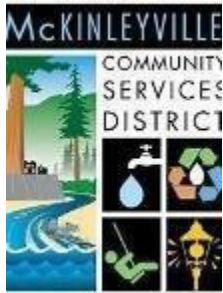


California Cooperative Forest Management Plan
CFIP Project Number:#8GG24322

State Contract Number: 25-NCR-HUM-01

Plan Template Edition Date: April 25, 2025

Prepared for:



McKinleyville
Community Services
District 1656 Sutter
Road
McKinleyville, CA 95519

Property Name: McKinleyville Community Forest

Property Location Address: 1656 Sutter Road, McKinleyville, CA. 95519

Landowner(s) Name :McKinleyville Community Services District

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.

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Abbreviations and Acronyms

BMP	Best Management Practices
CCR	California Code of Regulations
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CWHR	CA Wildlife Habitat Relationships
CE	Conservation Easement
CMAI	Culmination of Mean Annual Increment
CMP	Culvert Metal Pipe
CNDD	California Natural Diversity Database
CNPS	California Native Plant Society
CSDS	Controllable Sediment Discharge Sites
CWPP	Community Wildfire Protection Plan
CEQA	California Environmental Quality Act
DBH	Diameter at Breast Height
FMP	Forest Management Plan
FSC	Forest Stewardship Council
GIS	Geographic Information Systems
MBF	Thousand Board Feet
NCUAQMD	North Coast Unified Air Quality Management District
NTMP	Non-Industrial Timber Management Plan
PG&E	Pacific Gas and Electric Company
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
RPF	Registered Professional Forester
SMP	Smoke Management Plan
TEK	Traditional Ecological Knowledge
TPZ	Timber Production Zone
WLPZ	Watercourse and Lake Protection Zone

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 approved its content."

Name (print or type): Pat Kaspari General Manager

Signature: _____

Date: _____

Mailing Address: P.O. Box 2037, McKinleyville, CA 95519

Phone number: 707-839-3251

E-mail: pkaspari@mckinleyvillecsd.com

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 Program 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 Certification

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):

Greg Blomstrom

Signature: _____

Date: _____

Registered Professional Forester #: Greg Blomstrom,

RPF #1877 Organization or Company: Baldwin

Blomstrom, Wilkinson & Associates Mailing Address:

POB 702, Arcata, CA 95518

Phone Number: 707 382-7293

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): James Robbins Signature: _____
Date: _____

Unit & Mailing Address:

Humboldt/Del Norte Unit
118 N. Fortuna Blvd
Fortuna, CA 95540

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: McKinleyville Community Services
District (MCSD) Mailing Address: 1656 Sutter Rd
McKinleyville, CA 95519
Phone Number: 707839-3251
E-mail: pkaspari@mckinleyvillecsd.com

Landowner’s Representative (if applicable)

Landowner’s Representative Name (if applicable): Pat Kaspari General Manager MCSD

Representative’s Registered Professional Forester # Greg
Blomstrom RPF #1877 Mailing Address: POB 702 Arcata, CA 95518
Phone Number: 707 382-7293
E-mail: gblomstrom01@gmail.com

Management Plan History

This CFIP plan or FMP ordinarily will be revised or amended periodically if forest conditions or the goals of the landowner change significantly. All management activities conducted on the property under the guidance of the CFIP FMP are subject to further CEQA analysis at the project level. Site-specific CEQA analysis, including imposition of mitigation measures to ensure a less than significant effect, will occur prior to on-the-ground implementation of specific management actions outlined in the FMP.

Property Facts

Public Land Survey System (PLSS) Description: **Section, 29, 32 & 33 T7N, R1E, Humboldt B&M Section 3, 4, 9 & 10, T6N, R1E, Humboldt B&M**

Nearest City or Town: **McKinleyville, CA**

County: **Humboldt**

Assessor's Parcel Number(s): **509-061-029, 509-062-006, 509-063-005, 510-011-029, 510-011-031, 510-011-032, 510-011-034**

GPS Coordinates: **40.936834 -124.074029**

Tract and Farm Number (if applicable): **NA**

Total Ownership Acreage: **599**

Total Forested Acreage: **599**

Does the Landowner reside on the property? Yes or No: **No**

INTRODUCTION

Describe the overall character of the topography including aspect and elevation range:

The 599-acre tract is located along the eastern boundary of McKinleyville, CA and lies south of Murray Road, extending south nearly to Hunts Drive. The forest is within the watersheds of Widow White Creek and Mill Creek. The forest stretches 3 miles from north to south.

Elevations range from 200 feet to about 500 feet. The geomorphology of the project area is principally related to uplifted marine sedimentary deposits with downcutting near watercourses on upper slopes and alluvium in the lowlands. The entire Community Forest is situated on an elevated marine terrace and the sandy soil is notable and well drained.

Aspects vary but are predominantly sloping to the west. The overall slope of the property by percent of is as follows:

- Flat (grade less than 5%): **243 acres**
- Gentle (grade 6% to 35%): **305 acres**
- Steep (grade greater than 35%): **51 acres**

Road System

Most of the property is accessible by existing road or by historical roads that, when reconstructed, would provide sufficient access for management. The northern unit has about 70 acres that are suitable for cable operations where new or temporary roads should not be constructed.

New roads are not necessary for management of the property, but significant road reconstruction and existing road maintenance upgrades are necessary. Road work points have been mapped and road improvement needs are detailed in Table 14. Cost estimates for the road work were derived from field reconnaissance and Natural Resources Conservation Service (NRCS) practices costs. The total length of improved (seasonal truck & temporary roads) is 11.7 miles. All of the existing roads are un-rocked.

Watershed Information

The property is within the Norton Creek (1109.100200), Mill Creek (110.9100102), and Warren Creek (1109.100103) CALWATER 2.2 watershed units. The Mill Creek watershed is 2,347 acres and the area of the Community Forest is 238.8 acres within that watershed. The Norton Creek watershed unit is 3,930 acres and the Community Forest has 356.5 acres within that watershed. The Warren Creek watershed unit is 2,387 acres and the Community Forest has 5.3 acres within that watershed. Norton Creek is listed by the Water Board as an impaired waterbody (303d) for indicator bacteria.

Table 1. CALWATERSHEDS of the MCF

CALWNUM	CDFSPWNAME	CDFPWSNAME	HUC_8_NAME	acres
1109.100200	Norton Creek	undefined	MAD-REDWOOD	356.568
1109.100102	Mouth of Mad River	Mill Creek	MAD-REDWOOD	238.798
1109.100103	Mouth of Mad River	Warren Creek	MAD-REDWOOD	5.369

History of Project and Property

At the time of Euro-American contact, the Native people living in the general area of the McKinleyville Community Forest were speakers of the Wiyot language, part of the Algonquin-Ritwan language family (Elasser 1978: 155). Wiyot ancestral lands extend from Little River to the north, Bear River Ridge to the south, and inland to Chalk Mountain and Berry Summit. There are three Native American resources referenced in the ethnographic literature; villages between Mad River and Mill Creek area (Loud 1918:261).

The Wiyot Tribe is a federally recognized tribal government. Wiyot Tribal lands today consist of the Table Bluff Rancheria and adjacent fee lands (the Old Reservation) near the Eel River. The Wiyot Tribe today is 600 members strong and growing. Other local reservations where persons of Wiyot descent make up a significant portion of the tribal membership include the Bear River Band of the Rohnerville Rancheria and the Cher-Ae-Heights Indian Community in Trinidad.

The Wiyot people lived in villages adjacent to forests and waterways, which they frequented for hunting, fishing and other uses. Village sites were located at the water's edge, ocean, bay, or creek, with trails leading to grassy openings and from one village to another. The Wiyot population prior to 1850 is estimated to have been between 1,000 and 3,300 individuals (Roscoe, et. al., 2010). Soon after the euromerican settlers began to occupy the ancestral homeland of the Wiyot, around 1850, the Wiyot population was decimated by violence and disease.

According to the 1922 Belcher Abstract maps, the California Barrel Company owned the vast majority of the McKinleyville Community Forest (MCF) lands. The community of Calville in fact was the company town for California Barrel Company workers, hence the name. Sometime between 1948 and 1956 Simpson Timber Company acquired the MCF California Barrel Company lands. Simpson Timber Company went through various name changes, including Simpson Lumber Company, then Simpson Resource Company in 1994 and finally in 2004 the last (and current) ownership name for the MCF lands; Green Diamond Resource Company.

Green Diamond Resource Company (GDRCo) is a privately-owned timber company based in Washington that owns and manages nearly 400,000 acres of timberland in northern California, primarily in Humboldt and Del Norte Counties (Green Diamond, 2012).

In 1994 and again in 1996 Simpson Timber Company, the predecessor to GDRCo, announced plans to take multiple parcels on the east side of McKinleyville out of a timber production zone (TPZ) and have the properties zoned Agricultural. The process to change a TPZ to an Agricultural zoning classification typically is a 10-year effort. Fearing that the change in zoning would make the land available for development, a community group sprang up called MARC (McKinleyville Action for a Rural Community) which protested Simpson's action and the timber company subsequently withdrew its request. Subsequently, a small group of people met with the Simpson Community Relations staff and Simpsons security people, after which Simpson made a tentative promise to continue managing the property for timber production. According to a McKinleyville Press March 25, 2008 article, GDRCo made a subsequent request in March 2008 to downzone the zoning on 320 acres within the current boundaries of the MCF.

In 1995 the McKinleyville Community Advisory Committee (MCAC) was formed and included members of the community interested in a Community Forest. By 2002 the MCAC and other community members

had developed and adopted the McKinleyville Community Plan which included a Community Forest on the east side of McKinleyville. In 2008 the Forest Project Work group was formed and helped to advocate for a Community Forest in McKinleyville. This effort evolved into the Humboldt Bay Regional Community Forest Working Group. A Humboldt Bay Community Forest Workshop was held October 18, 2010 during which participants strategized over forming Community Forests in Humboldt County. The Humboldt Bay Regional Community Forest Working Group, a citizens' group, began meeting in 2011 to consider various candidate properties for Community Forests in the County, and recommended creation of a Community Forest in the McKinleyville area.

At its December 4, 2013 meeting, the McKinleyville Community Services District (MCSD) Board adopted a five year strategic plan that included an objective to create a Community Forest.

The McKinleyville Municipal Advisory Committee, (McKMAC) a citizen group, voted unanimously at its November 18, 2015 meeting to create a Community Forest based on one of three potential land base options.

In 2015, responding to community interest, MCSD and The Trust for Public Land (TPL) created a partnership to aid in creation of the MCF. A presentation was later made about the proposal to the Humboldt County Board of Supervisors; the Board unanimously voted to support the concept. At a later meeting of MCSD, the Board voted approval and considered sources of funding for the project. Beginning in 2016 and continuing through 2020, MCSD and TPL jointly applied for numerous grants to acquire what the McKMAC described as option 2 for a Community Forest.

TPL is a national, non-profit, land conservation organization with the goal of protecting land in and around cities for public use and enjoyment. TPL's expertise includes facilitating conservation projects and negotiating land transactions and participation for parks and conservation areas for people, conservation, and habitat protection.

On December 9, 2020, the California Natural Resources Agency awarded a \$3.8 million grant for the purpose of acquiring 553 acres of GDRCo land by the MCSD. An additional 66 acres was added in 2022 making the final acreage of the MCF 599 acres. The Wildlife Conservation Board recorded a Notice of Unrecorded Grant Agreement (NUGA) on the property. While not a conservation easement, the NUGA prevents subdivision, property sale and conversion of the property to uses inconsistent with the grant agreement. A working forest with public access is permitted.

In addition, over the past two decades, the voters of McKinleyville have passed four ballot measures supporting the acquisition of parkland tracts.

There have not been any documented conservation practices or cost-share programs implemented on the property to date. The MCSD has conducted some road maintenance work including maintenance of existing waterbars and removed garbage at locations near the forest perimeter. The property has not experienced any known catastrophic events such as floods, windstorm blowdown, high intensity damaging wildfire, or significant pest infestations.

Local Fire History

According to the CAL FIRE history maps, no past documented wildfires have occurred on the property.

The 1908 Luffenholz fire burned over 7,000 acres just north of the MCSD forest. That fire was of an unknown origin. There was also a human caused fire on the property in 2024 in the northern end. This fire burned a post timber harvest landing slash pile and spread to a young plantation.

<https://gis.data.ca.gov/maps/CALFIRE-Forestry::california-historical-wildland-fire-perimeters-exploratory-map/about>

Current Property Conditions

Generally, the property is in good condition, the forest is healthy and growing, there are no significant liabilities such as large-scale landslides or contaminated sites and the adjacent neighbors do not appear to present any significant objections or conflicts to forest management at this point. The main resource issues that need to be addressed are road surface drainage upgrades, erosion sites that need to be repaired, invasive plant control, fuel hazard reduction, and timber stand improvements.

Property and Infrastructure

The MCF is vacant timberland with no dwellings or structures.

Roads

The MCF currently has approximately 11.7 miles of mapped “roads” within its boundaries. These roads were originally constructed to haul logs out of the forest over the last 25 years. Not all of these roads are recognizable as roads today: some have been used for access and recent logging, but many have just been left to be reclaimed by native vegetation. The 11.7 miles of mapped “roads” includes only roads that were used to haul logs with trucks; there are probably another 10-20 miles of ‘skid trails’ within the forest that were built to skid logs to landings on truck roads using crawler tractors.

The majority of roads within the MCF are “seasonal truck roads” meaning that they can only be used during the dry season for timber harvest activities. Seasonal truck roads may have some segments with surface rock, but the roads are not suitable for wintertime log hauling. MCF classifies the 11.7 miles of road as follows:

„ Road Classification

Road type	Miles
Seasonal	8.8
Temporary	2.9
Total	11.7

Relying on a network of seasonal truck roads means that all future timber harvest activity (or other ground disturbing activity) that occurs on the MCF will need to occur during the dry, summer season. Many of the unsurfaced seasonal truck roads are not suitable for even light duty administrative use during the wet season due to the muddy surfaces.

The MCSD and GDRCo have developed a reciprocal road easement for specified roads leading into and on the Community Forest to ensure adequate future road access by both entities. In addition to the network of roads designed for timber operations, there is a network of existing and planned recreational trails for the MCF. Recreational users will have access to the entire timber road and dedicated trail network as segments are constructed and made available for use.



Figure 1. Road Point 1.9 Former truck road requiring reconstruction



Figure 2. Road Erosion near Widow White Creek on Main Road

Site reconnaissance occurred during the 2024/2025 winter season of a relatively high rainfall year. We parked off of Murray Road and walked south to the property road system segment. Franciscan bedrock (hard graywacke sandstone) was noted in the road surface on our descent. At the intersection to the subject road segment, we noted a change to softer road subgrade; gray-brown sandstone exposed in road cuts was notably friable



Figure 3. Un-rocked Seasonal Haul Road on MCF

Electrical and Water Improvements

There are no existing or planned electrical improvements on the property. No public utility easements convey below ground or above ground powerlines or natural gas lines. No cell towers or alternative energy facilities occur on the property.

The MCF is generally unimproved vacant timberland. Existing improvements on the forest include the road system and associated gates, culverts, and drainage structures. There are no known water system intakes on the property. Per several GDRCo Timber Harvest Plans (THP) there are domestic water intakes west of the western boundary of the MCF.

There are multiple points where existing MCSD water and sewer mains terminate in close proximity to the western edge of the MCF boundary including at Babler Road, D Avenue, First Road, Second Road, Dragon Fly Drive, Sutter Road, Visser Court, and Hunts Drive.

It is possible that in the future, municipal water storage tanks could be situated on the property to provide gravity flows to the McKinleyville Community. It is possible that Mill Creek or Widow White Creek have domestic water use (surface or groundwater wells) downstream from the property. The

MCSO serves domestic water to most properties within the services district. That water is derived from the Humboldt Bay Municipal Water District Raney wells on the lower Mad River.

Other than forest road upgrades and recreational trails, trailhead parking, picnic tables, benches, signage, and kiosks, there are no plans for significant new public infrastructure such as fire stations, new utility lines, campgrounds, water storage reservoirs, cell towers, or other capital improvements in the forest. If future public infrastructure projects are proposed, they should be planned to be compatible with and complimentary to the overall forest management plan and grant funding conditions.

Forest Resource (Existing Conditions)

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

The McKinleyville Community Forest consists of 599 acres of second-and third growth Sitka spruce (*Picea sitchensis*), redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) forest located near Humboldt Bay in north-coastal California. The forest also includes riparian areas along Widow White Creek and Mill Creek. Other conifer species found on the forest include grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*) and non-native Monterey pine (*Pinus radiata*). The Natural Resource Conservation Service's ecological site classification for the forest is: F004BX121CA - Redwood-Sitka spruce/salal California huckleberry/swordfern. The forest also includes areas that can be classified as F004BX118CA, where Sitka spruce is the dominant overstory species and is located on a younger marine terrace. The climax stage of the spruce/redwood habitat is distinguished by a bi-layered canopy, usually with spruce, redwood or Douglas-fir as the dominant species. Redwood is a self-perpetuating habitat, with or without fire as a disturbance. After disturbance (usually by logging, fire, or flooding) succession proceeds rapidly. Initially, disturbed sites are barren, with a sparse herb layer. This stage usually gives way to shrubs and redwood sprouts within 10 years. Plant communities move naturally through a series of successional (or seral) stages. This process can be interrupted from time to time by natural forces such as diseases, insects, fire, or by human manipulation.

Based upon data provided by the previous owner, GDRCo, conifer volume is estimated at 8,170 MBF (thousand board feet) and the Scribner log scale of trees 11.6" diameter and above. However, over half of that volume is in low value species such as Monterey pine, red cedar, grand fir, and Sitka spruce. The GDRCo data also indicates that over half the forest is in stands less than 30 years old and over 1/3 of the MCF is in stands 20 years old or less. Conversely, about ¼ of the property is in stands 60 years old, or more, with most if not all being located in watercourse protection zones.

The California Natural Diversity Database (CNDDDB) classifies vegetation for the primary purpose of assisting in determining significance and rarity of various vegetation types. Sitka spruce forest associations are recognized by the CNDDDB as a natural community that is considered rare and of high priority for inventory. The California Department of Fish and Wildlife (CDFW) List of California Vegetation Alliances assigns Sitka spruce forests a rarity rank of G5S2. This designation means that Sitka spruce forests are considered globally common but rare in California. Large, contiguous stands of mature Sitka spruce are uncommon in the region due to this species' limited range and because agricultural and residential development in the coastal zone have resulted in removal of these forests, and because of timberland silvicultural practices that have converted them to more economically valuable species such as redwood and Douglas-fir.

The MCF is located in a very productive forest type. It borders residential areas on the west and provides an open space/working lands buffer for industrial and non-industrial timberland ownerships to the east. The acquisition of the MCF by the MCS D was designed, among other goals, to keep the area in forested open space in perpetuity, and eliminate any potential future threats for conversion or subdivision of this highly productive and ecologically important forest area.

When considering the appropriateness of forest management on a tract of land, one of the most important limiting factors is site quality. That is how fast, how dense, and how tall a site is able to grow trees. Sites are commonly rated using roman numerals I through V with I being the highest and V being the lowest. Site index is the height potential of a 50-year-old conifer (redwood in this case) grown relatively free of competition. For this property the 50-year base age site index for redwood was estimated at 107, which is high site class II. This means that a 50-year old redwood tree, growing freely without competition should be 107 feet tall at age 50. Based upon increment borings taken on selected co-dominate redwood trees, the Site index for the property is in the 160 range. This means that a 100-year-redwood tree should be 160 feet tall. It should be remembered that the index is only an average, with better and poorer micro sites occurring throughout the property.

The table below is a general expectation for volume per acre yields for even aged stands.

Table 2. Board-Foot Yield by Age Class and Site Index

BOARD-FOOT VOLUME PER ACRE YIELDS, TREES OF ALL SPECIES OVER 10.5 INCHES DBH (INT. ¼" RULE), TO 8 INCH TOP INSIDE BARK ABOVE 1.5 FOOT STUMP

Age (years)	Site index (feet)							
	100	120	140	160	180	200	220	240
20	...	600	2,300	7,000	14,500	23,900	35,000	46,500
30	900	3,100	9,500	19,600	34,500	52,300	71,600	93,200
40	2,800	8,800	20,400	36,900	57,900	82,100	108,700	137,500
50	7,300	16,500	33,700	55,300	82,000	112,700	146,000	181,300
60	14,400	27,400	48,900	74,500	106,100	142,100	180,900	221,900
70	22,800	40,400	65,000	94,500	130,400	170,900	214,400	259,500
80	32,400	53,700	81,500	114,300	153,500	198,200	244,800	293,500
90	44,000	67,400	98,300	133,800	176,400	224,100	273,600	325,700
100	55,760	81,300	114,600	152,300	198,100	248,500	301,700	357,600

GDRCo provided inventory data along with GIS data specific to the MCF. In forested landscapes, aggregations of similar vegetation are delineated into stands and then similar stands are aggregated into similar strata. The GDRCo GIS data contains approximately 150 polygons, each with a COVERID (polygon number) that corresponds to a GDRCo-provided EXCEL spreadsheet of stand data. When the 150 or so polygons were aggregated back together by COVERID they assembled into 57 stands matching the EXCEL data exactly. Map 7 shows the distribution of stands by the primary species and by size class. Size classes are based on the quadratic mean diameter of the stand and are divided into 4 classes (1-5.9" diameter = size class 1, 6-10.9" = size class 2, 11-20.9" = size class 3 and 21" and above is size class 4). About 17% of the MCF is size class 1, 37% is size class 2, 41% is size class 3 and only 1 acre is classified as size class 4.

In the tables below, note that net acres are used, which are the gross acres minus roads. Also, basal area, which is the cross-sectional area of trees at 4.5' above the ground, is used by foresters as a measure of stand/strata stocking. A basal area of 300 Sq. Ft./acre is well stocked, although it does not say anything about the size of the trees.

The GDRCo data appears to have been updated to December 2020 which helps to account for recent harvest. However, some of the inventory data is not specific to the property but instead comes from stands off the property in order to assign inventory data to on-property stands which have not been recently inventoried. At least 36 of the 57 MCF stands are duplicates of other GDRCo stands and it is not possible to know exactly how much of the inventory associated with the MCF is actually based on MCF-specific plots. Nonetheless, having used GDRCo inventory data on other projects we can say that the provided data is likely to be close or even very close to the actual volume on the property.

Table 4 below shows the conifer and hardwood inventory values on the MCF as of January 1, 2021. Conifer volume is estimated at 8,170 MBF (thousand board feet), Scribner log scale of trees 11.6" diameter and above. However, over half of that volume is in low value species such as Monterey pine, red cedar, grand fir and Sitka spruce. There is currently only one local market for spruce, which comprises almost 1/2 of the volume on the property. Also, as noted below, a lot of this volume is in stream zones and is not available for harvest.

Table 3. MCF 2020 Stocking Data

Strata	Acres		2020 Net MBF/Ac						Avg Defect	Scrib Net MBF 9"+ on Manageable Landbase				
	Gross	Net ^{1/}	Total	Conifer	RDW	DFIR	WW	RA+HDW		Conifer	RDW	DFIR	WW	RA+HDW
Site Class 1														
DF3 Average	71	45	26.8	26.4	1.2	18.6	6.5	0.4	21.8%	1,178	56	831	291	20
MC2 Average	56	48	9.5	8.8	2.4	2.7	3.7	0.7	22.8%	426	115	131	180	31
MH1 Average	41	39	-	-	-	-	-	-	0.0%	-	-	-	-	-
RW2 Average	22	22	8.1	7.8	4.5	3.4	-	0.3	15.4%	169	96	73	-	6
RW3 Average	3	3	62.6	62.6	62.6	-	-	-	8.1%	184	184	-	-	-
SS2 Average	36	25	24.1	18.7	-	1.9	16.7	5.4	10.1%	475	-	49	426	137
SS3 Average	79	54	34.5	31.1	0.4	5.7	24.9	3.4	14.9%	1,666	23	306	1,336	184
SW/RW Average	27	27	-	-	-	-	-	-	0.0%	4,097	475	1,390	2,233	379
Subtotal	334	262												
Site Class 2														
DF2 Average	10	9	2.6	2.6	-	1.9	0.6	-	6.0%	24	-	18	6	-
DF4 Average	1	1	17.5	17.5	-	17.5	-	-	6.0%	14	-	14	-	-
MC1 Average	34	34	-	-	-	-	-	-	0.0%	-	-	-	-	-
MH2 Average	13	11	12.8	12.8	-	5.1	7.7	-	6.8%	136	-	54	81	-
RA2 Average	12	12	11.0	2.7	-	-	2.7	8.3	8.0%	32	-	-	32	98
RW1 Average	41	39	-	-	-	-	-	-	0.0%	-	-	-	-	-
SS1 Average	12	10	0.9	0.9	-	-	0.9	-	6.0%	10	-	-	10	-
Subtotal	123	115								215	-	87	129	98
Site Class 3														
MC3 Average	108	55	39.5	38.4	2.5	10.1	25.8	1.0	17.7%	2,133	139	563	1,431	57
GWIN SS3	33	20	44.0	44.0	0.1	14.3	29.7	-	17.6%	877	2	284	591	-
Subtotal	141	75								3,010	141	847	2,021	57
Non Forest														
NF Average	2	1	-	-	-	-	-	-	0.0%	-	-	-	-	-
Total	600	454								7,322	616	2,324	4,382	533
^{1/} of Roads and Class I and II WLPZs														

Table 4. Basal Area, Volume per Acre and Total Volume by Species on the MCF

	Trees/ Acre	Mean Diameter Inches	Basal Area SqFt/Acre	Net Vol/Ac Scrib > 11"	Total Vol Scrib > 11"
Doug fir	89.0	17.5	53.8	5.2	2,445
Grand fir	17.8	9.3	5.1	0.4	18
Monterey pine	16.2	16.8	13.5	0.5	8
Western red cedar	18.0	21.2	22.1	2.2	441
Redwood	97.7	14.6	31.5	2.1	769
Sitka spruce	125.4	18.3	80.9	10.5	4,353
Western hemlock	8.8	25.1	9.5	1.0	134
Subtotal Conifers	372.9		216.4	22.0	8,170
Red alder	74.6	10.9	34.0	2.2	844
Tanoak	97.4	9.5	12.2	0.2	15
Other hardwoods	53.9	4.7	12.1	N/A	N/A
Subtotal Hardwoods	225.9	25.1	58.3		860
Total	598.8		274.7	2.4	9,030

Table 5. Acres and Average Basal Area in sq. ft./acre by Timber Strata

Timber Strata <u>1/</u>	net acres	basal area avg
DF2	52	107.29
DF3	26	226.01
DF4	1	68.62
MC1	34	16.32
MC2	53	179.76
MC3	97	301.39
MH1	36	27.05
MH2	12	156.83
RA2	12	252.37
SHLTWD/RW1	25	0.00
RW1	41	11.76
RW2	22	224.63
RW3	3	541.36
SS1	12	29.26
SS2	36	271.73
SS3	78	229.15
NF	2	0.00
Total	541	

1/ MC and MH are mixed conifer and hardwood, respectively; RA is red alder; SHLTWD/RW1 is a DF, SS overstory on top of assumed RW seedlings

Given the caveat about the data above, the breakout of the MCF timberland by site class is as follows. Site class is a standardized method of assigning growth capability to timberland with high sites, categorized as site class I, having the highest growth potential and site class V being the lowest. The MCF comprises 353 acres of site class I, while 141.5 acres are site class II, 45.7 acres are site class III, 11.5 acres are in site class V (no site class IV apparently), and 1.6 acres were not classified. GDRCo estimates there are 14 road acres which could be deducted from the above breakout. The proportion of very high site (64% in site class I) is extraordinary and rarely encountered in Humboldt County. A new inventory is likely to show a lower proportion of high site but probably not dramatically lower. Whatever the new inventory shows, MCF timberland quality is very high.

The GDRCo data also includes acres and volume by age class, as shown in the table below. Over half the forest is in stands less than 30 years old and over 1/3 of the MCF is in stands 20 years old or less. Conversely, about 1/4 of the property is in stands 60 years old, or more, with most if not all being located in stream zones.

Table 6. Acres of MCF by Age Class

Age Class 2025	Ac. Net of Rds, WLPZs	Cumula - tive Ac.	Net Con. MBF in Age Cls
0	0.8	0.8	0.0
5	26.7	27.5	0.0
10	9.5	37.0	24.2
15	72.6	109.6	0.0
20	38.9	148.5	0.0
25	0.0	148.5	0.0
30	21.5	170.0	168.8
35	94.4	264.4	1045.5
40	11.8	276.2	31.5
45	55.5	331.7	2132.9
50	47.6	379.3	1362.0
60	53.6	432.9	1666.0
80	21.6	454.5	891.3
Total	454.5		7322.3

Because the data does not support a detailed analysis of the impact of stream buffers on timber volume, a more rudimentary analysis was conducted to determine how much volume is likely in stream zones. A total of nine of the 57 stands were selected whose boundaries more or less conform to the likely buffers the forest practice rules require around class 1 and 2 watercourses. Only half of stand 713227, which is a "large" 36 acre stand on the extreme northwest corner of the MCF, was used for this analysis. These nine stands comprise about 160 acres of the 541 net acres (164 of 553 gross acres) of the MCF, however they contain 6,560 MBF, or 80%, of the 8,170 MBF of conifer volume on the property. Although some small part of this volume on the outer edges of these stands might be available for harvest, generally this volume should be considered as unavailable due to terrain and stream buffers.

Initial analysis indicates that there might be as many as 381 acres of manageable stands within the MCF; however, a substantial proportion of this acreage is in very young stands. Table 8 below shows the acreage and volume per acre of all of the manageable stands by age class. As expected, stands in age classes 0-22.5 have no timber volume, but comprise 216 of the 381 acres.

Table 7. Acres of “Manageable” Stands by Age Class

Age class	Net Acres	MBF Scrib./Ac
2.5	63.1	1.1
7.5	22.3	0.0
12.5	38.3	0.0
17.5	56.9	0.0
22.5	35.9	10.6
27.5	37.1	8.3
32.5	42.1	20.3
37.5	48.2	14.9
42.5	27.2	43.7
47.5	0.4	48.5
52.5	1.0	55.4
57.5	8.4	56.7
62.5	0.5	18.6
Total Ac	381.0	

In addition, while stands in age classes equal to or greater than 47.5 supposedly have relatively high volume per acre they are mostly small slivers of stands and likely an artifact of the stand delineation and GIS processing procedures and so should not be considered as candidates for management. Ultimately, the 142 acres of stands in Table 9 below are, for the time being, likely the only stands that might warrant further consideration for on-the-ground review and possible management action over the long term.

Table 8. Possible Candidate Stands for Management

Stand	TTY	Strata	Acres	Vol/ac
1/2 of 713227	SS3	SS3	18.0	43.7
610440	CXSS	MC2	18.8	12.0
610443	CXRW	MC2	8.2	11.6
610446	RWDF	RW2	27.4	9.6
611032	CXSS	MC2	9.2	12.8
713226	CXRA	MH2	14.5	13.8
713228	RASS	RA2	14.6	10.6
713229	SSCX	SS2	31.1	29.1
Total			141.7	

Silviculture

Silviculture is the art and science of controlling the establishment, growth, composition, health, and quality of the forest to meet the landowner's goals for sustainability, habitat, restoration, and recreational values. The MCF will be managed using only uneven-aged silvicultural systems, which mimic a natural forest by perpetuating stands with various age classes. Thinning and/or selection prescriptions will need to balance tree growth targets, regeneration recruitment, structural complexity, concerns of bear damage, and economic viability. Typically, these criteria can be achieved by removing 20% to 40% of stand volume at each entry. A re-entry cycle may be spaced 10 to 25+ years apart depending on many factors. The longer the return interval between harvests, the more time for the stand to recover and present a more appealing visual appearance.

The maximum age that a tree is generally allowed to reach within a managed forest is known as the "rotation age." Trees that reach this age (or sometimes size) would be harvested, or "rotated" out of the forest. The commercial tree species found on the MCF are long lived, from hundreds to thousands of years. There is no need to establish a rotation age for trees on the MCF at this point, as it is early in their life cycle. In general, many trees on the MCF will be allowed to grow until they attain characteristics commonly found in a mature forest (fissured bark, complex crowns, large diameters, heights of 200' or more, etc.).

Longer rotation ages result in larger and fewer trees harvested per acre. There is less un-merchantable slash debris created by logging operations in older stands as compared to younger harvested stands with more un-merchantable sized tops. The need for site preparation is lessened by the lower volumes of slash material. Also, larger and fewer logs are handled (skidded, loaded and scaled) during harvest, resulting in lower overall operating costs. Silvicultural methods as proposed will tend to increase characteristics related to stand complexity and aesthetics which include some or most of the following factors:

- Multi-layered canopies - Modified single-tree selection timber harvests, release of advanced regeneration, establishment of new redwood tree cohorts, planting of shade-tolerant species (western hemlock, grand fir, etc.) in areas where they are underrepresented, and retention of some trees with complicated re-sprouted or reiterated tops.
- Elevated large snag densities - Girdling of selected intermediate to co-dominant trees, usually Sitka spruce, grand fir, and Douglas-fir.
- Elevated downed woody debris densities and volumes - Felling of trees and retention of large broken pieces to create large downed log material, and augmentation of debris by hauling in cull logs from nearby land clearing operations.
- Variable retention density harvests - Thinning from below and harvest of stump sprout clusters with retention of dominant sprout trees, variable density harvests.
- Activities to re-allocate basal area to larger diameter classes.

Benefits of extended rotations/older trees:

- Reduced mortality
- Abundant understory vegetation
- Understory cohort recruitment
- Larger more stable & vigorous trees

- Deeper, fuller, wider, persistent crowns
- Proportionally greater redwood composition
- Greater carbon storage

Access and Security

There is only one known fence or gate along common property lines near the Murray Road parking lot. The boundary with Green Diamond Resource Company generally follows a common road.

Dumping of household garbage, furniture, and other waste materials is relatively common near adjoining public roads such as Murray Road.

Unauthorized camping occurs periodically along the western portion of the tract. Signs of unauthorized motorcycle and ATV use are common along much of the road system.

The main road system is comprised of the M1000 road, which runs from the lower gate on Murray Road all the way to the southern tip of the property, and then out to Essex Lane and the M2000/M2100 Roads, which connect from the upper Murray Road gate to the M1000 in the northwest portion of the property. The M1000 currently forms the majority of the eastern boundary of the property. There are multiple unsanctioned and informal access points on the west side of the property that are used by the public to access the property, including from Babler Lane, Gwin Road, Sutter Road, and Cochrane Road. None of these access points are currently officially designated and since they involve trespass use there is no existing dedicated parking.

GDRCo has posted the property with no trespassing signs. The growing demand for recreation use in the area is reflected by the proliferation of un-sanctioned trails. Illegal dumping and litter are not currently problems within the interior of the forest but is a periodic problem along Murray Road.

The historic trespass recreational use of the property has degraded sections of the forest road system and caused significant erosion throughout the property where existing skid trails have been used for recreation. Trespass road and trail use on the MCF have also induced additional trespass onto some adjacent residentially zoned parcels as people look for ingress/egress routes to and from the MCF. Below are Law Enforcement / Local Emergency Contact Agencies

Humboldt County Sheriff's Office:
826 5th St Eureka, CA 95501
(707) 445-7251
hso@co.humboldt.ca.us

California Department of Fish and Wildlife:
619 2nd St,
Eureka, CA
707 445-6493

Arcata Fire District McKinleyville Station and District Headquarters
2149 Central Avenue
McKinleyville, CA 95519
(707) 825-2000

Emergency Personnel

Once management activities such as fuel treatments and other on the ground practices begin, the following should be provided to the Agencies and Organizations listed above each year before April 1st:

- A copy of the property map with access routes delineated.
- An annual "No Trespass" authorization letter filed with the Humboldt County Sheriff's Office to allow them to enforce the no camping on site regulations.
- The name, address, and emergency 24-hour phone number(s) of an individual and an alternate who has authority to respond to CAL FIRE requests for resources to suppress fires.
- The number of individuals available for firefighting duty and their skills.
- A list of available firefighting equipment.
- Keys or combinations to any locked gates along emergency access routes.

Recreation & Aesthetics

Recreational use at the MCF has a great potential to increase the quality of life in the area and contribute to the local economy. The forest provides outstanding opportunities for dispersed recreation including: hiking, mountain bike riding, horseback riding, running, photography, nature study, and picnicking.

One of the primary reasons the MCSD pursued the acquisition of the MCF is to meet the growing demands for trails and dispersed recreational use in the McKinleyville areas.

The aesthetic qualities of the forest are very good with some open vistas and views towards the coast. After young stands are thinned and pruned, recreational users will have much improved visibility into some of the roadside/trailside forest stands that currently are fairly impenetrable.

The McKinleyville Community Plan and Humboldt County Trails Plan both describe the long-term goals of providing additional trails in the forested hills east of McKinleyville. The new MCF acquisition allows for a trails plan to now be developed and implemented that will provide for managed recreational use, and eliminate the problems associated with trespass use on roads and trails not designed for recreational use such as resource damage, illegal dumping, illegal camping, etc.

The MCSD recreational trail use plan and management can be guided and informed by local examples such as the Arcata Community Forest, Redwood National and State Parks, and the recreational use plan on the McKay Community Forest.

Recreational use goals pertaining to trails on the MCF include:

- Provide an integrated trail system for a diversity of trail users.
- Promote a safe and secure environment for visitors of all ages and abilities.
- Protect the Community Forest's natural and cultural resources.
- Provide a trail information system.

- The recreational infrastructure on the MCF will emphasize dispersed, day-use opportunities.
- Foster community partnerships to assist with trail development and maintenance.
- Promote trail-oriented tourism and special events.
- Pursue linkages with other trails and recreational facilities.



Figure 4. Recently opened trailhead parking area on Murray Road.

Currently, public access is provided at multiple points, including one developed parking lot off Murray Road at the north end of the Community Forest and an area off of First Road. There are also upper access area features such as a gated entry and a parking area loop that can accommodate several vehicles and horse trailers.

The MCS D currently maintains an excellent system of parks, trails, and other recreational facilities for the use of local recreationists (see Map 11, Existing and Proposed Trails from the McKinleyville Area Plan, LCP). Complementary areas include Azalea State Park and open space lands held by the McKinleyville Land Trust. The MCF will substantially increase the amount of open space lands and trails available to the public, and will enhance neighborhood connectivity in the eastern part of the District, which was identified as an unmet need in the 2012 McKinleyville Parks and Recreation Master Plan. The MCF will improve the quality of life for area residents and visitors by providing outstanding recreational opportunities. Recreational facilities will be designed to be compatible with adjacent land uses, forest stewardship, resource conservation, and timber operations within a working forest.

Public access points and trails will be developed incrementally in a logical sequence over the course of several years. The time frame for trail development will depend on available funding, volunteer interest, and working through the applicable permitting processes. Local organizations expressing interest in

actively supporting the development of trails and recreational opportunities include the Volunteer Trail Stewards Program of the Humboldt Trails Council, the Mountain Bike Tribal Trails Alliance, Redwood Coast Mountain Bike Association, and the Redwood Region Endurance Riders.

Specific Goals for Recreation on the McKinleyville Community Forest include:

- Provide opportunities for people to maintain and improve health and fitness through outdoor physical activity.
- Provide recreational trails that enable people to seek challenges and engage in play.
- Provide a refuge where people can connect with nature, experience solitude and wildness, make discoveries, and observe natural beauty.
- Provide an outdoor classroom for students and community members.
- Support public appreciation of watershed services, forest management, and modern timber harvest practices.
- Nurture a sense of place in the greater McKinleyville area and boost civic pride.
- Promote tourism and support the local economy.
- Allow local non-profit restoration groups to collect native plant material, such as transplanting stock and shrub greenery that is removed along power line rights-of-way and along alignments of proposed logging skid trails or new road segments where native plants would be impacted.
- Provide opportunities for local Native groups to apply Traditional Ecological Knowledge to stewardship of the forest and to gather plants for traditional purposes.

Recreation Trail Guidelines

1. New trail routes will be planned to meet the growing dispersed recreation demands and to reduce user conflict.
2. Steps will be taken to ensure that recreational use is consistent with maintaining resource values. Illegal camping activity will not be permitted.

Mountain Bike Specific Trails

Mountain bikers often prefer features that are technically challenging and provide an experience of play and discovery. A new technical bike trail area was recently constructed just south of Murray Road. This new technical trail is located well away from any watercourse or wetlands. In developing new and improved mountain bike trails erosion control will be a major consideration, as will safety concerns (to pedestrians, equestrians, etc.), and the exclusion of motor vehicles.

Mountain bike facilities may include a pump track, kids' zone, skills area, and trailhead parking. Pump tracks provide a continuous loop with rollers, berms, and other features that allow riders to gain momentum without pedaling by "pumping" the bike with up and down movements. A skills area would provide features constructed with dirt or wood to help riders' practice bike handling, balancing, and jumping. The kids' zone would provide small-scale features with a focus on safety and skill development. These facilities would provide opportunities for riders, especially youth, to learn and practice skills and then apply those skills on designated trails within the MCF.

