factsheet%20%282%29.pdf>

Local NRCS contacts: Evan Smith, Forester at Evan.t.smith@usda.gov

Valerie Bullard, Soil Conservationist at valerie.bullard@usda.gov.

*Landowners must often pay up front, then will get reimbursed after the work is done. To apply, reach out to the local NRCS office and let them know you are interested. You will work with them to determine your eligibility.

2. California Forest Improvement Program (CFIP)

This program aims to improve forest resources, including animal habitat, and soil and water quality. Cost share is to hire a Registered Professional Forester to write a Forest Management Plan, and to oversee reforestation, stand improvement, and conservation practices/habitat improvement.

- Minimum acreage: 20 to 5,000 acres
- Cost share: yes*
- Prescribed burning covered: no

CFIP user guide: <https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/grants/california-forest-improvement-program/cfip-user-s-guide-october-2022.pdf?rev=e1f107c9d70040c280c629450dd343d9&hash=23010DAD8EBC63E950BD962FA9160063>

Local contact: David Ahmadi, Forestry Assistance Specialist at David.Ahmadi@fire.ca.gov.

Located at 143 B Spring Street, Grass Valley, CA 95945

*Funds get reimbursed after the work is completed. CFIP provides reimbursement at 75% or 90% cost share rates. Before filling out an application, consult with the Forestry Assistant Specialist, currently David Ahmadi (above).

3. Community Wildfire Defense Grant

This USDA Forest Service grant helps at-risk local communities and Tribes plan and reduce the risk against wildfire. Prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster. *For more information:* <https://www.fs.usda.gov/managing-land/fire/grants>.

Professional Assistance

4. Partners for Fish and Wildlife Program

This U.S. Fish and Wildlife Service program aims to restore habitats on working landscapes (e.g. forests, farms, ranches). This could involve improving water resources, planting native species, or oak woodland restoration. Their conservation priorities are wet meadows, streams and riparian habitats.

- Minimum acreage: No
- Cost share: 1:1 match, either cash and/or in-kind services
- Prescribed burning covered: In some instances; check with contact

Website: <https://www.fws.gov/program/partners-fish-and-wildlife>

Local contact: Matt Hamman at matt_hamman@fws.gov. (530) 889-2301.

Located at 11641 Blocker Drive, Suite 110, Auburn, CA 95603

5. California Vegetation Management Program (VMP)

This CAL FIRE program aims to reduce fuel loading to prevent catastrophic wildfire in California, with prescribed fire as a focus. The project area must be on State Responsibility Lands: [SRA viewer](#).

- Cost share: yes

Note that as of early 2023, this funding is not being offered. However, check their website for future opportunities. Search “Cal Vegetation Management Program”.

6. Emergency Forest Restoration Program (EFRP)

This USDA-run program helps landowners of private forestland restore forest health that has been damaged by natural disasters. Drought or insect infestation do not apply. Debris removal, planting, fire lanes, fencing, wildlife enhancement are examples of work scopes.

- Minimum acreage: no
- Cost share: yes, up to 75% of the cost to implement practices can be provided.
- Prescribed burning covered: check with contact

Local contact: NRCS Grass Valley at (530) 798-5527. Grass Valley Service Center

Located at 113 Presley Way Ste 1, Grass Valley, CA 95945.

Factsheet: https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/emergency_forest_restoration_program-fact_sheet.pdf

7. California Fire Safe Council Grants

This grant program emphasizes fire risk reduction activities by landowners and residents in at-risk communities to restore and maintain resilient landscapes and create fire-adapted communities. Individual landowners cannot apply—must have a legal fiscal sponsor. Check the website for current grant opportunities.

- Minimum acreage: may vary
- Cost share: 50/50 match required; cash, good, or in-kind services.
- Prescribed burning covered: yes

Professional Assistance

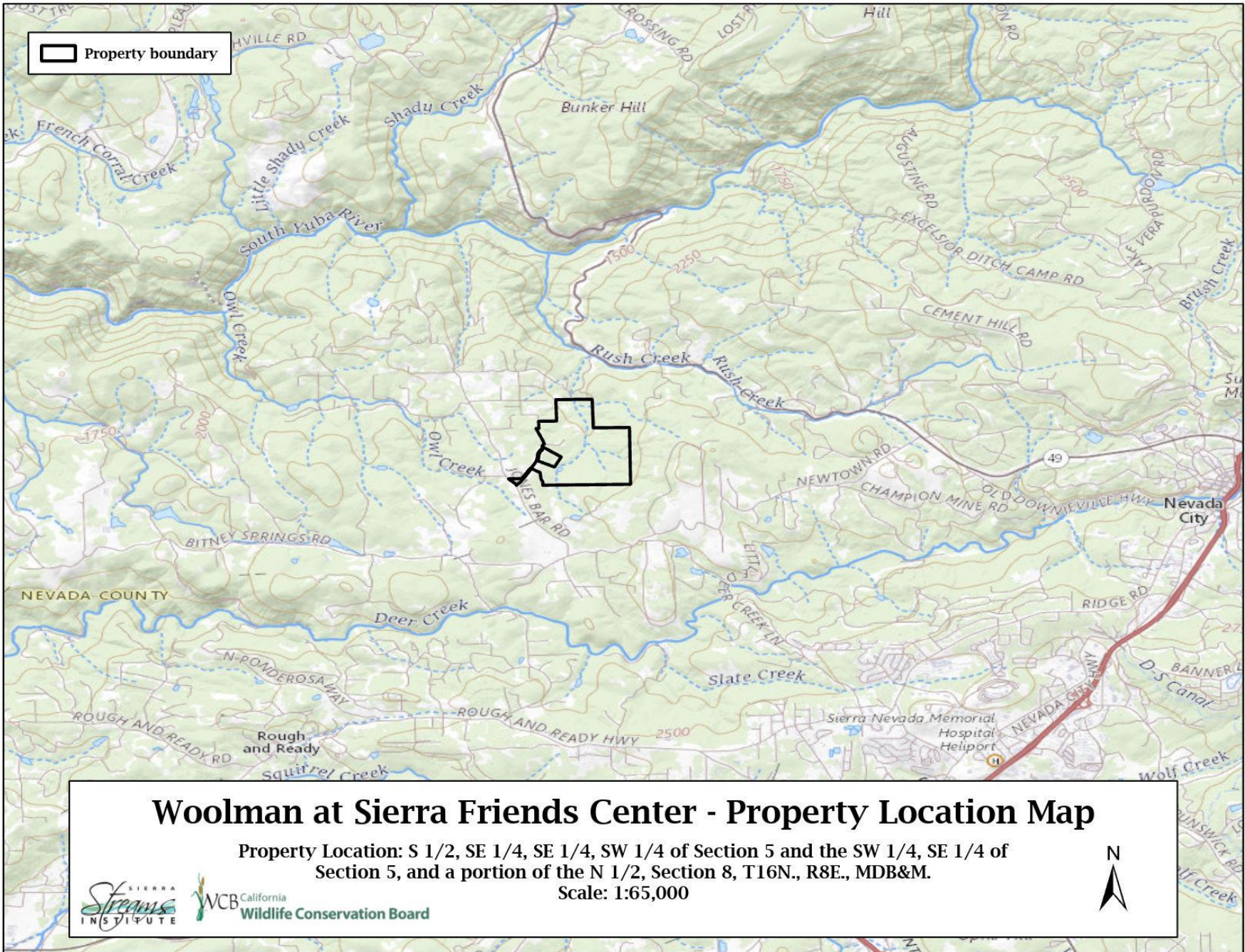
Website: <https://cafiresafecouncil.org/grants-and-funding/apply-for-a-grant/>.