Multi-Use Trails

Horseback riding is popular in the McKinleyville area and there are many horse owners within close proximity to the MCF. While some riders may be able to access the MCF without driving to a trailhead parking facility, it is likely that most equestrians will access the forest at the existing parking area on Murray Road.

The MCS D hosts an interactive trail map at:

<https://experience.arcgis.com/experience/7d1c7eceb8124aecac1b071ab8fd1eee>

Most trails are anticipated to be multi-use trails meaning that they provide use by hikers, runner's, mountain bike riders, and equestrians. Soliciting input from all of these user groups is important when designing and designating recreational trails. A convenient way to solicit input on trail planning is the use of an online survey platform such as ESRI ArcGIS Survey123 and support for management once constructed. Solicit community leadership support for trail development. Promote community involvement with trail planning, construction, and maintenance. Create alliances between various trail user groups early in an effort to maximize resources and efforts. Assess needs within the community and solicit leadership support for trail development. Conflicts can occur on multi-use trails but can be avoided by constructing trails with good sight lines. Education is the key for fostering trail user cooperation and the MCS D can work with trail organizations to help the community to develop better trail sharing practices.

Other Recommendations for Recreation and Trails Include:

- Work with adjacent landowners to discourage and resolve trespass issues.
- Identify the locations of rare plant occurrences and minimize impacts during trail construction.
- Prohibit the use of motorized vehicles, shooting, hunting, camping, fires, and night time use, unless specifically authorized.
- Provide interpretive services that explain the Community Forest history, management programs, and forest ecology. Services provided may be in the form of self-guided trails, brochures and maps, or docent-led tours and are designed to encourage public use of the Community Forest and to solicit opinions from the public to improve the management of forest resources and visitor use.
- Design trails to comply with applicable local, State, and Federal master plans, design guidelines, environmental mitigation, laws, permits, or accepted standards.
- Remove unauthorized/rogue trails as soon as possible.
- Resolve trail user conflicts through education so that trail users adopt appropriate trail etiquette and self-police.
- Equestrian Trailer Parking – In addition to providing equestrian trailer parking at spaces where horseback riding trails are present, horse-friendly materials should be used. Parking spaces should be designed as a row of pull-through spaces each with sufficient depth and width for unloading horses and to allow horses to be tied to trailer sides. To accommodate overflow parking, additional space is recommended. Accessibility to shade and potable water should be considered when designing equestrian parking.
- Maps and Signs – Provide signs, maps, and brochures at all trailheads and appropriately placed information kiosks to indicate permitted types of trail use, distances of trail sections, trail difficulty rating and to show the location of the kiosk or trailhead where the user is viewing the information. Signs and maps may also

make note of landmarks, commonly seen wildlife, unusual features, and sites of historical or ecological significance. All signs should be easily identifiable, vandal resistant, weather resistant, and durable.

- Published resources include the California State Parks Trail Manual, the US Forest Service Trail Manual (FSM 2355), the USDA Forest Service Trails Management Handbook (FSH 23.09.18), USDA Standard Specifications for Construction and Maintenance of Trails (EM-7720-103, USDA/FHWA, Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, and the 2004 International Mountain Biking-Trail Solutions Guide.

Sustainable Trails Typically Involve:

- Sustainable grades
- Outsloped tread
- Frequent grade reversals
- Erosion resistance
- Path that traverses along the side slope
- Provision for sheet flow of runoff
- Positive user experiences
- Low maintenance

These trail design elements are typically referred to as a rolling contour trail.

Trail Density Considerations

While there is no specific formula regarding optimal trail density, potential environmental impacts, aesthetic impacts, and trail maintenance impacts should be considered.

Environmental impact: More trails mean more vegetation removal, potential for erosion, and possible habitat disruption. Some studies show impacts to ground nesting birds can be an issue with high density looping trail networks. Careful planning is needed to minimize these impacts.

Vegetation: Foliage and trees can affect how much trail can be built per acre and how "lost in the woods" a trail feels.

Maintenance: Dense trail networks require higher maintenance costs and may be more prone to erosion or damage.

Aesthetic Impacts: Higher density can be tolerated in areas of heavy vegetative cover compared to more open areas but user experience may be impacted visually by seeing adjacent trails in close proximity.

User group needs: Different users have different needs. Mountain bikers might prefer more challenging, densely packed trails, while hikers might prefer a more spread-out network.

Topography: The terrain steepness influences how trails can be laid out and how dense they can be without excessive impact. Packed switchbacks for example are much different than a straight-line trail in terms of localized impacts.

Some parks use ratio formulas (miles of trail to acres) like 1:10 or 1:20 to determine trail density based on the size and type of the park. A 1:10 ratio might be used in urban parks, while a 1:20 ratio might be used in wilderness areas. A higher ratio (e.g., 1:50) is common for backcountry and large regional natural areas. For a local example, the Arcata Community Forest has a 1:40 ratio of miles of roads/trails to the area of public forest.

Since the MCF roads also serve as trails, they are counted as “trail miles” in the network. The current ratio of trails/roads per acre in the MCF is 1:50. This ratio counts all road categories, many of which are currently used as trails but does not include all existing un-sanctioned trails.

Trail Projects and CEQA

Trail development as a “project” requires environmental analysis and any identified significant impacts to be mitigated. A MCF trails master plan can be developed and environmental analysis performed on the entire network so that the implementation of segments of the trail network can occur over a period of time. There are several Categorical Exemptions that could apply to trail projects on the MCF. For example, minor modifications of the land using existing structures (such as the existing road system) could enable public access to many areas of the forest.

Categorical Exemptions and Trail Projects

For simple projects that do not cause significant effects Common CEQA exemption categories:

- Class 1 – repair and maintenance of existing facilities.
- Class 3 – new small equipment or facilities.
- Class 4 - Minor Alterations to Land (CEQA Guidelines § 15304) consists of minor public or private alterations in the condition of land, water and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes. (a) Grading on land with a slope of less than 10 percent, except that grading shall not be exempt in a waterway, in any wetland, in an officially designated (by federal, state, or local government action) scenic area, or in officially mapped areas of severe geologic hazard such as an Alquist-Priolo Earthquake Fault Zone or within an Official Seismic Hazard Zone, as delineated by the State Geologist.
- Class 11 – minor structures accessory to existing facilities.

Negative Declarations and Mitigated Negative Declarations

For projects with environmental impacts, but not significant effects, or for which potential significant effects can be clearly mitigated, a 6 to 9 month timeframe is common.

Example types of projects:

- Trail extensions, trail connections.
- New bridges or boardwalks over streams and wetlands (with mitigation).
- Deferred maintenance projects for campgrounds, day use areas.

Project Environmental Impact Report

EIR's provide enough detail to evaluate and mitigate, to the extent feasible, all impacts at a project- implementation level

- Includes alternatives analysis, possibly unavoidable, significant impacts.
- 12 to 24 months (or can be longer if controversial).

Example types of projects:

- Projects encountering endangered species or significant cultural resources.
- Major new trails or larger-scale facilities (visitor centers, new campgrounds).

Self-mitigating Trail Design

Using accepted design manuals such as the State Park Trail Manual trail design standards provide opportunities for environmentally protective design elements if incorporated as part of project design, or performance standards for a future design, project can be “self-mitigating” under CEQA review.

Motorized vehicles are to be prohibited in the forest except for: forest management, use of school and other buses to allow access for groups, parking at the main trailheads, and for public safety or research purposes as approved and permitted by the MCS D. E-bikes that are Class I & II are permitted in the MCF. In addition, the following activities are not permitted:

- Camping
- Fires
- Hunting
- Use of firearms and bow-and-arrow
- Paintball
- Construction of tree houses
- Cutting or removal of trees and plants (except for permitted Tribal cultural resource uses)
- Creating unauthorized trails

The MCS D has rules and guidelines for avoiding user conflicts and impacts to forest resources. Issues to address include rules for dog walking (e.g., provisions for leashes and waste clean-up). To report non-emergency illegal activities forest users can call Parks and Recreation. (707) 839-9003 and or the Humboldt County Sheriff’s Office at (707) 445-7251. For emergencies call 911.

Geology

The MCF occupies steep to gentle slopes composed of Pleistocene-age dune sand deposits and the Falor formation. The dune sand deposits are described as ‘unconsolidated, variably grained sand’ and the Falor formation described as ‘pebbly conglomerate, sandstone and silt’.

The existing condition of the MCF has been shaped by a long history of forest management. Despite the impacts associated with early logging and the legacy of those high-impact methods, the area is highly productive timber ground and appears capable of sustaining lower-impact forest management (and recreational use) well into the future. Low-gradient terrace uplands are associated with negligible geologic hazards and are well suited for timber management.

GRDCo excluded landslide features mapped by the California Geological Survey (CGS Kelly 1984) in the northeast portion of the MCF in the headwall area of Widow White Creek when they initiated harvest on THP 1-13-091. According to GRDCo, Kelly (CGS 1984) mapped these features, but GRDCo foresters found no indicators of instability.

Soils

In the 1950s, the California Soil Vegetation Survey (Gardner et al) mapped soils in Humboldt County and on the MCF found Tonini, Empire, Hely, and Mendocino soils. Most of these soils had loamy or fine sandy loam textures and on flatter slopes had a low erosion hazard rating.

Soils in the MCF were recently classified by the US Soil Conservation Service as Timmons (soil mapping unit number 225), Lepoli (258), Halfbluff (226), and Candymountain (257) Timmons soils are marine terrace-derived soils located in the northern and flatter quarter of the property. They are fine loamy mixed mesic typic Palehumults in the Ultisol family. Because these areas are flat (0-2%) they have a slight erosion hazard rating under most uses. Halfbluff soils are classified as coarse loamy mixed isomesic Humudepts. Like Timmons soils, they have a slight erosion hazard rating. Lepoli soils are also marine terrace-derived soils but occur on much steeper ground located in the northern and eastern part of the property, but also located on the flatter parts near where Mill Creek crosses through the property. They are classified as having severe erosion potential if subjected to off-road or off-trail use. Lepoli soils are classified as fine loamy mixed isomesic-typic Palehumults in the Ultisol family. The majority of the soils on the MCF are the relatively flatter Candymountain soils located in the middle and southern parts of the property. They are derived from dissected marine terraces and are classified as coarse loamy mixed isomesic Humudepts with a moderate erosion hazard rating. All of the above soils are derived from sedimentary rock.

Streams, Wetlands and Ponds

Mill Creek is in the Mill Creek CALWATER 2.2 watershed hydrologic unit (1109.100102) while Widow White Creek is in the Norton Creek hydrologic unit (1109.100200). Both creeks drain to the lower Mad River.

The maintenance of quality riparian habitat is an important issue in the forest. Since most species are dependent on riparian areas at some time in their life cycles, management activities which affect these habitats have more potential for affecting the overall wildlife resource on the MCF than any other type of activity.

The retention of riparian buffer strips along watercourses results in old growth stand characteristics over time. Stream buffers designated along class I, II and III watercourses serve to protect species which live in the streams and along the riparian zones (see Table 3.13.1 below).

The Widow White Creek watershed area is 4.9 sq mi. Elevation ranges from 620 feet at the creek's headwaters south of Murray Road, to sea level at the Mad River estuary. The class I and II stream corridors will provide functional connectivity between species habitat types.

The riparian community is populated with a different array of vegetation than the upland forest. Certain wildlife species are found only along stream courses or require water for breeding. Substantial riparian vegetation exists now in the MCF, primarily along the approximately 9.8 miles of class I and class II watercourses. Class III watercourses are typically so small and intermittent that they do not support a unique riparian habitat type. Calculating CAL FIRE watercourse zone widths indicates that there are around 63 acres of class I watercourse zones and 55 acres of class II watercourse zones on the MCF.

Table 9. McKinleyville Community Forest Watercourses by Class and Length.
Source: CAL FIRE: Forest Practice GIS

Stream Classes on MCF	Miles
Class I: Perennial, fish bearing, or located above domestic intakes	5.6
Class II: Supports aquatic life, non-fish-bearing	4.2
Class III: Intermittent streams, can transport sediment to higher class waters	5.5
Total	15.3

Wetlands and seeps that may provide habitat for non-fish aquatic species are afforded the same protections as class II watercourses. Some locations of wet areas and seeps found during the management plan development have been mapped.

Water quality will be managed by implementing watershed improvement projects and by applying management practices which minimize erosion, sedimentation, and flooding. In general, roads should be outsloped and rocked, with ditches and road widths kept to a minimum. Restrictions to limit landing size, skid trail density, and soil compaction are written into all operational plans including timber harvest plans.

Wildlife

Fish & Aquatic Species

The watersheds of Widow White Creek and Mill Creek are relatively small coastal watersheds draining to the lower Mad River. These watersheds are primarily forested in the upper reaches, with residential and commercial development in the middle and lower reaches.

Climate conditions are heavily influenced by coastal weather patterns due to the close proximity to the Pacific Ocean. Annual rainfall averages 50 inches with the majority falling between November and March. Summer temperatures are mild and the presence of a marine fog layer is common. Soils in the watersheds are predominantly silty in nature, derived from parent material of mixed marine deposits derived from sedimentary rock. The soils are well drained sandy loams.

Coastal freshwater streams can provide entry points from the ocean for anadromous fish species, including coho salmon and steelhead, and coastal cutthroat trout. Non-anadromous rainbow trout also inhabit coastal streams.

Anadromous habitat for coho salmon and steelhead in Mill Creek ends at Turner Falls, near Central Ave., but there is good resident trout habitat upstream. There are no adult fish barriers on Widow White Creek, although the HWY 101 and Murray Road culverts are likely upstream barriers to juveniles (Allen, pers. comm. 2021).

On Widow White Creek, adult and juvenile coho and steelhead were observed in the creek behind the high school; even before 'jump pools', to aid fish passage, were installed at McKinleyville Ave. (Allen, 2021). Numerous agencies and non-profits are engaged in fish conservation activities, including CDFW, U.S. Fish and Wildlife Service, and Redwood Community Action Agency.

Upland Wildlife

Terrestrial Wildlife

The McKinleyville Community Services District is responsible for managing wildlife habitat, but not the animals themselves. Wildlife populations are the responsibility of the CDFW and the USFWS (for Threatened and Endangered species). Hunting is not permitted in the Community Forest.

Amphibians including frogs, toads, and salamanders; reptiles including snakes and lizards; mammals including bats, squirrels, chipmunks, mice, weasels, bear, deer, and elk; and birds such as marbled murrelets, sparrows, blackbirds, and wood warblers, can be found in coastal conifer forests.

One of the most interesting creatures in the coastal redwood ecosystem is the banana slug. These mollusks can be yellow, brown, or a combination of yellow and brown splotches. Banana slugs operate as a virtual vacuum for the forest floor, eating everything from vegetation to fungi. They are prey for salamanders, newts, snakes, foxes, and raccoons (https://humboldtredwoods.org/wildlife_2021).

Common bird species found in the canopy are primarily insect eaters and include orange-crowned warblers, Swainson's thrush, winter wrens, olive-sided flycatcher, red-breasted nuthatch, and chestnut-backed chickadee. Other common bird species include the acorn woodpecker and western scrub jay. Species that prey on insect eaters include a variety of raptors such as the Coopers hawk and red-tailed hawk, and owls, such as the native Northern spotted owl and the invasive barred owl, both of which have been located just to the east of the MCF.

A short distance to the east from the MCF, and separated from it by GRDCo forestlands, lies the 571-acre Lindsay Creek Tract of the van Eck California Forest. This ownership includes two other tracts near McKinleyville, all managed by Pacific Forest Trust. In the van Eck Forest the primary silvicultural method is the selection harvest system, which maintains a continuous canopy of mature trees. Under this silvicultural system periodic timber harvest is conducted for revenue generation and to maintain the health and vigor of the residual standing trees, while working toward restoration of mature forest conditions and elevated carbon sequestration rates.

GRDCo's past management strategies on the now MCF, THP were based around removal of the forest canopy approximately every 45 years under even aged management. As noted in their THPs, although the use of clearcutting would markedly change the habitat of the THP plan area, some wildlife species would benefit from removal of the overstory canopy and from the rapid resprouting of redwood and other species, providing browse for herbivores such as elk and deer and omnivores including bear, as well as dense cover for rodents and other small mammals, which in turn attract carnivores and raptors. On a field trip to the MCF in June 2021, wildlife species observed included a small hawk (possibly sharp-shinned) and snake tracks in dust on the main road. Black bears are known to damage small conifers by stripping their bark to get to nutrients in the tree cambium, and some evidence of this was noted.

GRDCo's even-aged management strategy on the MCF included mitigation measures for wildlife. Selected defective trees with high wildlife value were retained, particularly trees with deformities and structures likely to be used by wildlife. Their general goal was to conduct harvest 'in a manner consistent with maximum sustained production of high-quality timber products while giving consideration to forest structure development and suitability for wildlife species.' (GDRC 2017). In addition, GRDCo significantly limited harvest in Watercourse and Lake Protection Zone (WLPZ) and these buffers represent the majority of mature stands of trees on the MCF. Such a variety of habitats encourages the presence of a wide variety of wildlife species.

As the MCSD begins to manage the MCF, it should work to maintain the conservation elements conserved by GDRCo, while elevating development of a variety of wildlife habitats to a primary rather than secondary goal of forest management; and, where appropriate, work to conserve the existing (and to develop additional) overstory canopy structure. Initiation of selection silviculture, as opposed to a program of clearcutting, will provide habitat for wildlife species that may not now be present, or as abundant, on adjacent GDRCo forests and urbanized areas.

Figure 5. Snags are important for cavity nesting birds



Invasive Species and Native Pests

Invasive species on the MCF include pampas grass, Scotch broom, English ivy, Canadian thistle, and other species that have been introduced and grow vigorously outside their natural habitat. These species have little or no food value for wildlife and can compete with planted conifer seedlings. Other non-native plants of concern include:

- French broom (*Genista monspessulana*)
- Fennel (*Foeniculum vulgare*)
- Himalayan Black berry (*Rubus armeniacus*)
- Periwinkle (*Vinca major*)
- Spanish broom (*Spartium junceum*)
- Foxglove (*Digitalis purpurea*)

These unwanted plants may be controlled to a limited extent by hand cutting and removal, especially if found and removed early before they can spread. Herbicides are not expected to be needed for invasive plant control on this public forest.

Monterey pine (*Pinus radiata*) is a non-native conifer found on the MCF and should be controlled as it can seed rapidly to open areas. Control consists of pulling out seedlings and girdling or felling larger trees. When markets are available for Monterey and Monterey-knobcone pine, these trees should be removed as much as it feasibly can be done, to reduce its presence in the forest.

The spread of invasive weeds is a shared concern by many individuals and organizations within Humboldt County. Private landowners, private organizations (e.g., Pacific Gas and Electric Company), NGOs and public organizations such as California Native Plants Society, California Invasive Plant Council, and the Humboldt County Weed Management (Humboldt County is a signatory member of the latter group), agree to work towards control of invasive exotic weeds. A link to the Humboldt County Weed Management areas can be found at: <https://www.cal-ipc.org/solutions/wmas/humboldt-wma/>. Animals which could be considered pests include:

- Black-tailed deer that browse on unprotected leaders of conifer seedlings
- Wood rats that can girdle small trees
- Black bears that can strip the bark from young pole sized trees to access the phloem layer where sugars are stored and transported

Girdling or stripping of bark on young conifers (mainly redwood) by black bear is the only obvious animal pest issue in the forest. Bear damage is noticeable in many young growth stands and it can lead to mortality and increased tree defect and impact merchantable timber values. Bear damage should be monitored as pre-commercial thinning of stands in the future and increased growth rates and sugar production can amplify bear damage (Perry et al. 2016). Other efforts to reduce pest damage or predisposition will include:

- Minimization of injuries to residual trees during forest management activities
- Reuse of old skid trails where available to reduce soil compaction
- Retention of a diverse species composition in or adjacent to stands following forest management activities and within or nearby to future regeneration units
- Removal of non-native tree species that may be predisposed to pests
- Use of CAL FIRE or other forest pest management specialists to train employees in forest pest early detection and management

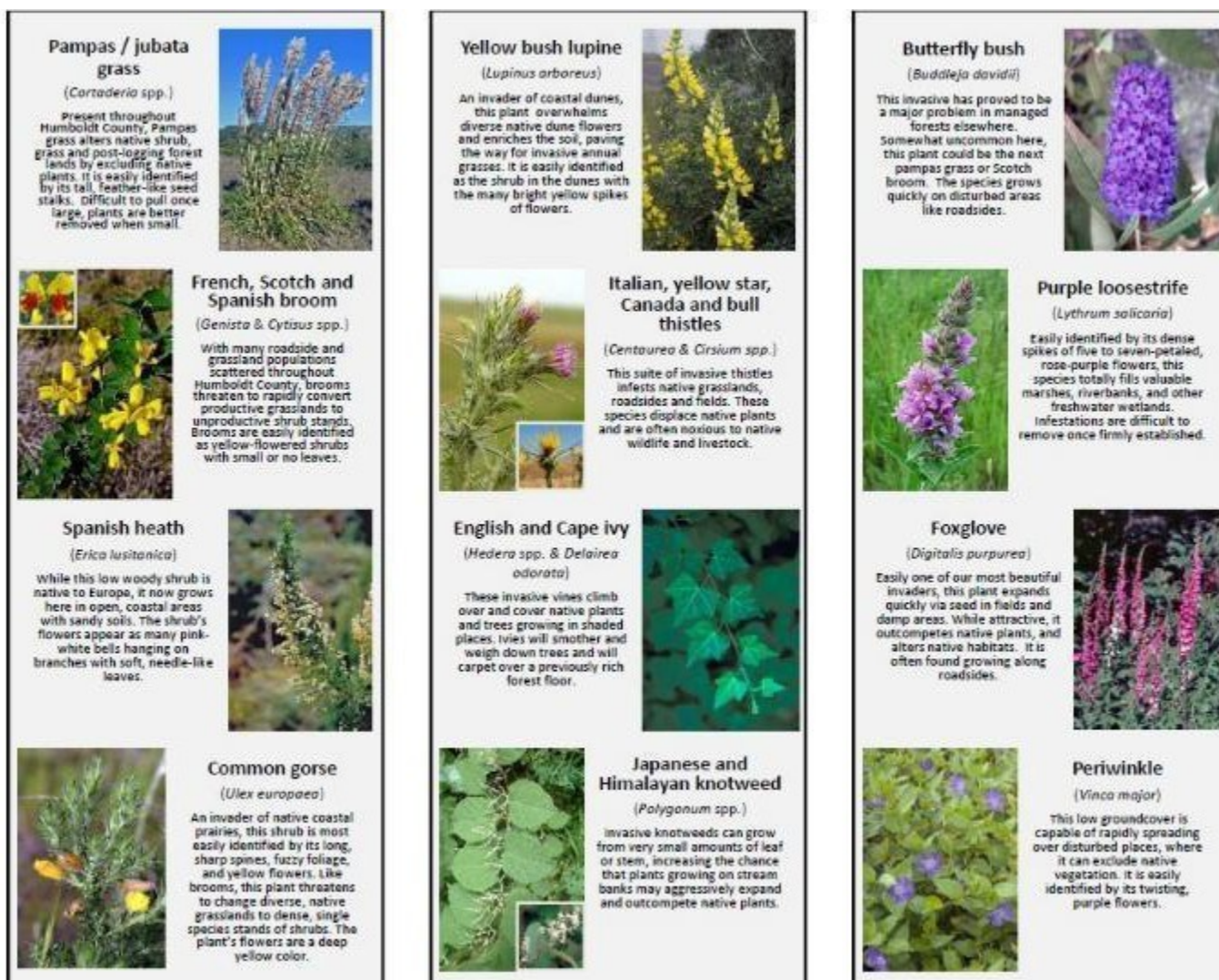


Figure 6. Invasive Plants from the Humboldt County Weed Management Area

Tree Diseases

Although pests are not a serious concern in the redwood forest type due to the pest resistance of redwood, certain pests can cause tree mortality, reduce growth, or affect seed production. Pest problems are often the result of complex forest ecosystem interactions. Young trees under stress from logging damage or prolonged drought are more susceptible to problems.

Douglas-fir trees closest to the coast tend to become affected by *Porodaelea pini* (red ring rot conk) when they reach a larger size and an age of 80 years or so. Also, Humboldt County is an area that has been declared by the Board of Forestry and Fire Protection to be a Zone of Infection for Sudden Oak Death (*Phytophthora ramorum*) (SOD). No SOD has been observed in the MCF to date. The plan area currently contains the following SOD host species:

- Coast redwood (*Sequoia sempervirens*)
- Douglas-fir (*Pseudotsuga menziesii*)
- bay laurel (*Umbellularia californica*)
- huckleberry (*Vaccinium ovatum*, *V. parvifolium*)
- bigleaf maple (*Acer macrophyllum*)
- rhododendron (*Rhododendron* spp.)
- cascara (*Frangula purshiana*)
- western starflower (*Lysimachia latifolia*)

SOD is a forest disease caused by a water mold fungus (*Phytophthora ramorum*). This fungus will cause SOD in hosts including tanoak, coast live oak, and California black oak, and a foliar/twig disease in other hosts including California bay laurel.

The most useful diagnostic symptom for *Phytophthora ramorum* in mature oaks and tanoak is cankers on the trunk from which dark black to red or amber sap exudes. Diagnosis of the disease is not always easy; for example, a tanoak tree may be infected but the symptoms do not show. The sudden browning of the tree crown, for which the "sudden" part of "sudden oak death" was derived, may occur several years after the onset of infection and not all trees end in a sudden browning, some have gradual leaf loss. Black charcoal bubbles, caused by a fungus known as Hypoxylon, decay sapwood and may move into a tree weakened by *Phytophthora ramorum*, but presence of Hypoxylon does not mean the tree has *Phytophthora ramorum*.

A common diagnostic symptom of *Phytophthora ramorum* in California bay laurel is dead areas on the leaves, where water collects. No bay laurel trees have reportedly died from this fungus. However, bay laurels are thought to be very important in spreading the disease as the fungus readily produces spores on moist bay leaves. The vectors of *Phytophthora ramorum* are wind and water.

(www.aphis.usda.gov/plant_health/plant_pest_info/pram/index.shtml)

Best management practices (BMP) have been developed to protect against spread of SOD on personnel or equipment. A list of current BMPs may be found at SuddenOakDeath.org or by linking directly to the following website: <http://nature.berkeley.edu/comtf/pdf/forestry4-08.pdf>.

Silvicultural practices can provide protection against forest pests and diseases. Prevention techniques include proper tree, variety, and site selection for planted seedlings, harvest practices that favor natural regeneration, such as group selection, and thinning practices that reduce pest populations and favor sustainable control by natural enemies.

Air Resources

The assessment area for noise and air quality includes the residential and public facility zones on the forest perimeter. Management of the forest would involve use of chainsaws and large and small construction equipment that would create minor and temporary increases in ambient noise levels in the project vicinity during timber harvesting, and the installation and maintenance of projects including roads, trails, shaded fuel breaks, stream restoration, and invasive plant removals. No area would be subject to excessive noise levels for an extended period of time. A special zone can be established along the urban interface within the MCF where group selection openings will not occur. The single tree selection zone along the urban interface will help filter noise and dust. To maintain air quality, dust abatement will be used on haul roads and landings as needed.

Noise

Cable yarding requires the use of frequent whistle signals for logger communication per OSHA standards and this type of noise is difficult to mitigate. The sounds associated with cable logging have occurred for years in and adjacent to the MCF so there is an established baseline. Cable yarder noise travels a great distance and will be noticeable to forest users and adjacent property owners. The noise related from timber harvest activities will cause a short-term change in noise levels. Noise impacts are generally limited to a time period of 7:00 A.M. to 6:00 P.M. Mondays through Fridays.

- Burning of post logging slash piles at landings and or burning of material for forest fuel treatment or invasive plant control requires a burn permit and Smoke Management Plan from the North Coast Unified Air Quality Management District. Chipping is more expensive than burning but releases less CO₂ and causes less air resource impacts.
- The MCSD should consider using only single tree selection silviculture along the urban interface to help filter noise and dust.
- The MCSD should use dust abatement such as watering on haul roads and landings to maintain air quality.

Landowner Management Objectives

- Promote complexity in forest structure and composition.
- Maintain biologic and floristic diversity and eradicate any populations of invasive plants to allow the native species to thrive.
- Maintain and increase carbon sequestration on the parcel.
- Maintain and enhance timber growth and productivity.
- Utilize stand improvement techniques such as pre-commercial thinning, pruning, and inter-planting to improve the value and growth of the forest stands.
- Practice sustainable forest management techniques.
- Overtime, manage to develop un-even aged stands. Maintain of snags, coarse woody debris, and landscape-level biological legacies.
- Improve the health of the forest , increase resiliency to wildfires and disease outbreaks, restore species diversity, and reduce stand densities in overstocked stands.
- The landowner would like to reduce fuel loading along existing roads and near structures to reduce wildfire hazard.
- Provide public access and passive recreational opportunities.

Management Goals and Objectives

Forest Stewardship

- Utilize a sustainable forestry model and conservation-based forest structure.
- Increase standing timber volume and terrestrial carbon over time.
- Favor the growth of larger trees, especially redwood and Douglas-fir.
- Create a climate resilient forest and reduce the risk of high intensity, damaging wildfires.
- Balance ecological, social, and economic values and acknowledge

that these values are connected.

- Utilize the Forest as an outdoor laboratory for local schools and for the university to foster research and other academic studies.

Environmental Values

- Recognize the value of and maintain the diversity of species (including hardwoods).
- Protect and enhance aquatic and wetland habitat values on the forest as well as within the downstream watersheds.
- Help to mitigate storm-event flows in Mill Creek and Widow White Creek which will limit flooding in the 100-year floodplain.
- Manage to develop un-even aged stands, maintain snags, coarse woody debris, and landscape- level biological legacies.
- Seek grants and other opportunities to implement projects that improve the quality of fish and wildlife habitat.
- Cooperatively work with federal, state, and county agencies and non-government organizations for control of non-native invasive species.

Working Forest

- Add value to the property through application of single tree selection silviculture which allows for development of mature forest conditions over time and into perpetuity.
- Provide regular future income from sale of forest products.
- Provide for a well-designed and maintained system of roads that are co-used as recreational trails.
- Deliver conservation co-benefits including fish and wildlife habitat and water quality.
- Provide educational, research, and recreational opportunities. Timber harvest operations provide a unique opportunity to provide education in the field regarding the ecological intention of the operations.
- Generate sufficient revenue from timber harvest and grant funding to cover forest, management and maintenance costs and upgrades.
- Seek a partnership between the MCS D and the Wiyot and other tribes to increase opportunities for Wiyot tribal members to gather traditional materials.

Public Access and Recreation

- Provide a large public open space area with a well-developed and maintained trail network.
- Provide amenities to support public access such as trailhead parking, restrooms, interpretive signs, picnic tables, benches, and horse watering troughs.
- Provide maps, signboards, kiosks, Avenza smartphone map application, trail names/numbers.
- Implement a network of trails and access points.
- Encourage public events that promote public access and recreation, e.g., equestrian, bike, or running, including races.
- Leverage forest management activities to improve public access and

recreation, for example include trail or road improvements in forest harvest operations.

- Support and work to expand volunteer programs to enhance recreation, interpretation and patrol while building a cadre of volunteer stewards.
- Conduct periodic user surveys and needs assessments of forest users for future planning efforts and to understand the demographics of the users.
- Public access points and trails will be developed incrementally in a logical sequence over the course of several years. The timeframe will depend on fundraising and grant opportunities, volunteer interest, and working through the appropriate planning and permitting processes.

Community Involvement

- Promote access to the forest by Native people practicing traditional tribal practices, such as gathering native plants.
- Engage with local Native tribes and groups to assist in management of the forest consistent with historic Native practices.
- Actively promote volunteerism that benefits the environmental health, enhances recreational use, and provides additional resources for forest management.
- Increase public awareness and understanding of community-based forestry.
- Seek partnerships with local schools and community groups for training opportunities.
- Collaborate with individuals, organizations, tribal and government entities promote ecosystem health and sustainability.
- Encourage public input through efforts such as, but not limited to, public meetings, surveys, and workshops.

Public Safety

- Encourage public safety to be the top priority for the users of the McKinleyville Community Forest
- MCSD to cooperatively work with federal, state and county agencies and non-governmental organizations to integrate fire prevention and suppression resources and develop and implement hazardous fuel reduction projects to reduce the risk of wildfire
- MCSD and Humboldt County will enforce applicable county rules and regulations prohibiting such activities
 - illegal dumping
 - camping
 - hunting
 - leash law violations
 - littering
 - Use of motorized vehicles
- Develop evacuation plans and evacuation routes in consultation with applicable agencies

- Develop emergency access for fire trucks, law enforcement vehicles, helicopters, ambulances, litters, etc.
- Provide public education and plans for wildfire safety and evacuations
- Provide specific safety plans for trail closures or detours around active timber harvests or other operations where heavy equipment is in use
- Resolve any trail user conflicts, to the extent feasible, through education, effective trail signage, design and designation of trails to promote safety and, maintenance and construction of rolling dips for use as speed control, and periodic trail patrol. The emphasis will be on education so that trail users adopt appropriate trail etiquette and self-police the trail system.

Education

- Provide opportunities for involvement with local schools, colleges, universities and the McKinleyville Land Trust.
- Utilize docents and naturalist guided walks to provide opportunities for people to expand their knowledge and enjoyment of the forest.
- Increase awareness and appreciation of cultural heritage by working with the local tribes to increase cultural awareness of the forest.
- Optimize the utilization of web-based platforms to ensure a broad and diverse information base.
- Promote a sense of responsibility for the users of the MCF through educational opportunities.

Constraints and Proposed Alternatives

Alternative #1 Current management (no project or no active management). The current land use is occasional recreation and open space. No commercial timber operations have been implemented since the property acquisition. No action would also increase risk for wildfire on overstocked dense timber stands and mortality on overcrowded stands will add additional fuel. This alternative could have a negative effect on certain wildlife species.

Alternative #2: Subdivision or selling portions of the land base. This is not a feasible option as this was a public acquisition supported by state grants from the CA Natural Resources Agency in cooperation with the Trust for Public Land.

Alternative #3 -Modified Selection System- Intermediate Intensity with goal of late seral characteristics Harvest entries will occur every 15-20 years based upon market conditions. Harvests will occur in all diameter classes to maintain and or achieve uneven-age stand conditions except that the largest conifers will be retained in order to approximate old growth conditions. Under this alternative, low intensity harvests will move the conifers towards a more natural stand condition. This method can be described as regulation by volume as the harvest is tied to the periodic growth of the stand. The all-age structure of the stand will give the landowner options for timing harvests to meet market peaks.

Longer harvest rotations can produce healthy, complex forest landscapes.

A shift to extended harvest rotations has the advantages of (a) producing a variety of tree sizes and wood products over time, (b) improving the age distributions of trees in the landscape, (c) promoting

healthier wildlife habitat, (d) increasing carbon storage, and (e) preserving options for adaptive management. Precommercial and commercial thinning also helps to establish diversity and minimize tree overcrowding, especially releasing white oak trees from encroaching and overtopping conifers.

Alternative #4: Intensive timber management. The fourth alternative would be to intensively manage the property for timber production. This type of management could include even age management and shorter rotations. This type of management may impact the aesthetic appeal of the property as a public access forest.

MCSO is interested in continuing with the current land use (#1) plus managing the forest long-term similar to Alternative #3. This includes an emphasis on forest health, carbon sequestration, fuel reduction, habitat enhancement, and erosion control elements to improve the overall character and condition on the property consistent with the District's stewardship ethics. Timber products may be generated as a byproduct of restorative activities, but intensive timber management would not be the focus. The use of a near-term (within the next 10-year period) Forest Resilience Exemption (1038.3) may provide an opportunity to reduce fire threats and allow for some commercial timber harvest as an initial treatment. Harvesting under this Exemption is limited to those trees that eliminate the vertical continuity of vegetative fuels and the horizontal continuity of tree crowns, for the purpose of reducing the rate of fire spread, duration intensity, fuel ignitability, or ignition of tree crowns 14 CCR § 1038.3.

The residual stand shall consist primarily of healthy and vigorous dominants and codominants from the preharvest stand. The quadratic mean diameter of trees having 8 inches diameter at breast height (DBH) or greater in the pre-harvest stand must be increased in the post-harvest stand when using this exemption. This exemption has a limit in the diameter of trees that can be removed. Only trees < 30 inches DBH may be removed. The minimum residual stocking levels must be 100 square feet of basal area or greater.

Future Property Conditions

Roads

Table 11 below lists road improvement needs that includes two bridges for stream crossings, road reconstruction primarily at the approaches to the proposed bridge crossings, road reconstruction, and the construction of several rolling dips. Road improvements will be a major management need for the next ten years. Due to a lack of watercourse crossings on the two major drainages that bisect the property from east to west, much of the property is currently not accessible to even light duty pickup trucks. The existing road segments that are un-rocked are mostly stable hard surfaces. Where there are existing waterbars and rolling dips, they are functioning well. Most of the existing road system could use additional rolling dips and surface rocking to allow for recreational use year-round. For truck roads to serve as recreational roads, we recommend using recycle base from Alves or Kernan Trail mix blend. The important thing for recreational use surfaces is not to have loose rock or large cobble. Several very flat sections of road are difficult to drain, and following rain, hold water in "cupped" puddles. These areas can be rocked so that the road is crowned and can drain to the sides. Size replacement culverts for 100-year storm events. The entire property currently has only one existing 18" corrugated metal pipe (CMP) culvert located at 40.56912 -124.4972. That pipe is in good condition, appears to be sized for a 100- year storm event, and is at a low gradient. Due to spring flow, this watercourse appears to be a small Class II. Although there are creek crossings requiring bridges, no other watercourse crossings that involve culverts are necessary for upgrading the road system.

Table 10. Road Upgrades

MCS D			NRCS rates and practices			NRCS		
Road Point	NRCS Practice Code/Scenario #	Practice Name	Scenario Name/Description	Units	100% Rate	Cost		
1	560	Aggregate gravel graded		27,973 sq ft	\$2.54	\$71,051.00	266 cu yd ROCK, lower gate to GDRCO CC	\$7,182.
2	578,#1	Stream Crossing	bridge 55-65' length	60 feet	\$ 3,447.93	\$206,875.00	Widow White Creek	
3	560, #11	Access Road	Rolling dip addition	400 Feet	\$10.02	\$4,008.00	upper gate to end of road point 1.	
4	560	Aggregate gravel graded		50,600 sq ft	\$2.54	\$128,524.00	468 cu yds truck spread would really be \$12,636 plus grading/rolling	
5	560, #11	Access Road	Rolling dip addition	100 Feet	\$10.02	\$1,002.00		
6	560, #11	Access Road	Rolling dip addition	100 Feet	\$10.02	\$1,002.00		
7	578,#9	Stream Crossing	HU-Bridge, Rail Car	60 feet	\$2,792.51	\$167,550.00	Mill Creek Crossing	
8	578,#9	Stream Crossing	water crossing, hard armor	420 sq. ft	\$21.59	\$9,067.80	Mill Creek Crossing	
9	560	Access Road	HU-Road Rehab, Surfaced, 10%-40% Slope	1,000 LF	\$26.47	\$26,470.00	difficult section north and south of Mill Creek	
10	560, #11	Access Road	Rolling dip addition	100 feet	\$10.02	\$1,002.00	south of Mill Creek	
11	560, #11	Access Road	Rolling dip addition	100 Feet	\$10.02	\$1,002.00	north of Mill Creek	
12	461	Rock Riprap, placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	15 Cubic Yard	\$69.22	\$1,038.00		
						\$618,591.80		
<p>Note: The bridge rates for NRCS may be a bit higher than what would be expected for a locally "Kernan" type bridge. But good to use for now due to the distance to drag bridges to sites, prevailing wage and delivery costs and fluctuating price of steel.</p>								



Unusable road segment North of Mill Creek Crossing Road Point 1.7



South of Mill Creek, flat road segments are difficult to drain.

Figure 7. Road Erosion



Road point 1.3 South side of Widow White Creek roadGPS 40.56968 -124.4847. Road Reconstruction site road approach needs to be disconnected from the Watercourse.

Figure 8. Road Erosion Points

Figure 9. Road Upgrade Location Map

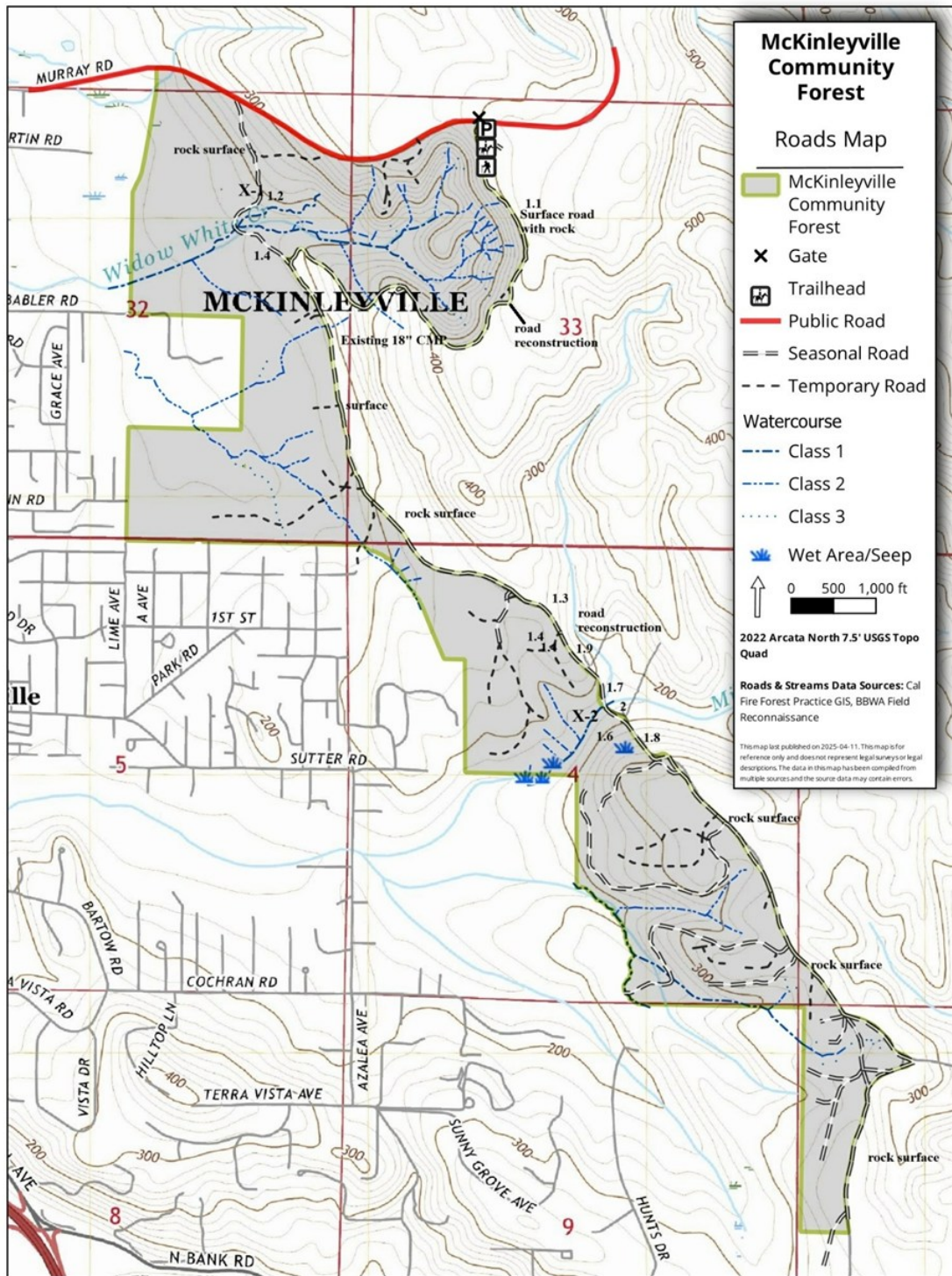


Table 11. Culvert Model for Watersheds > 100 acres

Location:		MCF										
<i>(Enter data in fields with red-colored headings. Other data fields will be calculated automatically.)</i>												
Magnitude and Frequency Method for 100-year flood flow (A > 100 acres)								100-yr flood flow Q₁₀₀ (cfs)				Culvert Diameter (in)
No.	Crossing	Area (acres) A	Basin maximum elevation (ft)*	Crossing elevation (ft)*	Area (mi²) A	Avg. Annual Precipitation (in/yr) P	Elevation (ft/1000) H	North Coast⁽¹⁾ (NC)	Sierra⁽²⁾ (S)	North-east⁽³⁾ (NE)	Central Coast⁽⁴⁾ (CC)	
1	X-1	241	500	140	0.377	55	108	192	58.9	70.3	51.5	73.4 106.9
2	X-1	716	540	200	1.119	55	0.37	496	1564.1	133.6	874.5	

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES: CA. Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment Cafferata et al 2004

Crossing X-1 is located at Widow White Creek and would require a minimum six foot diameter culvert. Crossing X-2 is located at Mill Creek and would require a minimum nine foot diameter culvert.

Table 12. Culvert Model for Watersheds < 200 acres

Rational Method for 100-year flood flow (A < 200 acres)									
No.	Crossing	T_c = 60((11.9 X L³)/H)^{0.385}			Q₁₀₀ = CIA				Culvert Diameter (in)
		Channel length (to top of basin) (mi)	Elevation difference (ft)	Concentration time (min)	Runoff coefficient	100-year Return-Period Precipitation (in/hr)	Area (acres)	100-yr flood flow (cfs)	
		L	H	T_c	C	I*	A	Q₁₀₀	
1	X-1	0.77	360	12	0.4	1.43	241	138	64.3
2	X-2	1.2	340	20	0.4	1.43	716	410	99.0

For comparison, using the Rational Method for Culvert sizing shows culvert diameter in inches required. This model is not appropriate for crossing X-1 and X-2 as they are greater than 200 acres in size.

Table 13. Significant Existing or Potential Erosion Sites w/ Feasible Treatment

Map Point		X-1		Site Description	Bridge span needed for watercourse crossing on Widow White Creek	
1600 Permit	yes	CSDS	yes	Activity/Treatment	Install 55'-65' bridge, footings and associated rip rap	
Road Type		Seasonal truck		Existing Culvert	N	Proposed Culvert N
Stream Class		I		Priority	high	Operation Period When low flow July-October 15
Discharge Potential		Low, <2 cu yd		Disturbed Area	<300 sq ft	Disturbed Vegetation <25 sq ft sword fern
Fill Vol. Removing		30 cy yd		Fill Vol. Adding	30 cu yd	Fill Material Adding 75yds. clean rock 4"x 8" along existing road surfaces

Map Point		X-2		Site Description	No existing crossing, would be a difficult temp "Spittler" crossing	
1600 Permit	yes	CSDS	yes	Activity/Treatment	Install 60' bridge, foundation footings and rip rap rock road approaches	
Road Type		Seasonal truck		Existing Culvert	N	Proposed Culvert N
Stream Class		II		Priority	medium	Operation Period When low flow July-October 15
Discharge Potential		Low, <2 cu yd		Disturbed Area	<100 sq ft	Disturbed Vegetation <25 sq ft sword fern
Fill Vol. Removing		30 yds on approach		Fill Vol. Adding	15 yds rip rap footings	Fill Material Adding 15 yds

Map Point		1.1		Site Description	Un-rocked seasonal road needs rock surface	
1600 Permit	yes	CSDS	yes	Activity/Treatment	Add 28,000 sq ft of road rock south of the Murray Road Parking area.	
Road Type		Seasonal truck		Existing Culvert	N	Proposed Culvert N
Stream Class		NA		Priority	high	Operation Period When dry July-Nov r 15
Discharge Potential		Low, <2 cu yd		Disturbed Area	<100 sq ft	Disturbed Vegetation <25 sq ft sword fern
Fill Vol. Removing		NA		Fill Vol. Adding	266 cu yds	Fill Material Adding 266 cu yards

Map Point		1.2		Site Description	Road approach to Widow White Creek is transported road surface sediment to watercourse
1600 Permit	yes	CSDS	yes	Activity/Treatment	Install rolling dip north side of Widow White Creek
Road Type		Seasonal truck		Existing Culvert	N
				Proposed Culvert	N

Stream Class	I	Priority	high	Operation Period	When dry July-October 15
Discharge Potential	High <100 cu yd	Disturbed Area	<600 sq ft	Disturbed Vegetation	<25 sq ft sword fern
Fill Vol. Removing	30 cy yd	Fill Vol. Adding	55 cu yd	Fill Material Adding	5 loads of rock for a 100" rock surface

Map Point		1.3		Site Description	Un-rocked road surface potential source of sediment
1600 Permit	yes	CSDS	yes	Activity/Treatment	Rock road surface South of Widow White Creek and North of Mill Creek
Road Type		Seasonal truck		Existing Culvert	N
				Proposed Culvert	N
Stream Class	NA	Priority	medium	Operation Period	When dry July-Nov 15
Discharge Potential	Low, <20 cu yd	Disturbed Area	<240 sq ft	Disturbed Vegetation	<50 sq ft sword fern
Fill Vol. Removing	28 cy yd	Fill Vol. Adding	29 cu yd	Fill Material Adding	50,600 road surface rock

Map Point		1.4		Site Description	Road needs rolling dip to drain properly
1600 Permit	yes	CSDS	yes	Activity/Treatment	Install rolling dip.
Road Type		Seasonal truck		Existing Culvert	N
				Proposed Culvert	N
Stream Class	III	Priority	medium	Operation Period	When dry July-October 15
Discharge Potential	Low, <20 cu yd	Disturbed Area	<240 sq ft	Disturbed Vegetation	<50 sq ft sword fern
Fill Vol. Removing	28 cy yd	Fill Vol. Adding	29 cu yd	Fill Material Adding	½ cubic yard 4x8" rock at outlet.

Map Point		1.5		Site Description	Existing deteriorating 24" CMP needs to be replaced with new 24" ABS pipe set at grade.	
1600 Permit	yes	CSDS	yes	Activity/Treatment	Install rolling dip.	
Road Type		Seasonal truck		Existing Culvert		Proposed Culvert
Stream Class		III		Priority	high	Operation Period
Discharge Potential		Low, <20 cu yd		Disturbed Area	<240 sq ft	Disturbed Vegetation
Fill Vol. Removing		28 cy yd		Fill Vol. Adding	29 cu yd	Fill Material Adding
						½ cubic yard 4x8" rock at outlet.

Map Point		1.6		Site Description	BLANK	
1600 Permit	yes	CSDS	yes	Activity/Treatment		
Road Type		Seasonal truck		Existing Culvert	N	Proposed Culvert
Stream Class		III		Priority	medium	Operation Period
Discharge Potential		Low, <20 cu yd		Disturbed Area	<240 sq ft	Disturbed Vegetation
Fill Vol. Removing		28 cy yd		Fill Vol. Adding	29 cu yd	Fill Material Adding
						½ cubic yard 4x8" rock at outlet.

Map Point		1.7		Site Description	Existing road is gullied and is a non -functional thru cut . Active sediment source to Mill Creek	
1600 Permit	yes	CSDS	yes	Activity/Treatment	1,000 LF of road reconstruction	
Road Type		Seasonal truck		Existing Culvert	N	Proposed Culvert
Stream Class		II		Priority	high	Operation Period
Discharge Potential		high, <20 cu yd		Disturbed Area	<500 sq ft	Disturbed Vegetation
Fill Vol. Removing		28 cy yd		Fill Vol. Adding	29 cu yd	Fill Material Adding
						½ cubic yard 4x8" rock at outlet.

Map Point		1.8		Site Description		Road needs rolling dip to hydrologically disconnect the watercourse. S. side of Mill Creek.		
1600 Permit	yes	CSDS	yes	Activity/Treatment		Install rolling dip and apply surface rock for 100 LF		
Road Type		Seasonal truck		Existing Culvert		N	Proposed Culvert	N

Stream Class		III		Priority		medium	Operation Period		NTO When dry July-October 15
Discharge Potential		Low, <20 cu yd		Disturbed Area		<240 sq ft	Disturbed Vegetation		<50 sq ft sword fern
Fill Vol. Removing		28 cy yd		Fill Vol. Adding		29 cu yd	Fill Material Adding		½ cubic yard 4x8" rock at outlet.

1600 Permit		yes	CSDS	yes	Activity/Treatment		Install rolling dip and apply surface rock for 100 LF		
Road Type		Seasonal truck		Existing Culvert		N	Proposed Culvert		M
Stream Class		III		Priority		medium	Operation Period		NTO when dry July-October 15
Discharge Potential		Low, <20 cu yd		Disturbed Area		<240 sq ft	Disturbed Vegetation		<50 sq ft sword fern
Fill Vol. Removing		30 cy yd		Fill Vol. Adding		30 cu yd	Fill Material Adding		30 yd 4"8" clean rock

Map Point		2		Site Description		Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place. Active erosion from recreational use.			
1600 Permit	yes	CSDS	yes	Activity/Treatment		Rock Riprap, placed with geotextile			
Road Type		Seasonal truck		Existing Culvert		N	Proposed Culvert		N
Stream Class		Wet area class II area		Priority		medium	Operation Period		When dry July-October 15
Discharge Potential		Low, <20 cu yd		Disturbed Area		<240 sq ft	Disturbed Vegetation		<50 sq ft sword fern
Fill Vol. Removing		20 cy yd		Fill Vol. Adding		15 cu yd	Fill Material Adding		15 cubic yard 4x8" rock

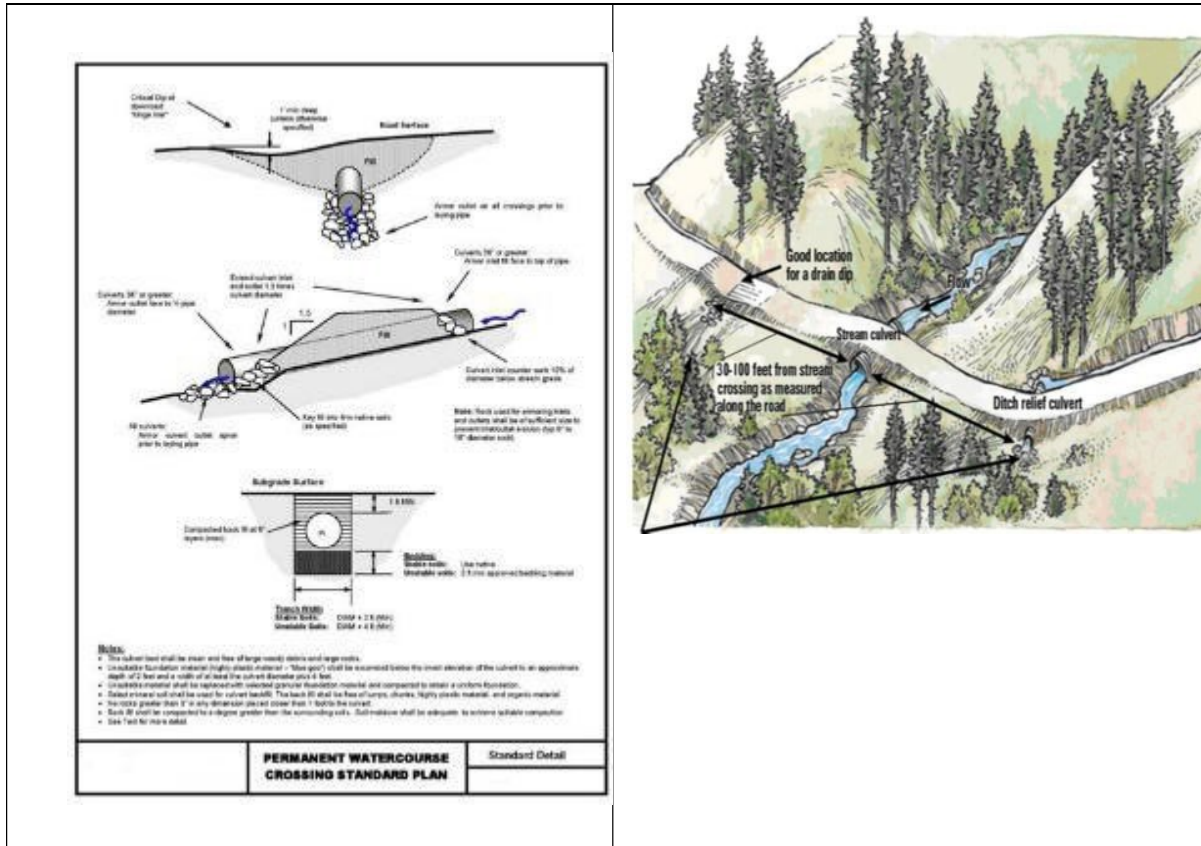


Figure 10. Proper Drainage Ditch Configuration

Ditch drainage should be directed into vegetation and undisturbed litter and not allowed to continue flowing down the ditch and into the stream (from Technical Addendum # 5, CA Board of Forestry and Fire Protection).

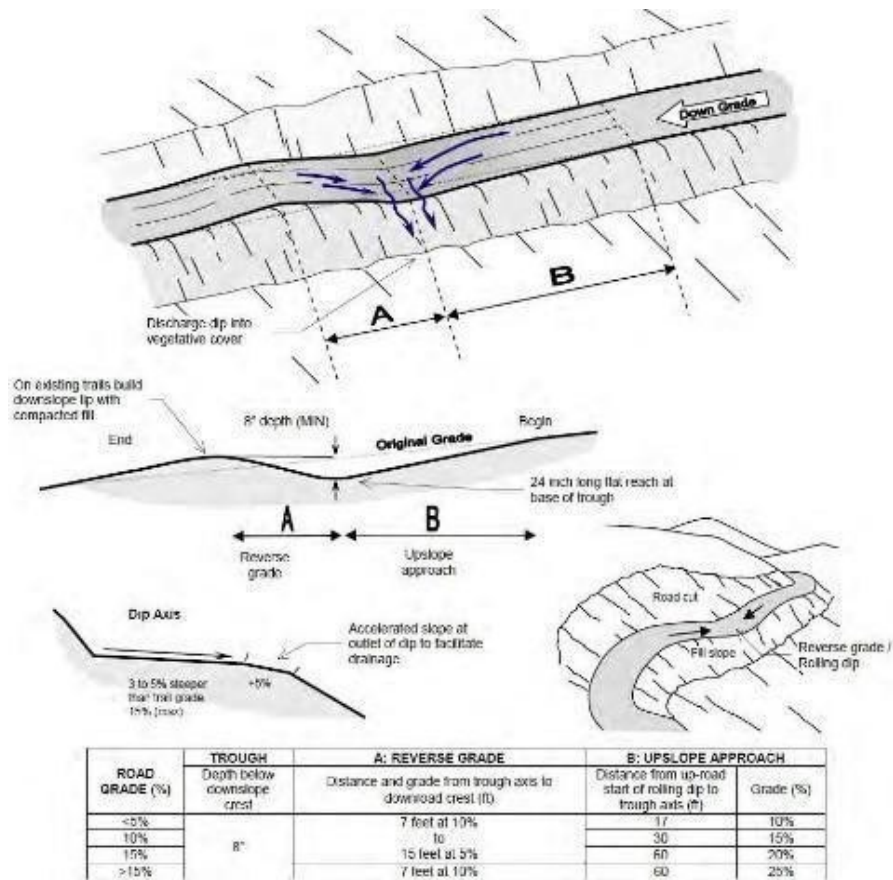


Figure 11. Graphic illustrating hydrologic disconnection and rolling dips to be employed on road system.

Fire Protection

The property is within the State Responsibility Area (SRA) for CAL FIRE. SRA boundaries are those adopted by the Board of Forestry and Fire Protection in January 2011, updated to reflect changes as of July 1, 2015. They are the official boundaries recognized by the Board of Forestry and Fire Protection to define the areas where CAL FIRE has financial responsibility for fire suppression and prevention. The property is rated and mapped as high in terms of fire hazard severity by the CAL FIRE and Resource Assessment Program- (FRAP). Over 90% of the wildfires that occur on SRA land are human caused. Fire protection is an important consideration in the management of the properties. It is not known to what extent fire control resources exist in the immediate vicinity.

Despite its high fire hazard rating there have been very few major wildfire events in this planning unit.

The Humboldt Bay Area Planning Unit encompasses over 143,700 acres situated along the central coast of Humboldt County and contains the most urbanized and populated areas within the county. The geography of the Unit is dominated by Humboldt Bay, which spans approximately two thirds of the Unit's coastline and comprises three sections: South Bay, Entrance Bay, and North Bay. The Forest Stewardship Council (FSC) was appointed by the Humboldt County Board of Supervisors to guide maintenance and implementation of the Humboldt County Master Fire Protection Plan (MFPP) - Humboldt County's Community Wildfire Protection Plan (CWPP).

According to the CAL FIRE and Resource Assessment Program (FRAP), the MCF is within a mapped priority 4 landscape for prioritization of watersheds for potential treatment to reduce wildfire risk based on threats and assets to forested lands and wildfire threats to communities. (<https://calfire-forestry.maps.arcgis.com/apps/MapSeries/index.html?appid=f767d3f842fd47f4b35d8557f10387a7>).

In general, the existing county road system is in good enough condition for fire suppression apparatus to access a large portion of the property during the dry season. There is sufficient native rock in the road bed for fire vehicles and crews to access most of the property during the wet season as well.

Wildfire risk may be further compounded by climate change. Climate change research suggests that wildfire risk could increase with predicted warmer temperatures and more frequent, severe droughts which create dry forest conditions that are more conducive to ignition and spread. The wildfire “season” may become longer as conditions become drier and hotter for a longer period of time. Some trees may become stressed due to drought and will die or succumb to disease and pests such as the bark beetle, which has killed thousands of trees in northern California as a result of the recent drought. An increase in dead, standing trees may contribute to high fuel loads. The potential for long, dry forest conditions coupled with commonly high fuel loads may result in more frequent, high intensity wildfires that are likely to have adverse impacts to forestlands, carbon sequestration, suppression costs, and risks to life and property.

Wildland Fire Potential and Fuels Condition

Sources of ignition on the MCF include prescribed fires that may escape from forest management activities such as pile burning, infrequent natural lightning strikes, fires caused by humans who are recreating, illegal campfires, and fires that move into the forest from residential areas. Residential area fires could escape from burn piles, poor disposal management of barbeque coals, fireworks, or other means. The MCF is located in areas mapped as “high” for fire severity according to the statewide Fire Hazard Severity Zone map adopted by CAL FIRE. The areas mapped as “high fire severity” in Humboldt County include most of the forested coastal hills around Humboldt Bay.

As of 2020, CAL FIRE had not mapped any fires on the MCF as far back as the 1908 Luffenholtz fire. However, subsequent to CAL FIRE’s publishing of the fire perimeter maps for 2020 early this year, a several acre fire occurred on the flat area of the MCF east of Gwin Rd. A second smaller fire occurred in the same area a couple of weeks after the first fire. Both fires were determined to be human caused. The MCF is located in a State Responsibility Area for wildland fire protection and wholly within the Arcata Fire Protection District boundary for structure protection.

Although fire is an integral part of the redwood forest ecology, wildfires cannot be allowed to burn due to the proximity to urban areas. Limited use of prescribed fire as a management tool includes eliminating large concentrations of slash at landings and roadsides, and low intensity understory burns to reduce fire hazards and mimic natural disturbance. Although natural fires are infrequent, old growth stumps and snags that ignite can be difficult to extinguish. Recent fires in other redwood forest areas such as the Canoe Fire in Humboldt Redwoods State Park and the CZU complex in the Santa Cruz Mountains shows that extensive wildfire in redwood forests can occur. Even though the MCF is not located in a mapped “very high” severity fire risk area, with a changing climate, future conditions in the MCF could lead to damaging fires in the future.

The Humboldt County CWPP identified the area “*between the forested area east of McKinleyville and the interface zones*” as a priority for fuel reduction, defensible space and landscape treatments.

The CWPP also highlights a priority to “*work with commercial timberland owners such as Green Diamond Resource Company to identify priority areas for strategic vegetation treatments to increase forest resiliency to wildfire.*” This includes designing projects to buffer residences from wildfires that originate from the timberlands and to protect timber resources and ecological values from fires that start in adjacent developed areas and along roads. Priority areas for such project development include timberlands adjacent to the east side of McKinleyville and the west side of Fieldbrook. The District will seek opportunities to collaborate on roadside vegetation management projects with GDRCo and the county along public and shared roads as well as with other property owners where private roads border the forest .

Post-timber harvest slash material consists of unmerchantable treetops, limbs, and bark. This material can primarily be lopped and scattered within logging areas, allowing it to then mulch into the soil. Concentrations of slash tend to be greatest at log landings to which logs are skidded for loading onto trucks. At those locations machine piles may occasionally be created for later burning during the wet season, chipped on site, or hauled off as biomass. Moderate amounts of slash may be placed back into the forest stands with log loaders and spread to decompose. Logging slash can be used as a BMP in some cases, e.g., to cover logging skid trails with a woody debris mulch layer to prevent erosion and to prevent the establishment of unauthorized trails. For stands closer to residential areas within the Fire Protection Zone, slash material should be chipped or removed when possible. Along high-use roads and trails logging slash can be chipped to improve the forest appearance. Most areas harvested under selection silviculture will “green up” within a couple of years post-harvest and slash material will be less visible. Management of fuels along the wildland urban interface will include education and outreach to adjacent residential property owners regarding forest fuels management practices on the private lands. In general, the existing road system is in good enough condition for fire suppression apparatus to access a large portion of the property.

Fire Protection and Hazard Reduction

The CAL FIRE Trinidad Fire Station and the Arcata Fire District are responsible for fire protection in the MCF. CAL FIRE and the Arcata Fire District would work together under mutual aid to ensure an adequate fire protection program would be in place for the MCF. In addition, MCSD staff would work with other agencies as needed to provide fire protection.

Pre-suppression is defined as fire protection activities performed before fire occurrence, to ensure reduced fire intensity and effective fire suppression. Pre-suppression plans discuss site-specific ways to minimize loss and to reduce hazard and risk. Many pre-suppression prescriptions involve reduction of forest vegetation, including thinning, pruning, and various slash treatments.

General Guidelines for Fire Protection

Decades of fire suppression and an increase in sources of ignition from residential uses in the area has created a situation where the forests of the region are not able to withstand the effects of wildfires without damage to the timber stands and property developments. Fire is an integral part of this forest ecosystem, but heavy concentrations of suppressed trees that would have been cleared by repeated light ground fires have now become dangerous accumulations of ladder fuels capable of carrying a ground fire into the crowns of healthy trees. Forest conditions are at a point where high fuel loads, adjacent residential uses and ladder fuels make it difficult to allow natural fire to be returned to most of this forest for the foreseeable future.

Therefore, it is very important to institute a thorough and workable program for reducing the threat of catastrophic wildfire. Since the long-term reduction of the wildfire threat will require the prudent reintroduction of prescribed fire, a fuels management regime should initially focus on breaking up the fire ladder and properly treating excessive fuels buildup associated with any commercial harvests or stand improvement projects. This work will focus on currently used roads first, where traffic makes the likelihood of ignition high and the fire hazard is most severe. Shaded fuel breaks should be created for at least 100 feet along either side of the road, which may be done as part of a pre-commercial thinning project.

All slash from harvesting and pruning should be lopped within 18” of the ground, and locally heavy accumulations of slash in logging areas must be piled and burned during wet fall or winter weather. Within shaded fuel break areas, slash must be completely removed or piled and burned within 100 feet of either side of the road and up to 150 feet where possible.

General fire safety recommendations are:

- Do not operate machinery or chainsaws when conditions such as wind, humidity, and air temperature combines to make for “extreme” hazards.
- Ensure that in any type of logging operation during the fire season that all workers conform to regulations pertaining to smoking, fire tool requirements, lunch and warming fires, posting of fire rules, care in welding, prohibiting uncovered glass containers, caution in using chainsaws and other spark emitting equipment, and daily inspections prior to shutting down operations.
- Keep a water truck or other water source on site when burning large piles of slash.
- Maintain a cache of fire tools such as shovels, axes, McLeods, portable backpack water tank, etc. on site and accessible.
- Keep a list of emergency phone numbers that identifies local fire response agencies, both public and volunteer.
- Create defensible fuel breaks around structures by clearing all brush and small trees.
- Develop extra water storage facilities from springs or other sources.
- Fit all water storage containers with appropriate size valves for firefighting.
- The main fire fuel related activity that could occur on the parcel would be the thinning of young dense commercial/pre-commercial stands to reduce field loads.

Water Supply

Fire hydrants should be used in this area for refilling a fire engine. There are limited domestic water sources suitable for this purpose in the immediate vicinity.

Information to Local Emergency Personnel

Once management activities begin, the following should be provided to CAL FIRE: each year before April 1st:

- A copy of the property map with access routes delineated.
- The name, address, and emergency 24-hour phone number(s) of an individual and an alternate who has authority to respond to CAL FIRE requests for resources to suppress fires.
- The number of individuals available for firefighting duty and their skills.
- A list of available firefighting equipment.
- Keys or combinations to any locked gates along emergency access routes.

Public Information

Fire hazard and prevention information, as well as any forest regulations developed and implemented by the MCSD, would be posted on all informational kiosks. The trailhead parking areas, information boards, and picnic areas would be treated to reduce fire hazards for safety. The major roads and trails in the forest would be maintained to provide access for fire protection purposes.

Shaded Fuel Breaks

Shaded fuel breaks protect high value areas such as forestland, historical sites, and neighboring property. Typically, they are areas 100 feet wide where vegetation and other forest fuels have been decreased in order to reduce the rate of spread of an advancing fire. Less wide shaded fuel breaks are also beneficial. Within the MCF, the areas bordering public roads can be treated as shaded fuel breaks. Within these shaded fuel breaks, dead trees and ladder fuels (shrubs and lower tree limbs) are removed and the overstory canopy thinned to a level where shade would still reduce the growth of new ground cover/fuels. The understory would be modified so that a low-growing ground cover would be retained within the fuel break to provide fuel to start a backfire. Whenever possible, fuel breaks should visually merge with the surrounding landscape, conforming to the natural features of the area. Periodic maintenance would be needed to maintain fuel break specifications. Shaded fuel breaks in the MCF would provide safe locations for fire control lines and backfiring; ridgelines are commonly used as control points. Shaded fuel breaks and roads also aid in the compartmentalization of the property in order to contain a wildfire to its smallest size possible given existing infrastructure. This would minimize the need to install fire lines with bulldozers in the event of a wildfire. A 100 feet shaded fuel break along the northern boundary of the forest that borders Murray Road, would help to reduce potential sources of ignition from this busy route. Clearing a fuel break around public entrances on the western border will also help contain accidental fires. Over time it might be possible to extend these treatments to the entire western boundary with the urban area.

Thinning

Thinning involves removing individually selected live trees to reduce density, thus providing room to grow and maintain forest health, and to reduce the continuity of fuel.

Forest stands of almost all ages can be maintained in a healthy and vigorous state by periodic thinning. Precommercial thinning produces no commercial projects and creates significant slash. Commercial thinning produces many small merchantable logs (and in more mature stands, larger logs) and logging revenue can fund stand treatments including slash reduction.

Thinning from below removes smaller and weaker trees, while leaving larger and more fire-resistant trees. The trees that are left (residual trees) will occupy a healthier, more open and more vigorous stand with less competition for sunlight, water, and nutrients. This decreases their susceptibility to mortality from insects and disease and increases their growth and likelihood of surviving low intensity fires. If the thinning prescription also includes removal of the smaller trees and shrubs, thinning can be effective in reducing the vertical fuel continuity and ladder fuel that fosters crown fires.

By itself, thinning increases rather than decreases the surface fuel layer. For this reason, slash is usually reduced by burning, crushing, or masticating. Slash can be minimized by 'whole tree logging' in which the crowns as well as the boles are taken to the landing and the crowns chipped there. Piling slash with tractors separates fuels, opens up planting areas, and provides wildlife habitat.

Piling slash but not burning it leaves heavy concentrations of fuels on site that provide significant habitat for small mammals. Transportation of slash off-site is effective in reducing the in-unit fuels but is expensive and the slash still has to be processed elsewhere. Burning is the most popular measure for reducing slash piles.

Pile burning would be conducted during the non-fire season on permissive burn days. Any burn piles would have to be completely extinguished at the end of the workday, prior to personnel leaving the area. Burning for forest management or for hazard reduction would be conducted in compliance with an approved burn plan under prescribed conditions and would be consistent with CAL FIRE's Vegetation Management Program. The MCF is in a wildland area and visitors and passers-by may be exposed to prescribed fire. The District is recommended to close public access to the forest if there is an active fire in the area. If fuel treatment projects are described in detail in the Non-Industrial Timber Management Plan (NTMP), it can serve as the environmental compliance document for grant-funded fuel treatment and forest health projects.

Pruning

Pruning removes the lower (live and dead) limbs of a tree to reduce ladder fuel. It may be done alone or in combination with thinning. It is very labor intensive and so is most frequently done in small areas alongside roads to increase the effectiveness of the road as a fuel break. It is most commonly done using loppers or power limbing saws. Hand shears, saws, or clippers may be used when more care is required. Lower limbs should be pruned to a height of 15 to 20 feet. Care should be taken to not remove more than 50 percent of the live crown length. Conifer limbs should be cut flush against the bole so healing will occur quickly.

The greater the distance between surface fuel and the base of tree crowns, the more difficult it is for surface fires to climb up the bark and become crown fires. Pruned trees are more likely to survive low intensity fires. The prune trunk begins to produce knot-free lumber, which brings a higher price. (Graham et al 2004).

Forest Patrol

Forest patrol is an important part of fire protection and prevention. District staff would coordinate with the County Sheriff Department and local user groups for patrol purposes. Patrols would include public contact, fire detection, and patrol of roads and trails during the fire season.



Figure 12. Example of a shaded fuel break on the Soquel Demonstration Forest Santa Cruz County.



LANDSCAPE DEBRIS BURNING
Proper Debris Burning Prevents Wildfire

LEARN THE HOW, WHAT AND WHEN OF PREVENTING WILDFIRES FROM IMPROPER BURNING:

HOW

- 

DON'T BURN UNLESS WEATHER CONDITIONS (PARTICULARLY WIND) ARE SUCH THAT BURNING CAN BE CONSIDERED SAFE.
- 

KEEP A WATER SUPPLY AND SHOVEL CLOSE TO THE BURNING SITE.
- 

A RESPONSIBLE ADULT IS REQUIRED BY LAW TO BE IN ATTENDANCE UNTIL THE FIRE IS OUT.

LANDSCAPE DEBRIS PILES MUST BE IN SMALL 4- FEET BY 4- FEET PILES.

4 FT  10 FT

CLEAR ALL FLAMMABLE MATERIAL AND VEGETATION WITHIN 10- FEET OF THE OUTER EDGE OF PILE.

WHAT

- 

NO HOUSEHOLD TRASH OR GARBAGE CAN BE BURNED OUTDOORS AT RESIDENCES.
- 

OK

DRY, NATURAL VEGETATION, GROWN ON THE PROPERTY CAN STILL BE BURNED OUTDOORS IN OPEN PILES, UNLESS PROHIBITED BY LOCAL ORDINANCES.

WHEN

- 

DON'T BURN IF IT IS WINDY AND THE SURROUNDING VEGETATION IS VERY DRY.
- PERMITS**

BURNING CAN ONLY BE DONE AFTER OBTAINING REQUIRED PERMITS FOR PERMISSIVE BURN DAYS. CHECK BURN DAYS BY CONTACTING YOUR LOCAL AIR DISTRICT.

ONE LESS SPARK
ONE LESS WILDFIRE

FOR MORE INFORMATION AND A PRINT-READY CAMPFIRE PERMIT VISIT:
PREVENTWILDFIRECA.ORG
#PREVENTWILDFIRE #ONELESSSPARK

BROUGHT TO YOU BY THE CALIFORNIA WILDLAND FIRE COORDINATING GROUP (CWCG)

Figure 13. Landscape Debris Burning Poster

Forest Resource (Future Conditions)

Based on the number of acres of manageable stands by age class described in the existing conditions section, an estimate of the growth and yield of the Community Forest can be made, though not with the precision that will come once an updated forest wide inventory is conducted.

In general, site 1 and 2 timberland can grow around 1,000 board feet per acre per year. Given existing inventory an estimate of yield over the next 20 years can be made. Growth on the manageable portion of the Community Forest is projected at 380 MBF/year. Based on this growth rate (and no harvest), there might be around 5,700 MBF of volume on the forest in 2025, 7,600 MBF in 2030, 9,500 MBF in 2035 and at the end of 20 years, the manageable part of the Community Forest might have as much as 11,400 MBF of conifer stocking or about 30 MBF/acre.

Assuming harvest is about 50% of growth for the next 20 years (in order to increase stocking), harvest in 2025 might produce close to 1,000 MBF (one million board feet), then another 1,000 MBF in 2030 and so on until 2040. At that point, stocking would amount to about 9,500 MBF or about 25 MBF/acre. Of course, stocking on the entire forest would likely be substantially higher as the 160 acres of stream zones would be expected to also be growing around 1,000 board feet/acre/year. Given the existing inventory in the stream zones of 6,560 MBF at present and with a growth rate of 1,000 board feet/acre/year, the stream zones might contain around 9,750 MBF of conifers in 2040. Thus in 2040 the Community Forest might contain as much as 39 MBF/acre and around 20,000 MBF. Unfortunately, the data does not warrant a much more detailed analysis, so no estimate of future stocking by species is projected, though for gross planning purposes the safest assumption is that the species composition in 2040 is likely to be similar to today's species composition with half of the volume in spruce and other low value species. However, given the stocking observed in the recently harvested areas, it does look like the proportion of redwood could be substantially higher in 2040 than today. The District should:

- Plan to conduct an inventory at the property and stand level that provides estimates of volume and growth by species accurate to within + 15% at the 66% confidence level, which will aid in growth and yield modeling at the stand level. Ensure that all modeling and reporting of growth and yield includes estimates of carbon stocking in metric tons per acre in order to provide the MCSD with estimates of the amount of carbon being sequestered on the MCF.
- Establish a conifer board foot stocking goal somewhere above baseline (e.g. ~ 30 MBF/ac) as a floor not to go below, and restrict harvest to less than 25% of growth until the goal is reached. Once reached, restrict harvest of growth to approximately 50% of growth until the upper goal is reached.
- Establish a long term conifer board foot stocking goal "soft ceiling" at approximately 100 MBF/ac at which point all or most of growth can be harvested.

Overall, the forest is fairly well stocked. Three specific areas totaling 16.5 acres were identified during the preparation of this plan that would benefit from reforestation treatments. The seed zone for the property is 092. When ordering seedlings, it is important to specify the seed zone and elevation for the reforestation locations. Reforestation efforts will focus on planting primarily redwood and Douglas fir. It is preferable to plant the largest available seedling such as 2-year old bare root or containerized seedlings. Reforestation will require mechanical site preparation in areas of dense brush and for areas with heavy grass cover, planting spots may be scalped" with a hoedad or fire tool to 18"x18"

Land classification

The redwood (RW4D) and (RW3D) type are essentially an even-aged 2nd growth stand of 40-50 year old redwood that has grown up since the initial logging. It also contains California bay, red alder, Big leaf maple, and a minor amount of Salix. The understory of the stand is composed of Douglas-fir seedlings/saplings, hardwoods, forbs, and sword fern. Residual, larger Douglas-fir are scattered in this vegetation type. The redwood trees vary from suppressed and intermediate in the plantations to non-plantation intermediate, co- dominant and mature trees, which are growing fairly well.

Key to California Wildlife Habitat Relationship Vegetation Type Codes. <https://wildlife.ca.gov/data/cwhr>

MCF CWHR Vegetation Types		
CWHR Classification	Average Tree Size (inches dbh ⁴)	Canopy Closure (%)
Redwood 3D	pole size (6 - 11)	60 - 100
Redwood 3D	small tree size (11 - 24)	40 - 59
Montane Hardwood-Conifer 4D	small tree size (11 - 24)	60 - 100
Redwood 4D	small tree size (11 - 24)	60 - 100
Redwood 5D	Medium/large tree size (>24)	60 - 100
Redwood 6D	Uneven canopy trees >24"	60-100

CWHR Size Codes

Size Code	Tree Size
1	< 0" DBH (shorter than 4 ½' tall)
2	0-8" DBH
3	8-16" DBH
4	16-24" DBH
5	24-32" DBH
6	32-40" DBH
7	40+" DBH

Canopy Cover Codes

Cover Code	Percent
S	5 – 20
P	20 – 40
M	40 – 60
D	60 – 80
E	80 – 100

Late Succession Forest Stands

There are no stands on the MCF that qualify as Late Succession Forest Stands according to the Forest Practice Rule definition per s 895.1 . Late Succession Forest Stands are defined by the Forest Practice Rules as follows: *Late Succession Forest Stands means stands of dominant and predominant trees that meet the criteria of WHR class 5M, 5D, or 6 with an open, moderate or dense canopy closure classification, often with multiple canopy layers, and are at least 20 acres in size. Functional characteristics of late succession forests include large decadent trees, snags, and large down logs.*

Forest thinning operations can be used to increase timber value of a stand by:

- Increasing growth rates by reducing the time it takes for trees to reach maturity.
- Altering the species composition of a stand with the aim of increasing the proportion of valuable timber species.
- Increasing the proportion of valuable wood volume by decreasing the amount of poorly formed low-quality trees.

Benefits of Thinning: Positive Effects on Wildlife Habitat

Forest thinning operations can be used to improve wildlife habitat by: Altering the species composition of a stand with the aim of increasing the proportion of tree species providing valuable sources of food and shelter, such as big leaf maple and red alder.

- Altering the age class of forest. Even-aged stands, those consisting of a distinct age and size class, are less diverse and benefit fewer species of wildlife in comparison to balanced, uneven-aged stands consisting of three or more age and size classes.
- Removing invasive trees, shrubs, and vines which are detrimental to the overall health and quality of a habitat.

Benefits of Forest Thinning to Reduce Wildfire Risk

Thinning can mitigate wildfire severity by reducing fuel density, removing ladder fuels, creating safer zones for fire crews, improving forest resilience, and establishing strategic fuel breaks that limit fire spread and allow for more effective fire management to help protect communities.