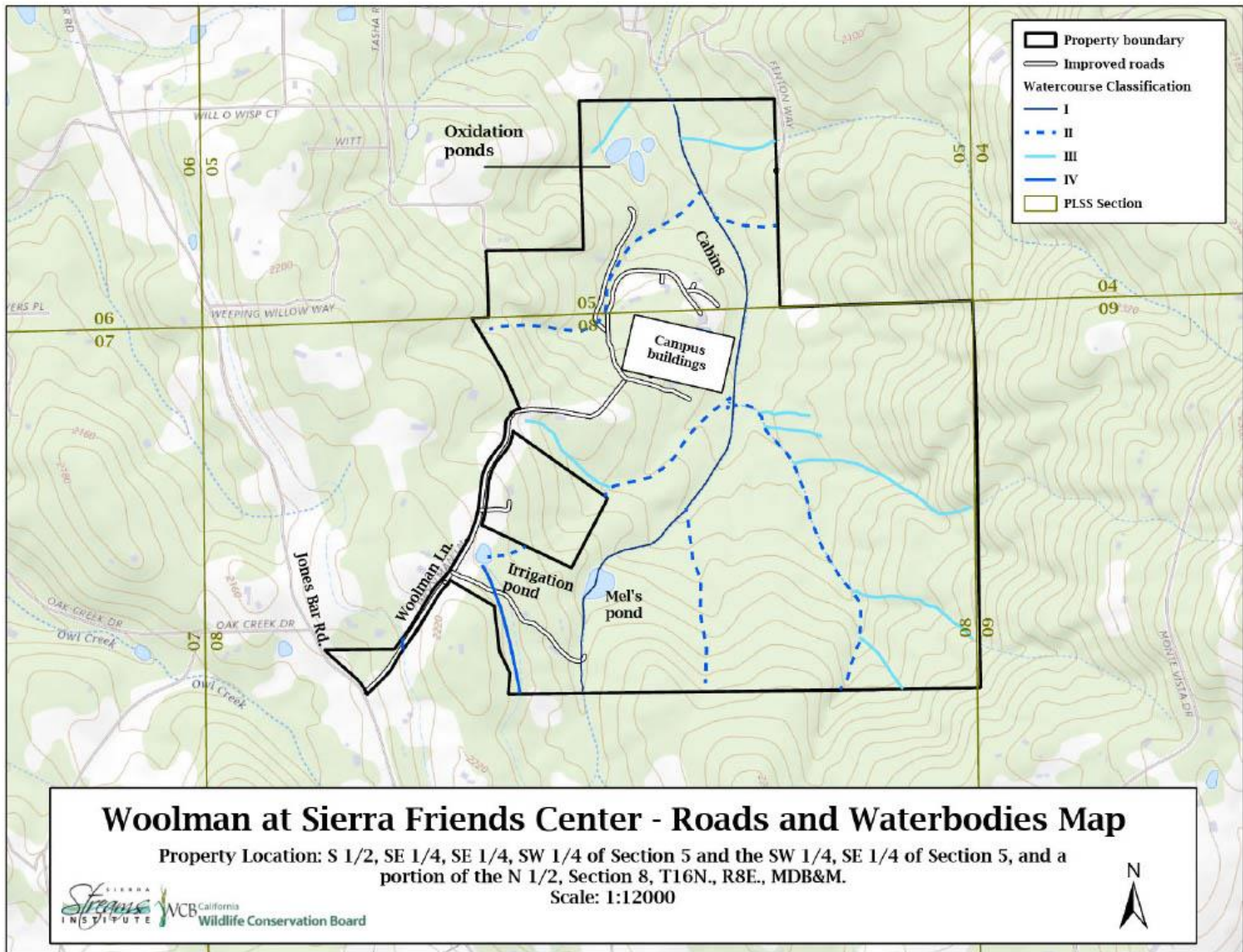
Contact: <https://cafiresafecouncil.org/contact/>