Access and Security (Future Conditions)

The main road system of the MCF is comprised of the M1000 Road, which runs from the lower gate on Murray Road all the way to the southern tip of the property, and then out to Essex Lane and the M2000/M2100 Roads, which connect from the upper Murray Road gate to the M1000 in the northwest portion of the property. The M1000 currently forms the majority of the eastern boundary of the property. There are multiple unsanctioned and informal access points on the west side of the property that are used by the public to access the property.

The MCF has a gated parking area on the south side of Murray Road. The gate is closed by MSCD staff after sunset. The main roads in the MCF are commonly used by walkers, runners, bicyclists, motorcyclists, and occasionally by ATV users, despite the signage prohibiting motor vehicle use. Signs of unauthorized motorcycle use are common along much of the road system. Dumping of household garbage, furniture, and other waste materials is relatively common near adjoining public roads such as Murray Road. Unauthorized camping occurs periodically along the western portion of the tract as well as on the MCF.

Recreation & Aesthetics (Future Conditions)

Aesthetic Considerations

The “look” of the Community Forest is an important consideration of forest management activities. In general, there will be continuous forest canopy across the forest even immediately following timber harvest. Harvests will generally consist of light thinning across the stands, where mostly smaller and defective trees will be removed. Essentially, the MCF will always maintain a continuous forested appearance from a near and far view perspective.

The use of uneven-aged silviculture, which is the silvicultural method recommended for use on the MCF, would reduce potential visual impacts associated with timber harvesting. Trees retained for late-successional wildlife habitat, future crop trees, and growing stock will provide continuous forest cover after harvest operations. Harvested stands are, by their very nature, more open than natural stands, but should be well- stocked and composed of various age classes displaying distinct layers of tree crowns.

Some management- created group selection gaps will mimic natural forest openings created by natural disturbances such as windthrow, which is when a tree is uprooted by wind. Slash can be packed on skid trails after use, “camouflaging” the bare, disturbed ground appearance and providing cover for erosion control.

Recommendation: To minimize aesthetic impacts of timber harvest, slash can be chipped along high use roads and trails or burned or trucked to a biomass facility or to other less visible areas. Lopping and scattering slash from recent timber harvests to a depth of less than 24” can hasten and cycle nutrients back into the soil. In coastal redwood forests, slash and bare ground from timber harvesting is typically obscured by vegetation regrowth in a couple of years. Treating slash by burning, removing or lopping and scattering to a depth of 24” or less should be standard operating procedure for each timber harvest operation.



Figure 14. Second growth selection harvesting on the Arcata Community Forest

Within the harvest units, additional measures will be taken beyond the minimum forest practice rules to clean up slash material after harvest. Trees damaged during logging (broken tops, missing bark, etc.) will be minimized in single tree harvest, but when they do occur, they will generally be removed, especially near roads and trails.

Logging slash will be removed from roads and trails. Slash can be chipped adjacent to high use trails and multi-use forest roads to improve aesthetics. Log landings, which will be kept to as small of size as possible and “naturalized”- meaning that leaf litter and native plants (huckleberry, ferns) will be planted on landing surfaces after harvest. Over the long-term, as the dense young stands are pre-commercially or commercially thinned, the volume of unmerchantable tops and slash material will decline as the tree stem density decreases and the stand age increases.

Log yarding (whether cable or tractor based) will periodically impact existing recreational trails. Following timber operations, recreational trails can be re-constructed and, in many cases, upgraded. Timber harvest operations provide an opportunity to upgrade trails because roads will be opened up for access, and dump truck loads of rock may be brought to the site for trail surfacing. Also, having heavy equipment on site may lead to an opportunity to reshape or add to an existing trail.

To improve visual aesthetics, most trees damaged by logging will be removed. In areas of high recreational use minor logging damage to retained trees can be mitigated using black or brown tree paint. Additionally, trees that were marked with blue paint for harvest but for some reason not cut should have the paint marks “blacked out” to improve the visual appearance of the forests. All operational related flagging should be removed from logging areas, post-harvest. Recommendation: The overall management effort will strive to maintain a visually pleasing forest setting that serves to enhance the recreational experience, local tourism and provide an attractive visual backdrop to the surrounding community.

Given the current high density stands on the forest, thinning and pruning trees will serve to improve aesthetics primarily by providing visual penetration into forest areas that are currently almost impenetrable.

Recreation (Future Direction)

Continue current direction into future. Current recreational use of the property includes hiking, mountain biking, running, horseback riding, and unauthorized ATV and motorcycle usage. The growing demand for recreation use in the area is reflected by the proliferation of illegal trails. Illegal dumping and litter is not currently a problem within the interior of the forest but it is a significant problem along Murray Road at the two existing gates and county road right of way.

The past trespassing for recreational use on the property has degraded sections of the forest road system and caused significant erosion throughout the property where existing logging skid trails have been used for recreation. Trespass road and trail use on the MCF has also induced additional trespass onto some adjacent residentially zoned parcels as people look for ingress/egress routes to and from the MCF.

One of the primary reasons the MCSD pursued the acquisition of the MCF is to meet the growing demands for trails and dispersed recreational use in the McKinleyville areas.

The McKinleyville Community Plan and Humboldt County Trails Plan both describe the long -term goals of providing additional trails in the forested hills east of McKinleyville. The new MCF acquisition allows for a trails plan to now be developed and implemented that will provide for managed recreational use, and eliminate the problems associated with trespass use on roads and trails not designed for recreational use such as resource damage, illegal dumping, illegal camping, etc..

Recreational use at the MCF has a great potential to increase the quality of life in the area and contribute to the local economy. The forest provides outstanding opportunities for dispersed recreation including: hiking, mountain bike riding, horseback riding, running, photography, nature study and picnicking.

The MCSD recreational trail use plan and management can be guided and informed by local examples such as the Arcata Community Forest, Redwood National and State Parks and the emerging recreational use plan on the McKay Community Forest.

Recreational use goals pertaining to trails on the MCF include:

- Provide an integrated trail system for a diversity of trail users.
- Promote a safe and secure environment for visitors of all ages and abilities.
- Protect the Community Forest’s natural and cultural resources.
- Provide a trail information system.
- The recreational infrastructure on the MCF will emphasize dispersed, day-use opportunities.
- Foster community partnerships to assist with trail development and maintenance.
- Promote trail-oriented tourism and special events.
- Pursue linkages with other trails and recreational facilities

Soils

Soils were discussed previously. Estimated soil erosion hazards for future selection silviculture on the MCF are estimated as:

ESTIMATED SURFACE SOIL EROSION HAZARD (RM-87)J-S114							STATE OF CALIFORNIA BOARD OF FORESTRY		
I. SOIL FACTORS				1-99-NTMP-033-HUM DEV			FACTOR RATING BY AREA A=Tractor; B=Cable		
A. SOIL TEXTURE	Fine	Medium	Course	A	B				
1. DETACHABILITY	Low	Moderate	High	20	20				
Rating	1-9	10-18	19-30						
2. PERMEABILITY	Slow	Moderate	Rapid	2	2				
Rating	5-4	3-2	1						
B. DEPTH TO RESTRICTIVE LAYER OR BEDROCK									
	Shallow	Moderate	Deep	2	2				
Rating	1 - 19"	20 - 39"	40 - 60" (+)						
C. PERCENT SURFACE COARSE FRAGMENTS GREATER THAN 2 MM IN SIZE (INCLUDING ROCKS)									
	Low	Moderate	High	8	8	FACTOR RATING BY AREA			
Rating	(-) 10-39%	40-70%	71-100%			A	B		
	10-6	5-3	2-1	Subtotal -->			32	32	
II. SLOPE FACTOR									
Slope	5-15%	16-30%	31-40%	41-50%	51-70%	71-80% (+)	6	18	
Rating	1-3	4-6	7-10	11-15	16-25	26-35			
III. PROTECTIVE VEGETATIVE COVER REMAINING AFTER DISTURBANCE									
	Low	Moderate	High	3	4				
Rating	0-40%	41-80%	81-100%						
	15-8	4-7	3-1						
IV. TWO-YEAR, ONE-HOUR RAINFALL INTENSITY (Hundredths Inch)									
	Low	Moderate	High	Extreme	9	9			
Rating	(-) 30-39	40-59	60-69	70-80 (+)					
	1-3	4-7	8-11	12-15	TOTAL SUM OF FACTORS -->			50	63
Erosion Hazard Rating									
	<50	50-65	66-75	>75	M	M			
	Low	Moderate	High	Extreme					
THE DETERMINATION IS -->									

Note: Area A is ground based. Area B is cable yarding (steeper).

Streams, Wetlands and Ponds (Future Conditions)

Continue current direction. Water quality will be managed by implementing watershed improvement projects and by applying management practices which minimize erosion, sedimentation, and flooding. In general, roads should be outsloped and rocked, with ditches and road widths kept to a minimum. Restrictions to limit landing size, skid trail density, and soil compaction are written into all operational plans including timber harvest plans.

Figure 15. Skunk cabbage and slough sedge wetland



Wildlife (Future Conditions)

The MCSD is responsible for managing wildlife habitat, but not the animals themselves. Wildlife populations are the responsibility of the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service (for Threatened and Endangered species). Hunting is not permitted in the Community Forest.

Amphibians including frogs, toads and salamanders; reptiles including snakes and lizards; mammals including bats, squirrels, chipmunks, mice, weasels, bear, deer and elk; and birds such as marbled murrelets, sparrows, blackbirds and wood warblers, can be found in coastal conifer forests.

Common bird species found in the canopy are primarily insect eaters and include orange-crowned warblers, Swainson's thrush, winter wrens, olive-sided flycatcher, red-breasted nuthatch, and chestnut-backed chickadee. Other common bird species include the acorn woodpecker and western scrub jay.

Species that prey on insect eaters include a variety of raptors such as the Coopers hawk and red-tailed hawk, and owls, such as the native Northern spotted owl and the invasive barred owl, both of which

have been located just to the east of the MCF.

GRDCO's even-aged management strategy on the MCF included some mitigation measures for wildlife. Selected defective trees with high wildlife value were retained, particularly trees with deformities and structures likely to be used by wildlife. The general goal was to conduct harvest *'in a manner consistent with maximum sustained production of high-quality timber products while giving consideration to forest structure development and suitability for wildlife species.'* (GDRC 2017). In addition, GDRCo limited harvest in watercourse buffers (WLPZs) and RMZs, and these buffers represent the majority of mature stands of trees on the MCF. Such a variety of habitats encourages the presence of a wide variety of wildlife species.

Continue current direction. As the MCSD begins to manage the MCF, it should work to maintain the conservation elements conserved by GDRC, while elevating development of a variety of wildlife habitats to a primary rather than secondary goal of forest management; and, where appropriate, work to conserve the existing (and to develop additional) overstory canopy structure. Initiation of un-even age selection silviculture will provide habitat diversity for wildlife species that may not now be present.

Threatened or Endangered Animal Species

The MCF includes portions of the Arcata North USGS 7.5-minute Quadrangle. Any special status species located on the forest should be submitted to the (CNDDDB). The CNDDDB is an inventory of the status and locations of rare plants and animals in California.

The MCF provides a long, narrow, contiguous forested corridor that connects the watershed of Widow White Creek on the north to that of the Mad River on the south. It encompasses a significant portion of the watershed of Mill Creek and several tributaries. The MCF lies just east of an urbanized landscape and borders Green Diamond on the east and dispersed housing on the north and south. The location of the forest provides a de facto urban limit line to the dense urban development that comprises most of central McKinleyville.

The urban influence on the western, northern, and southern borders of the MCF undoubtedly impacts the presence and abundance of some wildlife species.

The MCSD will engage in a project-specific scoping process to identify those special status wildlife status species likely to occur in the affected environment of a project area, including proposed timber harvest, and the potential impact to wildlife habitat from the activity, either individually or cumulatively. A variety of sources of information will typically be consulted. These include the CNDDDB and the McKinleyville Community Forest GIS database, as well as a variety of general surveys and focused species inventories and research efforts. The scoping process will evaluate likelihood of species presence, habitat availability, survey methodology and timing, and possible mitigation or opportunities for habitat enhancement. Wildlife survey intensity will be driven by population density and detectability of special status species, habitats occupied by them, and the level of habitat disturbance expected from the land management action.

The presence of deadwood structures (fallen logs, snags) is a key factor in survival of many animal species such as the Pileated woodpecker and clouded salamander. Thus, species diversity depends on

the presence or absence of these deadwood structures in the managed landscape, as well as vertical and horizontal spatial complexity. Snag densities in the forest are low due to past cutting practices and the slow rate of natural recruitment. However, accumulations of large down woody debris such as fallen logs are abundant due to the debris accumulated from industrial harvest over the last 20 years.

During the next ten to twenty years, the overall acreages of most habitat types on the MCF are not expected to change very much. However, there may be a shift in the mosaic of habitat areas due to the transition of early successional stages into more mature stands, and the application of silvicultural management activities, such as selection timber harvesting, which foregoes clearcutting in favor of retention of a persistent overstory canopy.

According to direct observations and the California Department of Fish and Wildlife Natural Diversity Database (CNDDDB), these rare, threatened, or species of special concern have been documented as occurring on or adjacent to the McKinleyville Community Forest:

- Pacific fisher
- coho salmon
- coastal cutthroat trout
- Northern red-legged frog
- northern spotted owl
- great blue heron
- southern torrent salamander

In addition, several rare, endangered or species of special concern whose ranges may overlap the McKinleyville Community Forest include:

- bald eagle
- northern goshawk
- Cooper's hawk
- tailed frog
- marbled murrelet
- golden eagle
- osprey
- Sonoma tree vole
- sharp shinned hawk
- great egret
- steelhead trout
- white-footed vole
- Vaux's swift
- western pond turtle
- foothill yellow-legged frog

Table 14. Watercourse buffers applicable to the MCF

Water Class	Class I	Class II	Class III
Characteristics or Key Indicator Beneficial Use	1) Domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area and/or 2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning.	1) Fish always or seasonally present offsite within 1000 feet downstream and/or 2) Aquatic habitat for non-fish aquatic species. 3) Excludes Class III waters that are tributary to Class I waters.	No aquatic life present, Watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high water flow conditions after completion of Timber Operations.
Slope Class (%)	Buffer Zone Width (Feet)	Buffer Zone Width (Feet)	Buffer Zone Width (Feet)
<30	75	50	25
30-50	100	75	50
>50	150	100	75

Records kept by GRDCo contain a wealth of information on the species noted above as well as other potential species of concern. GDRCo has conducted surveys for several listed species over the last 20 years, including Del Norte salamanders, Southern torrent salamanders, tailed frogs, Western pond turtles, Coho salmon, steelhead, Pacific fisher, and the Endangered or Threatened species Northern spotted owl, marbled murrelet, bald eagle, bank swallow, and the Pacific Marten and Humboldt Marten.

GDRCo has a Habitat Conservation Plan for the Northern spotted owl in place for its ~400,000 acre ownership in Humboldt and Del Norte Counties; as well as management strategies for conserving and improving habitat for many of the other species noted above, including a Protocol for Protection of Nesting Forest Raptors and Selected Colonial Wading Birds. In addition GDRCo has numerous other agreements in place on its property such as its Aquatic HCP, Master Agreement for Timber Operations, Sustained Yield Plan, property wide 1600 permit for waste discharge, and others. Most of these agreements allow for streamlined operations in return for significant reporting and other requirements. In some cases, these agreements might be amended to “follow the property” but would need the agreement of GDRCo and the issuing agencies. The commitment made by GDRCo represents a starting point for future management of the Community Forest, and GDRCo documents such as past THP’s contain a wealth of information on management of these species.

Special Status Plants

Sensitive plant species include those plants listed as endangered, threatened, or rare at the state and federal level, as well as those that meet the criteria for listing in the California Environmental Quality Act 15380. The California Native Plant Society (CNPS) maintains an inventory of Rare and Endangered Plants of California. Plants ranked 1A, 1B, and 2 of the inventory represent plants that qualify for listing.

In its management of the MCF area, GDRCo adhered to a Botanical Management Plan agreed to with the California Department of Fish and Game CDFW (now known as CDFW) in 2008. GDRCo conducted numerous plant surveys within areas proposed for harvest within the Community Forest area, as documented in various THP’s. GDRCo developed and implemented an ownership-wide Sensitive Plant

Conservation Plan with the goal of enabling sensitive plant species to persist in their preferred habitats while allowing flexibility in management of lands for timber production.

GDRCo established Botanical Management Areas that had similar or unique floristic characteristics and that could be managed under overarching BMP's that included focused surveys, retention of populations, management of reserves, impact avoidance, and compatible management practices (e.g., road use restrictions, timing of impacts, invasive plant removal and habitat enhancement for disturbance associated species) to reduce the risk of negative impacts to species or habitats.

One of the Botanical Management Areas is known as Big Mack Combo. It covers much of the Community Forest area, and GDRCo has done a thorough analysis and created a useful list of Rare, Threatened and Endangered Plant Species for this area. The list of possible plants to survey for in the Big Mack Combo includes 27 species. Of these, 12 were rated as having no habitat within the survey area, while 15 were considered as 'maybe' having habitat.

Records of field botanical surveys in the Big Mack Combo for THP 1-19-00076HUM did not locate CNPS 1 or 2 Rare Plants. Two CNPS 3 or 4 Uncommon Plants found were recorded:

- *Lycopodium clavatum*, whose common names include common club moss, stag's-horn clubmoss, running clubmoss, or ground pine
- *Ribes laxiflorum*, known as trailing black currant

GDRCo notes that both these species were found growing near Class III (seasonal) streams, which are minimally protected under the California Forest Practice Rules, and that under the planned harvest prescription these plant populations would likely be directly and adversely impacted.

The MCSO will engage in a project-specific scoping process to identify those special status species likely to occur in the affected environment of a project area such as a trail project or area proposed for timber harvest, and the potential habitat impact from the activity either individually or cumulatively. A variety of sources of information will typically be consulted, including the CNDDDB, the MCF GIS database, as well as a variety of completed survey and focused species inventories (e.g., those conducted by GDRCo), and research efforts. The scoping process will evaluate likelihood of species presence, habitat availability, survey methodology and timing, and possible mitigation or opportunities for habitat enhancement. Population density and detectability of the special status species, habitats occupied, and the level of habitat disturbance expected from the land management action will guide survey intensity.

Surveys will coincide with the known flowering periods of listed species and be floristic in nature. If a NTMP is prepared for the MCF a Botanical Survey Report will be amended to Section V of the NTMP prior to harvest operations. Any observed population of a California listed or California Rare Plant Rank 1 or 2 species (prior to or during operations) will receive a 50-foot no-operations buffer or have specific mitigations developed in consultation with and/or CDFW to be amended to the plan. If any occurrence is observed during harvest operations by the Registered Professional Forester (RPF), CAL FIRE, and CDFW shall be notified immediately. The silvicultural techniques implemented on the MCF are designed to be relatively low-impact (i.e., single tree and group selection, retention of the larger conifers, WLPZ buffers, etc.) and are designed to result in a reduction, if not elimination, of potential impacts to species of concern.

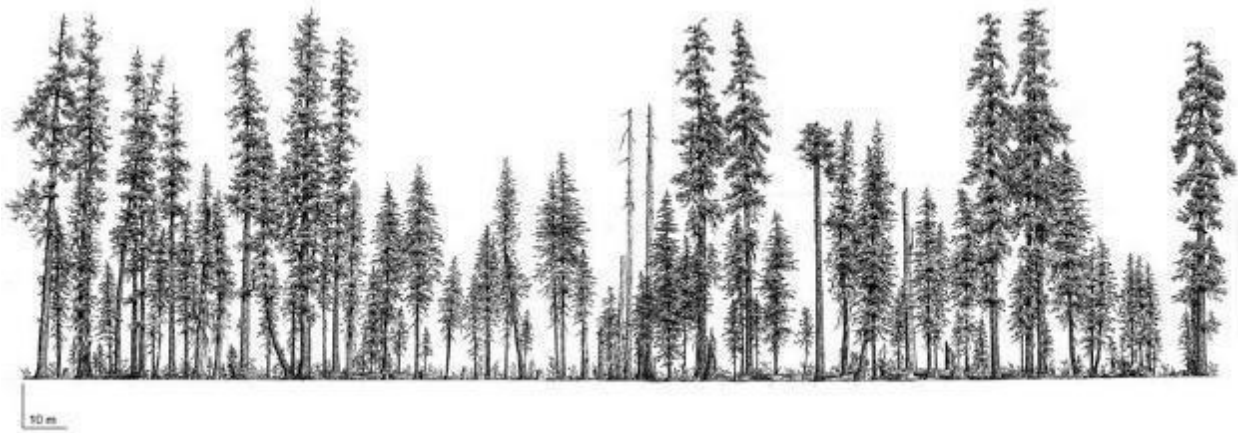


Figure 16. Moving an even-aged forest to complex structure

Figure 16 showing how over time a simplified even-age forest can be managed into the future to become complex with multi-age stand structure, down logs and standing snags.

General Guidelines for Fish and Wildlife Habitat Improvement Conservation Measures

The list of conservation measures below includes activities that are specific to various resources including trees, large woody debris, plant species, and soils; but any improvement to forest health and integrity can have radiating effects to the entire ecosystem.

Timber Harvesting Mitigations

- Mark legacy or wildlife trees for snag recruitment and to eventually become downed woody debris; on average 2–4 dominant trees per acre.
 - Existing downed land cull logs produced during timber operations should be left in the woods for coarse woody debris recruitment wherever possible, except when utilized for firewood or developing building materials (e.g., milling wood on-site for trail bridges). Some fuel modification will be necessary to reduce fire hazard.
 - All logs in stream zones should be retained. Management will provide for a continuous supply of coniferous coarse woody material to improve, maintain, and restore vital stream functions, including salmonid habitat structure and bank stability.
 - Retain all nest trees.
 - Retain legacy old growth trees.
- Conduct pre-harvest and post-project surveys to identify active nest sites of all raptors and special-status bird species that may occur. Those species include but are limited to: Cooper's hawk, sharp shinned hawk, long-eared owl, and yellow warbler. In addition, pre-harvest surveys will be conducted for northern spotted owl.

Botanical Resources

- Examine the CNDDDB reports during project planning and incorporate measures into all project development and monitoring processes for all known species as well as special status species that may be present. Submit CNDDDB Field Survey forms to CDFW for any sightings of listed, rare or special status species.
- Maintain the indigenous plant composition in the redwood biome through active management, planting of species mix, and use of local seed sources.
- Maintain and enhance, when appropriate, the riparian plant community.
- Identify and protect habitat of designated sensitive plant species in accordance with State and Federal policy.
- Educate forest users of the value of the botanical forest resources during interpretive programs.
- Maintain control of invasive non-native species.
- Revegetate denuded areas resulting from recreational misuse or overuse. (For ordering nursery stock, the seed zone for the MCF is 092.)
- Prohibit the general collection of floral greenery, flowers, fungi, and other plant material for individual use and commercial purposes excepting cultural uses by local tribes.

Soil Productivity

Soil productivity will be enhanced by:

1. Preventing organic matter loss

Organic matter loss occurs primarily due to site preparation activities such as high temperature-controlled burns and by the scraping and compacting action associated with heavy equipment operation on skid trails and landings. Leaving some vegetative material in the forest post-harvest helps to provide nutrient cycling and provide organic mulch. Conducting prescribed fire treatments when conditions do not allow fires to burn hot enough to consume the duff layer.

2. Preventing surface soil loss

Surface soil loss occurs when extensive areas of ground are exposed to rainfall resulting in sheet/rill erosion and gully erosion of the topsoil layer. This is especially a concern on steep slopes, or slopes and roads adjacent to watercourses. Soil loss can be prevented by revegetating bare areas with native trees and plants and using weed free straw mulch for covering bare mineral soil where there is a potential for surface soils erosion. Generally, using selection silviculture on the MCF will not expose extensive areas to surface erosion as the existing forest canopy and natural leaf drop will likely "self-mulch" most areas under the tree canopy.

3. Preventing soil compaction

Soil compaction occurs primarily during timber yarding operations. Areas where soil compaction losses can occur include skid trails, landings, and roads where heavy crawler

tractors and rubber tire equipment are used. Soil compaction results in increased surface runoff by decreasing the infiltration rate. Heavily compacted soil may also be difficult to revegetate. Soil compaction potential increases with the size of the logging machinery and when skidding on wet or saturated soil. Soil compaction can be limited by reusing existing skid trails; limiting the ground pressure of the logging equipment and avoiding the use of heavy equipment when soils are saturated, and limiting the ground pressure of logging equipment.

4. Preventing growing space loss

Loss of growing space occurs when forest areas are converted to other uses or rendered incapable of growing trees through site degradation. Areas converted to non-timber growing acres on the MCF are limited to road rights-of-way, trailhead parking, and logging landings.

Growing space loss can be minimized by reusing existing landings and skid trails, limiting landing size, and decommissioning existing roads that are not needed for future management. Due to the desire for keeping landings as small as possible to prevent growing space loss, front end log loaders are not practical in MCF timber harvest operations. Boom type hydrologic shovel loaders can operate on smaller landing footprints, making them the desirable log loader type.

Resource values of native habitat communities should be restored, maintained, or enhanced to promote natural diversity and stability. Measures to achieve this goal include snag recruitment and retention, preservation of appropriate logs and other wood, debris maintenance of natural ponds and springs, and protection of riparian zones for use as movement corridors for wildlife.

Northern Spotted Owl Conservation Strategy

Northern spotted owls (NSO) have been federally listed as a Threatened species since 1990. Northern spotted owls are long-lived, medium sized forest owls, which often spend their entire adult life in one territory. Nesting sites are monitored and protected according to California Board of Forestry Rules and the federal Endangered Species Act (ESA). The NSO is also a state listed species.

Forest management objectives for northern spotted owls on the MCF are designed to maintain or increase the habitat for this species through forest management practices that enhance nesting/roosting opportunities and availability of a suitable prey base.

Proposed timber harvests containing suitable NSO nesting or roosting habitat must be surveyed for at least two years before operations, to determine the presence or absence of NSO's. Surveys must follow established protocols endorsed by the responsible state or federal agency.

The list of conservation measures below includes activities that are specific to various resources including trees, large woody debris, plant species, and soils; but any improvement to forest health and integrity can have radiating effects to the entire ecosystem.

It is an important goal of this plan to provide high quality wildlife habitat, particularly for species associated with undisturbed riparian areas and late seral forest conditions. This is consistent with the silvicultural goals of creating a mature uneven-aged forest with a canopy of large Douglas-fir while

maintaining the hardwood component. The changes in forest composition that will result from implementing the selection system will favor species typical of uneven aged, mid to late seral, mixed conifer forests.

The species which have received the most attention recently due to their declining populations are the northern spotted owl, marbled murrelet, and anadromous fish in general. There are certainly other terrestrial and aquatic species as well which have suffered more quietly from a reduction in habitat. Some of the elements to consider when assessing the habitat value for these species include: the presence of snags, dens, and nest trees; levels of large woody debris in the forest and in creek zones; the amount of sediment input to streams; the size of pools and riffles for fish spawning and rearing; and water temperature in fish bearing streams and tributaries.

The intention of management is to mitigate the impacts of past logging by rehabilitating and improving habitat opportunities for native wildlife whenever possible. Even though most of the species that utilize the land either now or in the future will never be seen or measured, that does not mean they are not there. It is not practical to carry out species specific surveys in most cases, but by implementing management which retains important habitat features and protects sensitive areas such as stream zones, it is assumed that the needs of most wildlife species will be met.

To achieve these goals the following management practices should be used:

- Retain all snags unless marked as a hazard by the RPF or their designee.
- Mark Legacy or Wildlife trees for snag recruitment and to eventually become downed woody debris.
- Existing downed logs and cull logs produced during timber operations should be left in the woods for coarse woody debris recruitment wherever possible, except when utilized for firewood or building. Some fuel modification may be necessary to reduce fire hazard.
- All logs in stream zones must be retained. Management will provide for a continuous supply of coniferous coarse woody material to improve, maintain and restore vital stream functions, including salmonid habitat structure and bank stability. Near-stream vegetation in tributaries should be maintained with a canopy above 80% at all times in order to safeguard against water temperature effects.
- No operation of heavy equipment within any stream zones except at prepared truck or tractor road crossings, in order to further safeguard against sediment and mass wasting effects on aquatic habitat.
- Log and rock hauling and skidding operations should cease when turbid water is flowing across the road surface or in a roadside ditch which has the ability to enter a watercourse.
- Rocked watercourse crossings whenever possible.
- When it comes to determining which wildlife species actually use the property, landowner observation can play an important role. Keeping records of any animal sightings along with when and where seen can prove to be invaluable in the future. Even if their identity is uncertain, a description can help with later analysis.
- For more general wildlife information, there are a number of resources available to find out whether any species listed as Threatened or Endangered or as a Species of Special Concern, might be found in the plan vicinity. However, they are usually only

as specific as the USGS 7.5' minute quadrangle. Updated plant, animal, and communities' lists can be obtained from the CDFW website. CDFW also maintains the CNDDDB to record location specific sightings of listed species.

Further analysis of the potential impacts to significant wildlife species will be required when a harvest plan is developed. This will include surveying for northern spotted owls and possibly other species as well.

The Northern Region field office of the California Department of Fish and Wildlife can be reached at (707) 445-6493.

The primary sources for information on the status of sensitive plant species and habitats are the CNPS and CDFW. The CNPS Inventory of Rare and Endangered Plants of California is a comprehensive list with five categories that are summarized below. Plants on lists 1A, 1B, and 2 are considered sensitive species as described in the California Environmental Quality Act (14 Cal. Code Reg. §15380) and are therefore the focus of this report.

- 1A: Plants presumed extinct in California
- 1B: Plants rare, threatened, or endangered in California and elsewhere
- 2: Plants rare, threatened, or endangered in California but more common elsewhere
- 3: Plants about which we need more information - a review list
- 4: Plants of limited distribution – a watch list

CDFW has a similar list of Special Vascular Plants, Bryophytes, and Lichens published by the CDFW CNDDDB. The Special Plants List includes the CNPS Inventory, as well as species considered sensitive by other governmental agencies (e.g., Bureau of Land Management, U.S. Fish and Wildlife Service, and U.S. Forest Service). In addition, CNDDDB recognizes certain habitats as sensitive (CDFW 2001).

The ranking system used by CDFW differs slightly from that used by CNPS. CDFW gives species a global (G) and a state (S) rank, each of which are divided into five categories. The five categories range from 1-5, where 1 is most threatened and 5 is not threatened at all. The state rank is further divided into three subcategories that indicate the level of threat to the known occurrences: 1 = very threatened, 2 = threatened, 3 = not threatened.

The ranking system used by CDFW is summarized below.

1. Less than 6 viable occurrences OR less than 1,000 individuals OR less than 2,000 acres
2. 6-20 occurrences OR 1,000-3,000 individuals OR 2,000-10,000 acres
3. 21-100 occurrences OR 3,000-10,000 individuals OR 10,000- 50,000 acres
4. Apparently secure, but there is some threat, or somewhat narrow habitat
5. Demonstrably secure to ineradicable

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 locations of these values and what they can do to protect them. Landowners also need to know that 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. The landowner must be made aware that any future ground practices to implement this plan using public entity

reimbursement funds requires a signed CAL FIRE California Forest Improvement Program (CFIP) Environmental Checklist (CEQA) or an NRCS CPA- 52 (NEPA) Checklist. Along with this checklist a process of “discovery” or survey for unknown values along with a discussion of possible mitigations is required.

Invasive Species and Pests

Pests

Every forest ecosystem has biological agents (animals, insects, and diseases) and physical forces (fire, wind, snow, and ice) which are destructive to living vegetation, but which are integral to the functioning of that ecosystem. These agents become a “problem” only when they adversely affect vegetation which is of particular value to the landowner or society. While an endemic level of insects and disease in a forest is natural, if these levels become epidemic, loss of timber value and fire hazard may result. In a forest being managed to meet landowner’s goals, human intervention is often called for to improve productivity or protect the investment.

Forested areas naturally harbor a baseline level of disease and pests. Several insects are found on redwood but none cause significant damage. These include a flatheaded twig borer and girdler (*Anthaxia aeneogaster*), two redwood bark beetles (*Phloeosinus sequoiae* and *P. cristatus*), and the sequoia pitch moth (*Vespamima sequoiae*).

Animal Damage

Bear damage presents the most significant pest issue on the MCF. It mainly affects redwood but also Douglas fir and grand fir to a lesser degree. Thin, young, even aged stands can induce bear damage by releasing trees to grow faster as bears tend to favor fast growing redwood cambium layers. Successful mitigation strategies include lighter thinning, leaving higher densities of redwood in anticipation of higher damage rates, and leaving unthinned buffers adjacent to roads and other paths travelled by bears.

The MCF currently does not have any urgent significant pest issues that need to be addressed. The following guidelines can help minimize future pest issues:

- Know when you are in an infested area.
- Do not transport infected or contaminated material to areas that are free of the disease.
- When cutting or pruning a diseased tree, clean tools with a disinfectant before using them on uninfected trees.
- If you are outside of the Zone of Infestation, contact CAL FIRE or the County Agricultural Commissioner’s office to report trees you suspect might have pitch canker.
- Make sure that contractors and co-workers are aware of these guidelines.
- Reducing competition through stocking control such as pre-commercial thinning.
- Prevent fire and logging damage to trees.
- Use of local genetics in all reforestation and re-vegetation efforts.

By managing healthy and resilient forests, insects and diseases can be minimized. Damaged or poor condition trees should be removed during silvicultural treatments.

If insects or disease do become a significant problem, specific measures will be taken. Infestation zones may be cut to remove epidemic levels of pathogens. Chemical insecticides and herbicides will not be used in conformance with the desires of the landowner. Broadly accepted biological controls may be utilized depending on the intensity and threat of any outbreak. The best preventative treatment for the aforementioned insect and disease problems is to maintain a healthy, vigorous stand through timely thinning and harvesting. A healthy tree is less likely to be infested with insects or disease, or to succumb to these destructive agents if infested, than an unhealthy tree. It is expected that through the management actions prescribed in this plan, a healthier, more vigorous forest will develop, and hence be more resistant to pest outbreaks

Sudden Oak Death

SOD., as it is commonly known, is known to occur in Humboldt County, and this epidemic is serious enough to warrant a special section of this plan. An extensive amount of information is available and updated regularly on the Animal and Plant Health Inspection Service (APHIS) website, which is the source of most the information presented here.

There is currently a dramatic and sudden dieback of tanoaks, coast live oak, and black oak trees in several areas of coastal California with tanoak being the most affected. Since 1995, trees from these species have been reported dying in large numbers in several coastal counties. The extent of the problem is not fully known, and the problem is expected to become more extensive in upcoming years, affecting urban and wildland tanoak, coast live, black oak, as well as numerous shrub species. Such a massive dieback of tanoaks and other oaks has never been reported in California and, if it continues, there are going to be several environmental changes: (a) the loss of these highly valued trees from gardens and forests, (b) alterations to forest ecology, with unknown and possibly dramatic implications for wildlife habitat and food chain provision, and (c) serious fire hazard risk from the resulting buildup of dry fuel.

Pathologists have isolated an important causal agent - a new species of *Phytophthora* - and beetles, other fungi, and weather may be additional factors. *Phytophthora ramorum* is a fungus that appears to enter through the bark on tree trunks and limbs, possibly after they are splashed there by raindrops. Once the trees have gone through the progressive stages of the symptoms, their vigor rapidly declines and they become vulnerable to secondary insect pests such as bark and ambrosia beetles. The property is in an area that currently contains the following SOD host species:

Coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), bay laurel (*Umbellularia californica*), rhododendron (*Rhododendron* sp.), huckleberry (*Vaccinium ovatum*), bigleaf maple (*Acer macrophyllum*), rhododendron (all *Rhododendron* species), Cascara (*Frangula purshiana*) and western starflower (*Trientalis latifolia*).

The range of integrated pest management tools includes mechanical, physical, biological, cultural and chemical management.

Air and Noise Resources

The landowner has not currently been treating unwanted vegetation. Slash from timber stand improvement work can be chipped and blown over the forest floor, masticated with heavy equipment or piled and burned as permitted by the North Coast Unified Air Quality Management District. The Humboldt County Fire Safe Council periodically has a residential defensible space chipping program available. Smoke from pile burning or prescribed fire should not be a significant issue in the neighborhood due to the low density of dwelling units in this part of the watershed. Harvest planning should include measures for dust abatement due to the fine soils.

Air quality permits will be obtained before burning post-harvest slash piles and burn only during permissive burn days. County burn permits can be purchased or renewed online at www.ncuaqmd.org. The Standard Burn Permit application fee is \$20.00. A Smoke Management Plan (SMP) may be required depending upon the type, size, or location of the burn. SMPs are always required when a burn has the potential to impact nearby sensitive receptors (homes, schools, businesses, roads, etc.). Generally, an SMP is required if the quantity of material to be burned equals or exceeds one acre of material per calendar day. Depending on your burn, you may be required to submit a SMP and obtain authorization prior to burning. The SMP application fee is \$65.00.

Recommendations

Obtain air quality permits before burning post-harvest slash piles and burn only during permissive burn days. County burn permits can be purchased or renewed online at www.ncuaqmd.org. The Standard Burn Permit application fee is \$20.00.

Burning must not cause a smoke nuisance for neighbors. Manage burns to reduce excessive smoke by keeping material dry and burning hot with visible flames. Never allow your burn piles to smolder overnight. Avoid burning when high pressure is forming and a visible inversion is evident. The “Winter Burning” season runs from about November through April 30th of each year.

Cover a portion of the burn pile with plastic or kraft paper (waxed, \$40 per 300’ roll) before the wet season starts. It is possible that a community chipper could be available for fuel reduction. Contact Cybelle Immitt, from Humboldt County’s Fire-adapted Landscapes and Safe Homes (FLASH) program for current information at cimmitt@co.humboldt.ca.us, 707-267-9542. Chipping is more expensive than burning but releases less CO₂ and causes less air resource impacts.

The assessment area for noise and air quality includes the residential and public facility zones on the forest perimeter. Management of the forest would involve use of chainsaws and large and small construction equipment that would create minor and temporary increases in ambient noise levels in the project vicinity during timber harvesting, and the installation and maintenance of projects including roads, trails, shaded fuel breaks, stream restoration, and invasive plant removals. No area would be subject to excessive noise levels for an extended period of time. A special zone can be established along the urban interface within the MCF where group selection openings will not occur. The single tree selection zone along the urban interface will help filter noise and dust. To maintain air quality, dust abatement will be used on haul roads and landings as needed.

Climate Considerations and Carbon Sequestration

There are a number of reasons that the MCF is not likely to qualify any time soon as an Improved Forest Management project under the California Air Resources Board's Compliance Offset Protocol for US Forest Projects.

First and foremost, under the current Improved Forest Management project requirements, the MCF is not considered large enough to be a viable project for the carbon market. This is due to the economies of scale required for carbon projects, which require long term expenses such as verification, re-inventories, and modeling and filing of annual monitoring reports. If the carbon registration protocols change in the future, a property the size of the MCF could possibly be a viable project under "aggregation", meaning it could be aggregated with other smaller projects to create a large enough project to be financially viable for either a compliance market or voluntary carbon market. Second, and equally important, the MCF carbon stocks are significantly under baseline, which means any carbon being sequestered today is not additional and instead is going into building stocks on the forest. Given the location of the Community Forest in the ARB-designated Northern California Coast Super Section and Redwood, Douglas fir Mixed Conifer Assessment Area, the MCF would need an average stocking, outside of stream zones, of around 27.5 MBF/acres just to meet baseline. Working against the MCF is the fact that the Redwood, Douglas-fir, Mixed Conifer assessment area has the highest baseline carbon stocking of any area in the US.

None of this is to say that the MCF is not sequestering carbon, it is; likely in the range of 4-7 tonnes (metric ton) of CO₂/acre – a value that can be quantified during future forest inventories to ensure that carbon stocks are accounted for in estimates of growth and yield. Currently the value of a tonne of carbon sequestered in a project compliant with the ARB's US Protocol was around \$25/ tonne as of May 2025.

Monitoring and Adaptive Management

Monitoring provides information to help determine if the Community Forest management activities are meeting the FSP 's objectives and are adhering to NTMP and conservation easement requirements as well as responding to concerns from the public, adjacent landowners, and other agencies.

Monitoring is a process used to evaluate progress toward goals listed in the FSP for the MCF. Adaptive management is a process to implement management strategies when and if analysis of monitoring results indicate that resource conditions begin to deviate from the desired trajectory and condition. This section describes the monitoring and adaptive management approach that will be used on MCF in the implementation of this FMP as well as what could be expected with a future NTMP.

Adaptive management is one approach for dealing with uncertainty. It requires clear goals, an understanding of alternatives, observation and monitoring, and the ability to adapt management decisions to new information. It is a critically important tool when decisions have to be made in uncertain circumstances. Much of forest management is experimental and dynamic. This requires revisiting actions and changing course—to adapt—when circumstances warrant. There are many definitions in the literature on adaptive management, but a common theme shared by them all is that adaptive management is a learning-based process. Through the monitoring process, determinations may be made as to whether the FMP and or NTMP need to be amended or management practices or activities need to be redesigned.

A monitoring plan will be designed to generate information that is useful to the forest managers to help them understand the outcomes of their management activities as implemented. Did the prescribed forestry treatment have the intended short-term results? If not, what are the possible reasons? The monitoring plan should be designed to keep the public informed as to the effects of forest management activities and serve as a good example of model forestry and adaptive management for other landowners and practitioners of forestry and silviculture in the region.

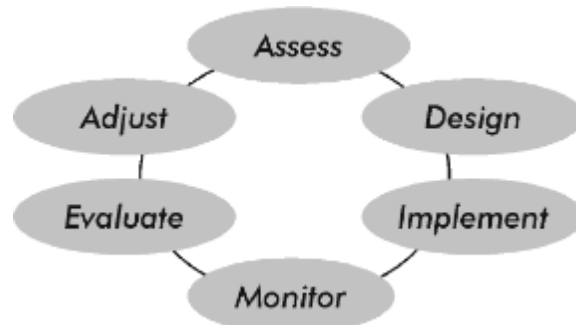


Figure 17. The Adaptive Management Cycle (Murray and Marmorek 2003)

Family Legacy

This section is not pertinent to this public forest.

Livestock

There are no plans for livestock use on the MCF. The forest type and canopy density results in very little livestock forage value. Prescribed herbivory could be a tool for reducing wildfire fuel loads especially near the residential urban interface. Herbivory is a historic, natural way of removing biomass and can yield a quality protein product for commercial benefit. Herbivores are essentially a “biological masticator” that can reproduce themselves and turn unwanted biomass into a consumable product. In addition to fire prevention benefits, carefully managed grazing can provide important environmental benefits such as increased soil organic matter, control of invasive species, and improved plant and wildlife habitat.

Prescribed herbivory could be used when the following concerns arise:

- Air quality, when compared to the use of prescribed fire.
- Noise, when compared to mechanical and some manual treatments.
- Proximity to structures, when compared to risks of using prescribed fire or mechanical treatments.
- Steep slopes, when compared to prescribed fire, manual, or mechanical treatments.
- Soil compaction and surface disturbance, when compared to mechanical treatments.
- Noxious weed control, when compared to manual or mechanical treatments.

Vegetation Unit Descriptions

Currently the MCF is described as one management unit as the vegetation types, geology, and timber site class are similar throughout. For the purposes of this plan, it has been divided into three management units.

North Unit: Area north of Widow White Creek: This unit borders Murray Road and contains all of the steeper (cable yarding) ground in the forest.
Acres: 128 ac

Middle Unit: This unit is the area south of Widow White Creek and North of Mill Creek. Acres: 292 ac

South Unit: This area is south of Mill Creek. Acres: 180 ac

CFIP Project Description

Table 16. Proposed CFIP Budget



STATE OF CALIFORNIA, NATURAL RESOURCES AGENCY
 DEPARTMENT OF FORESTRY AND FIRE PROTECTION
CFIP Project Budget
 RM-8 (REV. 12/2022)

CFIP Project Budget

Grantee:	MCS D				
CFIP Project Number:	25-CNR-HUM-01			8GG24322	
Cost share rate :	90%				

Practice	Rating	Acreage	Cost Per Acre	Total Estimated Practice Cost	Cost Share	Enter Advance Amount
Management Plan		0		\$ 9,810.00	\$ 8,829.00	\$ -
Mini-Management Plan		0			\$ -	\$ -
Arch Addendum		0		\$ 2,574.00	\$ 2,316.60	\$ -
Other Plan Addendum		0			\$ -	\$ -
EFMP Tier 1		0			\$ -	\$ -
EFMP Tier 2		0			\$ -	\$ -
RPF Supervision	First 20 ac.	20	\$ 281	\$ 5,620.00	\$ 5,058.00	\$ -
RPF Supervision	Remainder	89	\$ 94	\$ 8,366.00	\$ 7,529.40	\$ -
Planting:				90		
Site Preparation Herbicide	Light	0		\$ -	\$ -	\$ -
Site Preparation Herbicide	Moderate	0		\$ -	\$ -	\$ -
Site Preparation Herbicide	Heavy	0		\$ -	\$ -	\$ -
Site Preparation Mechanical	Light	0		\$ -	\$ -	\$ -
Site Preparation Mechanical	Moderate	27	\$ 1,008	\$ 27,216.00	\$ 24,494.40	\$ -
Site Preparation Mechanical	Heavy				\$ -	\$ -
Substantially Damaged Site	N/A			\$ -	\$ -	\$ -
Trees & Planting	Light			\$ -	\$ -	\$ -
Trees & Planting	Moderate	27	\$ 504	\$ 13,608.00	\$ 12,247.20	\$ -
Trees & Planting	Heavy	0		\$ -	\$ -	\$ -
Tree Shelters		0		\$ -	\$ -	\$ -
Pre-commercial Thinning	Light	0		\$ -	\$ -	\$ -
Pre-commercial Thinning	Moderate			\$ -	\$ -	\$ -
Pre-commercial Thinning	Heavy	83	\$ 1,340	\$ 111,220.00	\$ 100,098.00	\$ -
Release:						
Mechanical	Light	0		\$ -	\$ -	\$ -
Mechanical	Moderate			\$ -	\$ -	\$ -
Mechanical	Heavy			\$ -	\$ -	\$ -
Other	Light	0		\$ -	\$ -	\$ -
Other	Moderate	0		\$ -	\$ -	\$ -
Other	Heavy	0		\$ -	\$ -	\$ -
Pruning	50 TPA	0		\$ -	\$ -	\$ -
Pruning	100 TPA	19	\$ 421	\$ 7,999.00	\$ 7,199.10	\$ -
Pruning	150 TPA	63	\$ 561	\$ 35,343.00	\$ 31,808.70	\$ -
Follow-Up Herbicide	Light	0		\$ -	\$ -	\$ -
Follow-up Herbicide	Moderate	0		\$ -	\$ -	\$ -
Follow-up Herbicide	Heavy	0		\$ -	\$ -	\$ -
Follow-up (mechanical or handwork)	Light	0		\$ -	\$ -	\$ -
Follow-up (mechanical or handwork)	Moderate	35	\$ 1,008	\$ 35,280.00	\$ 31,752.00	\$ -
Follow-up (mechanical or handwork)	Heavy	0		\$ -	\$ -	\$ -
Improvement		0			\$ -	\$ -
				\$ 257,126.00	\$ 231,332.40	\$ -
					Box A	Box B
Maximum Reimbursement:				\$ 231,332.40	(Box A)	
Total Advance Requested:				\$ 90,000.00	(Box B)	

Description of the CFIP Practices to be carried out in 2025-2026

The project involves the following:

Pre-commercial thinning: 83 acres Pruning: 82 acres

Site preparation: 27 acres Tree planting: 27 acres

Follow-up treatment (mechanical or handwork) : 35 acres Archeological survey: 109 acres.

Pre-treatment Stand Description Road Edge Units

Unit 2-1 and 2-4 are on the property lines and are mixed stands with young trees and scattered large trees starting at the north end of Lime Avenue and Holly Drive. Tpa are approximately 400-500. Understory is fairly heavy huckleberry. Young stands regenerated from even aged management and are composed of 8 12, 16 and 23 year old stands. Thin 44 acres along existing roads 100' from road edge.

Objective: Reduce the number of stems of small commercial tree species to a predetermined spacing to improve growth and/or to reduce fuel loads. Release involves removal of non-commercial tree species, shrubs/brush or grasses that are competing with previously planted or existing commercial tree species.

Treatment Rate: Heavy

Explanation and justification for rate chosen: Tree density along the main roadways is relatively high and mechanical treatment is proposed. These roads serve as recreational use trails so creating high visibility in the forest edge understory provides added benefit for recreational users.

Labor Type: Contractor

If self-labor, explain and justify decision: _____

Method: Mastication Hand

felling Herbicide¹ Other If other

describe:

Field Standards: Unit boundaries will be flagged prior to operations

Unit boundaries will not be flagged because they are delineated by mapped features such as roads, watercourses, and or fence lines.

RPF will meet on-site with contractor prior to operations. RPF will do a sample mark in the thinning units,

Leave Trees will be marked Cut Trees will be marked Contractor Choice

Post-treatment Standards (at least one): 150 trees/ac basal area/ac

17' -20' Tree Spacing Diameter Limit: 9' DBH

Target Species for removal: redwood, Douglas fir, red alder, Sitka spruce

Additional treatment standards: Invasive plants such as pampas grass and scotch broom will also be removed.

- Remove all deformed, injured, diseased, forked, dead, and dying trees unless other considerations would require their retention.
- Remove all suppressed trees and those intermediate and co-dominant trees, which are not to be kept for final crop trees. As a rule, these are the trees whose crowns are below the general crown level.
- Leave the healthy and fully crowned dominants as crop trees. Remove the competitors of the crop trees. This could be a co-dominant or several intermediate or suppressed trees. Remove rough, limby dominant wolf trees and deformed trees when they compete with better quality trees. Remove dead, dying forked, insect damaged, and diseased trees, unless other wildlife diversity considerations would require their retention

Slash Treatment:

- Lopping and scattering of slash to a height less than 30 inches from the ground is the minimum requirement for slash disposal on CFIP projects. The cost of lopping and scattering slash is covered by the thinning/release practices. OR
- See Follow-Up Slash Removal Practice

Follow up mastication of activity generated slash will occur on the RX2-1 to RX2-7 and RX4-1 units that are accessible and located along main seasonal truck roads and along Murray Road and the forest urban interface near Gwin Road. These areas total 35 acres.

Additional Treatment and/or insect/disease recommendations NA

Mitigation Measures:

- See Standard Mitigation Measures Checklist at end

Additional Mitigation Measures: N/A or list addition measures here: _____

¹ All recommendations for the use of pesticides must be by a licensed Agricultural Pest Control Advisor, registered with the County Agricultural Commissioner, in the county where the pesticides will be applied. A CAL FIRE form (RM 30) must be submitted detailing the treatment recommendations.

Practice Pruning

Objective: Cut branches from future conifer crop trees to reduce vertical fuel continuity, improve wood quality, and improve aesthetics.

Treatment Rate: 100 TPA

Explanation and justification for rate chosen: Lower density stands in these two units.

Labor Type: Contractor

If self-labor, explain and justify decision: _____

Target Trees (describe species, size, and desirable characteristics): Leav trees from thinning operations.

Practice Pruning Unit: **RX 2-1 & 2-2** Acres: **19**

Treatment Rate: 150 TPA

Explanation and justification for rate chosen: Higher density stands **Total 63 acres at 150 tpa**

Labor Type: Contractor

If self-labor, explain and justify decision: _____

Target Trees (describe species, size, and desirable characteristics): Conifer leave trees from thinning operations will be pruned.

Method: Prune the branches of conifer trees with a chainsaw and/or pole saw.

Standards:

- Prune all branches of target trees to at least 10 feet above the ground measured from the high side of the slope.
- Ideally, pruned branches should be less than two inches across at the base. Larger branches may need to be undercut to avoid ripping the bark below the ridge.
- All branches shall be pruned just outside the branch collar to avoid leaving branch stubs and to avoid flush cuts too close to the trunk cambium.

If other describe: _____

Field Standards:

- Unit boundaries will be flagged prior to operations.
- Unit boundaries will not be flagged because they are delineated by mapped features such as roads, watercourses, and or fence lines.
- RPF will meet on-site with contractor prior to operations.
- Target Trees will be marked Contractor Choice

Slash Treatment:

- Lopping and scattering of slash to a height less than 30 inches from the ground is the minimum requirement for slash disposal on CFIP projects. The cost of lopping and scattering slash is covered by the thinning/release practices. OR
- See Follow-Up Slash Removal Practice Additional mastication of slash is proposed for the roadside thinning units totaling 35 acres.

Mitigation Measures:

- See Standard Mitigation Measures Checklist at end

Additional Mitigation Measures: N/A or list addition measures here: _____

Practice Follow-up Slash Reduction

Unit:

Objective: Reduce fuel load by treating slash from other forest improvement practices.

Treatment Rate: Moderate

Explanation and justification for rate chosen: follow up mastication of slash generated from thinning/pruning on selected units.

Labor Type: Contractor

If self-labor, explain and justify decision: _____

Method: Mastication

Chipping Pile/burn Other If

other describe: _____

Field Standards:

- Unit boundaries will be flagged prior to operations
- Unit boundaries will not be flagged because they are delineated by mapped features such as roads, watercourses, and or fence lines.
- RPF will meet on-site with contractor prior to operations.

Treatment Standards

Size of material to be treated: 1"-9" dia boles limbs and tops. If pile and burn, what are the maximum pile dimensions: NA Percentage of ground area to be treated: 100 %

Maximum final depth of treated material: <10"

Additional treatment standards: bare mineral soil will be covered with clipped material Additional Treatment and/or insect/disease recommendations NA

Mitigation Measures:

See Standard Mitigation Measures Checklist at end

Additional Mitigation Measures: N/A or list addition measures here: _____

RPF will organize contractor crews, develop project specifications, flag unit boundaries, mark trees as necessary; develop mitigations measures, map treatment areas; calculate net acres treated; order seedlings and assist the MCSD with contractor bid documents.

i. Fill out the RPF Checklist indicating the specific responsibilities the RPF accepts for each proposed practice.

b. Site Preparation -Map, flag boundaries and communicate with contractors in the field the appropriate treatment specs.

i. Method, target, procedures and standards. Also include clearance distances, degree of vegetation treatment/removal, equipment, erosion control, hazard reduction, locations, restrictions, and timing.

Site preparations shall include mechanical brush clearing (use of masticator and or power weed wacker machines in order to create suitable planting spots. This is an interplant or areas that have some existing conifers; they will be protected and flagged if possible to make sure that they are not impacted by site prep operations. In areas of heavy grass or sod, hand scalping plating spots 18" x 18" will be required. Timing for the mechanical site prep work will be the fall season prior to planting. Hand scalping planting spots will be concurrent with planting using the side of the hoedad planting tool.

ii. Additional treatments such as disking/ripping along contours, broadcast burning, burning of piles/windrows. NA

iii. Mitigation measures. No heavy equipment will work within a WLPZ.

Planting:

i. Approximate spacing, method of planting, number of trees per acre, planting standards, seed zone(s), species, and timing.

Reforestation efforts will focus on planting primarily redwood and Douglas fir may also be planted. It is preferable to plant the largest available seedling such as s 2.0 bare root or two year old containerized tree. The Tsemeta Nursery in Hoopa, CA stated that they can supply 3500 seedlings for this project for late 2025 early 2026. Reforestation will require mechanical site preparation in areas of dense brush and for areas with heavy grass cover, planting spots may be "scalped" with a hoedad or fire tool to 18'x18" in some areas. Tree planting will involve planting 200-350 redwood seedlings per acre depending upon the amount of existing seedlings present. Spacing will generally be 12'x12'. The timing of planting will be November- January. Planting success should be relatively high in this location.

ii. Mitigation measures. All planting boxes, plastic bags etc. will be removed from the forest by the contractor. ATV access will be required to units during periods of saturated soil conditions.

- i. Type, purpose, method, standards, and timing.
- ii. For follow-up slash treatment, explain and justify the size of material to be treated, the percent of area to be treated, and the final depth of treated material. Site prep slash material will be masticated or chipped on site, when hand crews are used, brush material will be cut and lopped to a depth of < 18".
- iii. Mitigation measures. NA

Pre-commercial Thinning:

- a. Objective, method, and standards. Include diameter limit, disease prevention needs, spacing standards or basal area, slash treatment, timing, and method.
- Forest fuels reduction consists of treating understory trees and brush with the goals of reducing fire hazards, improving tree growth, stabilizing carbon in retained trees, and increasing forest resilience to high intensity wildfire disturbances. Forest thinning activities can be manual or mechanical and must be designed to change stand structure to: 1) concentrate carbon storage in widely-spaced and larger trees that are more resilient to wildfire, drought, and pest outbreaks; 2) reduce the likelihood of wildfire transitioning into the forest canopy; and 3) provide co-benefits such as fish and wildlife habitat, increased biodiversity, and wildlife adaptation to climate change. In existing forest stands, thin conifers and hardwoods. Trees <10" DBH will be selected for thinning treatment. Healthy conifers selected for retention that are <10 inches DBH will achieve a 15 - 20 foot spacing from bole to bole and 150-200 trees per acre where feasible. Where stands are composed solely of conifers <10 inches DBH, these stands will be spaced approximately 25 feet apart from bole to bole. After treatment, tree stump heights shall be no more than 12 inches high as measured on the uphill side or 4 inches above natural obstacles (i.e. logs, rocks). Trees with the most desirable phenotypes will be retained, i.e. full crowns, fast growing, and disease-free. Trees preferred for removal will be those exhibiting signs of poor growth or containing disease. Dense shrub cover will be broken up for purposes of removing fuel continuity.

Chip or masticate adjacent (within 100') to roads, landings, and other accessible portions of the treatment areas. Equipment includes power chippers, whereby material would be hand fed and chips would be blown onto the ground. Mastication involves reducing the size of residual down and dead material by grinding, shredding, or chopping material and leaving it on-site as mulch. Concurrent to thinning operations, invasive plants such as scotch broom, Monterrey pine, and cotoneaster will be cut and chopped or masticated.

Masticators are typically low-ground pressure tracked vehicles, such as a skid steer with a forward-mounted drum-like attachment with external masticating teeth used to cut and shred woody material and live vegetation. Excavators may also be employed, utilizing a smaller masticating head (drum or rotary), which is attached to the boom. Dead standing vegetation generally less than 10-inch DBH may be masticated to reduce ladder fuel and achieve desired tree spacing. Similarly, mastication may be applied to treat re-sprouting brush, regrowth, and fallen debris to maintain desired conditions.

- b. Additional treatment(s) recommended. In areas not accessible for chippers or masticators, slash will be lopped and scattered to a depth < 18" to hasten decomposition.

- c. Mitigation measures. No heavy equipment within WLPZ. No noise generating activity near residential areas before 7AM or after 5PM or on weekends and government recognized holidays. The project is within an area that the Board of Forestry and Fire Protection has declared a Zone of Infestation or Infection for sudden oak death (SOD) pursuant to Public Resources Code § 4716. SOD host material (Douglas-fir (*Pseudotsuga menziesii*), huckleberry (*Vaccinium ovatum*), big leaf maple (*Acer macrophyllum*)), will not be removed from the regulated area unless appropriate state and federal permits are obtained. Downed woody debris in strategic locations to maintain forest floor complexity while reducing fuel connectivity.

Pruning:

Objective and method. The objective of pruning is to reduce ladder fuels in forested areas and improve aesthetics for recreational users by providing the ability to see into dense forest stands. Most areas adjacent to roads that are used as trails are very dense and visitors cannot see more than a foot off the road/trail. Masticator or hand crews with chain saws and pole saws can be used to limb lower branches of conifers and hardwoods to ten feet. Masticate, chip, or lop and scatter material depending upon access for chippers and masticator equipment. Pruning will reduce ladder fuels and improve wood quality. Prune residual trees by lopping low branches up to a minimum height of 10' (above the level of slash on the uphill side of the tree) but never remove more than 30 percent of the crown. Pruned material will be hand piled or lopped and scattered.

Number of trees per acre to be prune -150- 300 TPA

Height to which trees will be pruned – Ten feet

Slash treatment. Pruned material will be chipped, masticated, or lopped and scattered.

Mitigation measures. No heavy equipment within watercourse protection zone buffers. No noise generating activity near residential areas before 7AM or after 5PM or on weekends and federally recognized holidays.

Manual Treatment

Manual treatments may utilize chainsaws, loppers, pruners, or other hand-operated equipment to cut, or prune woody species. An integrated pest management approach, using manual hand treatments to remove invasive species such as, but not limited to, Canada thistle (*Cirsium arvense*), Dyers woad (*Isatis tinctoria*), and other non-native species occurring in the project area. Manual treatments include the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous or woody species. Manual activities may operate on slopes greater than 40% as needed and will adhere to the following specifications.

Selection of Cut Trees and Treatment of Slash

In existing forest stands, live conifers <10" DBH will be selected for treatment. Healthy conifers selected for retention that are <10 inches DBH will achieve a 15 - 20 foot spacing from bole to bole and 100-200 trees per acre where feasible. Where stands are composed solely of conifers <10 inches DBH, these stands will be spaced approximately 20 feet apart from bole to bole. Thinning conifers >10" DBH that are not shipped to a sawmill will be chipped, masticated, lopped and scattered to

a depth of less than 18" or piled/ tarped and burned. Downed logs should have good contact with the soil to facilitate decomposition. After treatment, tree stump heights shall be no more than 6 inches high as measured on the uphill side or density 4 inches above natural obstacles (i.e. logs, rocks).

Pruning

Remaining trees will be pruned to a height of 10 feet but never remove more than 30 percent of the crown. Pruned material will be hand piled or lopped and scattered

Trees, Shrubs and other Plants to Be Left Untreated

To maintain habitat function for special-status wildlife, the following features would be retained within all treatment areas:

- Downed woody debris in strategic locations to maintain forest floor complexity while reducing fuel connectivity;
- Any activities conducted within a riparian corridor will be conducted to avoid alteration to a bed, channel, or bank of a waterway and all debris, including sawdust, chips, or other vegetative material, will be prevented from entering the bed, channel, or bank of a waterway.
- In forest habitats determined to be occupied by northern spotted owls through implementation of surveys, treatments would be designed to reduce canopy cover by no more than 20 percent from existing conditions, and a minimum of 60 percent canopy cover would be retained.
- Retain large snags up to two per acre beyond 300 feet from homes (with a preference for the largest snags that exhibit the form and decay characteristics favored by wildlife) unless the snags pose a hazard to implementation or personnel.

Mechanical Treatment

Mechanical treatments are designed to cut, uproot, crush/compact, or chop target vegetation.

Masticators are typically low-ground pressure tracked vehicles, such as a skid steer with a forward-mounted drum-like attachment with external masticating teeth used to cut and shred woody material and live vegetation. Excavators may also be employed, utilizing a smaller masticating head (drum or rotary), which attaches to the boom. Limited mastication within some treatment units would occur on slopes less than ~40 percent and where previous salvage logging has occurred. Cutting brush and small trees within road prisms cut and fill slopes greater than 35 percent may be accomplished by an excavator masticator (while positioned in the road) in lieu of cutting and chipping. Dead standing vegetation generally less than 12-inch DBH may be masticated to reduce ladder fuel and achieve desired tree spacing. Similarly, mastication may be applied to treat re-sprouting brush, regrowth, and fallen debris to maintain desired conditions.

Standard Mitigations for Site Preparation and Follow-up (Delete or leave unchecked items)

- No heavy equipment on excessively saturated soils.

- ☒ No heavy equipment within any watercourse equipment exclusion zone, providing a buffer strip. The EEZ will be flagged prior to operations.
- ☒ No equipment will be serviced next to streams, lakes, wet meadows, marshes, or other wet areas.
- ☒ All areas below the stream and lake transition line of Class I, II and III watercourses as described in the Forest Practice Rules will be kept free of slash and debris, except as intended for woody debris enhancement for fisheries and wildlife.
- ☒ Accidental deposits in watercourses will be immediately removed. Removal will be consistent with the requirements found in California's Forest Practice Rules.
- ☒ Brush removed with bulldozers will be piled in windrows along the contour of the land on all slopes.
- ☒ If mechanical equipment is used for brush manipulation or site preparation, steep slopes and extremely thin soils will be avoided.
- ☒ Where large stands of brush are cleared, impacts will be mitigated by using small or irregular patches where appropriate
- ☒ No heavy equipment will be allowed on potential or active slide areas.
- ☒ Retention of black and white oaks and other mast-producing species will occur.
- ☒ Retain all existing snags over 18"
- ☒ Snags with visible evidence as nesting or roosting sites for rare, endangered, or threatened bird species will be retained.
- ☒ All burning will be done in accordance with local air quality regulations and under burning permits where required. Due to the size of expected piles, a non-standard air quality permit will be required.
- ☒ Direct contamination of water by accidental spills will be avoided by requiring that all mixing, loading and temporary storage on site of materials be done away from any running or ephemeral watercourses. Potential impacts from spills or accidents will be mitigated by requiring in the project description a plan which identifies downstream users (if applicable) who must be notified in the event of substantial contamination of water bodies, how and when they will be notified, and who will be responsible for cleaning up the spill. Spills will be confined, cleaned up and/or excavated, and disposed of according to all applicable laws. General guidelines for spill cleanup will be included in the "Conditions of Pesticide Application". Spills will be cleaned up immediately and toxic materials will be disposed of in accordance with all state, federal and local laws.



Figure 19. Examples of Mechanized Equipment

Fecon FTX 128 Series compact track loader with masticating head attachment (top). Morbark Beaver M15R tracked chipper (bottom).



Figure 20. Example of Mechanized Equipment 2

Link-Belt 145 x 4 excavator with masticating head attachment.

Chipping

Roadside mechanical cutting and chipping of existing surface fuels and slash created from tree felling and yarding. Existing surface fuels, thinning and pruning residue, and cut brush would be pulled to forest roads and chipped into small pieces using a chipper. Chipping residue would be distributed back into the treatment unit, utilized for biomass, or utilized as a cover to reduce the risk of invasive plant establishment at landings and roads.



Figure 21. Examples of hand crews conducting manual piling and chipping

Required Permits and Monitoring

Regulatory Environment

Since there is no current permit to log on the property, the owners would need to decide which permitting path to take, and that decision would also have an effect on net income.

Options include:

- Non-Industrial Timber Management Plan (NTMP)
- Timber Harvest Plan (THP)
- Forest Fire Resilience Exemption, 14 CCR § 1038.3
- 10% Harvesting Dead, Dying, Diseased trees Exemption, 14 CCR § 1038(b)
- Or any other viable options

NTMP

An NTMP and THP take roughly the same amount of time before harvesting can take place (2 years) as botany, and wildlife surveys need to be completed.

NTMP costs for this ownership would be approximately \$100,000-\$150,000 for the plan and \$6,000 to file each NTO (Notice of Timber Operations) which can be done during years of timber harvest activities once the plan has been approved. The cost of the NTO mostly comes from pre-harvest botany and wildlife surveys, as well as harvest layout and

finding loggers (a cost which may be reduced somewhat if the landowners conduct some of the sale administration). NTMPs generally cost more because of the additional surveying and growth and yield modeling required of them compared to a THP. NTMPs are limited to uneven-aged management, which includes single-tree selection, group selection, and commercial thinning silvicultural methods.

The primary reason many ranches and smaller landowners obtain NTMPs is because of the ability to quickly respond to upturns in the timber markets and to have a long-term permit. However, these properties are also usually large enough that they anticipate multiple harvest entries on different areas of their property over time, making the higher initial cost of the NTMP worthwhile compared to filing multiple THPs. When a property is small or understocked and only one or two harvests can be anticipated in the foreseeable future, the advantage of the NTMP is marginal. On the other hand, NTMPs provide maximum flexibility about how much and when to harvest, which aligns well with low intensity periodic timber harvests.

Summary of Regulatory Constraints for NTMPs under the CA Forest Practice Rules

Silviculture

- *Under the Selection silviculture method, trees are removed individually or in small groups sized from one-quarter (0.25) acres to two and one-half (2.5) acres maximum.*
- *On site II and III lands at least seventy-five (75) square feet per acre of conifer basal area shall be retained as a minimum stocking standard.*
- *Not more than 20% of the total area harvested with the selection method under any harvest operation shall be covered by small group clearings.*
- *Within the logging area all snags shall be retained to provide wildlife habitat with the exception of snags for safety reasons.*
 - ***Yarding***
- *Heavy equipment equipped with a blade, shall not operate on skid roads or slopes that are so steep as to require the blade to be used for breaking (Generally <50% slope).*
- *Tractor roads shall be limited in number and width to the minimum necessary for removal of logs.*
- *Heavy equipment shall not operate on Unstable Areas. If such areas are unavoidable, the RPF shall develop specific measures to minimize the effect of operations on slope instability.*
- *Slash and debris from timber operations shall not be bunched adjacent to residual trees required for silvicultural or wildlife purposes or placed in a location where they could discharge into a Class I or II watercourse, or lake.*

- *Where tractor roads are constructed, only those roads shall be used for the skidding of logs to landings.*
- *Desirable residual trees and seedlings will not be damaged or destroyed by tractor operations.*
- *Where water breaks cannot effectively disperse surface runoff, other erosion controls shall be installed as needed.*
 - **Roads**
- *Logging Roads and Landings shall be planned and located within the context of a systematic layout pattern that considers 14 CCR § 923(b), uses existing Logging Roads and Landings where feasible and appropriate, and provides access for fire and resource protection activities.*
- *Logging Roads and Landings shall be planned and located within the context of the following:*
 - *Duplicative roads and total road mileage.*
 - *The number of Logging Road Watercourse crossings.*
 - *Construction and reconstruction near Watercourses, lakes, marshes, wet meadows, and other wet areas.*
 - *Construction and reconstruction across steep areas that lead without flattening to Class I, II, III, or IV Watercourses and lakes.*
 - *Construction and reconstruction on unstable areas or in connected headwall swales.*
 - *Construction and reconstruction near nesting sites of rare, threatened, or endangered bird species.*
 - *Construction and reconstruction near populations of rare, threatened, or endangered plants.*
 - *Ground disturbance and the size of cuts and fills.*
 - *The potential for affecting surface hydrology, including, but not limited to, concentrating or diverting runoff or draining the Logging Road or Landing surface directly into a Watercourse or lake.*
 - *Maintenance needs while being compatible with the Logging Road classification and long-term road usage.*
 - *No Logging Roads or Landings shall be planned for construction (i) within 150 feet of the Class I Watercourse transition line, (ii) within 100 feet of the Class II Watercourse Transition Line on slopes greater than 30%, (iii) within Class I, II, III, or IV Watercourses or lakes, (iv) within a WLPZ, or (v) in marshes, wet meadows, and other wet areas, except at approved watercourse crossings.*

- *No Logging Roads or Landings shall be planned for reconstruction (i) within Class I, II, III, or IV Watercourses or lakes, (ii) within a WLPZ, or (iii) in marshes, wet meadows, and other wet areas, except at approved watercourse crossings.*
- *Logging Roads and Landings shall be planned and located to avoid unstable areas and connected headwall swales. As part of the planning and use of Logging Roads, Landings, and Watercourse crossings in the logging area, the RPF or supervised designee shall: (i) locate and map significant existing and potential erosion sites and (ii) specify feasible treatments to mitigate significant adverse Impacts from the road or Landing. All logging road and landing surfaces shall be adequately drained through the use of logging road and landing surface shaping in combination with the installation of drainage structures or facilities and shall be hydrologically disconnected from watercourses and lakes to the extent feasible.*
- **Watercourses**
 - *The quality and beneficial uses of water shall not be unreasonably degraded by timber operations. During timber operations, the timber operator shall not place, discharge, or dispose of or deposit in such a manner as to permit to pass into the water of this state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, or the quality and beneficial uses of water.*

Timber Harvest Plan (THP)

The timeframe for a THP preparation is two years, minimum and costs for this ownership would depend upon the size of the particular THP project. Generally, a THP would cost between \$50,000-\$80,000 (includes archeology, botany, northern spotted owl surveys, 1600 permits etc.). The permit is valid for up to seven years. If the landowner chooses to harvest 20-30% of the volume using selection, then the limitations in the Forest Practice Rules are unlikely to constrain harvest.

Forest Resilience Exemption 14 CCR § 1038.3

- Up to 500 acres of harvest area is allowed.
- No tree with a DBH greater than 30" can be harvested.
- Within the Coast District, if the preharvest crown canopy of dominants and

codominants is occupied by trees less than fourteen (14) inches in DBH, a minimum of one hundred (100) trees over four (4) inches in DBH shall be retained per acre for Site I, II, and III lands.

- 300-600 feet of road construction is permitted if it is greater than 200 feet from a watercourse.
- Slash and woody debris shall be treated to achieve a maximum post-harvest depth of eighteen (18) inches above the ground except within one hundred fifty (150) feet from any point of an approved and legally permitted structure that complies with the California Standards Building Code per 14 CCR § 1038.3(d)(1).
- All surface fuels within one-hundred-fifty (150) feet of an Approved and Legally Permitted Structure, which could promote the spread of wildfire, shall be chipped, burned, or removed within forty-five (45) days from the start of Timber Operations per 14 CCR § 1038.3(d)(2).
- Vertical spacing shall be achieved by treating dead fuels, excluding dead branches on the trees retained for Stocking, to a minimum clearance distance of eight (8) feet measured from the base of the live crown of the post-harvest dominants and codominants to the top of the dead surface or ladder fuels, whichever is taller per 14 CCR § 1038.3(d)(4).
- To qualify for this exemption the land must be within a moderate, high or very high fire hazard severity zone. The property is within the high fire severity zone, as mapped by CAL FIRE.

This exemption is a viable option for the property, especially in the young dense stands that are near a commercial size class. Typically, 10" DBH denotes a sawlog sized tree that can be harvested and shipped to a sawmill.

The California Forest Practice Rules can be found at:

<https://bof.fire.ca.gov/media/qs5p1yk4/2024-forest-practice-rules-and-act-final.pdf>.

Sale of Timber Products

Sawlogs are expected to be the principal commodity produced on the forest, although there may be an opportunity for incidental firewood sales and biomass for energy markets. Delivered-log timber sales can be conducted on a competitive sealed bid basis. Timber sale agreements would be based upon delivery of a certain quantity of logs to the mill. This is commonly referred to as delivered log price.

Yield tax of 2.9% is calculated based on a formula that accounts for species, total volume, volume per log, logging method, and state-average stumpage values. The MCSD would be paid for net log scale and MCSD, or the log purchasers, are required to pay the Board of Equalization Timber Yield Tax. MCSD falls into Timber Value Area 1 on the Board of Equalization's Harvest Values Schedule, which is published semiannually.

As an alternative to a delivered log type of timber sale, is to sell logs as a "stumpage sale". A stumpage sale is when a log bidder purchases the logs "at the stump" and implements and pays for the logging and log transport.

Within this type of sale, the purchaser hires the logging and trucking firms. The California State Demonstration Forests, Bureau of Land Management, and the US Forest Service typically use the stumpage sale method. Most industrial and non-industrial landowners, including the City of Arcata, use the delivered log timber sale method which allows for more control of the logger and logging operation and timing of the timber harvest activity.

Logging and log delivery would normally be accomplished via a logging contract between the MCSD and a Licensed Timber Operator (LTO or logger) and whose contract is administered by a RPF working under contract with the MCSD. After the MCSD gains sufficient experience, it could easily administer such logging contracts on its own.

The MCSD is prevented from exporting logs per federal Department of Commerce restrictions (15 CFR 792) for raw log exports that affect states and subdivisions of the state that includes counties, cities and special districts.

Monitoring

Proactive and required monitoring for regulatory compliance may be required. Contact CAL FIRE or a RPF for help in this area. Contact NRCS or CDFW for monitoring assistance. Installing a network of permanent Continuous Forest Inventory Plots (CFI) would help monitor forest resources such as growth rates and forest structure over time. Photo point monitoring of the road repair sites including before and after treatment is advisable.

Successful implementation of selection management requires that healthy cohorts of many ages of trees be maintained in a stand at all times. Therefore, natural regeneration of all native conifer species is encouraged and protected. Planted areas may require follow-up, such as hand-release to reduce competition

California Environmental Quality Act (CEQA) and National Environmental Protection 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. There are no CEQA/NEPA requirements for this Management Plan. The CFIP program has a programmatic Environmental Impact Report (EIR) associated with it.

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 will cause ground-disturbance, notification must also be provided to:

- Native American Heritage Commission
- Tribal contacts
- Local Historical Society

For future planning efforts, the plan preparer should summarize, discuss, and show on a map any threatened and/or endangered species that are known to exist. Furthermore, there should be a discussion to inform the landowner about the process of “discovery” or survey for unknown species that have the potential to reside on the property and discuss possible mitigations that should occur if ground disturbing events are prescribed in the future.

PROVIDE A PROJECT NOTIFICATION TO THE FOLLOWING AGENCIES

- Humboldt County Clerk’s Office
- 825 Fifth Street
- Eureka, CA 95525
- 707 445-7593

CA Department of Fish and Wildlife Habitat Conservation Planning
Branch

P.O. Box 944209, Sacramento, CA 94244-2090

HCPB@wildlife.ca.gov

- Northcoast Regional Water Quality Control Board
- <https://www.waterboards.ca.gov/northcoast/>

Helpful Links:

Forest Health

The California Forest Pest Council in partnership with the USDA publishes the annual “California Forest Pest report” that has information about the forest insect and disease problems in all regions of California. For a PDF of the most recent edition, visit: <https://calforestpestcouncil.org>.