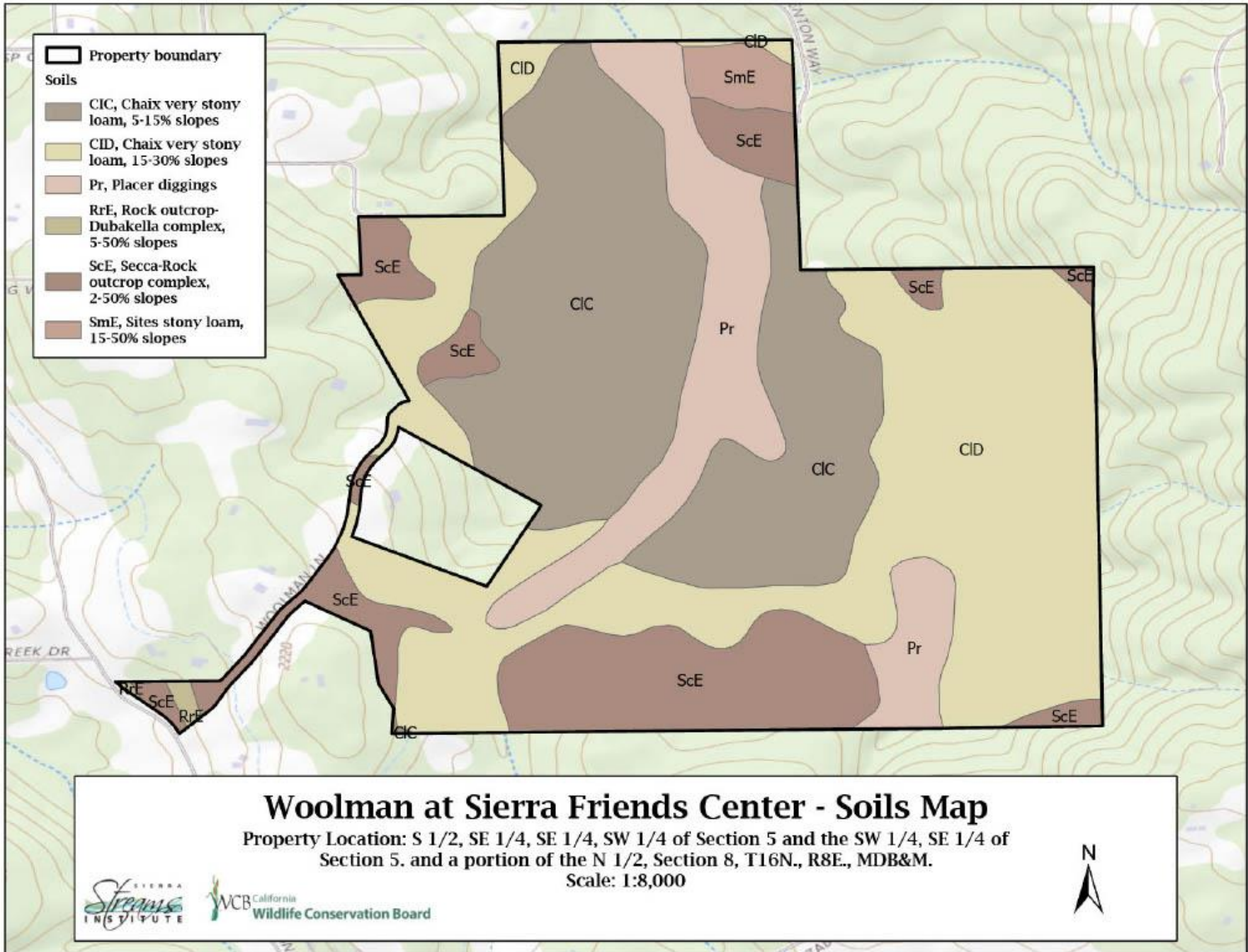
Other Potential Grant Source

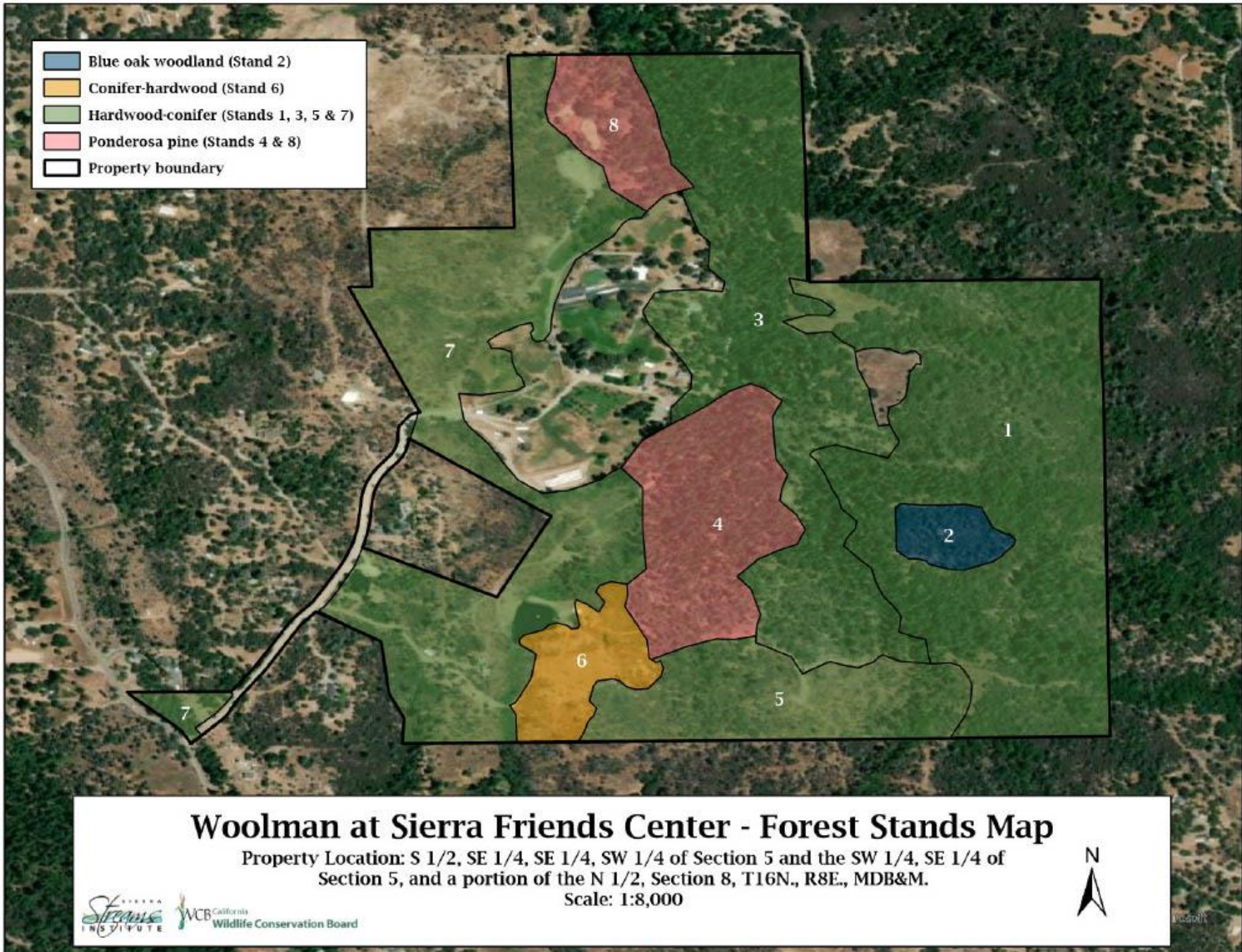
Nevada County Office of Emergency Services may offer FireWise Community grants on occasion. Check their website for information: <https://nevadacountyca.gov/3595/Firewise-Community-Grants>.

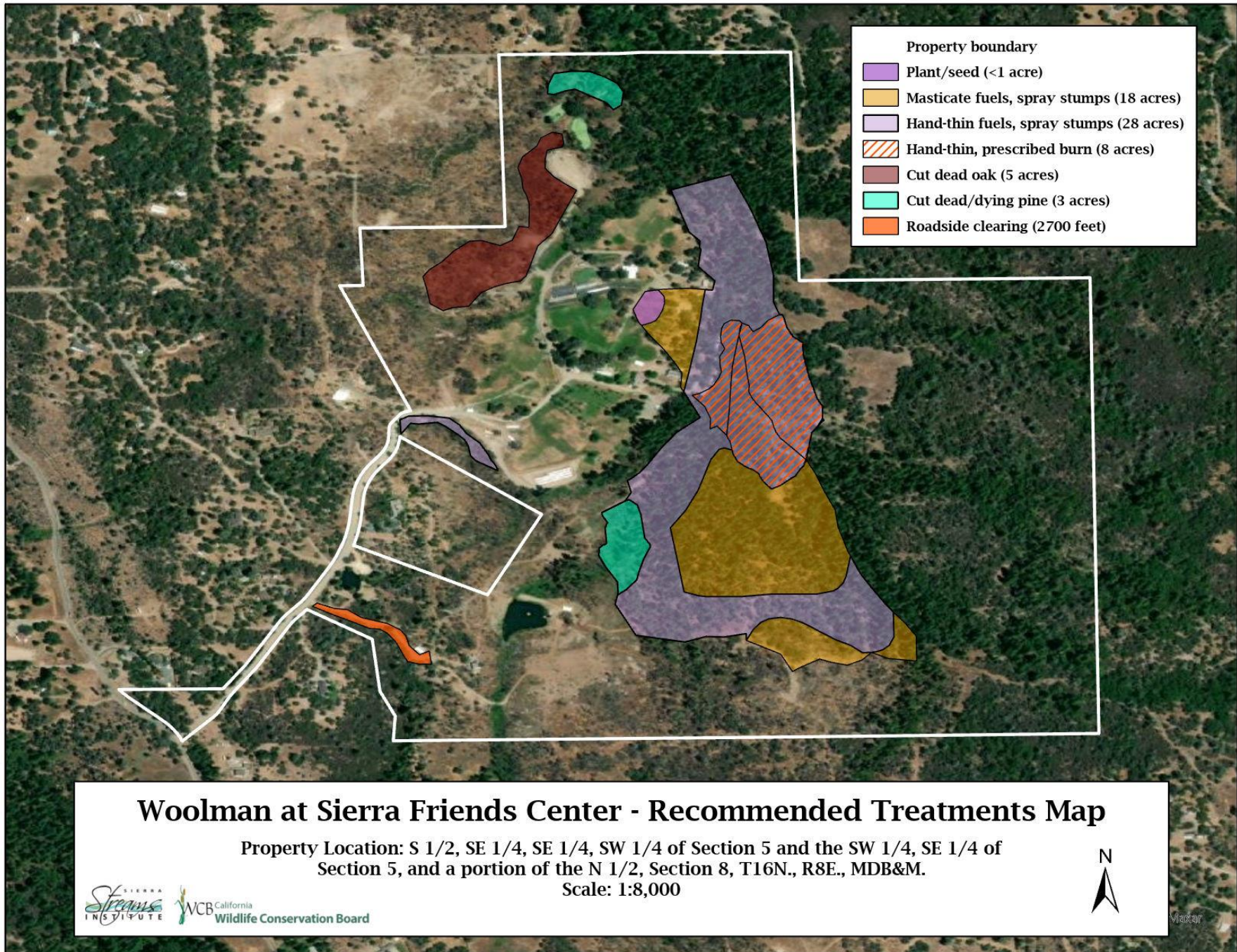
Maps











Appendix 1: Standards and Specifications

NRCS Standards are in the NRCS Field Office Technical Guide (FOTG) at:

<https://efotg.sc.egov.usda.gov/#/>

CFIP Standards are in the CFIP User's Guide, posted on the right-hand side of the CAL FIRE CFIP webpage at: <https://www.fire.ca.gov/what-we-do/grants/california-forest-improvement>

Appendix 2: Taxes and Land Use

Property Tax

The property does not fall under any specific property tax program.

Income Tax

Timber harvest and other revenue generating activities generally produce a federal and state income tax liability. Tax credits may be available for some management activities.

Estate Tax

Good estate planning can help to lessen tax liability when passing land to heirs. Landowners should seek good planning and tax advice.

Record Keeping

Good record keeping can help landowners manage their assets, increase their revenues, and minimize their tax liability. The landowner is responsible for maintaining a copy of this Management Plan.

Land Use

The zoning and land use classifications from the County land use plan is not applicable for this property.

Appendix 3: Past Plans and Updates

An NTMP has been approved for the property. The previous management plan and NTMP are on file with the landowner.

Appendix 4: Supporting Data

Stand 1 inventory results for 2022

Species	Stems/acre	BA ft ² /acre	Bf/acre	QMD (in.)
DF	25.0	0.0	0.0	2.6
IC	581.1	10.0	175.8	
PP	80.2	12.7	1909.6	
GP	53.3	8.8	1029.2	
CY	485.6	3.5	0.0	
BL	305.2	15.8	318.5	
BO	59.9	8.4	594.1	
IO	965.2	31.5	193.4	
Total	2555.4	90.8	4220.7	
Std Dev.			4226.8	
95% CL			49.1 - 112.5	

Stand 2 inventory results for 2022

Species	Stems/acre	BA ft ² /acre	Bf/acre	QMD (in.)
PP	1.0	3.3	435.4	3.2
BL	1089.6	73.3	503.5	
BO	3.3	3.3	293.2	
IO	400.0	3.2	0.0	
Total	1493.9	83.2	1232.2	
Std Dev.			1119.2	
95% CL			0.0 - 4012.5	

Stand 3 inventory results for 2022

Species	Stems/acre	BA ft ² /acre	Bf/acre	QMD (in.)
IC	300.3	2.0	132.2	2.1
PP	14.1	25.7	4574.0	
GP	0.6	1.4	192.7	
CY	313.2	8.8	358.7	
BL	319.0	7.2	235.9	
BO	269.2	12.4	460.4	
IO	482.4	4.9	96.5	
MA	1072.9	7.2	422.5	
Total	2771.7	69.7	6472.8	
Std Dev.			5789.8	
95% CL			1116.57 - 11829.1	

Appendix 4: Supporting Data

Stand 4 inventory results for 2022

Species	Stems/acre	BA ft²/acre	Bf/acre	QMD (in.)
IC	107.2	30.7	1402.4	3.7
PP	49.9	90.0	17040.9	
CY	200.0	0.1	0.0	
BO	12.5	8.3	564.8	
IO	1564.8	14.7	0.0	
MA	2.9	1.7	91.2	
BM	52.5	1.7	78.8	
OH	31.5	6.7	0.0	
Total	2021.06	153.9	19178.1	
Std Dev.			8623.38	
95% CL			10125.5 – 28230.7	

Stand 5 inventory results for 2022

Species	Stems/acre	BA ft²/acre	Bf/acre	QMD (in.)
BL	174.5	36.5	731.4	3.8
BO	150.0	0.2	0.0	
IO	150.0	0.1	0.0	
Total	474.5	36.7	731.4	
Std Dev.			1034.4	
95% CL			0.00 – 10024.8	

Stand 6 inventory results for 2022

Species	Stems/acre	BA ft²/acre	Bf/acre	QMD (in.)
DF	136.4	0.2	0.0	0.5
IC	82.0	0.9	103.3	
PP	381.8	0.3	0.0	
BL	354.5	0.5	0.0	
BO	190.9	0.1	0.0	
IO	109.1	0.1	0.0	
OS	109.1	0.1	0.0	
Total	1363.9	2.13	103.3	
Std Dev.			342.5	
95% CL			0.00 – 333.4	

Appendix 4: Supporting Data

Stand 7 inventory results for 2022

Species	Stems/acre	BA ft²/acre	Bf/acre	QMD (in.)
DF	109.1	0.1	0.0	1.8
PP	28.0	4.4	226.4	
GP	40.2	10.7	436.7	
BL	472.4	10.0	266.9	
BO	200.8	6.4	310.6	
IO	1988.2	17.5	187.8	
MA	27.3	0.0	0.0	
Total	2866.0	49.12	1428.4	
Std Dev.			1698.5	
95% CL			287.0 -2569.8	

Stand 8 inventory results for 2022

Species	Stems/acre	BA ft²/acre	Bf/acre	QMD (in.)
IC	0.6	3.3	446.2	3.8
PP	132.0	73.4	14037.2	
CY	6.3	6.7	400.1	
BL	404.2	7.2	687.2	
BO	6.0	20.0	2957.5	
IO	900.0	1.2	0.0	
Total	1449.1	111.8	18528.3	
Std Dev.			12509.2	
95% CL			0.0 - 49602.8	

Species codes: IC= incense-cedar, PP= ponderosa pine, CY= canyon live oak, BL= blue oak, BO= black oak, IO= interior live oak, MA= madrone, GP= grey pine, DF= Douglas-fir, OS= other softwoods, OH= other hardwoods

Appendix 5: Archaeology Statement

The purpose of the Cultural Resources section is the identification and, to the extent possible, preservation of archaeological and historical resources on the Property.

An archaeological records check **MUST BE** conducted by Northeast Information Center (NEIC) prior to any on-site activities utilizing public funding.

Archaeology is confidential. A confidential archaeological records search was conducted for the entire property. The report is on file with the landowner (Northeast Center of California Historical Resources Information System (I.C. File # NEV-23-13)

Appendix 6: Burn Plan

California Standardized Prescribed Burn Plan

Project Title: Woolman at Sierra Friends Center Prescribed Burn Project

Prescribed Fire Burn Boss: To Be Determined

Author of Plan: Stephen Graydon Qualifications: CARX(t)

Agency Having Jurisdiction (AHJ): Cal Fire (AHJ); Penn Valley FPD, Nevada County Consolidated FPD

Property Manager: Marty Coleman-Hunt

Primary Property Owner contact phone: 530.273.3183

Date Created: 3/24/2022

Date Re-Evaluated* (if applicable): NA

**Burn plans should be re-evaluated as needed to account for changes in fuel/site conditions or project objectives.*

1. Project Area Description

Location: The Woolman School Campus is in rolling foothill terrain between the South Yuba River to the north, and the cities of Grass Valley and Nevada City to the southeast. The cities of GV and NC are 3.5 and 4 miles away, respectively. Open agricultural land surrounds much of the campus infrastructure, but the target sections are primarily timber areas along the northeastern perimeter of the property. There is a variable understory of shrubs, brush, and grasses within these timber areas. Portions of the northern, western, and southern sections of the property were significantly altered by the Jones fire in 2019. The prescribed fire units are in areas partially burned by the fire, including some burned area and the spaces adjacent to structures and residences along the eastern boundary.

Latitude & Longitude [in Degrees Decimal Minutes (DDM)]:

Latitude: 39.268221 N (39° 16.0933' N)

Longitude: -121.1003776 W (121° 06.0226' W)

Property Ownership (private, state, etc.): Private (SRA administration)

Unit size (acres): 8 total acres

Unit Description:

	Within the Unit	Adjacent to Unit
Fuel Type/Model	TL9 & TU1	TU5 & TL9
Slope	5%	5%
Aspect	North	North
Special features	Confluence, mining remnants	Campus/Recreational Structures

Author Signature _____

Date _____

Land Manager _____

Date _____



Prescribed fire goals & objectives *[include overarching project goals as well as specific project objectives.*

Project Goals:

The overall goals of the project include fuel reduction and wildfire prevention, increased wildfire resilience, maintenance of existing and planned thinning treatments, and for use in education and capacity development of the Woolman Campus staff, volunteers, and visitors.