Wildlife Habitat

CDFW has an excellent resource pertaining to conservation and management of wildlife at: <https://wildlife.ca.gov/Conservation>

CAL FIRE Forest Stewardship Resources:

<https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/landowner-assistance/forest-stewardship/>

Additional Professional Assistance

CAL FIRE Forestry Assistant Specialist
118 Fortuna Blvd,
Fortuna, CA 95540
(916) 224-8761

California Department of Fish and Wildlife Northern Region Field Office: 619 Second St.,
Eureka, CA 95501 (707) 445-6493

UC Extension Forester 5630 South Broadway
Eureka, CA 95503
707 445-7351

Natural Resource Conservation
Service Eureka Service Center
5630 S Broadway
Eureka, CA 95503
(707) 444-9708

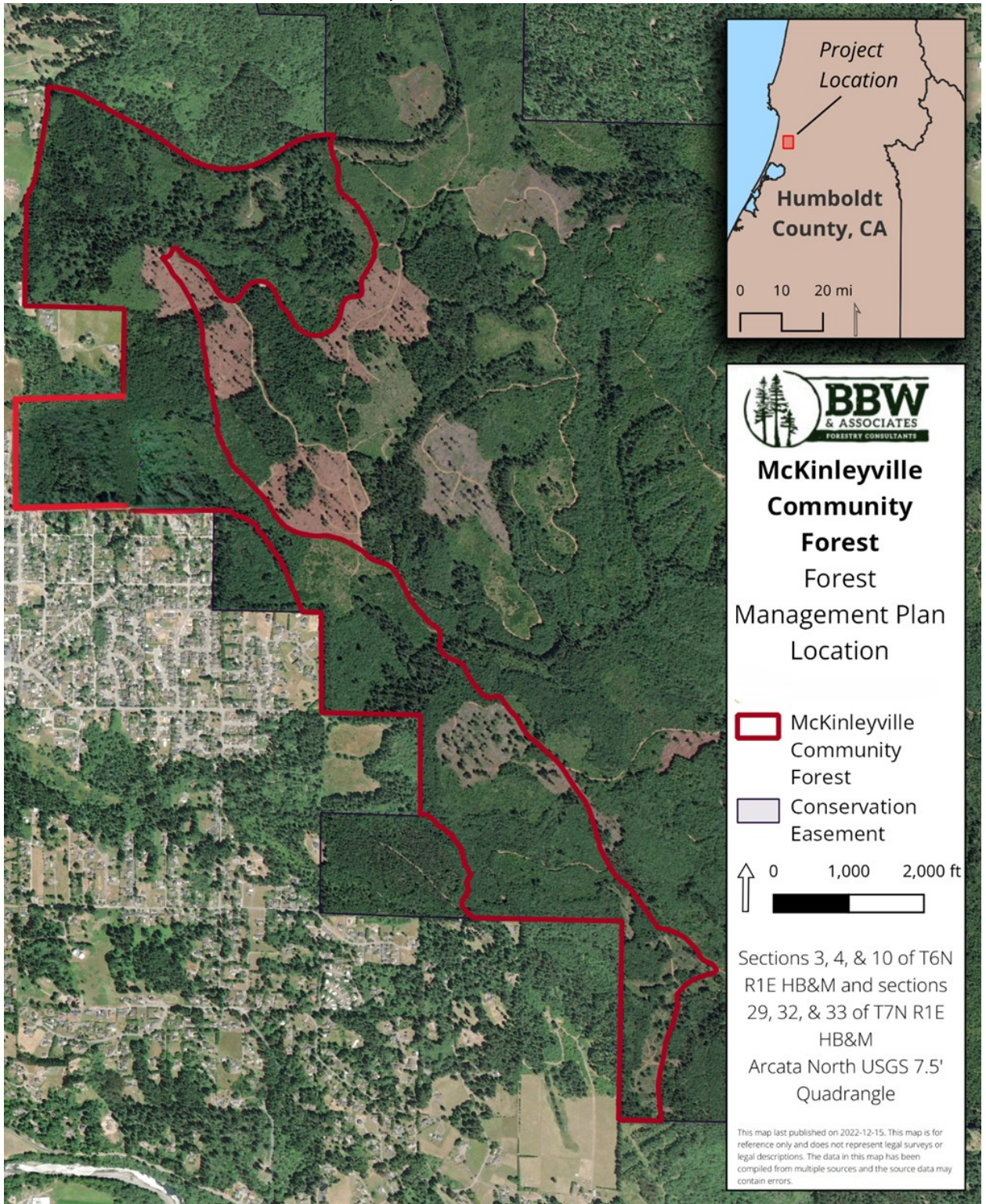
California Invasive Plant Council
1442-A Walnut St. #462 Berkeley, CA 94709

California Department of
Fish and Wildlife Northern
Region Field Office: 619
Second St., Eureka, CA
95501(707) 445-6493

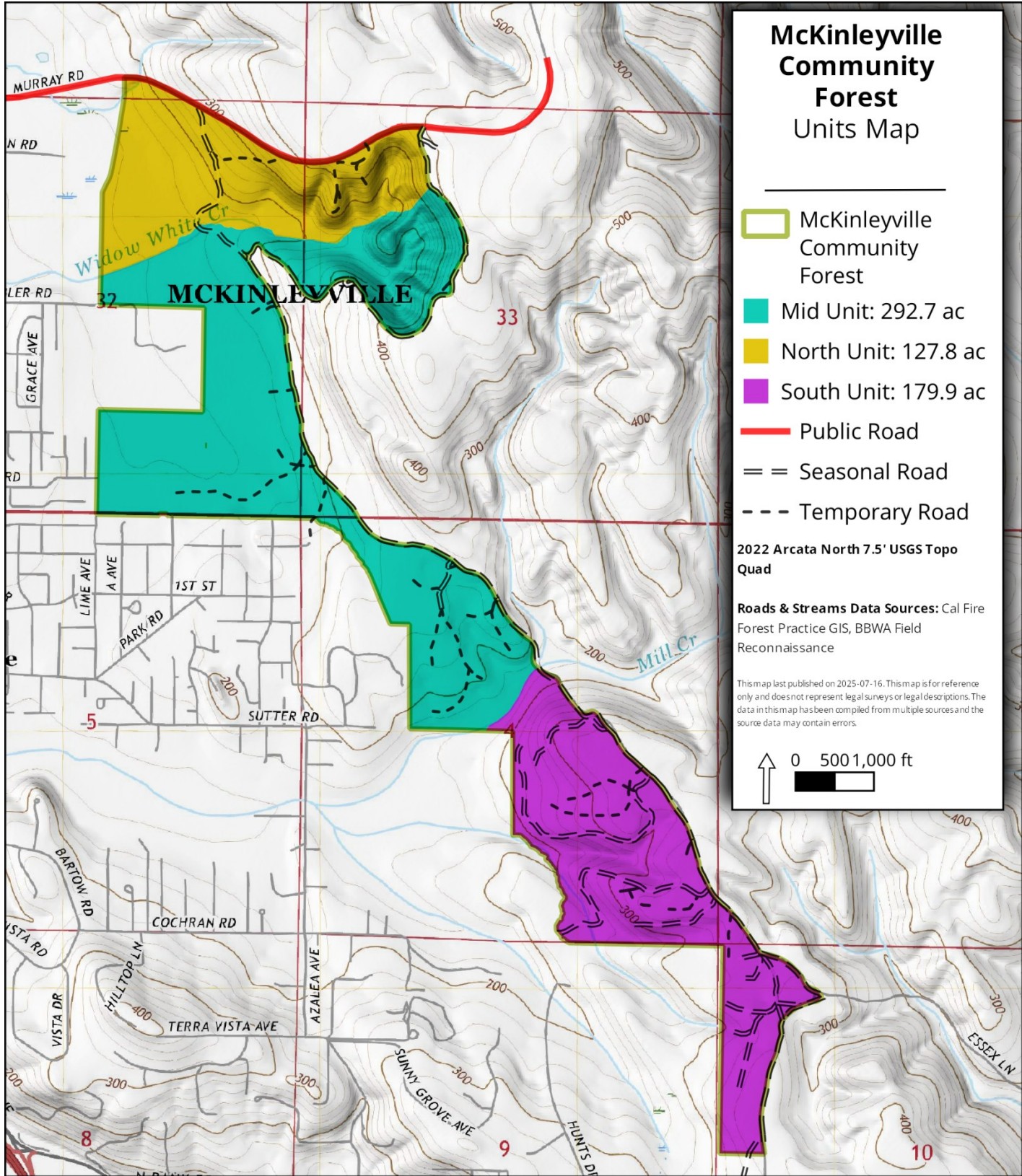
Humboldt Resource
Conservation District 5630
South Broadway
Eureka, CA 95503
jcrd@yahoo.com

Maps

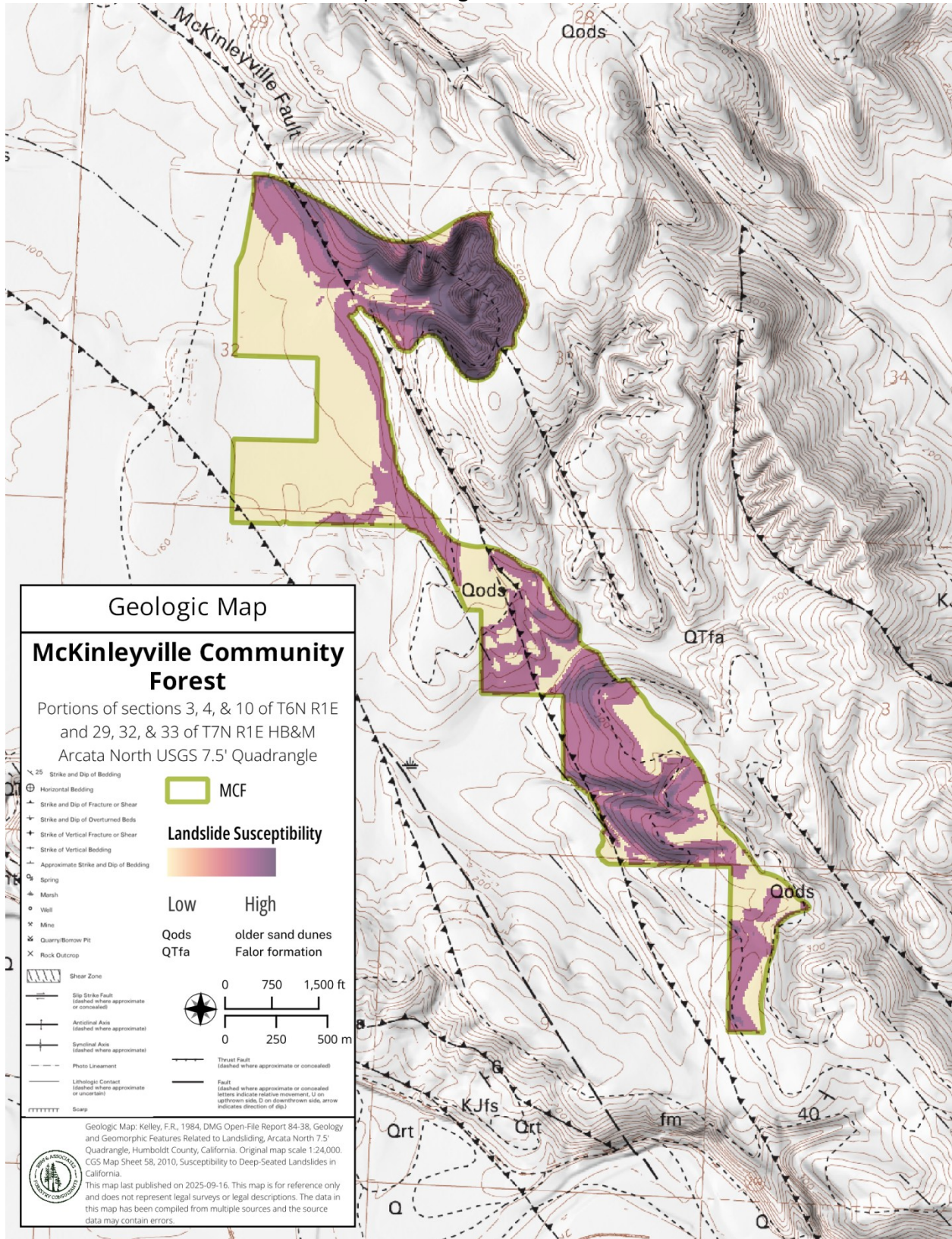
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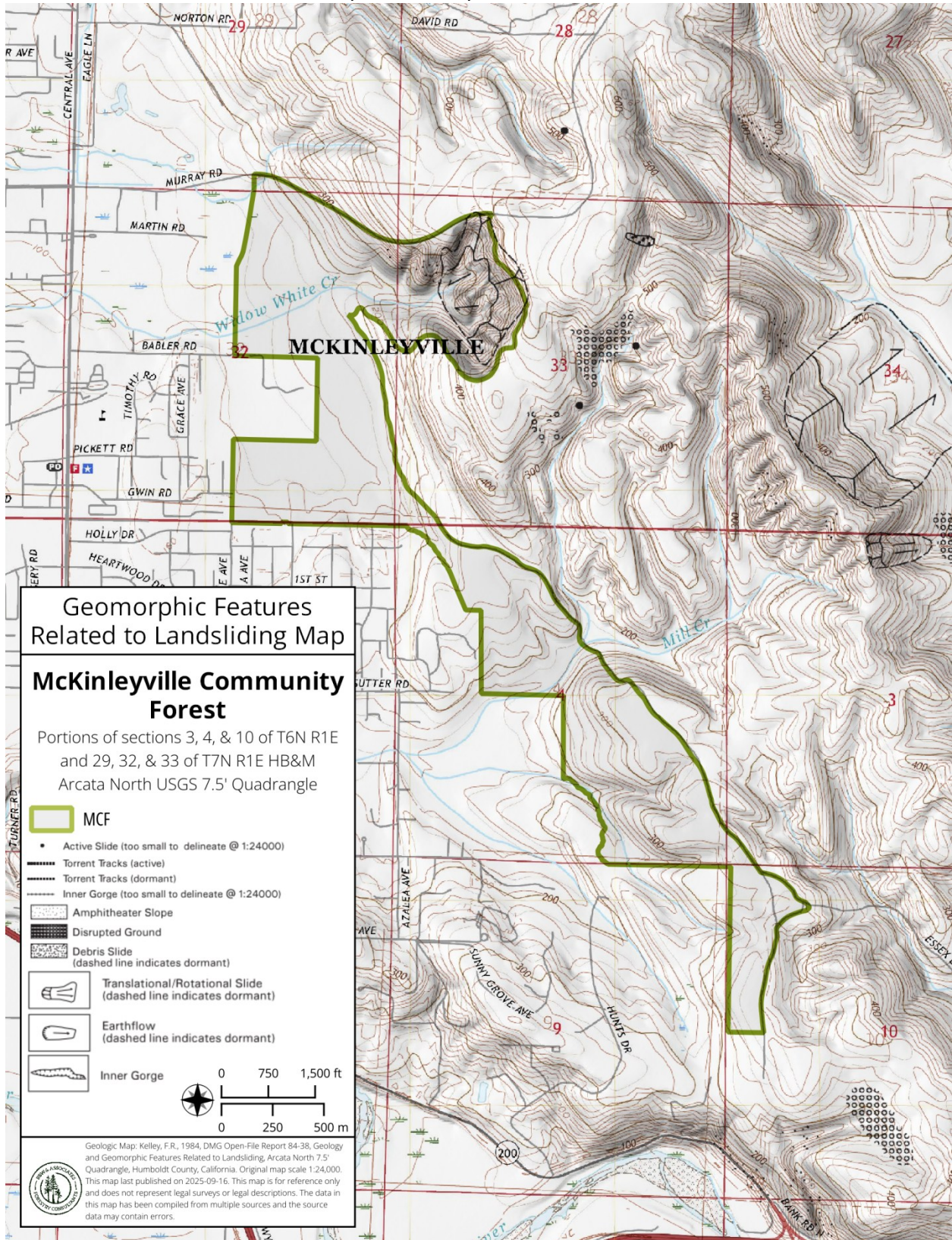
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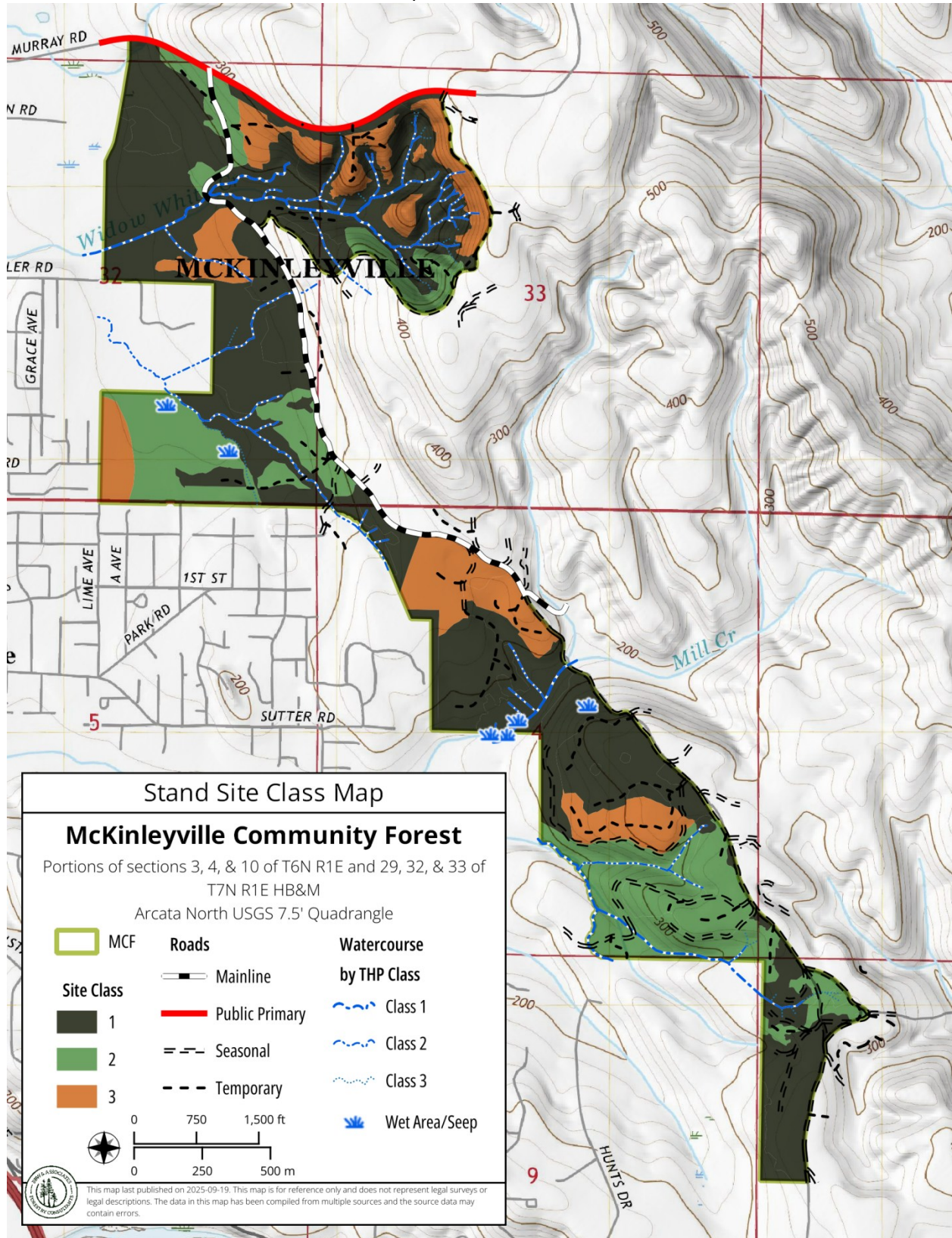
Map 3 Geologic Provinces



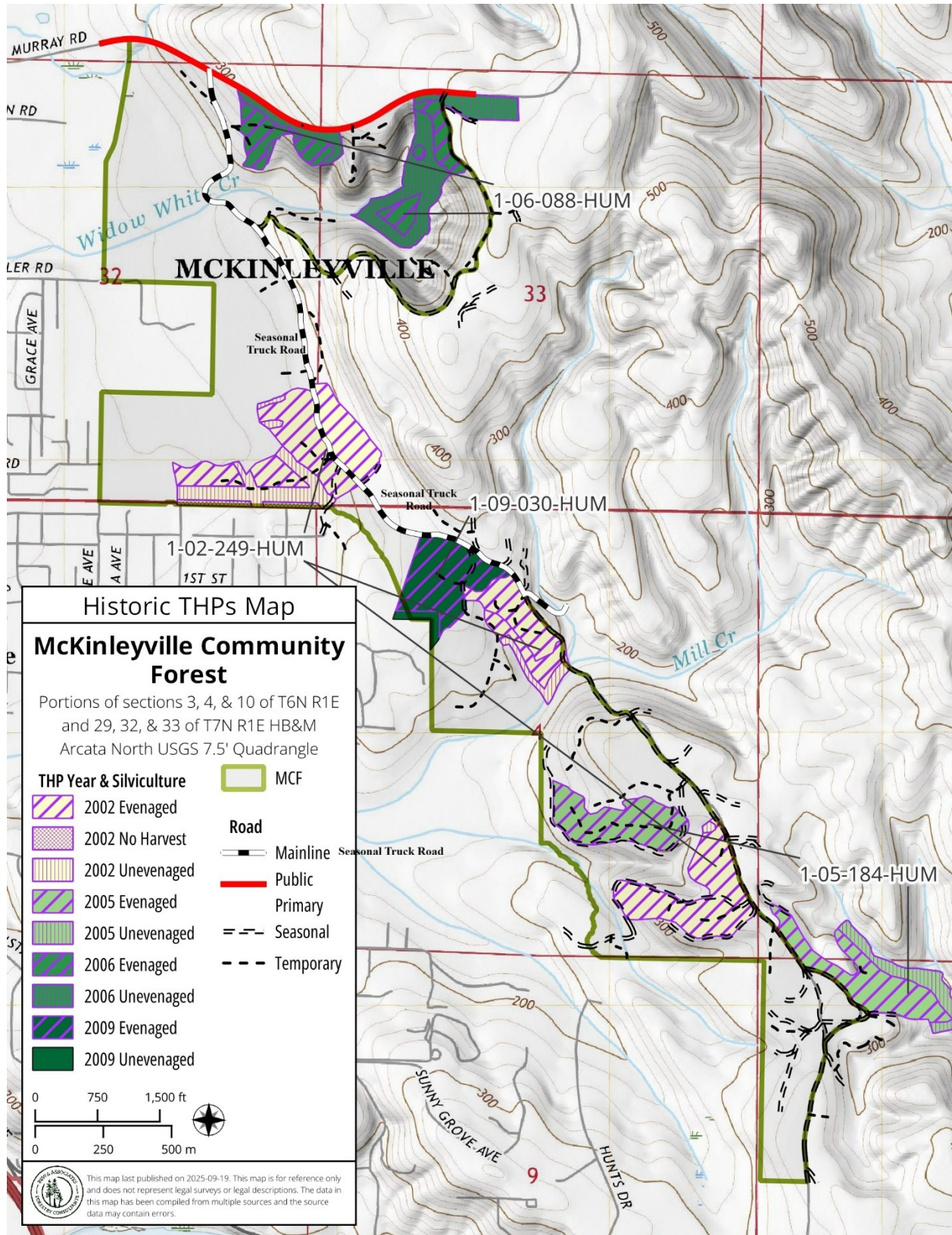
Map 4 Geomorphic Features



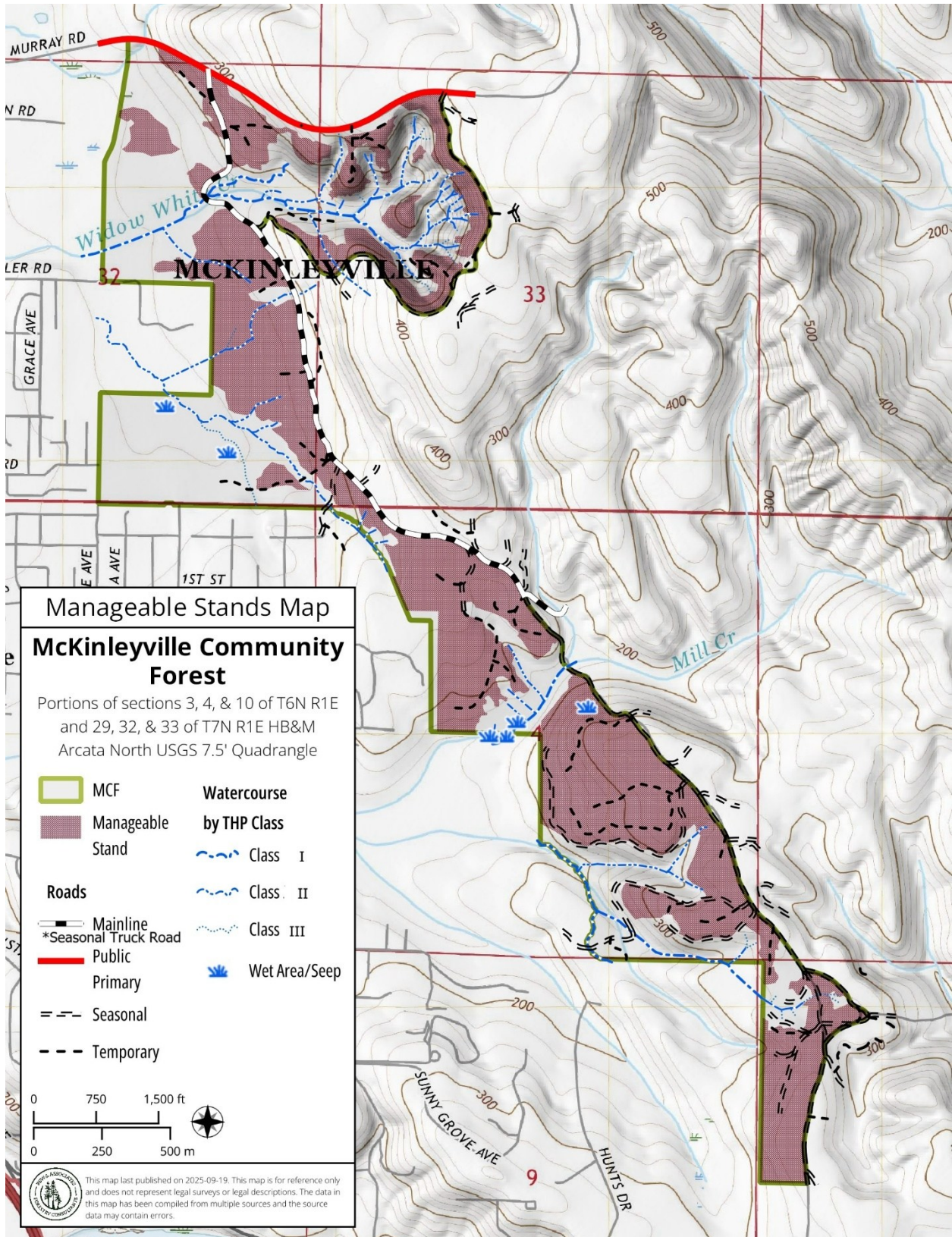
Map 5 Site Class



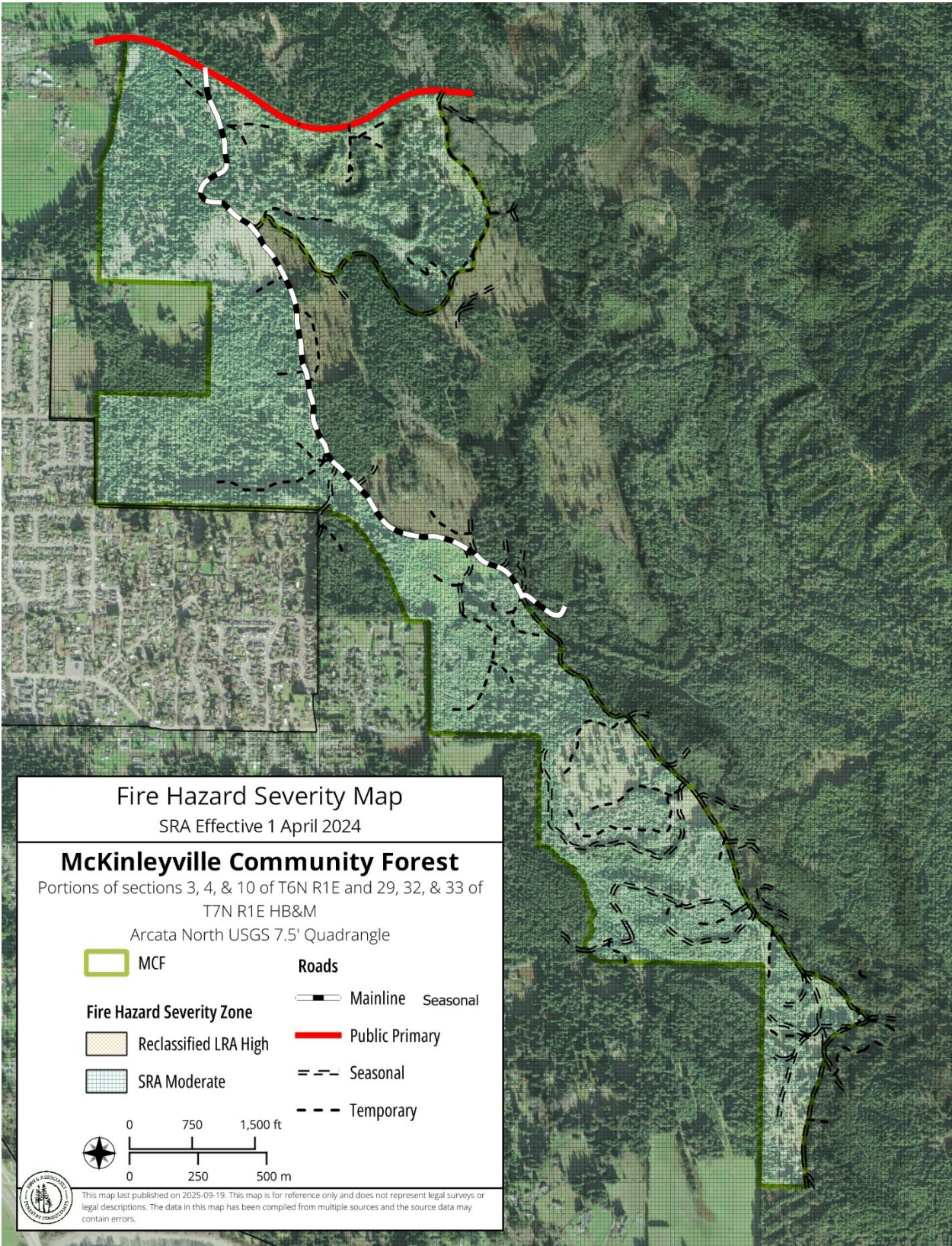
Map 6 Past THPs



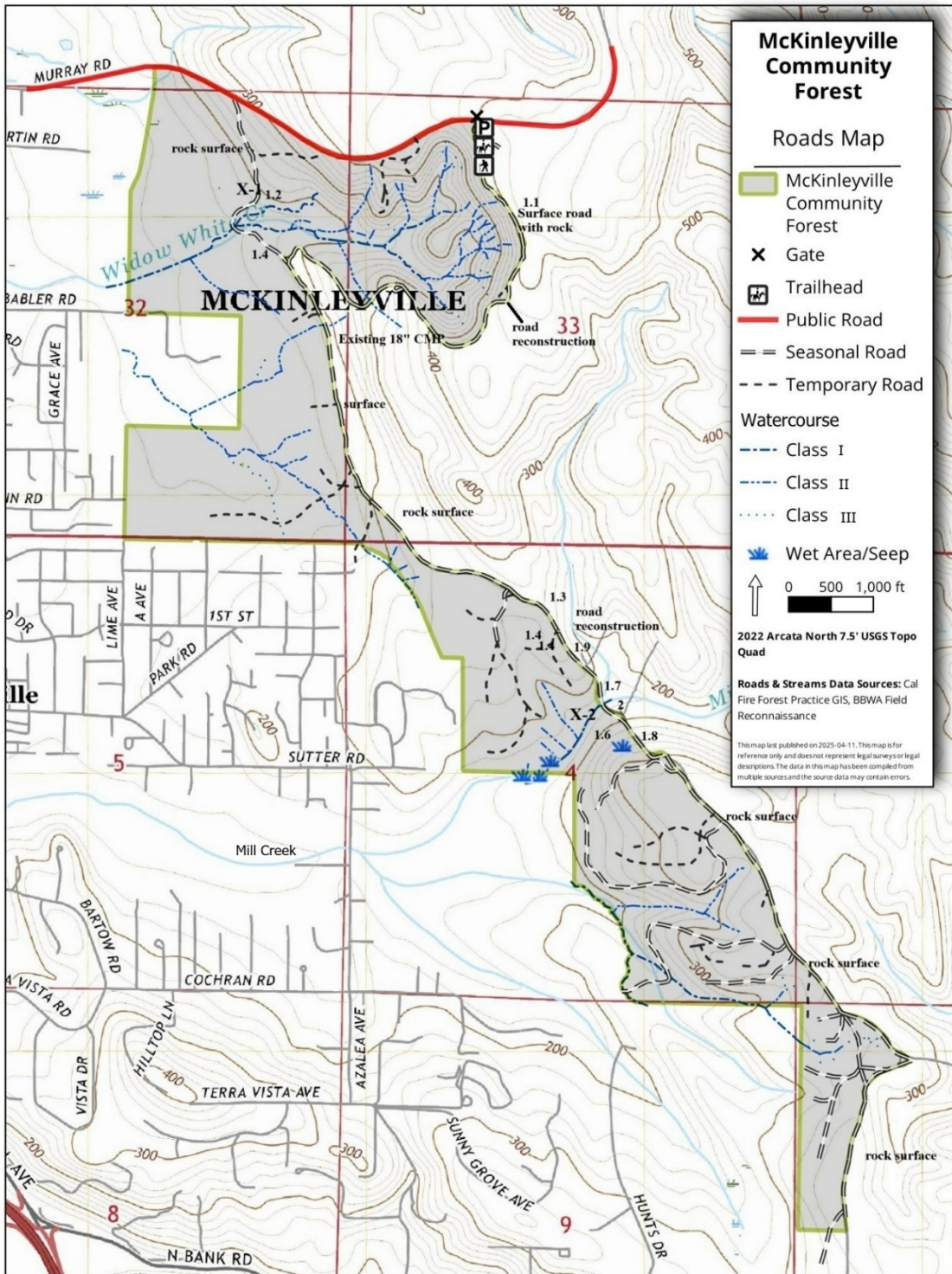
Map 7 Manageable Stands



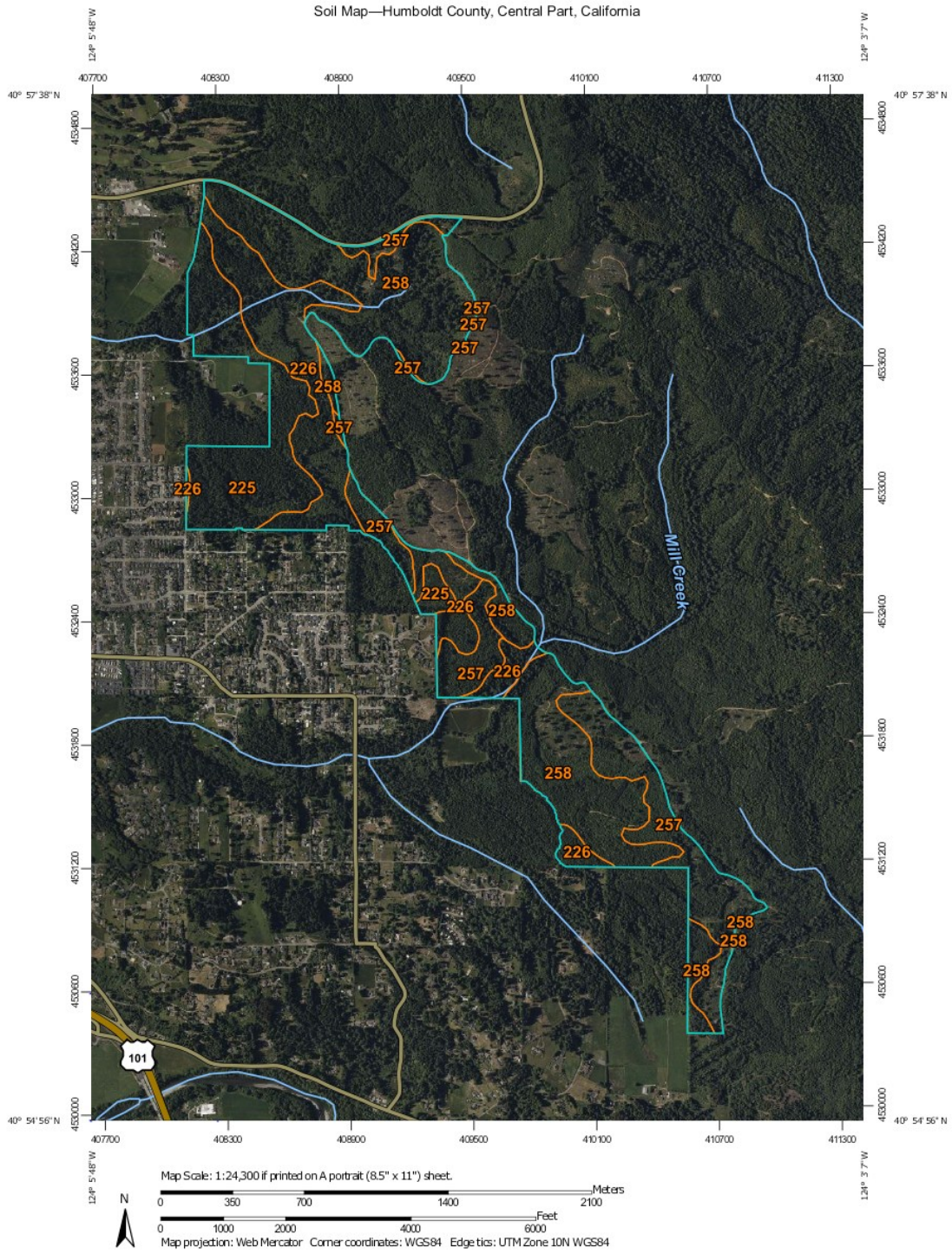
Map 8 Fire Hazard Zones



Map 9 Roads Map



Map 10 Soils



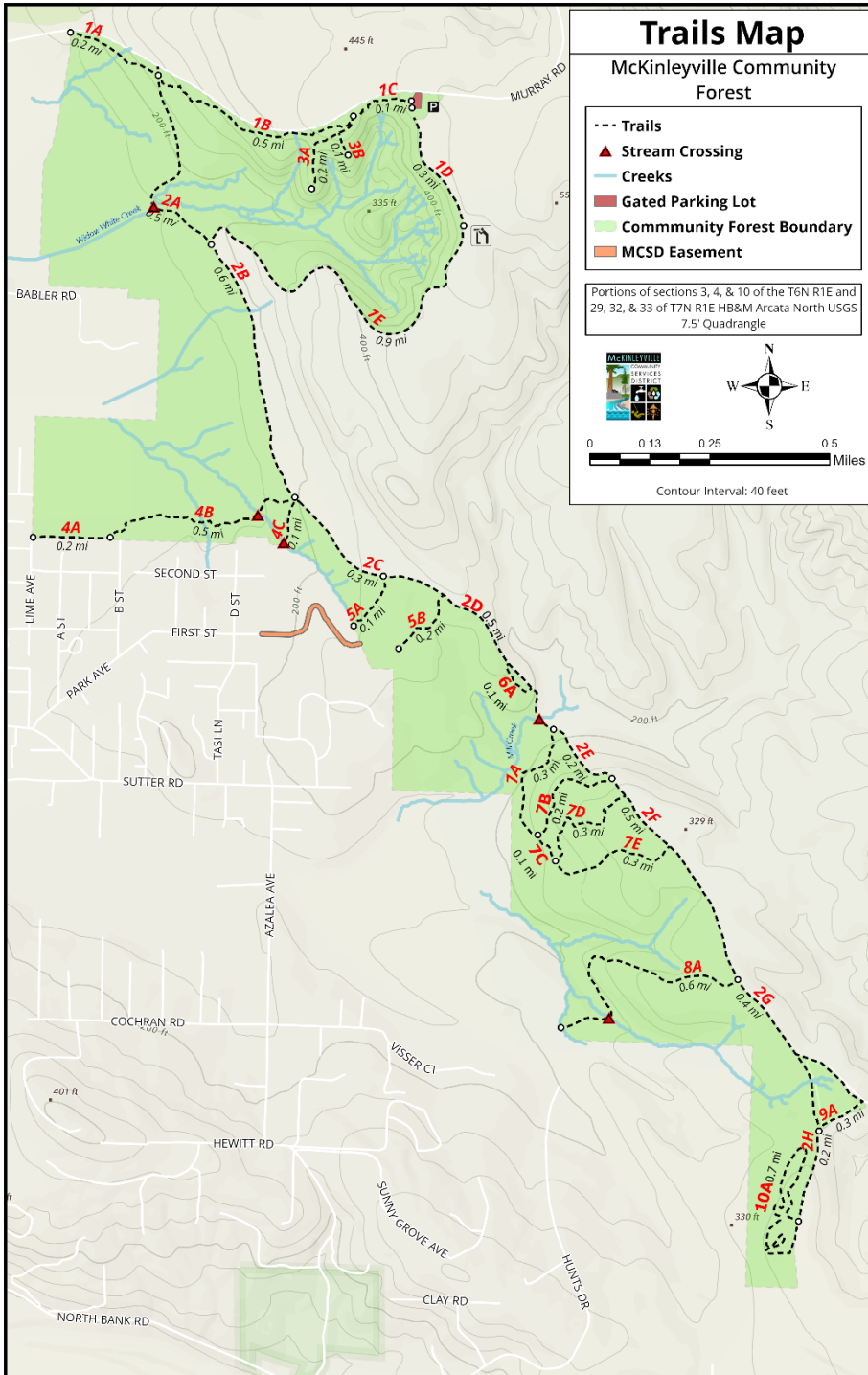
MAP LEGEND		MAP INFORMATION	
<p>Area of Interest (AOI)</p> <p>□ Area of Interest (AOI)</p> <p>Soils</p> <p>□ Soil Map Unit Polygons</p> <p>— Soil Map Unit Lines</p> <p>■ Soil Map Unit Points</p> <p>Special Point Features</p> <p>☉ Blowout</p> <p>☒ Borrow Pit</p> <p>☒ Clay Spot</p> <p>◊ Closed Depression</p> <p>☒ Gravel Pt</p> <p>☒ Gravelly Spot</p> <p>☒ Landfill</p> <p>☒ Lava Flow</p> <p>☒ Marsh or swamp</p> <p>☒ Mine or Quarry</p> <p>☒ Miscellaneous Water</p> <p>☒ Perennial Water</p> <p>☒ Rock Outcrop</p> <p>☒ Saline Spot</p> <p>☒ Sandy Spot</p> <p>☒ Severely Eroded Spot</p> <p>☒ Sinkhole</p> <p>☒ Slide or Slip</p> <p>☒ Sodic Spot</p>	<p>☒ Spoil Area</p> <p>☒ Stony Spot</p> <p>☒ Very Stony Spot</p> <p>☒ Wet Spot</p> <p>☒ Other</p> <p>☒ Special Line Features</p> <p>Water Features</p> <p>— Streams and Canals</p> <p>Transportation</p> <p>+++ Rails</p> <p>— Interstate Highways</p> <p>— US Routes</p> <p>— Major Roads</p> <p>— Local Roads</p> <p>Background</p> <p>■ Aerial Photography</p>	<p>The soil surveys that comprise your AOI were mapped at 1:24,000.</p> <p>Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Humboldt County, Central Part, California Survey Area Data: Version 12, Sep 5, 2025</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Jun 1, 2022—Jun 19, 2022</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>	

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
225	Arcata and Candymountain soils, 0 to 2 percent slopes	109.8	18.3%
226	Arcata and Candymountain soils, 2 to 9 percent slopes	129.1	21.6%
257	Lepoil-Candymountain complex, 2 to 15 percent slopes	120.8	20.2%
258	Lepoil-Espa-Candymountain complex, 15 to 50 percent slopes	238.9	39.9%
Totals for Area of Interest		598.6	100.0%

MCF Soil Types by percentage.

Map 11 Trails



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>

Natural Resources Conservation Service CONSERVATION PRACTICE STANDARD WOODY RESIDUE TREATMENT Code 384 (ac)

DEFINITION The treatment of residual woody material that is created due to management activities or natural disturbances.

PURPOSE

- Reduce hazardous fuels.
- Reduce the risk of harmful insects and disease.
- Protect/maintain air quality by reducing the risk of wildfire.
- To improve access for management purposes.
- Improve access to forage for livestock and wildlife.
- Develop renewable energy systems.
- Enhance aesthetics.
- Reduce the risk of harm to humans and livestock.
- Improve the soil organic matter.
- Improve the site for natural or artificial regeneration.

CONDITIONS WHERE PRACTICE APPLIES

On all lands, except active cropland, where woody residue requires treatment.

GENERAL CRITERIA APPLICABLE TO ALL PURPOSES

The condition and extent of residual woody material must determine the treatment method selected based on the operator's purpose. Treatment methods (i.e., piling, burning, chipping/masticating, lop and scatter, offsite removal, crushing) will achieve landowner objectives while adequately protecting land and water resources.