Prescribed Fire Objectives:

- Reduce surface fuel loading by 30 – 75%
- Reduce 1 hour surface fuels 40 – 90%
- Reduce 10 hour surface fuels 40 – 90%
- Reduce 100 hour surface fuels 10 – 50%
- Reduce 1000 hour and Duff layer 0 – 50%

2. Pre-burn considerations

Weather Observations and Information:

Weather forecasts for the unit location must be evaluated prior to planning a burn. The forecast for the burn location and day must be checked using the hourly format from the National Weather Service (NWS: <https://www.weather.gov/>). This forecast should be printed, and must be included in the operational briefing. Additionally, the evening's forecast and the following two days must also be observed and included in briefings. The following days' forecast must be taken into account when planning routines and staffing levels for securing, patrolling, and extinguishing the unit until it is 'Out' (see Post-Burn activities section) under expected conditions.

The nearby RAWs station (<https://raws.dri.edu/cgi-bin/rawMAIN.pl?caCRDR>) should be consulted for referencing the RH, Temperature min/mean/max, and the 10-hour fuel stick trends of the geographic area. The 10-hour fuel reading will likely be lower/drier than what is expected for the shaded conditions of the ignition units, but the trends of the local weather data should be helpful in identifying strategic timing of a burn within preferred conditions.

Additionally, to get the wind speed and direction for 20-foot winds, and to understand the zone forecast that fire responders will be attending to, the Fire-Weather Forecast must also be printed for the day of the burn, and should be evaluated for the three days following the planned burn, as the information comes available. The forecast can be found at <https://www.weather.gov/wrh/fire?wfo=sto> , the location of the burn selected within the map, the "Fire Weather Zone Forecast" tab selected and printed. Note, by selecting the "Point Forecast Matrix" tab, and then the "Hourly Weather Graph" link therein, one can access the NWS hourly forecast previously mentioned.

Conditions at the time of the test fire must be documented, in addition to answering the "Go/No-go" checklist found in the IAP. Weather should be taken once every hour for the duration of ignition operations, and recorded for a complete monitoring reference. A sling psychrometer, Kestrel© device, or other device designed specifically for quantifying temperature and Relative Humidity (RH) should be used to gather this information. Weather and fuel conditions are vital to understanding and predicting

fire behavior and should be central to all planning efforts and reflexive actions during and after the burn operations. Specific measurements (RH, Temp, wind direction / speed) found in weather forecasts and RAWS data should also be compared in advance with local devices to understand trends and adjust expectations.

Plan for unit preparation (*describe line type/construction, pre-treatment of fuels, pre-burn land management considerations (e.g., grazing deferral), etc.*):

Preparation of the ignition unit must be completed prior to the ignition of said unit, and preparations should be implemented for immediately adjacent units as well. The specifications here can be reduced under “Cool” conditions up to a maximum of half, as confirmed in writing by the burn boss and/or landowner on the IAP. These specifications are designed to support repeat burning of an area, to support the landscape goals of wildfire mitigation, and to create a forest structure that is adapted to fire and conducive to burning in cooler prescriptions. Initial investments in preparation will create returns with every interval of fire, and thereby also increase the likelihood of meeting and maintaining project objectives.

Preparation – All Units

Control Lines:

- Roads used as control lines must be free of burnable material for the width of the drivable area, and the roadway free of obstacles or debris for clear travel.
- Trails & 2-tracks must be free of burnable material for at least 32”, and the pathway free of obstacles or debris for clear travel.
- Ladder fuels and small diameter (<4”dbh) trees, bushes and shrubs must be thinned or removed for a width of 10’ along the control line; a specification referred to as “The Cut”.
- Hand constructed control line, or “The Scrape” should be placed at the external edge of The Cut, or in the center when separating two units.
 - + Hand line construction for control lines must create a 32” wide area free of organic material, down to mineral soil, and without an accumulation of organic debris along the line.
 - + Hand line constructed perpendicular to the slope (contour) must have a ‘cup-trench’ (12” minimum depth/height of trench/berm) installed at the external edge of the 32” hand line. Cup trenches must be built from mineral soil, and maintained in good form before ignitions

Ignition Unit Perimeters:

- Unit perimeters should be treated to remove standing vegetation and accumulations of down and dead material up to 25’ interior of the control lines, with greater depth (35-50’) at corners and along control lines with any bends or irregularities.
 - + Standing vegetation should be cut and dispersed into the unit (lop and scatter; >10’), with slash reduced to 12” depth, or even with the rest of the fuel bed.
 - + Small concentrations (“jackpots”) are acceptable outside of the 10’ width of “The Cut”, but material should be scattered or piled and burned in advance to reduce fuel loads and heat along the line.
 - + When rolling material poses a threat, and whenever possible, accumulations of dead and down material should be moved to the interior of the unit (>25’); any material that cannot be removed, should be aligned with the slope to minimize the potential for rolling material.



+ If rolling material is expected to occur near control lines on sloped units, and the material cannot be moved (ie – standing dead stob/short snag, stump, large log, etc.), a secondary ‘cup-trench’ should be installed to mitigate rollout potential in advance of ignitions.

Internal Preparations and Mitigations:

- Residual trees shall be evaluated for the potential to be a receptor or distributor of embers

+ Special attention should be paid to all trees within 150’ of roadways and control lines, and any trees with signs of hazard or structural compromise must be felled, or marked, pre-treated, and communicated at briefings to all personnel

+ Trees with cavities, dead sections, or standing dead trees (snags) located near roads or control lines should be thoroughly inspected for hazardous potential and felled if the potential is more significant than mitigating tactics can nullify.

- Dead standing trees (“snags”) should be evaluated for hazardous potential, and should be felled if they poses a threat to control lines, personnel, or desired residual trees.

- Vulnerable trees should be pre-treated by raking/scraping around the base to a radius of 3-5’ to remove all surface litter, pre-treated with water as able before/during ignitions, and potentially treating the trees in advance with long-term fire retardant if reasonable.

* Internally located trees with defects can be beneficial as habitat structures, and should be left intact whenever possible. Burns should be allowed to recruit these structures up to a predetermined quantity whenever acceptable to the project goals or objectives.

Water supply (*describe quantity, location, and other considerations*):

Water supplies must be full and in position prior to ignitions. Hose lays should also be filled prior to ignitions, provided environmental conditions do not pose a risk of freezing the hoses or where placement could damage hardware (couplings on roads, etc).

**The following equipment, in quantities determined by fuel and weather considerations, will be required for holding operations of an ignition unit. Professional (NWCG) typing is not used as the primary definition of said resources, but as a relative equivalent of similar size and capability. Pumping pressures of the following equipment may not be suitable for steep inclines, or long hose-lays, and tactics and accessibility measures should be practiced in advance to find the limitations of privately owned or rented equipment. The pumps identified in this plan must be able to provide reasonable pressure to spray water using the lateral (100’ x 1”), and at the termination of the hose lay (GHT), to a distance of ~20’ or more.

**All personnel within the holding group, and ideally all personnel involved in the burn, should be familiar and experienced with the operation of the specific water handling equipment and pump operations used for the burns.

Equipment:

Type 6 engine – 200+ gallons, with a pump, 100’ lateral (1”), nozzle, and operator

Water-trailer – 250-400+ gallons, with a pump, 100’ lateral (1”), nozzle, and tow-vehicle TBD

Backpack pumps – 5 gallon soft or hard containers with hand-pumps

Hose lay – 400’+ of 1” and 2 reducers to Garden hose diameter; Wyes/laterals up to every 100’, and

nozzles for every lateral (see Holding Resources, additional hose may be required to cover perimeter based on conditions)

Hardware – A minimum of (2) 1" to ¾" (GHT) reducers must be available, a minimum of (4) total splitting devices (wye's, in-line T's), and enough nozzles to accommodate two independent progressive hose lays with one lateral each (50' minimum for laterals)

**Set-up prior to an unit ignition must ensure all hoses, fittings, and pumps are interoperable (or marked to identify compatibility restrictions) and functional.

Locations:

Specific placement of water equipment will be up to the determination of the Burn Boss, but the following criteria should be included.