- Care must be taken to minimize injury to or function of the residual plant communities.
- Timing of treatment must coincide with intended purpose(s) and minimize impact on other resources.
- Any broadcast burning activities must comply with the Conservation Practice Standard (CPS) Prescribed Burning (Code 338).
- Any residual woody material left on the site after treatment will not present an unacceptable fire, safety, environmental, or pest hazard. Such remaining material will not interfere with the intended purpose or other planned management activities.

ADDITIONAL CRITERIA APPLICABLE TO REDUCE HAZARDOUS FUELS

- Reduce the amount of fuels to an acceptable level by controlling height, size, amount, and distribution.
- Additional Criteria to Reduce the Risk of Harmful Insects and Disease.
- The degree, intensity, and timing of treatment must consider the characteristics of harmful insects or diseases to enhance the effectiveness of control.

ADDITIONAL CRITERIA TO PROTECT/MAINTAIN AIR QUALITY BY REDUCING THE RISK OF WILDFIRE

- Activities will be consistent with established regulations and guidelines for particulate matter (PM) 10 and PM2.5 emissions, ozone precursors (nitrogen oxides (NOx) and volatile organic compounds (VOCs), as well as smoke and fugitive dust, and State and local permit requirements.

ADDITIONAL CRITERIA TO IMPROVE ACCESS TO FORAGE FOR LIVESTOCK AND WILDLIFE

- Woody material must be piled, contour windrowed, or removed sufficiently to allow access by livestock and wildlife, and to maximize forage growth.

ADDITIONAL CRITERIA FOR DEVELOP RENEWABLE ENERGY SYSTEMS

- Removal of woody material must not be detrimental to the site and will adequately protect soil and water resources. Adequate woody material will be left to maintain or improve nutrient and organic matter cycling.

ADDITIONAL CRITERIA TO ENHANCE AESTHETICS

- Woody material left on the site that is scattered, windrowed or piled will be further treated to meet client objectives and any State or local requirements for aesthetics and visual resources.

Additional Criteria to Reduce the Risk of Harm to Humans and Livestock Woody material left on the site that is scattered, piled, or windrowed will be further treated to meet client objectives and any State or local requirements for safe use of the area.

ADDITIONAL CRITERIA TO IMPROVE SOIL ORGANIC MATTER

- Woody material will be of a size and closeness to soil to accelerate in decomposition.

ADDITIONAL CRITERIA TO IMPROVE THE SITE FOR NATURAL OR ARTIFICIAL REGENERATION

- Woody material will be treated to complement treatments specified in CPS Tree/Shrub Site Preparation (Code 490).

CONSIDERATIONS

- When feasible, consider chipping, shredding, offsite disposal, biofuel composting, or other techniques in lieu of burning.
- When determining the method and timing of woody material treatment, consider air quality regulations, burning regulations, available resources, ability to use woody biomass, and future regeneration needs.
- Consider effects on soil carbon when off-site removal of woody material is to occur.
- Consider wildlife habitat needs (e.g., large downed wood, snags, brush piles, etc.) when planning the timing of and performing treatment.
- Consider establishing artificial habitat (e.g., bat boxes, nesting platforms, rock piles, etc.) where needed.
- Consider pollinator needs when planning and performing treatment.
- Consider the beneficial and other effects on cultural resources, and threatened and endangered species, natural areas, and wetlands.

PLANS AND SPECIFICATIONS

- Specifications for applying this practice must be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

- Monitor populations and the potential of damage to site resources by harmful pests and take controlling actions as necessary.

- Access by vehicles or people will be controlled during treatment for safety. See CPS Access Control (Code 472).
- Monitor vegetation growth. Unwanted vegetation or excessive regrowth may occur, requiring treatment.

NRCS References

Lowe, K. 2005. Working Paper 13: Treating Slash after Restoration Thinning. Ecological Restoration Institute. Northern Arizona University. Flagstaff,

Arizona. https://cdm17192.contentdm.oclc.org/digital/collection/p17192_coll1/id/460/rec/1.

Bennett, M., and S. Fitzgerald. 2008. Reducing Hazardous Fuels on Woodland Property: Disposing of Woody Material. Oregon State University Extension publication EC-1574.

CONSERVATION PRACTICE

STANDARD

TREE/SHRUBPRUNING CODE 660

DEFINITION: The removal of all or part of selected branches, leaders, or roots from trees and shrubs. PURPOSE

- Improve the appearance of trees or shrubs, e.g., ornamental plants and Christmas trees.
- Improve the quality of wood products.
- Improve the production of plant products, e.g., nuts, fruits, boughs and tips.
- Reduce fire and/or safety hazards.
- Improve the growth and vigor of understory plants.
- Adjust the foliage and branching density or rooting length for other specific intents, such as wind and snow control, noise abatement, access control, and visual screens and managing competition.
- Improve health and vigor of woody plants e.g. disease, insect, and injury management.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to any area with trees or shrubs.

CRITERIA

General Criteria Applicable to All Purposes

The pruning and shearing method and timing will match the limitations of the site, soils, and plants and minimize damage to the residual plant bole/stems and limbs. For a high degree of removal of crown foliage, pruning and shearing shall be done in two or more timed intervals to

minimize plant stress.

Debris and vegetative material left on the site after treatment will not present an unacceptable fire or pest hazard or interfere with the intended purpose and other management activities. Burning of removed vegetation shall follow the criteria and considerations listed in the Prescribed Burning (338). Ground vegetation and/or conditions must be left in a manner to address erosion and other natural resource concerns to acceptable levels. Disinfect pruning and shearing tools to minimize the spread of pathogens.

CONSIDERATIONS

Pruning and shearing should be timed to minimize disturbance to seasonal wildlife activities. Review the estimated cost and projected economic benefits of the project before starting a pruning or shearing project. Branches removed may be used for other products.

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD FIREBREAK 394 DEFINITION

A permanent or temporary strip of bare or vegetated land planned to retard fire.

PURPOSE

- Reduce the spread of wildfire.
- Contain prescribed burns.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all land uses where protection from wildfire is needed or prescribed burning is applied.

CRITERIA

General Criteria Applicable to All Purposes

Firebreaks may be temporary or permanent and shall consist of fire-resistant vegetation, non-flammable materials, bare ground, or a combination of these. Firebreaks will be of sufficient width and length to contain the expected fire. Firebreaks shall be located to minimize risk to the resources being protected. Erosion control measures shall be installed to prevent sediment from leaving the site. Plant species selected for vegetated firebreaks will be noninvasive and capable of retarding fire.

CONSIDERATIONS

Use barriers such as streams, lakes, ponds, rock cliffs, roads, field borders, skid trails, landings, drainage canals, railroads, utility rights-of-way, cultivated land, or other areas as existing firebreaks. Electric lines can be hazardous in heavy smoke as they may conduct electricity. When using barriers consider the effects on wildlife and fisheries. Attempt to locate firebreaks near ridge crests and valley bottoms. If winds are predictable, firebreaks should be located perpendicular to the wind and on the windward side of the area to be protected. Consider using diverse species combinations which best meet locally native wildlife and pollinator needs.

Locate on the contour where practicable to minimize risk of soil erosion. Design and layout should include multiple uses. Consider the beneficial and other effects of installation of the firebreak on cultural resources and threatened and endangered species, natural areas, riparian areas, and wetlands.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan and the burn plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Mow, disk, or graze vegetative firebreaks to avoid a build-up of excess litter and to control weeds. Treatment should be timed to reduce impacts to nesting when possible. Inspect all firebreaks for woody materials such as dead limbs or blown down trees and remove them from the firebreak.

Inspect firebreaks at least annually and rework bare ground firebreaks as necessary to keep them clear of flammable vegetation.

Pre-commercial Thinning code (660) /Fuel Hazard Reduction (384) site specific detail

Objective: The primary goal of the thinning is to reduce fuel density and continuity on dense stands of mixed Douglas-fir and hardwoods along an existing road. Thinning these stands will also improve growth on the best stems and decrease the proportion of hardwood composition to allow the fuel break area to move towards a Douglas-fir dominated site.

Method: A chainsaw crew will fall and lop the more suppressed and damaged redwood, Douglas-fir, Sitka spruce, and hardwood trees until the appropriate stand densities are reached, leaving the most vigorous, well formed, dominant, and co-dominant stems to grow into future crop trees. Additionally, understory shrubs including predominantly huckleberry and sprouting tanoak will be removed.

Standards: Trees which may be removed include Douglas-fir and hardwoods up to approximately 8" DBH. Leave tree spacing shall be a minimum average of 15 feet, but will range depending on the DBH and crown spacing of the trees being left. Approximately 70% of understory shrubs will be removed, small islands of shrubs may be left if they do not contribute to horizontal or vertical fuel continuity.

Mitigation measure: Any slash deposited in the watercourse by the thinning operation shall be removed and piled outside the required stream zone distance established by the Forest Practice Rules. All snags with wildlife characteristics beneficial to wildlife shall be retained.

Tree/Shrub Pruning (Code 660)

The objective of the pruning practice on the property should be to improve log quality while removing ladder fuels. Hand and power extension saws

should be used to prune lower limbs to a height of 10-16 feet. Slash should be piled and burned or chipped on site and spread as mulch. Larger limbs should be bucked to use as firewood. Conifers along roadways should also be pruned to a height of 10- 16 feet. This should improve visual penetration and more importantly, act as a shaded fuel break. Limbs should be cut flush with the tree stems taking care not to scar the tree bole.

Mitigation measures: Slash to be treated to meet minimum hazard reduction per Forest Practices Act. Pruning should not take place during wet weather to minimize potential pest problems.

Slash treatment: Debris from thinning operations should be lopped with chain saws and hand scattered to within 18" of the ground surface, chipped or piled and burned. Slash should be chipped or piled and burned within 150 feet of the main roads.

Mitigation:

- No snags should be felled unless they are less than 6" diameter and do not display signs of wildlife use. Trees should be felled away from any watercourse protection zones.
- Any burning should comply with Air Resources Board regulations and local ordinances.
- Careful falling of hardwoods is imperative to minimize damage to existing conifer seedlings and saplings.
- Thinning should occur from June 1st to September 15th

OPERATION AND MAINTENANCE

Prepare an operation and maintenance plan for this site. As a minimum, include the following activities:

- Burn or mow the area periodically, if needed to maintain the health of the plant community. Do not conduct maintenance practices and activities during the primary reproductive period of wildlife. Exceptions can be considered to maintain the health of the vegetative community if such exceptions do not conflict with agency requirements.
- Control access by vehicles and/or equipment during or after tree/shrub establishment to protect new plants and minimize erosion, compaction and other site impacts.
- Inspect the site at an appropriate time following planting, seeding, and/or natural regeneration to determine whether the survival rate for tree and shrubs meets practice and client objectives. Replant or provide supplemental planting when survival is not adequate.
- Inspect the trees and shrubs periodically, and protect

them from adverse impacts of insects, diseases, competing vegetation, fire, livestock, wildlife, non-functioning tree shelters and/or weed barriers, etc.

- If needed, control competing vegetation until the desired trees/shrubs are established. Control plant species on the Federal or State invasive species and noxious weed lists.
- If needed, apply nutrients to maintain vigor of desirable trees/shrubs.

**NATURALRESOURCESCONSERVATIONSERVICE
CONSERVATION PRACTICE STANDARD
TREE/SHRUBPRUNINGNG (Ac.)CODE 660**

DEFINITION The removal of all or part of selected branches, leaders or roots from trees and shrubs.

PURPOSE

- Improve the appearance of trees or shrubs, e.g., ornamental plants and Christmas trees.
- Improve the quality of wood products.
- Improve the production of plant products, e.g., nuts, fruits, boughs and tips.
- Reduce fire and/or safety hazards.
- Improve the growth and vigor of understory plants.
- Adjust the foliage and branching density or rooting length for other specific intents, such as wind and snow control, noise abatement, access control, and visual screens and managing competition.
- Improve health and vigor of woody plants e.g., disease, insect and injury management.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to any area with trees or shrubs.

CRITERIA

General Criteria Applicable to All Purposes

The pruning and shearing method and timing will match the limitations of the site, soils and plants and minimize damage to the residual plant bole/stems and limbs. For a high degree removal of crown foliage, pruning and shearing shall be done in two or more timed intervals to minimize plant stress. Debris and vegetative material left on the site after treatment will not present an unacceptable fire or pest hazard or interfere with the intended purpose and other management activities. Burning of removed vegetation shall follow the criteria and considerations listed in the Prescribed Burning (338).

Ground vegetation and/or conditions must be left in a manner to address erosion and other natural resource concerns to acceptable levels.

Disinfect pruning and shearing tools to minimize the spread of pathogens.

CONSIDERATIONS

Pruning and shearing should be timed to minimize disturbance to seasonal wildlife activities.

Review the estimated cost and projected economic benefits of the project before starting a pruning or shearing project. Branches removed may be used for other products.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes and narrative statements in the conservation plan, or other acceptable documentation.

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD FIREBREAK 394

DEFINITION

A permanent or temporary strip of bare or vegetated land planned to retard fire.

PURPOSE

- Reduce the spread of wildfire.
- Contains prescribed burns.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all land uses where protection from wildfire is needed or prescribed burning is applied.

CRITERIA

General Criteria Applicable to All Purposes

Firebreaks may be temporary or permanent and shall consist of fire-resistant vegetation, non-flammable materials, bare ground, or a combination of these. Firebreaks will be of sufficient width and length to contain the expected fire. Firebreaks shall be located to minimize risk to the resources being protected. Erosion control measures shall be installed to prevent sediment from leaving the site. Plant species selected for vegetated firebreaks will be noninvasive and capable of retarding fire.

CONSIDERATIONS

Use barriers such as streams, lakes, ponds, rock cliffs, roads, field borders, skid trails, landings, drainage canals, railroads, utility rights-of-way, cultivated land, or other areas as existing firebreaks. Electric lines can be hazardous in heavy smoke as they may conduct electricity. When using barriers consider the effects on wildlife and fisheries.

Attempt to locate firebreaks near ridge crests and valley bottoms . If winds are predictable, firebreaks should be located perpendicular to the wind and on the windward side of the area to be protected. Consider using diverse species combinations which best meet locally native wildlife and pollinator needs. Locate on the contour where practicable to minimize risk of soil erosion. Design and layout should include multiple uses.

Consider the beneficial and other effects of installation of the firebreak on cultural resources and threatened and endangered species, natural areas, riparian areas and wetlands.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan and the burn plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Mow, disk, or graze vegetative firebreaks to avoid a build-up of excess litter and to control weeds. Treatment should be timed to reduce impacts to nesting when possible. Inspect all firebreaks for wood materials such as dead limbs or blown down trees and remove them from the firebreak. Inspect firebreaks at least annually and rework bare ground firebreaks as necessary to keep them clear of flammable vegetation.

Natural Resources Conservation Service CONSERVATION PRACTICE STANDARD BRUSH MANAGEMENT Code 314 (Ac)

DEFINITION The management or removal of woody (nonherbaceous or succulent) plants including those that are invasive and noxious.

PURPOSE

Create the desired plant community consistent with the ecological site or a desired state within the site description. Restore or release desired vegetative cover to protect soils, control erosion, reduce sediment, improve water quality, or enhance hydrology. Maintain, modify, or enhance fish and wildlife habitat. Improve forage accessibility, quality, and quantity for livestock and wildlife. Manage fuel loads to achieve desired conditions. Control pervasive plant species to a desired level of treatment that will ultimately contribute to creation or maintenance of an ecological site description “steady state” addressing the need for forage, wildlife habitat, and/or water quality.

CONDITIONS WHERE PRACTICE APPLIES

On all lands except active cropland where the removal, reduction, or manipulation of woody (nonherbaceous or succulent) plants is desired. This practice does not

apply to removal of woody vegetation by prescribed fire (use Conservation Practice Standard (CPS) Prescribed Burning (Code 338) or removal of woody vegetation to facilitate a land-use change (use CPS Land Clearing (Code 460)).

CRITERIA

General Criteria Applicable to All Purposes

Brush management will be designed to achieve the desired plant community based on species composition, structure, density, and canopy (or foliar) cover or height. Brush management will be applied in a manner to achieve the desired control of the target woody species and protection of desired species. This will be accomplished by mechanical, chemical, burning, or biological methods, either alone or in combination. When prescribed burning is used as a method, CPS Prescribed Burning (Code 338) will also be applied. When the intent is to manage trees for silvicultural purposes, use CPS Forest Stand Improvement (Code 666). NRCS will not develop biological or chemical treatment recommendations except for biological control utilizing grazing animals. In such cases, CPS Prescribed Grazing (Code 528) is used to ensure desired results are achieved and maintained. NRCS may provide clients with acceptable biological and/or chemical control references. In cases where there is insufficient understory vegetation to provide a seed source to result in the desired plant community, use CPS Range Planting (Code 550) or CPS Forage and Biomass Planting (Code 512) to ensure the desired results are achieved and maintained. Follow-up treatments may be necessary to achieve objectives.

Additional Criteria for Creating the Desired Plant Community Consistent with the Ecological Site

Use applicable ecological site description (ESD) state and transition models to develop specifications that are ecologically sound and defensible. Treatments must be congruent with dynamics of the ecological site(s) and keyed to state and plant community phases that have the potential and capability to support the desired plant community. If an ESD is not available, base specifications on the best approximation of the desired plant community composition, structure, and function to support resilience. Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

Additional Criteria for Restoring or Releasing Desired Vegetative Cover to Protect Soils, Control Erosion, Reduce Sediment, Improve Water Quality or Enhance Hydrology

Choose a method of control that results in the least amount of soil disturbance if soil erosion potential is high and revegetation is slow or uncertain leaving the site vulnerable to long-term exposure to soil loss.

In conjunction with other conservation practices, the number, sequence, and timing of soil-disturbing operations must be managed to maintain soil loss within acceptable levels using approved erosion prediction technology.

Additional Criteria to Maintain, Modify or Enhance Fish and Wildlife Habitat

Brush management will be planned and applied in a manner to meet the habitat requirements for wildlife species of concern as determined by an approved habitat evaluation procedure. Conduct treatments during periods of the year that accommodate reproduction and other life-cycle requirements of target wildlife and pollinator species, and in accordance with specifications developed for CPS Wetland Wildlife Habitat Management (Code 644) and CPS Upland Wildlife Habitat Management (Code 645).

Additional Criteria for Control of Pervasive Plant Species to a Desired Level of Treatment That Will Ultimately Contribute to Creation or Maintenance of an Ecological Site Description “Steady State” Addressing the Need for Forage, Wildlife Habitat, and/or Water Quality.

Additional treatments are planned and will be applied to achieve effective control of pervasive plant species through reapplication.

Additional Criteria to Manage Fuel Loads to Achieve Desired Conditions

Control undesirable woody plants in a manner that creates the desired plant community, including the desired fuel load, to reduce the risk of wildfire, and facilitate the future application of prescribed fire.

Appendix 2 – Taxes and Land Use

The landowner does not pay property tax but commercial timber harvests must pay California Tax and Fee Administration timber taxes when timber is sold. One option for MCSD is to request that timber buyers pay the timber taxes on their behalf. The property is managed by the MCSD with annual budgets approved with a public involvement process by the MCSD governing board. Annual budgets are available to the public in a fully transparent manner. The forest program is administered by the Parks and Recreation Department. A volunteer Forest Advisory Committee appointed by the Board assists staff with forest management policy direction.

Mission Statement

The mission of McKinleyville Parks and Recreation is to create community and increase quality of life through people, recreation programs, public facilities, and parks.

To create community and increase quality of life, we:

- Provide recreational experiences
- Foster human development
- Facilitate community problem-solving
- Promote health and wellness
- Strengthen community image and sense of place

- Support economic development

TPZ: TIMBERLAND PRODUCTION ZONE

The Timberland Production Zone (TPZ) is intended to provide standards and restrictions for the preservation of timberlands for growing and harvesting timber. (Former Section INL#314-10; and INL#314-11; Ord. [1099](#) Sec. 1, 9/13/76; Amended by Ord. [1842](#), Sec. 5, 8/16/88; Amended by Ord. [1907](#), Sec. 1, 8/21/90; Amended by Ord. [2166](#), Sec. 11, 4/7/98; Amended by Ord. [2189](#), Sec. 1, 2/9/99; Amended by Ord. [2214](#), 6/6/00)

[314-7.4](#)

TPZ: TIMBERLAND PRODUCTION

Growing and harvesting of timber and accessory uses compatible thereto.

Accessory agricultural uses and structures listed at Sections [314-43.1.3](#) (Permitted Agricultural Accessory Uses) and [314-69.1.1](#) (Permitted Agricultural Accessory Structures). (Added by Ord. [2189](#), Sec. 1, 2/9/99; Amended by Ord. [2214](#), 6/6/00)

Principal Permitted Uses Compatible with Timber Production

The following accessory uses are deemed to be compatible with the growing and harvesting of timber provided they do not significantly detract from the use of the property for, or inhibit, growing and harvesting of timber: (Former Section INL#314-11)

Management for watershed and wetland restoration.

Management for fish and wildlife habitat.

A use integrally related to the growing, harvesting and processing of forest products; including but not limited to roads, log landings, and log storage areas (portable chippers and portable sawmills are considered a part of “processing”).

The erection, construction, alteration, or maintenance of gas, electric, water, or communication transmission facilities.

Grazing and other agricultural uses.

One (1) family dwelling or manufactured home, accessory dwelling unit, and normal accessory uses and structures for owner or caretaker subject to the special restrictions of Section [314-7.4.1.6](#), Special Restrictions Regarding Residences.

Temporary labor camps, less than one (1) year in duration, accessory to timber harvesting or planting operations.

Property Tax

Not pertinent to this public ownership

Income Tax

Not pertinent to this public ownership.

Estate Tax

Estate tax discussion is not pertinent to this public ownership.

Record Keeping

The landowner is responsible for maintaining a copy of this Forest Management Plan. Records should be kept of all pertinent transactions, expenses and income related to forest land management. This will aid in program budgeting and in tracking the economic trajectory of the operation.

Land Use

The current County of Humboldt Land use for the property is TPZ. This may be redesignated to Public or "P" in the future. Public land use allows for timber harvest and recreation similar to TPZ zoning. Proposed management of the forest is consistent with the county General Plan and the current TPZ zoning. TPZ Compatible uses include, but are not limited to: watershed management, fish and wildlife habitat, outdoor education and recreation activities.

Appendix 3 – NRCS Technical Service Provider (TSP) Correspondence Records

**Note: This is a required element of the CFIP FMP, but a public ownership does not qualify for NRCS EQIP or CSP programs unless that property is leased to an agricultural producer.*

Include the following correspondence records in the CA Cooperative FMP appendix when a NRCS Technical Service Provider prepares Conservative Practice Activity Code 106 FMP and financial assistance is issued through an NRCS program.

Description
Arrange a pre-work meeting (in-person or remote) between participant, TSP and NRCS field office to establish collaboration and address any questions.
Document each interaction with the participant, include notes and results of the interaction, date, and TSP initials.
Document each site visit, parties present, activity completed, results of site visit, date, and TSP initials.
Document any additional assessments, maps, photographs, and sketches used to support the selected alternatives.
Retain and provide any correspondence between the TSP and the participant relating to the development of the CPA or DIA.

As a public ownership, the MCF does not qualify for NRCS cost share through the Environmental Quality Incentives Program (EQIP). EQIP provides financial and technical assistance to agricultural producers and non-industrial forest managers.

Appendix 4 – Past Plans and Updates

Relationship to Other Plans

This FMP refers to and incorporates elements of the MCF Framework Plan of 2021 that was developed as a baseline conditions report to support the state funded land acquisition. In addition, the CFIP FMP plan and management direction advances goals and policies contained in:

- MCSD Strategic Plan 2024-2029. *Develop a Community Forest Management Plan, appoint a Forest Advisory Committee and construct trailhead parking facilities.*
- Humboldt County General Plan- On November 7, 2013, the Planning and Building Department provided a General Plan Conformance Review to the Planning Commission pursuant to Government Code Section 65402, which applies to any proposed public acquisition of private property. The Planning Commission adopted the report which concluded that the proposed Community Forest conforms to the Humboldt County Framework General Plan, Eureka Community Plan, Freshwater Community Plan, and Humboldt Bay Area Plan.
 - Specifically, the MCF project is consistent with General Plan Policy CO-P3. Open Space Acquisition. The County may consider opportunities to acquire high value open space lands, including Community Forests, and open space conservation easements from willing sellers.
- Humboldt County Community Wildfire Protection Plan CWPP - Collaborate with agency and local partners to plan and fund landscape level fuels reduction and management where appropriate and in observance of applicable environmental laws and regulations. Match the site with the best method of treatment to meet forest resiliency and community protection goals including prescribed fire, forest thinning, landscape pruning, mowing, or targeted grazing. (Between adjacent neighborhoods and the McKinleyville Community Forest).
- The Department of Fish and Wildlife’s Wildlife Conservation Strategy- The MCF advances a recommended conservation action of this plan: “public forest lands should be managed to maintain healthy ecosystems and wildlife diversity.”
- 2018 California Forest Carbon Plan- pg.3). Working forest conservation easements protect important forestland threatened with conversion to non-forest uses and can help to avoid non-forest uses that will result in greenhouse gas emissions rather than carbon sequestration. Pg. 4). Prevent forest land conversions through easements and acquisitions, as well as land use planning: 1. By 2030, increase the acreage of forestland protected by conservation easements by 10 percent with a focus on areas that are threatened by development and can effectively sequester and store resilient

carbon while providing wildlife habitat, protecting watershed values, and supporting other forest ecosystem benefits. California's State Wildlife Action Plan- Increase acres of forest structural diversity (multi-story canopy) by 5% from the 2015 baseline acreage.

The following Timber Harvest Plans cover portions of the MCF include:

1-06-088 HUM, 1-13-091 HUM, 1-1-031 HUM, 1-02-249 HUM, 1-12-006 HUM

Appendix 5 – Supporting Data

Supporting data and modeling outputs Alternative Deduction
References Soil Survey Data and or Ecological Site Descriptions
(ESDs) CNDDDB 9 quad search.

Animals	Scientific Name	Federal Status	State Status	CDFW Status
Amphibians				
Del Norte salamander	<i>Plethodon elongatus</i>	None	None	Watch List
toothill yellow-legged frog - north coast DPS	<i>Rana boylei</i> pop. 1	None	None	Species of Special Concern
northern red-legged frog	<i>Rana aurora</i>	None	None	Species of Special Concern
Pacific tailed frog	<i>Ascaphus truei</i>	None	None	Species of Special Concern
southern torrent salamander	<i>Rhyacotriton variegatus</i>	None	None	Species of Special Concern
Birds				
American bittern	<i>Botaurus lentiginosus</i>	None	None	None
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	Delisted	None
bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted	Endangered	Fully Protected
bank swallow	<i>Riparia</i>	None	Threatened	None
black-capped chickadee	<i>Parus atricapillus</i>	None	None	Watch List
black-crowned night heron	<i>Nycticorax</i>	None	None	None
bryants savannah sparrow	<i>Passerculus sandwichensis alaudinus</i>	None	None	Species of Special Concern
burrowing owl	<i>Athene cucularia</i>	None	Candidate Endangered	Species of Special Concern
California brown pelican	<i>Pelecanus occidentalis californicus</i>	Delisted	Delisted	None
California Ridgways rail	<i>Rallus obsoletus</i>	Endangered	Endangered	Fully Protected
Coopers hawk	<i>Accipiter cooperii</i>	None	None	Watch List
double-crested cormorant	<i>Nannopterum auritum</i>	None	None	Watch List
fork-tailed storm-petrel	<i>Hydrobates furcatus</i>	None	None	Species of Special Concern
great blue heron	<i>Ardea herodias</i>	None	None	None
great egret	<i>Ardea alba</i>	None	None	None
great gray owl	<i>Strix nebulosa</i>	None	Endangered	None
greater sandhill crane	<i>Antigone canadensis tabida</i>	None	Threatened	Fully Protected
lesser sandhill crane	<i>Antigone canadensis</i>	None	None	Species of Special Concern
long-billed curlew	<i>Numenius americanus</i>	None	None	Watch List
long-eared owl	<i>Asio otus</i>	None	None	Species of Special Concern
marbled murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Endangered	None
merlin	<i>Falco columbarius</i>	None	None	Watch List
mountain plover	<i>Charadrius montanus</i>	None	None	Species of Special Concern
northern harrier	<i>Circus hudsonius</i>	None	None	Species of Special Concern
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Threatened	Threatened	None
olive-sided flycatcher	<i>Contopus cooperi</i>	None	None	Species of Special Concern
osprey	<i>Pandion haliaetus</i>	None	None	Watch List
rhinoceros auklet	<i>Cerorhinca monocerata</i>	None	None	Watch List
sharp-shinned hawk	<i>Accipiter striatus</i>	None	None	Watch List
short-eared owl	<i>Asio flammeus</i>	None	None	Species of Special Concern
snowy egret	<i>Egretta thula</i>	None	None	None
tufted puffin	<i>Fratercula cirrhata</i>	None	None	Species of Special Concern
Vauxs swift	<i>Chaetura vauxi</i>	None	None	Species of Special Concern
western snowy plover	<i>Charadrius nivosus</i>	Threatened	None	Species of Special Concern
white-tailed kite	<i>Elanus leucurus</i>	None	None	Fully Protected
willow flycatcher	<i>Empidonax traillii</i>	None	Endangered	None
yellow rail	<i>Coturnicops noveboracensis</i>	None	None	Species of Special Concern
yellow-breasted chat	<i>Icteria virens</i>	None	None	Species of Special Concern
Fish				
chinook salmon - California coastal ESU	<i>Oncorhynchus tshawytscha</i> pop. 1/	Threatened	None	Species of Special Concern
chinook salmon - upper Klamath and Trinity Rivers ESU	<i>Oncorhynchus tshawytscha</i> pop. 30	Candidate	Threatened	Species of Special Concern
chum salmon	<i>Oncorhynchus keta</i>	None	None	None
Clear Lake prickly sculpin	<i>Cottus asper</i> ssp.	None	None	Species of Special Concern
coast cutthroat trout	<i>Oncorhynchus clarkii</i>	None	None	Species of Special Concern
coho salmon - southern Oregon / northern California ESU	<i>Oncorhynchus kisutch</i> pop. 2	Threatened	Threatened	None
eulachon	<i>Thaleichthys pacificus</i>	Threatened	None	Species of Special Concern
green sturgeon - northern DPS	<i>Acipenser medirostris</i> pop. 2	None	None	Species of Special Concern
green sturgeon - southern DPS	<i>Acipenser medirostris</i> pop. 1	Threatened	None	Species of Special Concern
longfin smelt	<i>Spirinchus thaleichthys</i>	None	Threatened	None
northern California brook lamprey	<i>Entosphenus jolletti</i>	None	None	Species of Special Concern
Pacific lamprey	<i>Entosphenus tridentatus</i>	None	None	Species of Special Concern
pink salmon	<i>Oncorhynchus gorbuscha</i>	None	None	None
steelhead - Klamath Mountains Province DPS	<i>Oncorhynchus mykiss irideus</i> pop. 1	None	None	Species of Special Concern
steelhead - northern California DPS summer-run	<i>Oncorhynchus mykiss irideus</i> pop. 48	Threatened	Endangered	None
steelhead - northern California DPS winter-run	<i>Oncorhynchus mykiss irideus</i> pop. 49	Threatened	None	Species of Special Concern
tidewater goby	<i>Lucyclogobius newberryi</i>	Endangered	None	Species of Special Concern
western brook lamprey	<i>Lampetra richardsoni</i>	None	None	Species of Special Concern
white sturgeon	<i>Acipenser transmontanus</i>	None	Candidate Threatened	Species of Special Concern
Insects				
Behrens snail-eating beetle	<i>Scaphinotus behrensi</i>	None	None	None
Crotch's bumble bee	<i>Bombus crotchii</i>	None	Candidate Endangered	None
obscure bumble bee	<i>Bombus caliginosus</i>	None	None	None
sandy beach tiger beetle	<i>Cicindela hirticollis gravida</i>	None	None	None
western bumble bee	<i>Bombus occidentalis</i>	None	Candidate Endangered	None

Mammals					
American badger	<i>Taxidea taxus</i>	None	None	Species of Special Concern	
Fisher	<i>Pekania pennanti</i>	None	None	Species of Special Concern	
hoary bat	<i>Lasiurus cinereus</i>	None	None	None	
Humboldt marten	<i>Martes caurina humboldtensis</i>	Threatened	Endangered	Species of Special Concern	
Humboldt mountain beaver	<i>Apodonia ruja humboldtiana</i>	None	None	None	
long-eared myotis	<i>Myotis evotis</i>	None	None	None	
North American porcupine	<i>Erethizon dorsatum</i>	None	None	None	
northern California ringtail	<i>Bassariscus astutus raptor</i>	None	None	Fully Protected	
silver-haired bat	<i>Lasionycteris noctivagans</i>	None	None	None	
Sonoma tree vole	<i>Arborimus pomus</i>	None	None	Species of Special Concern	
southern sea otter	<i>Enhydra lutris nereis</i>	Threatened	None	Fully Protected	
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	None	None	Species of Special Concern	
white-footed vole	<i>Arborimus albipes</i>	None	None	Species of Special Concern	
Yuma myotis	<i>Myotis yumanensis</i>	None	None	None	
Mollusks					
California floater	<i>Anodonta californiensis</i>	None	None	None	
Newcombs littorine snail	<i>Littorina subrotundata</i>	None	None	None	
western pearlshell	<i>Margaritifera jalcata</i>	None	None	None	
Reptiles					
northwestern pond turtle	<i>Actinemys marmorata</i>	Proposed Threatened	None	Species of Special Concern	

Plants	Scientific Name	Federal Status	State Status	CDFW Status	CA Rare Pla
Bryophytes					
cylindrical trichodon	<i>Trichodon cylindricus</i>	None	None	None	2B.2
minute pocket moss	<i>Fissidens pauperculus</i>	None	None	None	1B.2
Lichens					
Methuselah's beard lichen	<i>Usnea longissima</i>	None	None	None	4.2
twisted horsehair lichen	<i>Sulcaria spiralis</i>	None	None	None	1B.2
Vascular					
alpine marsh violet	<i>Viola palustris</i>	None	None	None	2B.2
American glehnia	<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>	None	None	None	4.2
beach layia	<i>Layia carnosa</i>	Threatened	Endangered	None	1B.1
Bolanders reed grass	<i>Calamagrostis bolanderi</i>	None	None	None	4.2
bristle-stalked sedge	<i>Carex leptalea</i>	None	None	None	2B.2
California globe mallow	<i>Iliamna latibracteata</i>	None	None	None	1B.2
California pinefoot	<i>Pityopus californicus</i>	None	None	None	4.2
coast checkerbloom	<i>Sidalcea oregana</i> ssp. <i>eximia</i>	None	None	None	1B.2
coast fawn lily	<i>Erythronium revolutum</i>	None	None	None	2B.2
coastal marsh milk-vetch	<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>	None	None	None	1B.2
dark-eyed gilia	<i>Gilia millefoliata</i>	None	None	None	1B.2
ghost-pipe	<i>Monotropa uniflora</i>	None	None	None	2B.2
giant fawn lily	<i>Erythronium oregonum</i>	None	None	None	2B.2
harlequin lotus	<i>Hosackia gracilis</i>	None	None	None	4.2
heart-leaved twayblade	<i>Listera cordata</i>	None	None	None	4.2
Howells montia	<i>Montia howellii</i>	None	None	None	2B.2
Humboldt Bay owls-clover	<i>Castilleja ambigua</i> var. <i>humboldtensis</i>	None	None	None	1B.2
Humboldt County fuchsia	<i>Epilobium septentrionale</i>	None	None	None	4.3
Kellogg's lily	<i>Lilium kelloggii</i>	None	None	None	4.3
leafy-stemmed mitrewort	<i>Mitellastrum caulescens</i>	None	None	None	4.2
Lyngbyes sedge	<i>Carex lyngbyei</i>	None	None	None	2B.2
maple-leaved checkerbloom	<i>Sidalcea malachroides</i>	None	None	None	4.2
marsh pea	<i>Lathyrus palustris</i>	None	None	None	2B.2
Menzies wallflower	<i>Erysimum menziesii</i>	Endangered	Endangered	None	1B.1
nodding semaphore grass	<i>Pleuropogon refractus</i>	None	None	None	4.2
northern clustered sedge	<i>Carex arcta</i>	None	None	None	2B.2
northern meadow sedge	<i>Carex praticola</i>	None	None	None	2B.2
Oregon coast paintbrush	<i>Castilleja littoralis</i>	None	None	None	2B.2
Oregon goldthread	<i>Coptis laciniata</i>	None	None	None	4.2
Pacific gilia	<i>Giulia capitata</i> ssp. <i>pacifica</i>	None	None	None	1B.2
Pacific golden saxifrage	<i>Chrysosplenium glechomifolium</i>	None	None	None	4.3
perennial goldfields	<i>Lasthenia californica</i> ssp. <i>macrantha</i>	None	None	None	1B.2
pink sand-verbena	<i>Abronia umbellata</i> var. <i>breviflora</i>	None	None	None	1B.1
Point Reyes salty birds-beak	<i>Chloropyron maritimum</i> ssp. <i>palustre</i>	None	None	None	1B.2
Purdy's fritillary	<i>Fritillaria purdyi</i>	None	None	None	4.3
Rattans milk-vetch	<i>Astragalus rattanii</i> var. <i>rattanii</i>	None	None	None	4.3
round-headed collinsia	<i>Collinsia corymbosa</i>	None	None	None	1B.2

running-pine	<i>Lycopodium clavatum</i>	None	None	None	4.1
Scoulers catchfly	<i>Silene scouleri</i> ssp. <i>scouleri</i>	None	None	None	2B.2
seacoast ragwort	<i>Packera bolanderi</i> var. <i>bolanderi</i>	None	None	None	2B.2
seaside bittercress	<i>Cardamine angulata</i>	None	None	None	2B.1
seaside pea	<i>Lathyrus japonicus</i>	None	None	None	2B.1
sea-watch	<i>Angelica lucida</i>	None	None	None	4.2
short-leaved evax	<i>Hesperexax sparsiflora</i> var. <i>brevifolia</i>	None	None	None	1B.2
Siskiyou checkerbloom	<i>Sidalcea malviflora</i> ssp. <i>patula</i>	None	None	None	1B.2
small spikerush	<i>Eleocharis parvula</i>	None	None	None	4.3
sticky pea	<i>Lathyrus glandulosus</i>	None	None	None	4.3
Tracy's tarplant	<i>Hemizonia congesta</i> ssp. <i>tracyi</i>	None	None	None	4.3
trailing black currant	<i>Ribes laxiflorum</i>	None	None	None	4.3
trifoliolate laceflower	<i>Tiarella trifoliata</i> var. <i>trifoliata</i>	None	None	None	3.2
western lily	<i>Lilium occidentale</i>	Endangered	Endangered	None	1B.1
western sand-spurrey	<i>Spergularia canadensis</i> var. <i>occidentalis</i>	None	None	None	2B.1
white-flowered rein orchid	<i>Piperia candida</i>	None	None	None	1B.2
Wolfs evening-primrose	<i>Oenothera wolfii</i>	None	None	None	1B.1
Community					
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	None	-
Northern Foredune Grassland	Northern Foredune Grassland	None	None	None	-

Name	covered	acresgis	net_acres	species	trees_per_acre	basal_area	gross_volume_per_ac_mbt	net_volume_per_ac_mbt	total_gross_volume_mbt
Community Forest	610361	3.12	3.07	DF	3.75	8.55	1.54	1.45	4.72
Community Forest	610436	0.64	0.55	DF	48.18	101.22	19.98	13.11	10.93
Community Forest	610437	19.55	19.53	DF	22.45	39.88	7.94	7.47	155.15
Community Forest	610440	15.76	15.21	DF	23.97	25.18	2.30	2.16	34.99
Community Forest	610442	43.23	42.01	DF	52.05	56.70	7.59	6.72	318.72
Community Forest	610443	6.84	6.60	DF	3.28	2.57	0.23	0.22	1.52
Community Forest	610446	22.15	22.15	DF	3.13	11.05	1.59	1.46	35.19
Community Forest	610453	0.32	0.32	DF	84.19	207.33	38.88	29.16	12.64
Community Forest	610454	0.27	0.27	DF	55.70	125.11	21.94	14.70	5.84
Community Forest	610455	1.24	1.16	DF	55.70	125.11	21.94	14.70	25.34
Community Forest	610456	1.61	1.61	DF	55.70	125.11	21.94	14.70	35.30
Community Forest	610458	0.30	0.30	DF	48.18	101.22	19.98	13.11	6.04
Community Forest	610459	0.65	0.65	DF	48.18	101.22	19.98	13.11	13.01
Community Forest	610460	0.47	0.40	DF	48.18	101.22	19.98	13.11	7.99
Community Forest	611020	0.37	0.37	DF	17.40	68.62	18.58	17.47	6.86
Community Forest	611022	0.62	0.62	DF	17.40	68.62	18.58	17.47	11.59
Community Forest	611023	0.08	0.08	DF	17.40	68.62	18.58	17.47	1.52
Community Forest	611031	8.90	8.40	DF	37.75	47.81	6.23	5.86	52.34
Community Forest	611033	16.03	15.25	DF	2.88	4.91	0.53	0.46	8.14
Community Forest	611041	7.35	6.75	DF	6.23	10.77	2.55	2.40	17.22
Community Forest	712812	0.00	0.00	DF	5.51	5.46	0.55	0.52	0.00
Community Forest	712813	1.20	0.98	DF	15.33	78.41	20.69	17.00	20.32
Community Forest	713223	2.22	2.15	DF	21.72	43.46	4.10	3.85	8.82
Community Forest	713224	2.08	2.04	DF	78.89	163.07	36.87	33.26	75.30
Community Forest	713225	40.93	40.70	DF	8.09	18.11	3.34	2.69	135.96
Community Forest	713226	12.66	11.69	DF	25.39	34.18	4.90	4.53	57.23
Community Forest	713227	36.72	36.37	DF	0.70	6.41	1.98	1.86	72.15
Community Forest	713229	25.25	25.17	DF	26.29	33.33	3.82	3.59	96.19
Community Forest	713231	5.69	5.69	DF	1.02	6.80	1.63	0.42	9.27
Community Forest	713232	21.46	21.39	DF	21.24	82.46	21.32	18.21	456.16
Community Forest	713233	5.77	5.77	DF	1.02	6.80	1.63	0.42	9.41
Community Forest	713234	1.22	1.14	DF	2.54	5.81	0.99	0.05	1.13
Community Forest	713235	0.84	0.84	DF	21.24	82.46	21.32	18.21	17.95
Community Forest	713354	17.51	16.84	DF	36.69	104.39	23.66	17.83	398.28
Community Forest	713363	44.84	43.92	DF	21.36	77.19	20.67	14.86	907.87
Community Forest	713364	9.45	9.45	DF	2.54	5.81	0.99	0.05	9.36
Community Forest	610453	0.32	0.32	GF	0.30	1.84	0.37	0.35	0.12
Community Forest	610454	0.27	0.27	GF	1.11	6.92	1.38	1.30	0.37
Community Forest	610455	1.24	1.16	GF	1.11	6.92	1.38	1.30	1.59
Community Forest	610456	1.61	1.61	GF	1.11	6.92	1.38	1.30	2.22
Community Forest	713226	12.66	11.69	GF	1.46	7.09	1.27	1.19	14.85
Community Forest	713224	2.08	2.04	JP	0.11	0.96	0.27	0.22	0.54
Community Forest	610436	0.64	0.55	MP	3.75	16.33	3.45	2.34	1.89
Community Forest	610458	0.30	0.30	MVP	3.75	16.33	3.45	2.34	1.04
Community Forest	610459	0.65	0.65	MVP	3.75	16.33	3.45	2.34	2.24
Community Forest	610460	0.47	0.40	MVP	3.75	16.33	3.45	2.34	1.38
Community Forest	611033	16.03	15.25	MVP	4.50	7.99	0.84	0.22	12.80
Community Forest	610437	19.55	19.53	RC	11.93	30.36	3.79	2.80	74.10
Community Forest	712813	1.20	0.98	RC	5.08	10.12	1.07	1.00	1.05
Community Forest	713227	36.72	36.37	RC	4.52	13.81	2.08	1.95	75.60
Community Forest	713228	11.83	11.78	RC	4.15	11.88	1.71	1.60	20.11
Community Forest	713231	5.69	5.69	RC	54.25	01.53	13.01	10.12	74.03
Community Forest	713232	21.46	21.39	RC	20.07	45.94	5.91	3.98	126.43
Community Forest	713233	5.77	5.77	RC	54.25	101.53	13.01	10.12	75.12
Community Forest	713234	1.22	1.14	RC	3.92	16.48	2.78	2.29	3.17
Community Forest	713235	0.84	0.84	RC	20.07	45.94	5.91	3.98	4.97
Community Forest	713363	44.84	43.92	RC	2.99	8.64	1.62	1.52	71.04
Community Forest	713364	9.45	9.45	RC	3.92	16.48	2.78	2.29	26.26
Community Forest	610436	0.64	0.55	RW	13.87	23.27	2.15	2.02	1.17
Community Forest	610437	19.55	19.53	RW	47.72	107.27	17.12	11.54	334.36
Community Forest	610440	15.76	15.21	RW	26.76	44.09	3.54	2.52	53.90
Community Forest	610442	43.23	42.01	RW	8.53	22.16	2.42	2.07	101.83

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Humboldt County, California



Local office

Arcata Fish And Wildlife Office

☎ (707) 822-7201

📠 (707) 822-8411

1655 Heindon Road
Arcata, CA 95521-4573

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Pacific Marten, Coastal Dps <i>Martes caurina</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9081	Threatened

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8193	EXPN
Marbled Murrelet <i>Brachyramphus marmoratus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl <i>Strix occidentalis caurina</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1123	Threatened

Western Snowy Plover *Charadrius nivosus nivosus* Threatened
 There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
<https://ecos.fws.gov/ecp/species/8035>

Yellow-billed Cuckoo *Coccyzus americanus* Threatened
 There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
<https://ecos.fws.gov/ecp/species/3911>

Reptiles

NAME	STATUS
Green Sea Turtle <i>Chelonia mydas</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened
Northwestern Pond Turtle <i>Actinemys marmorata</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found There is proposed critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The [data](#) in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the [Supplemental Information on Migratory Birds and Eagles document](#) to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>

- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior [authorization](#) by the Department of Interior U.S. Fish and Wildlife Service (FWS).