- Water pressure and holding resources must be positioned where a threat to control line exists from lofting, rolling, falling, flaming, or underground heat sources.
- The hose lay must be laid out along the unit perimeter, or at staged intervals relative to expected progression (progressive hose lay; first hose has nozzle until termination, then at 50' the next hose gets connected and move the nozzle to that hose end, etc.).
- Mobile pumping platforms should be kept mobile with an extra fire worker to assist with maneuvering
- Backpack pumps shall be kept full throughout the ignition operations, and stationed on holding personnel, or within immediate access of holding resources.

Unit access (*describe roads, signage needs, etc.*):

Access to the project area and the ignition units is from Newtown Rd. to Jones Bar Road, to Woolman Lane. Woolman lane splits at the headquarters of the Sierra Friends Center, with the road to the south being the best access to the edge of the units. A dirt access road that serves as one control line on the western edge of the units can be used by navigating through the soil farm along Woolman lane, prior to the junction at the Sierra Friends Center.

Prescribed Fire Signs should be visible to external parties who may be able to see smoke:

- Prescribed Fire signs should be placed at the Woolman Lane and Jones Bar Road, where it is visible to parties entering Woolman Lane.
 - + An additional sign could be placed closer to Jones Bar Rd., where it is visible to passing traffic and out of the right-of-way.
- Signage should contain the verbiage "Control Burn, Do Not Report" and, optionally a telephone number for the landowner or designee.

Advanced notice signs could include outreach to tertiary residents or visitors:

- Pre-burn signs/messages could also be placed at a centralized location where staff, visitors, and residents are likely to see it. Informational signs/posters should be in place up to a week prior to a burn, and in locations where local residents and any stakeholders frequently visit.

+ This type of notice could include a telephone number for the audience to call for more information, or other website or social media links (QR code links are helpful) to offer contextual information about the use of prescribed fire to mitigate catastrophic wildfire, improve ecological function, and/or create opportunities for neighbors to get involved with prescribed fire learning and activities. Using seasonal



notice and planned burn signs in advance can create connections with interested parties in the immediate geographic area, and may open communication in advance of burning to negotiate any concerns from nearby residents.

Plan to protect values at risk (if applicable; e.g., structures, water lines, sensitive species, cultural sites, etc.):

The primary values found in the project area include residual overstory trees, creeks, and minimal infrastructure (amphitheater, bridges). Residual trees and wooden bridges are located within and immediately adjacent to ignition units, but values such as vehicles and structures are located adjacent and external to any burn units.

Internal values:

- Residual overstory trees

+ Thinning activities to reduce horizontal and vertical fuel continuity.

- Selective thinning and removal of shrubs, saplings, and dead fuel accumulations from within drip-lines of residual trees will limit the impacts to residual overstory.

+ Preparation measures can include clearing understory vegetation, raking surface fuels out to the drip line, water pre-treatment around the boles, and long-term fire retardant applications on particularly vulnerable overstory individuals, or desirable habitat trees.

- Wooden bridges

+ Bridges should be blown off or swept to remove any small organic matter from the edges or between boards.

+ Raking at the edge of any bridges that have parts surrounded by available fuel should be done prior to ignition operations.

+ Pre-treating the bridges with water should also be done immediately prior to ignition.

- Amphitheater/campfire

+ Benches, sitting rounds, and other large timbered material should be staged away from available fuel beds, pre-treated with water as needed, and monitored during and after ignition operations.

External Values:

- Structures and on-site infrastructure should be prepared prior to the burn using the tactics of home/outbuilding hardening for wildfire. Windows and doors should be closed on all structures and apparatuses, and any organic material on, in, or around equipment and structures should be minimized, removed, and pre-treated with water immediately prior to ignitions, or with a long-term fire retardant in advance.

- Line construction and preparation efforts near adjacent equipment or structures should be more robust, and include advanced cut/pile/burning of vegetation rather than creating 'jackpots' if fire was to cross a control line; standing dead fuel should be mowed/trimmed, and pre-treated with water or retardant where adjacent areas could be subject to direct heating and ember wash.

3. Prescription

Element	Lower Limit (COOL)	Desired (MOD)	Upper Limit (WARM)
Fine Dead Fuel Moisture (%)	15	9	7
Relative Humidity (%)	45	30	18
*10 hr Fuel Moisture	17	10	8
Temperature (F)	40	65	80
**Mid-Flame Wind Speed (mph)	0	1	1.8
Probability of Ignition (%)	20	34	51
Smoke Direction	Any	West	Any

**10 hr fuel moisture only binding when using on-site measurements*

*** Mid-Flame windspeed is calculated using 20-foot winds and a Wind Adjustment Factor (WAF) of .10*

Wind direction (*acceptable range and optimal*): Any direction is acceptable, but with the sheltering of the unit under canopy and terrain, wind impacts are likely limited and mid flame windspeeds will likely be less than the Wind Adjustment Factor (WAF) as modeled.

Seasonality of burn (*if applicable; in many cases, implementation will be appropriate at any time that prescription parameters are met*):

The seasonal restrictions of this plan are as follows: (1) A burn may only be implemented in the months following a wetting rain, and after the end of declared fire season by the AHJ. (2) When the conditions of the prescription are met, having no more than two prescription elements at the “Upper Limit”, excluding the POI. Restrictions may be put in place from the AHJ after the end of declared fire season, and all permits must be obtained for any in-season burn or burns occurring in periods when permits are required.

4. Smoke Management Plan (*to be prepared according to local air district rules; refer to SMP for detailed plan*):

A burn permit from the Northern Sierra Air Quality Management District (NSAQMD) is required for any burn over 1 acre. Additional information on the specific fees and conditions of permitting is available by calling the NSAQMD at 530.274.9360 and requesting ‘the outdoor burning specialist’, or Joe, or Sam. Rules and conditions are complex, and changeable, and calls to the AQMD in advance of a planned burn day are highly suggested to get clear and current information. Current costs are \$76.37 for a Hazardous Fuel reduction burn permit, good for one (365 days) year, pending any acreage charges by the NSAQMD (up to \$2.54 /burned acre) for burns categorized as Forest Management or similar.

- Submitted through PFIRS
- Submitted in hard copy to landowner, to be submitted 2 weeks or more before a burn by the landowner or designee
- Not required by air district based on project size/emissions



5. Ignition Plan

Anticipated Fire Behavior (head fire – less desired)	Flame length (FL) (feet)	Rate of spread (ROS) (chains/hour)
Within the unit	1.4 – 3	.6 – 2.8
Adjacent to unit	1.9 – 4.4	.7 – 3.3
Anticipated Fire Behavior (backing fire - desired)	FL (feet)	ROS (ch/hr)
Within the unit	1.1 – 1.5	.4 - .6
Adjacent to unit	NA	NA
Production Rates	Chains/hour	
*Crews/resources	5	

Firing Boss to be designated based on environmental conditions

Note: Test fire will be conducted in a location that is representative of the burn unit. Location to be determined by Burn Boss on the day of burn based on environmental conditions.

Firing plan (describe sequence, patterns, techniques, and devices needed to meet objectives):

Firing operations will begin at the site of the test fire, and proceed from the highest topographic control line or downwind section, or a compromise between the two influences. This location and progression can be modified by the burn boss implementing the burn.

Initial firing should begin at the edge of the unit, firing off the control line directly. When the entire control line at the highest point or downwind section is blackened to a depth of ~25', operations can continue to blacken the corners and then the flanks of the unit.

Contour strips or dots can be used to ignite the interior of the unit, using more fire (strips) when the conditions are cooler, and less fire (dots) when the conditions are drier/warmer. Igniters and holding resources should be paying particular attention to the fire behavior, and the duration of time it takes for the most recent strips/dots to grow together and begin backing against the slope/wind. Because the topography of the units is fairly flat and with continuous canopy, zigzagging and other firing patterns to spread fire across the interior of the unit and allowing it to expand uniformly may be acceptable under moderate and cool prescriptions.

Patience will be the most effective tool for achieving the desired fire behavior across the project, and allowing the fire to back/flank across the area will be conducive to meeting the objectives of the project while minimizing risks to values. Small runs of head-fire may be necessary to meet time obligations, but this tactic should be used sparingly, as it does not often yield the desired fire behavior that will meet prescribed fire objectives for consumption or top-killing regrowth.

Reflexive approaches to the firing pattern may be modified by the burn boss or an experienced firing boss based on specific conditions.

☒ Holding Specialist to be designated based on conditions

Holding plan:

	Cool	Moderate	Warm
Fine Dead Fuel Moisture	12-15	9-11	7-8
Resource / Supply			
Firing Boss	Optional	Suggested	Yes*
Holding Boss	Optional	Optional	Yes*
Fire Workers**	5	8	12+
Type VI Engine	-	1*	1*
Water Trailer	1*	1*	1+1*
Hose Lay	½ perimeter*	½ perimeter	½ perimeter
On-site water supply	-	Optional	400gal+ Suggested
Backpack Pumps	3	2	2
Drip Torches	2-4	2-4	1-3
2-way radios	2+	4+	6+

*- either resource of same type acceptable

** - includes all fire workers except Burn Boss

Resources (describe total number and type of resources needed to implement burn safely, based on production rates outlined above. Include description of plan for on-site weather observations and weather forecasting):

Holding resources will work closely with firing operations to mitigate impacts to internal and external values. The burn boss and holding boss may supplement this holding plan, but the standards for securing the unit at the end of the burn must be maintained (10’ OUT as of 2200 the day of the burn) or increased.

Working from the test fire site through the unit, holding forces will split into at least two divisions (A / Z) as the firing operation moves from the top/downwind edge of the burn (head) down along the sides (flanks), to the bottom (heel). Holding resources must have water available to quickly handle any spots or slop-overs, but should also be briefed, capable, and equipped to use hand tools and a chainsaw to begin line construction to contain any undesired fire activity, or by using hot-shovel techniques as appropriate. Backpack pumps should be deployed when hose access is slow or does not reach. Backpack pumps should be worn where they are used as the primary water source for holding, and within close range of a filling station/water tank/engine. Holding resources can also use water to reduce fire intensity along control lines prior to intensities that may produce embers over the line.

Holding resources must also monitor the identified hazards and values, communicate to the ignitions group about the impact of fire behavior or smoke on values and control lines, and take suppressive action before values are impacted by fire or smoke. Water should be used to reduce heat impacts on values or



control lines by spraying at the base of the flames, or using a fog/mist/spray to reduce fire behavior without reducing the heat too much to continue combustion. Holding resources should be briefed on consumption objectives to inform holding / securing tactics.

Holding resources will increase spacing and reduce patrols as active combustion lessens, while continuing to extend the water supply along with active combustion, until reaching the bottom/heel control line. Holding resources should continue to monitor the entire burned perimeter, making decisions for staffing based on the existence or potential for burning material to be lofted over, rolled over, or burning under control lines. Hot material can be moved interior to complete burning consumption and remove it from the secured area, but this strategy may be excluded by the Burn Boss if undesired.

6. Post-burn Activities

- Notify Grass Valley Emergency Command Center (ECC) that ignitions on the unit(s) are complete, and communicate the status of the burn as either 'Out' (having no heat within the unit), or 'In Patrol Status'. If the burn is in Patrol Status, a contact should be confirmed with the ECC, and an update given upon request or when the unit is declared 'Out'
- Establish a briefing and the handing-off of unit responsibility between the burn boss and the party responsible for patrol and mop-up (landowner unless otherwise specified)
- Account for all personnel prior to their departure from the unit
- Gather all equipment and supplies but leave any hose-lays or mop-up tools in place and available until the unit is 'Out'

Mop-up and patrol plan (*describe activities, timeframes, and standards*):

Upon complete ignition of an ignition unit, the following actions shall be taken to monitor and mitigate post-fire risks, with suggested methods to track the outcomes of the prescribed fire relative to objectives. The Burn Boss of record may require additional measures, but no less than the following actions.

**Weather outlook for the evening of a burn, and the following three days must be observed prior to the ignition of any unit, and should be included in the day's IAP and briefings.

**When winds are predicted in excess of 20 mph at the 20-foot level, and for every 5 mph above 20 mph, the following standards should be increased by a factor of 2 (twice the number / frequency of patrols, depth of mop-up, etc.).

** Mop-up must be accomplished through the use of hand-tools. Water use is a way to increase efficiency, but using water as a stand-alone method is NOT acceptable for extinguishing heat. Mop-up is defined here as the deconstruction and cooling to ambient temperatures of any hot or burning material, and it is NEVER ACCEPTABLE TO BURY any heat source at any time. Heat below the surface of the soil is an increased risk because smoldering can continue, having enough oxygen to sustain limited combustion, and likely insulating the burning material for extended periods.

Securing Unit/ Patrol:

- Secure the unit immediately after active consumption, and during the same day as the ignition of the unit.

- +Secure the unit by mopping up the perimeter to a depth of 10', with additional depth (>20') suggested anywhere adjacent to values, high risk topographic feature (steep drainage, gully, drop-off, etc.) or where there is abundance of fuel outside of the ignition unit.

- Patrol the burn unit after it has been secured, making routine patrols every 2 hours up to 2200 on the day of the burn, and every 8 hours thereafter for the following 72 hours / 3 days.

- Perform mop-up activities beginning with any visible smoking debris that has not naturally extinguished or consumed within the first 24 hours, then through a methodical evaluation of the entire burn unit for smoldering or ground burning material.

- + Mop-up activities must result in the total extinguishment of material within the burn unit. Complete mop-up and securing the unit is essential, and must be carried out until all smoking, or hot organic material is cold, through either manual means or an environmental event (wetting rain).

- **Additional efforts and mop-up work should be performed if/when there are smoke impacts on neighbors or roadways, or when visibility or the health of nearby residents could be negatively impacted. All efforts to mitigate heavy smoke production should be undertaken upon knowledge of the issue.

After Action Review (AAR) and debriefing:

- Gather input from all personnel at the end of the burn, after the unit has been secured to the necessary specifications.

- Gather information from all personnel to better understand the nature and location of any residual heat, hazards observed or expected to occur, and other pertinent information about the status of the burn.

- Gather weather data and discuss fire behavior, and any observable outcomes relative to the burn objectives.

Monitoring / Observations:

- Pre-burn photos at known points should be used to track before & after progress and the objectives of the burns.

- Photos should be taken during the ignition of a unit (fire behavior capture), and at a period of one-month after the burn (fire effects, post burn)

- If possible, other monitoring protocols could be included with notes on specific happenings and outcomes of the unit ignitions, such as:

- + scorch height on tree trunks

- + crown scorch percentage (leaves burned or singed, may require time to emerge)

- + visual estimates of 1, 10, 100, and duff categorical reductions (need 'before' estimates)

- + Observed rates of spread (chain is 66', standard is chains/hour) and direction

- + Observed flame lengths (use known reference point within unit, visible from control line)

- + Observed firing patterns and spacing (fuel use estimates also helpful)

- + Observed weather conditions (methods of observations included)

Other post-burn activities (*optional; include appendices for marked activities*):

- Fire effects monitoring plan
- Project rehabilitation plan (*including infrastructure, improvements, and land rehabilitation*)
- Other (*describe*): Pre & Post fire photo points could be established for objective comparison

7. Notifications

Notifications should be made to the AHJ 48 or more hours prior to the desired burn date, as a courtesy. Greater notice can be beneficial, and any burn planned during the declared fire season must be scheduled 3-4 weeks in advance for a site evaluation to be completed before a permit can be issued.

Appendix E provides mailing addresses for all bordering property owners. A mailer should be sent out to the priority list of adjacent landowners, and could be sent out to the priority and complete lists. The purpose of the mailer should be to inform the group of the intention to burn the ignition units, and solicit contact information and preference for a particular contact method (phone, email, etc.). The mailer should be sent out one-two weeks in advance, and contain basic information and the option for people to opt-in to notifications about burns (and how often that is likely to occur).

Whenever possible, and when not unreasonable to accomplish with consideration to all other notifications, the burn boss or Woolman at Sierra Friends representative should work to accommodate the requests of the priority list residents. If burning is not appreciated by any contact, they should be referred to the AHJ and other fire departments, and/or the Northern Sierra Air Quality Management District for more information to clarify the legitimacy of their concerns and the validity of the timing and methodology for using fire to improve ecological functions and improve landscape resilience. Ideally, good communication should place an emphasis on the prescriptive elements of a burn (plan), and the stated goals and objectives can be a core component of any interactions. Current statistics for escaped prescribed fires in California, is at 1.76% as of 2020 (UCANR, retrieved from: <https://calag.ucanr.edu/Archive/?article=ca.2020a0014#R1>)

Seasonal notice to adjacent landowners about the intention to use fire is advised to take place after the end of declared fire season, following a season ending rain event. This timing should provide enough advanced notice to hold discussions about any details for planned burns or the notification process for specific landowners to be made well in advance of the likely burn windows.

The size of the lot and the limited number/proximity of neighbors puts less concern on the impacts of smoke, but where signs of fire could be a concern, good communication will help ease worries and potentially gain support. Email is also acceptable for advanced notifications, but calls must be made to adjacent landowners if confirmation via email is not received from a landowner / resident.

Pre-burn Notifications:

Adjacent Landowners (copy this section to supplement the IAP and check-off after making contact)

- | | |
|---------------------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> Name: Dorothy Henderson | Phone: 530.575.5988 |
| | Email: dorothyjoyhenderson@gmail.com |
| <input type="checkbox"/> Name: Doug Hamm | Phone: 530.615.1573 |
| | Email: douglasjhamm@gmail.com |
| <input type="checkbox"/> Name: Susan Hopkins | Phone: 530.274.1862 |
| | Email: susandhpeace@gmail.com |
| <input type="checkbox"/> Name: Anne Schlosser | Phone: 530.273.5500 |
| | Email: agschlos@earthlink.net |
| <input type="checkbox"/> *Name: _____ | Contact info: _____ |
| <input type="checkbox"/> *Name: _____ | Contact info: _____ |
| <input type="checkbox"/> *Name: _____ | Contact info: _____ |
| <input type="checkbox"/> *Name: _____ | Contact info: _____ |
| <input type="checkbox"/> *Name: _____ | Contact info: _____ |

**Include additional contacts if ownership changes/expands, and/or add to existing appendix E table.*

Air Quality Management District

- | | |
|------------------------------------------------------------------|----------------------------|
| <input type="checkbox"/> Name/Title: Northern Sierra AQMD | Phone: 530.274.9360 |
|------------------------------------------------------------------|----------------------------|

Fire Agency Having Jurisdiction

- | | |
|-------------------------------------------------------------------------|------------------------------|
| <input type="checkbox"/> Name/Title: Grass Valley ECC – Cal FIRE | Phone: 530.477.0641x7 |
| <input type="checkbox"/> Name/Title: Cal Fire Battalion 2312 | Phone: 530.277.2312 |
| <input type="checkbox"/> Name/Title: Cal Fire Battalion 2314 | Phone: 530.277.2314 |

Other Fire Agency Having Jurisdiction (if applicable):

- | | |
|----------------------------------------------------------------------------------|----------------------------|
| <input type="checkbox"/> Name/Title: Penn Valley Fire Protection District | Phone: 530.432.2630 |
| <input type="checkbox"/> Name/Title: Nevada County Consolidated | Phone: 530.265.4431 |

Other notifications may be required based on parameters outlined in the smoke management plan (e.g., schools and other sensitive receptors). Record additional notifications.



Day-of-Burn Notifications:

CAL FIRE Emergency Command Center (ECC):

Name/Title: Grass Valley ECC – Cal FIRE **Phone:** 530.477.0641x7

Air Quality Management District

Name/Title: Northern Sierra AQMD **Phone:** 530.274.9360

Other Fire Agency Having Jurisdiction (if applicable):

Name/Title: Penn Valley Fire Protection District **Phone:** 530.432.2630

Name/Title: Nevada County Consolidated **Phone:** 530.265.4431

Other (if applicable; e.g., law enforcement, adjacent landowners, etc.):

❖ *See Appendix E for complete list of adjacent landowner mailing addresses and contact information.*

Name/Agency: Click or tap here to enter text. **Phone:** Click or tap here to enter text.

Name/Agency: Click or tap here to enter text. **Phone:** Click or tap here to enter text.

Name/Agency: Click or tap here to enter text. **Phone:** Click or tap here to enter text.

8. Wildfire Conversion Plan

See MAP #4 for additional information

Conditions or Wildfire Conversion: Where the fire exceeds, or threatens to exceed the boundary of the project parcels, or the mechanisms of control present on scene or in route, the fire will be considered out of control, and require suppressive actions to bring it back under control.

Person designated to make declaration: Burn Boss and/or AHJ representative on scene

Designated Incident Commander in case of wildfire: Burn Boss will initiate direct attack suppressive action using prescribed fire workers, and the AHJ representative will occupy the IC role and instruct Burn Boss on appropriately directing prescribed fire workers to support and not interfere with suppression.

Person(s) to contact for declaration:

Call Reception on unit? Yes No

Name/Title: Grass Valley ECC – Cal FIRE **Phone:** 530.477.0641x7



- Name/Title:** Cal Fire Battalion 2312 **Phone:** 530.277.2312
- Name/Title:** Cal Fire Battalion 2314 **Phone:** 530.277.2314
- Name/Title:** Penn Valley FPD **Phone:** 530.432.2630
- Name/Title:** Nevada County Consolidated FPD **Phone:** 530.265.4431

Size-up/reporting considerations (also found on inside cover of IRPG):

- Rate of spread
- Fuel type
- Structure / Values threatened
- Estimated acreage
- Current actions being taken

9. Risk Management Activities

Check boxes for risk management activities/plans that will be developed for burn day:

- Contingency plan (required as plan attachment, Appendix A)
- Medical plan (in IAP)
- Communications plan (in IAP)
- Management Action Points (MAPs, Appendix A)
- Briefing checklist (in IAP)
- Safety plan (e.g., safety review, onsite assessment, 215A, etc.)
- Other (describe): Selected Group Safety and Leadership Topics

10. Other Attachments

Check boxes for other pertinent attachments that will be developed for burn day:

- IAP
- Project and area maps (required)
- Go-no-go checklist (recommended)
- Other (describe): [Click or tap here to enter text.](#)



Contingency Plan

A. Management Action Points (MAPs) or Limits:

1. Equipment becomes inoperable
2. Injury requiring medical evacuation
3. Smoke impacts to SSA are significant
4. **Fire becomes established outside of control lines**
5. Fire is not meeting objectives

B. Actions Needed: Relevant to MAP #, see full MAP document in Appendix A

C. Minimum Contingency Resources and Maximum Response Time(s):

The prescription calls for two resources with a 5-chains-per-hour minimum line production rate, and a contingency resource of the same production rate, within 2 hours response time. This 5 ch/hr standard can be accomplished with 3 personnel in conjunction with an engine (mobile water source), or by 5 personnel in hand-crew configuration, or by a small dozer (type III or greater). All resource configurations can accomplish 5ch/hr (or better) for all project area fuel models (within units and adjacent), and/or with a dozer operating up to a slope maximum of 40%.

Appendices

- A. Management Action Points (MAPs)
- B. Incident Action Plan (IAP), fillable
- C. Fire Behavior
 - 1. Adjacent fuels
 - 2. Within unit fuels
- D. Fine Dead Fuel Moisture Guide
- E. Mailing Addresses of Adjacent Landowners



Appendix 7: References

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Appendix 7: References

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