1. The [Migratory Birds Treaty Act](#) of 1918.

2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

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To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

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Survey Effort ()

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No Data ()

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Survey Timeframe

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER

FORESTED/SHRUB WETLAND

[PFO1C](#)

RIVERINE

[R3UBF](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

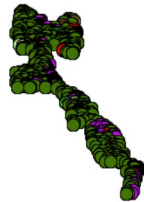
Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

i-Tree Canopy Report

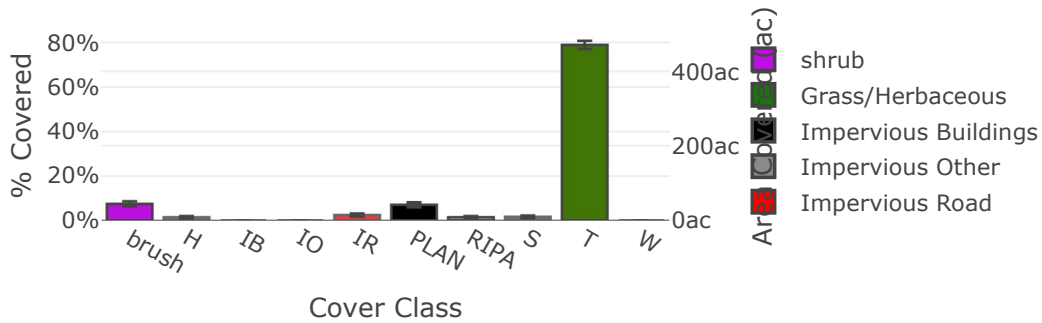
i-Tree Benefits and Cover Assessment

Estimated using random sampling statistics on 11/6/2025



Google

Land Cover



Abbr.	Cover Class	Description	Points	% Cover ± SE	Area (ac) ± SE
brush	shrub	brush	37	7.40 ± 1.17	44.34 ± 7.01
H	Grass/Herbaceous		7	1.40 ± 0.53	8.39 ± 3.17
IB	Impervious Buildings		0	0.00 ± 0.00	0.00 ± 0.00
IO	Impervious Other		0	0.00 ± 0.00	0.00 ± 0.00
IR	Impervious Road		12	2.40 ± 0.68	14.38 ± 4.10
PLAN	Plantation	Plantation	35	7.00 ± 1.14	41.94 ± 6.84
RIPA	Riparian	Riparian	7	1.40 ± 0.53	8.39 ± 3.17
S	Soil/Bare Ground		8	1.60 ± 0.57	9.59 ± 3.39
T	Tree	Conifer/Hardwood	394	78.80 ± 1.83	472.16 ± 10.95
W	Water		0	0.00 ± 0.00	0.00 ± 0.00
Total			500	100.00	599.19

Tree Benefit Estimates: Carbon (English units)

Description	Carbon (T)	±SE	CO ₂ Equiv. (T)	±SE	Value (USD)	±SE
Sequestered annually in trees	713.22	±12.22	2,615.13	±44.81	\$308,628	±5,288
Stored in trees (Note: this benefit is not an annual rate)	17,911.55	±306.90	65,675.68	±1,125.29	\$7,750,813	±132,803

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Amount sequestered is based on 1.365 T of Carbon, or 5.005 T of CO₂, per ac/yr and rounded. Amount stored is based on 34.281 T of Carbon, or 125.697 T of CO₂, per ac and rounded. Value (USD) is based on \$432.73/T of Carbon, or \$118.02/T of CO₂ and rounded. (English units: T = tons (2,000 pounds), ac = acres)

Tree Benefit Estimates: Air Pollution (English units)

Abbr.	Description	Amount (lb)	±SE	Value (USD)	±SE
CO	Carbon Monoxide removed annually	471.89	±8.09	\$92	±2
NO ₂	Nitrogen Dioxide removed annually	2,360.62	±40.45	\$29	±0
O ₃	Ozone removed annually	25,098.57	±430.04	\$1,455	±25
SO ₂	Sulfur Dioxide removed annually	2,357.72	±40.40	\$5	±0
PM _{2.5}	Particulate Matter less than 2.5 microns removed annually	1,240.35	±21.25	\$3,046	±52
PM ₁₀ *	Particulate Matter greater than 2.5 microns and less than 10 microns removed annually	8,918.77	±152.82	\$8,736	±150
Total		40,447.92	±693.04	\$13,364	±229

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Air Pollution Estimates are based on these values in lb/ac/yr @ \$/lb/yr and rounded:

CO 0.903 @ \$0.20 | NO₂ 4.518 @ \$0.01 | O₃ 48.036 @ \$0.06 | SO₂ 4.512 @ \$0.00 | PM_{2.5} 2.374 @ \$2.46 | PM₁₀* 17.070 @ \$0.98 (English units: lb = pounds, ac = acres)

Tree Benefit Estimates: Hydrological (English units)

Abbr.	Benefit	Amount (Kgal)	±SE	Value (USD)	±SE
AVRO	Avoided Runoff	469.13	±8.04	\$4,192	±72
E	Evaporation	38,707.19	±663.21	N/A	N/A
I	Interception	38,900.36	±666.52	N/A	N/A
T	Transpiration	59,979.96	±1,027.70	N/A	N/A
PE	Potential Evaporation	294,305.17	±5,042.66	N/A	N/A
PET	Potential Evapotranspiration	294,305.17	±5,042.66	N/A	N/A

Currency is in USD and rounded. Standard errors of removal and benefit amounts are based on standard errors of sampled and classified points. Hydrological Estimates are based on these values in Kgal/ac/yr @ \$/Kgal/yr and rounded:

AVRO 0.898 @ \$8.94 | E 74.082 @ N/A | I 74.452 @ N/A | T 114.796 @ N/A | PE 563.274 @ N/A | PET 563.274 @ N/A (English units: Kgal = thousands of gallons, ac = acres)

About i-Tree Canopy

The concept and prototype of this program were developed by David J. Nowak, Jeffery T. Walton, and Eric J. Greenfield (USDA Forest Service). The current version of this program was developed and adapted to i-Tree by David Ellingsworth, Mike Binkley, and Scott Maco (The Davey Tree Expert Company)

Limitations of i-Tree Canopy

The accuracy of the analysis depends upon the ability of the user to correctly classify each point into its correct class. As the number of points increase, the precision of the estimate will increase as the standard error of the estimate will decrease. If too few points are classified, the standard error will be too high to have any real certainty of the estimate.

Community Forest	610443	6.84	6.60	RW	64.07	87.10	5.90	3.87	38.91
Community Forest	610446	22.15	22.15	RW	56.59	70.33	4.47	3.61	98.96
Community Forest	610453	0.32	0.32	RW	7.52	23.80	3.19	2.21	1.04
Community Forest	610454	0.27	0.27	RW	2.91	9.41	1.25	0.86	0.33
Community Forest	610455	1.24	1.16	RW	2.91	9.41	1.25	0.86	1.44
Community Forest	610456	1.61	1.61	RW	2.91	9.41	1.25	0.86	2.01
Community Forest	610458	0.30	0.30	RW	13.87	23.27	2.15	2.02	0.65
Community Forest	610459	0.65	0.65	RW	13.87	23.27	2.15	2.02	1.40
Community Forest	610460	0.47	0.40	RW	13.87	23.27	2.15	2.02	0.86
Community Forest	611031	8.90	8.40	RW	37.76	46.60	4.60	2.88	38.60
Community Forest	611042	2.94	2.94	RW	210.17	429.43	64.60	59.29	190.11
Community Forest	712812	0.00	0.00	RW	13.73	20.32	1.61	0.94	0.00
Community Forest	713225	40.93	40.70	RW	4.64	3.89	0.32	0.14	13.22
Community Forest	713354	17.51	16.84	RW	2.17	12.20	1.68	1.00	28.29
Community Forest	713363	44.84	43.92	RW	0.73	7.80	2.05	1.93	90.12
Community Forest	610361	3.12	3.07	SS	2.50	3.92	0.55	0.52	1.69
Community Forest	610436	0.64	0.55	SS	35.63	69.15	11.96	10.89	6.55
Community Forest	610437	19.55	19.53	SS	17.85	87.27	27.58	21.54	538.65
Community Forest	610440	15.76	15.21	SS	43.91	45.70	4.38	3.91	66.56
Community Forest	610442	43.23	42.01	SS	33.37	38.00	4.95	4.58	208.09
Community Forest	610453	0.32	0.32	SS	0.81	9.51	2.41	1.85	0.78
Community Forest	610454	0.27	0.27	SS	5.48	20.12	4.48	3.36	1.19
Community Forest	610455	1.24	1.16	SS	5.48	20.12	4.48	3.36	5.18
Community Forest	610456	1.61	1.61	SS	5.48	20.12	4.48	3.36	7.22
Community Forest	610458	0.30	0.30	SS	35.63	69.15	11.96	10.89	3.62
Community Forest	610459	0.65	0.65	SS	35.63	69.15	11.96	10.89	7.79
Community Forest	610460	0.47	0.40	SS	35.63	69.15	11.96	10.89	4.79
Community Forest	611031	8.90	8.40	SS	23.57	25.98	3.21	3.02	26.99
Community Forest	611032	8.01	7.40	SS	28.28	47.56	7.28	6.85	53.87
Community Forest	611033	16.03	15.25	SS	1.48	11.94	2.73	1.25	41.63
Community Forest	611041	7.35	6.75	SS	6.23	5.82	0.81	0.76	5.46
Community Forest	712812	0.00	0.00	SS	57.97	107.03	15.62	14.53	0.00
Community Forest	712813	1.20	0.98	SS	22.63	136.00	42.78	37.64	42.03
Community Forest	713224	2.08	2.04	SS	3.74	19.64	5.04	4.74	10.29
Community Forest	713225	40.93	40.70	SS	60.18	117.66	23.61	21.47	961.09
Community Forest	713226	12.66	11.69	SS	19.03	41.80	6.54	6.10	76.38
Community Forest	713227	36.72	36.37	SS	35.51	135.57	31.07	21.19	1,129.80
Community Forest	713228	11.83	11.78	SS	6.42	8.12	1.18	1.11	13.92
Community Forest	713229	25.25	25.17	SS	90.87	120.26	20.36	19.09	512.36
Community Forest	713231	5.69	5.69	SS	70.13	127.33	23.74	22.30	135.04
Community Forest	713232	21.46	21.39	SS	38.82	110.53	25.64	20.54	548.43
Community Forest	713233	5.77	5.77	SS	70.13	127.33	23.74	22.30	137.03
Community Forest	713234	1.22	1.14	SS	60.59	81.34	10.27	9.65	11.72
Community Forest	713235	0.84	0.84	SS	38.82	110.53	25.64	20.54	21.58
Community Forest	713354	17.51	16.84	SS	9.38	25.48	5.32	4.00	89.59

Site Class Data

Community Forest	0	1.57	1.39	0.00	0.00	0.00	0.00
Community Forest	1	353.23	346.02	28.03	23.16	9,697.50	8,015.28
Community Forest	2	141.50	137.52	11.25	9.40	1,546.98	1,293.29
Community Forest	3	45.74	44.93	3.02	2.84	135.85	127.70
Community Forest	5	11.46	11.46	45.89	39.74	525.87	455.37

Appendix 6 – Archaeological Addendum (confidential section).

An Archeological Records search was conducted by the Northwest Information Center (NWIC File No. 20-2463) for this plan. The NWIC base maps show that there are no recorded Native American archaeological resources within or adjacent to the McKinleyville CFC project area. The NWIC has record of sixteen

previous studies that include approximately 65% of the McKinleyville CFC project. From NWIC: There are four previously recorded historic-period cultural resources within and adjacent to the McKinleyville CFC project area; P-12-001563, P-12-002416, P-12-003086, and P-12-003638. There are no previously recorded Native American archaeological resources within or adjacent to the McKinleyville CFC project area. Based upon review of information at the Northwest Information Center it is our assessment that there is a high possibility of unrecorded Native American archaeological resources and a high possibility of unrecorded historic-period cultural resources in the project area. Our records search reviews only information on file at this office. Consequently, there is always a possibility that additional information concerning Native American and historic-period activities and settlement exists that are not known to us and, therefore, were not provided in this records search.

Forest management activities (including CFIP conservation practices) may impact special environmental and/or cultural values such as threatened or endangered species and archaeological sites. Landowners need to know locations of these values and what they can do to protect them. Landowners also need to know that 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.

Any future ground practices implemented under this plan using public entity reimbursement funds requires a signed CAL FIRE CFIP Environmental Checklist (CEQA) or an NRCS CPA-52 (NEPA) Checklist. Along with this checklist a process of “discovery” or survey for unknown values along with a discussion of possible mitigations is required. The checklist must be filled out by an RPF or Certified Planner. In addition, archaeological values require an Archaeological Records Check, an entity Archaeologist review and Native American notification for the practice area.

Forest management activities conducted under other harvest permits (e.g., NTMP, THP, and some exemptions) will also require an Archaeological survey and report.

Questions can be directed to Ben Harris – Associate State Archeologist assigned to CAL FIRE’s HUU Humboldt-Del Norte Unit Headquarters. (707) 576-2966 (office)

Native American Heritage Commission (NAHC).

The mailing address and phone number for the NAHC is as follows:

Native American Heritage Commission

1550 Harbor Boulevard, Suite 100, West Sacramento, CA 95691

Phone: (916) 373-3710

Email: nahc@nahc.ca.gov

CAL FIRE maintains a current list of Native American Contacts. The list is available on the CAL FIRE website.

http://www.fire.ca.gov/resource_mgt/archaeology/downloads/NativeAmericanContactsList.pdf

The Humboldt County Historical Society Archive & Research Center can be reached at (707) 445-4342, info@humboldthistory.org.

As of July 2015, Assembly Bill (AB) 52 requires that lead agencies consider the effects of projects (on state and private land) to tribal cultural resources, and that consultation with federally and non-federally recognized Native American Tribes take place early in the environmental review process. As defined in PRC §21074, tribal cultural resources include archaeological sites, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are listed, or determined to be eligible for listing, on the national, state, or local Register of Historical Resources. Recorded sites are documented in Confidential Archaeological Addendums to Timber Harvest Plans and are archived in Northwest Information Center confidential files. The significance of each site is determined by its archaeological and historical value, as outlined in state and federal guidelines. Significance, as defined by these guidelines, is based on uniqueness and degree of preservation, with both considered in the determination of a site's value. Uniqueness refers to how many other similar features exist (on other sites), while preservation refers to the condition of the features remaining on the site. A site is not considered significant if it (although unique) has been completely destroyed, as there is nothing left to protect or study.

A confidentiality policy approved by the State Historical Resources Commission under authority of PRC § 5020.4(c), limits public disclosure of sensitive archaeological and historical resources. Consequently, site locations on the property having moderate to high levels of significance will not be revealed to the general public. The confidentiality policy is designed to protect the resources from artifact collection, site excavation, and vandalism. Cultural resources management procedures are based on CAL FIRE's statewide archaeology program. Individual projects conducted under the guidance of the NTMP will contain assessments of impacts to cultural resources.

Any Timber Harvest Plan (or a Non-Industrial Timber Management Plan [NTMP]) that is prepared for the ownership will include a Confidential Archaeological Addendum (CAA), prepared per 14 CCR § 929.1. The CAA would include, among other things: (1) an archaeological records check; (2) evidence of written notification to Native Americans of the preparation of a plan; (3) results of a field survey for archaeological and historical sites within the site survey area; (4) documentation of pre-field research; (5) a description of all archaeological or historical sites identified within the site survey area; and (6) a description of any specific enforceable protection measures to be implemented both within the site boundaries and within 100 feet of the site boundaries.

Native History

At the time of Euro-American contact, the Native people living in the general area of the McKinleyville Community Forest were speakers of the Wiyot language, part of the Algonquin-Ritwan language family (Elasser 1978: 155). Wiyot ancestral lands extend from Little River to the north, Bear River Ridge to the south, and inland to Chalk Mountain and Berry Summit.

The Wiyot Tribe is a federally recognized tribal government. Wiyot Tribal lands today consist of the Table Bluff Rancheria and adjacent fee lands (the Old Reservation) near the Eel River. The Wiyot Tribe today is 600 members strong and growing. Other local reservations where persons of Wiyot descent make up a significant portion of the tribal membership include the Bear River Band of the Rohnerville Rancheria and the Cher-Ae-Heights Indian Community in Trinidad.

The Wiyot people lived in villages adjacent to forests and waterways, which they frequented for hunting, fishing and other uses. Village sites were located at the water's edge, ocean, bay, or creek, with trails leading to grassy openings and from one village to another. The Wiyot population prior to 1850 is estimated to have been between 1,000 and 3,300 individuals (Roscoe, et. al., 2010). Soon after the

Euromerican settlers began to occupy the ancestral homeland of the Wiyot, around 1850, the Wiyot population was decimated by violence and disease.

The MCF is made available to the Wiyot and other local tribes to access and use for cultural purposes, including for collection of culturally important plant material. A permit system may be developed for plant collection and other cultural purposes. In addition, the MCS D should facilitate the respectful inclusion of Traditional Ecological Knowledge (TEK) for on-the-ground ecosystem stewardship. TEK refers to the evolving knowledge acquired by indigenous and local peoples over hundreds or thousands of years through direct contact with the environment. This knowledge is specific to a location and includes the relationships between plants, animals, natural phenomena, landscapes and timing of events that are used for lifeways, including but not limited to hunting, fishing, trapping, agriculture, and forestry.

Archaeological Resources

As of July 2015, Assembly Bill (AB) 52 requires that lead agencies consider the effects of projects on tribal cultural resources, and that consultation with federally and non-federally recognized Native American Tribes takes place early in the environmental review process. As Defined in PRC §21074, tribal cultural resources include archaeological sites, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are listed, or determined to be eligible for listing, on the national, state, or local register of historical resources.

An archaeological records check for the MCF area was provided by the California Historical Resources Information Center in June, 2021. Four historical sites related to ranching and logging activities, dating from the early 20th century, were recorded within or adjacent to the MCF. No prehistoric (Native American) sites have been recorded within the MCF to date. The report from the Historical Resources Information center noted that two homesteads dating from the late 1800s are located within or adjacent to the forest. The report notes that, given the environmental setting and ethnographic sensitivity of the area, there is a high potential for unrecorded Native American resources in the MCF, as well as a high potential for unrecorded historical-period archaeological resources. Buildings, structures, and objects over 45 years or older may be of historical value.

Recorded sites are documented in Confidential Archaeological Addendums to Timber Harvest Plans and are archived in Northwest Information Center confidential files. The significance of each site is determined by its archaeological and historical value, as outlined in state and federal guidelines. Significance, as defined by these guidelines, is based on uniqueness and degree of preservation, with both considered in the determination of a site's value. Uniqueness refers to how many other similar features exist (on other sites), while preservation refers to the condition of the features remaining on the site. A site is not considered significant if it (although unique) has been completely destroyed, as there is nothing left to protect or study.

A confidentiality policy exists that limits public disclosure of sensitive archaeological and historical resources. Consequently, site locations in the McKinleyville Community Forest having moderate to high levels of significance will not be revealed to the general public. The confidentiality policy protects the resources from artifact collection, site excavation, and vandalism. The policy was approved by the State Historical Resources Commission under authority of PRC § 5020.4(c). McKinleyville Community Forest cultural resources management procedures are based on CAL FIRE's statewide archaeology program. Individual projects conducted under the guidance of the Forest Management Plan will contain assessments of impacts to cultural resources.

Any Timber Harvest Plans (or a Non-Industrial Timber Management Plan [NTMP]) that is prepared for the McKinleyville Community Forest will include a Confidential Archaeological Addendum (CAA), prepared per 14 CCR § 929.1. The CAA would include, among other things: (1) an archaeological records check; (2) evidence of written notification to Native Americans of the preparation of a plan; (3) results of a field survey for archaeological and historical sites within the site survey area; (4) documentation of

pre-field research; (5) a description of all archaeological or historical sites identified within the site survey area; and (6) a description of any specific enforceable protection measures to be implemented both within the site boundaries and within 100 feet of the site boundaries.

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Glossary

Adaptive management	A dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used, along with research results, to modify management on a continuing basis to ensure that objectives are being met.
Age class	One of the intervals into which the age range of trees is divided for classification or use.
Anadromous fish	Fish that are born and reared in fresh water which move to the ocean and later return to fresh water to reproduce.
Appurtenant Road	A Logging Road under the ownership or control of the Timber Owner, Timberland Owner, Timber Operator, or plan submitter that will be used for log hauling.
Aspect	Direction or exposure of terrain towards which a slope faces.
Association	A kind of plant community with a definite species composition and structure, and relatively uniform environment (Plant Ecology).
Basal area	The cross-sectional area, in square feet, of a tree measured at breast height (4.5 feet).
Best management practice (BMP)	The method, measure or practice selected by an agency to meet its nonpoint source pollution control needs. BMP's include, but are not limited to structural controls, operations, and maintenance procedures. BMP's can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.
Biological diversity	The distribution and abundance of different plant and animal communities and species over time and space.
Blowdown	Trees felled by high winds.
Board foot (BF)	A unit of measurement equal to an unfinished board one foot square by one inch thick.
Broadcast burn	Allowing prescribed fire to bum over a designated area for reduction of fuel hazard, or as a silvicultural treatment.

California Environmental Quality Act (CEQA)	Following the passage of NEPA, the California State Legislature passed an Act in 1970 to declare state policy which will ensure the long-term protection of the environment. The Act will encourage the development and maintenance of a high-quality environment now and in the future; provide the people of California with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from pollution; and prevent the elimination of fish or wildlife species due to man's activities.
Canopy	The uppermost spreading, branchy layer of a forest.
Canopy closure	The progressive reduction in space between tree crowns as they spread laterally; a measure of the percent of potential open space occupied by the collective tree crowns in a stand.
Cavity nester	Wildlife species that excavate and/or occupy cavities in trees and snags.
Clearcutting	Harvesting of all trees in one area for the purpose of creating a new, even-aged stand. The area harvested may be a patch, stand or strip.
Codominant	One main crown class of trees with their tops in the upper canopy but lower than the dominant trees.
Commercial thinning	Timber sales which call for selective harvest in immature stands designed to improve the quality and growth of the remaining trees.
Cover	Vegetation used by wildlife for protection from predators; to ameliorate conditions of weather; or in which to reproduce.
Cultural resources	Buildings, sites, areas, architecture, memorials, and objects having scientific, prehistoric, historic, or social values.
Cumulative effect	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Defect	Any irregularity or imperfection in a tree, log, or wood product that reduces its soundness, durability, strength or utility.
Diameter at breast height (DBH)	The diameter of a standing tree measured at a point four feet-six inches from ground level on the uphill side.
Dispersed recreation	Outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort or convenience of the people.
Down log	Portion of a tree that has fallen or been cut and left in the woods.

Ecosystem function	The manner in which organisms interact with each other and their environment.
Edge	Where plant communities meet or where successional stages of vegetative conditions within plant communities come together, e.g., field and woodland, forest and meadow.
Effects (impacts)	Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by action and occur at the same time and place; indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable; or cumulative (see definition above).
Endangered species	Any plant or animal species which is in danger of extinction throughout all or a significant portion of its range (Endangered Species Act of 1973).
Endemic species	A species whose natural occurrence is confined to a certain region and whose distribution is relatively limited.
Erosion	Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is much more rapid than normal, natural or geologic erosion, primarily as a result of the influence of activities of man, animals or natural catastrophes.
Fire Protection Zone	That portion of the logging area within 100 ft. (30.48 m), as measured along the surface of the ground, from the edge of the traveled surface of all public roads and railroads, and 50 ft. (15.24 m) as measured along the surface of the ground from the traveled surface of all private roads, and within 100 ft. (30.48 m), as measured along the surface of the ground, from permanently located structures currently maintained for human habitation (Ref. Sec. [4562], PRC).
Forb	Any herbaceous plant other than grasses or grass-like plants.
Forester	A professionally trained individual who supervises the development, care and management of forest resources to include timber, wildlife and recreation. In California foresters are licensed by the State. A Registered Professional Forester (RPF) is a person who holds a valid license as a professional forester.
Fragmentation	The process of reducing size and connectivity of stands that compose a forest.
Full log suspension	The system of transporting logs from the cutting site to the landing without touching the ground.

Geographic Information System (GIS)	An information processing technology to input, store, manipulate, analyze and display spatial resource data to support the decision-making processes of an organization. Generally, an electronic medium for processing map information, typically used with manual processes, to effect specific decisions about the land base and its resources.
Group selection	The cutting method in which trees are removed periodically in small groups resulting in openings that do not exceed an acre or two in size. The result is an uneven-aged stand.
Hazard reduction	Any treatment of forest fuels that reduces the threat, ignition or spread of wildfire.
Hydrologic disconnection	Removal of direct routes of drainage or overland flow of road runoff to a watercourse or lake.
High-lead (cable) logging	Method of powered cable logging in which the main block is fastened high on a spar tree (or equivalent) to enable the front end of the logs being skidded to be lifted clear of the ground.
Indicator species	Species of fish, wildlife or plants which reflect ecological changes caused by land management.
Individual tree selection	The selection of trees for harvest based on individual tree characteristics.
Infiltration	The movement of water through the soil surface.
Inner gorge	A stream reach bounded by steep valley walls that terminate upslope into a gentler topography.
Intermediate (crown class)	One main crown class of trees with their tops in the middle canopy.
Intermediate harvest	Most commonly used intermediate cuttings are release, thinning, improvement and salvage.
Intermittent streams	Streams that do not contain water year-round.
Intolerant Trees	Trees which reproduce successfully only in the open, or where the canopy is greatly broken.
Landing	Any place where round timber is assembled for further transport, usually in the woods.
Layout	Preparation of a soft bed in order to cushion the fall of a large tree and thus prevent excessive breakage. Usually involves tractors pushing soil into a pile.
Litter layer	The loose, relatively decomposed organic debris on the surface of the forest floor typically made up of leaves, bark and small branches.

Management indicator species	<p>Management indicator species are animals or plants selected for special attention in the Forest Plan for one or more of three reasons. These include</p> <ul style="list-style-type: none"> emphasis species - species to be managed as key resources on the basis of identified issues (e.g., threatened, endangered, rare, sensitive, harvest or special interest species); special habitat indicators - species that require special habitat such as snags, riparian, old-growth forest stands, etc.; cumulative ecosystem change indicators - species generally having large home ranges, requiring diverse habitat.
Mass movement	The downslope movement of earth by gravity. Includes but not limited to landslides, rock falls, debris avalanches and soil creep.
Mean Annual Increment (MAI)	The average annual growth of a stand, calculated by dividing the total growth accrued over its life by its age in years at the time of measurement.
Monitoring	A process of collecting information to evaluate whether objectives and anticipated, or assumed results of the management plan are being realized.
Mortality	The loss of a population of trees, other plants and animals due to all lethal causes.
Multistoried	Forest stands that contain trees of various heights and diameter classes which therefore support foliage at various heights in the stand.
Nesting, roosting and foraging habitat	The forest vegetation with the age class, species of trees, structure, sufficient area and adequate food source to meet some or all of the life needs of the northern spotted owl.
Net scale	The scale of a log after deduction for defect.
Nonpoint source pollution	Water pollution that does not result from a discharge at a specific, single location (such as a pipe) but results from land runoff and is normally associated with agricultural, silvicultural or urban runoff.
Overstory	The portion of trees in a forest which forms the uppermost layer of foliage.
Perennial streams	Streams which normally flow throughout the year.
Plant associations	A plant community type based on land management potential, successional patterns and species composition.
Plant community	An association of plants of various species found growing together in different areas with similar site characteristics.

Pre-commercial thinning	The selective felling or removal of trees in a young stand, conducted to accelerate diameter growth on remaining trees, maintain a specific stocking density and improve vigor and quality of remaining trees. Conducted at an age before the trees are commercially merchantable.
Prescribed fire	Intentional use of fire under predetermined weather and fuel conditions to achieve specific objectives such as rejuvenating or type-converting vegetation.
Quadratic mean Diameter	Quadratic Mean Diameter, or QMD, is a measure of central tendency , which is considered more appropriate than an arithmetic mean for characterizing a group of trees which have been measured. Compared to the arithmetic mean, QMD assigns greater weight to larger trees. QMD is always greater than or equal to the arithmetic mean for a given set of measurements.
Reach	A continuous unbroken stretch of a stream with homogeneous characteristics; an extremity of a stream; a specified portion of a stream.
Recruitment	Replenishment. In terms of wildlife biology, to achieve successful reproduction or to replenish a supply of habitat elements, such as snags or down logs.
Reforestation	The natural or artificial restocking of an area with forest trees; includes measures to obtain natural regeneration, as well as tree planting and seeding.
Regeneration	The renewal of a tree crop, whether by natural or artificial means. Also, the young tree crop (seedlings and saplings) itself.
Release	All work done to free desirable trees from competition with other, less desirable vegetation.
Resilience	The ability of a social or ecological system to absorb disturbances, while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change.
Right-of-way	An accurately located land area within which a user may conduct operations approved by, or granted by the landowner.
Riparian areas	Terrestrial areas where the vegetation and microclimate are influenced by perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics; this habitat is transitional between true bottom land wetlands and upland terrestrial habitats and, while associated with water courses, may extend inland for considerable distance.

Rotation	The planned number of years required to establish and grow timber to a specified condition or maturity for regeneration harvest (including the regeneration period).
Salmonid	Member of the fish family Salmonidae, includes salmon and trout.
Salvage	Removal of recently dead or dying trees to minimize the loss of wood products.
Logging Road	A Logging Road that is part of the permanent road network that is not designed for year-round use.
Seasonal Road	
Second growth (young growth)	Timber stands established after natural or human-caused removal of the original stand or previous forest growth.
Sediment	Solid material, both mineral and organic, that is suspended in, or being transported by water.
Sediment yield	The quantity of soil, rock particles, organic matter or other dissolved or suspended debris that is transported through a cross-section of stream in a given period.
Seeps	Places where water oozes from the ground.
Selection cutting	The annual or periodic removal of trees, individually or in small groups, from an uneven-aged forest in order to realize yield and establish a new stand of irregular constitution.
Sensitive species	Those species that are under consideration for official listing as endangered or threatened species; or are on an official state list as needing special management attention. ·
Seral stage	A transitory or developmental stage of a biotic community in an ecological succession (does not include climax successional stage).
Shaded Fuel break	A shaded fuel break is a forest management strategy used for mitigating the threat of wildfire in areas where natural fire regimes have been suppressed, leading to a dangerous buildup of combustible vegetation. Constructing a shaded fuel break is the process of selectively thinning and removing more flammable understory vegetation while leaving the majority of larger, more fire tolerant tree species in place.
Silvicultural system	A management process whereby forests are tended, harvested and replaced resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the methods that remove the mature trees and provide for regeneration; and to the type of forest thereby produced.

Silviculture	The art and science of growing and tending forest vegetation, i.e., controlling the establishment, composition and growth of forests for specific management goals.
Site	Productive capacity of an area to produce forests or other vegetation. Related to climatic, biotic and soil factors for forest crops. It is expressed by a site index based on height of dominant trees in a stand at a certain age. Site indices are sometimes grouped into site classes.
Site preparation	Removal of unwanted vegetation, slash, roots and stones from a site before reforestation.
Skid	To remove a severed tree from its stump to a collection point where it is loaded onto another vehicle.
Slash	The residue of trees left on the ground after timber cutting or after other disruptions such storms or fires. Slash includes unutilized logs, uprooted stumps, broken stems, branches, twigs, leaves, bark and chips.
Slope stability	The resistance of a natural or artificial slope surface to failure by land sliding (mass movement).
Snag	A standing dead tree.
Soil compaction	An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads or pressure.
Soil productivity	Capacity or suitability of a soil for establishment and growth of a specified crop or plant species, primarily through nutrient availability.
Soil series	A group of soils developed from a particular type of parent material having naturally developed horizons that are similar in characteristics and arrangement in the soil profile.
Spatial	Referring to the distance, interval, or area between or within things.
Species diversity	The distribution and abundance of different plant and animal communities and species.
Stand	A community of trees or other vegetation sufficiently uniform in composition, constitution, age, spatial arrangement or condition to be distinguishable from adjacent communities and so form a silvicultural or management entity.
Steelhead	A large-sized, silvery anadromous rainbow trout.
Stocking	The degree to which trees occupy the land, measured by basal area and/or number of trees by size and spacing; compared with a stocking standard, that is, the basal area and/or number of trees required to fully utilize the land's growth potential.

Stream class	<p>The classification of streams according to their beneficial uses. Whole streams or parts of streams can be classified. One stream may be divided into several classes.</p> <p>Class I. Perennial or intermittent streams have one or more the following characteristics: (1) is the direct source of water for domestic use (cities, recreation sites, etc.); (2) are used by large numbers of fish for spawning, rearing or migration; (3) have sufficient flow to have a major influence on the water quality of a Class I stream.</p> <p>Class II. Perennial or intermittent streams have one or both of the following characteristics: (1) are used by non-fish aquatic species (e.g., salamanders, benthic insects, etc.); (2) have sufficient flow to have a moderate influence on downstream quality of a Class I or II stream.</p> <p>Class III. Intermittent streams not meeting Class I or Class II definitions</p> <p>Class IV. All man-made watercourses such as inboard ditches or those not meeting Class I, II or III definitions.</p>
Structure	The various horizontal and vertical physical elements of the forest.
Stumpage	Selling of timber based upon the log buyer paying for the timber “at the stump” whereby logging and hauling costs are borne by the purchaser as opposed to a delivered log type of timber sale where timber is paid for delivered to the sawmill.
Successional Stage	A phase in the gradual changing of a biological community (same as seral stage).
Surface Erosion	The detachment and transport of soil particles by wind, water or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in rills, or by dry ravel.
Suspended Sediment	Sediment suspended in a fluid by the upward components of turbulent currents or by colloidal suspension.
Sustained Yield	The yield that a forest can produce continuously at a given intensity of management.
Terrestrial	Living on land; distinguished from aquatic (living in water).
Tethered Operations	Tractor Operations which utilize synchronized cable winch systems which have been specifically designed or modified by the manufacturer or a Professional Engineer, as described within the Professional Engineers Act (Chapter 7 of Division 3 of the Business and Professions Code), to assist equipment in felling or Yarding during Timber Operations.
Threatened Species	Any species of plant or animal which is likely to become endangered in the foreseeable future throughout all, or a significant portion of its range.

Timber Site Index	A measure of site productivity based on the maximum rate of tree height growth. It is normally expressed as the height in feet reached by a tree at a given, or base age (the site index).
Timber Stand Improvement (TSI)	Measures such as thinning, pruning, release cutting, prescribed fire, girdling, weeding, etc., of unwanted trees with the objective of improving growing conditions of the remaining trees.
Tolerance	The forestry term for expressing the relative capacity of a tree to compete under low light and high root competition.
Tolerant Trees	Trees which reproduce and form understories beneath canopies of less tolerant trees or even beneath shade of their own species.
Tractor Operations	Any activity which is associated with Timber Operations and is performed by wheel or track mounted ground-based equipment, including, but not limited to, tractors or skidders.
Turbidity	The optical property of water as affected by suspension of material such as sediment, i.e., the muddy or cloudy state of water.
U.S Fish and Wildlife Service	A division within the U.S. Department of the Interior.
Underburning	Prescribed burning of the forest floor for botanical, wildlife habitat, fire hazard reduction or silvicultural objectives.
Understory	Vegetation growing under the canopy formed by taller trees (trees or shrubs).
Uneven-Age Management	The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the proportion of trees of particular sizes to be retained in each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands include single-tree and group selection.
Vertical Diversity	The diversity in a stand that results from the complexity of the aboveground structure of the vegetation.
Viewshed	A total landscape seen or potentially seen from specific points on a logical part of a travel route or water body.
Watershed	The land area drained by a river system.

Wetlands	Areas that are inundated by surface or ground water with a frequency sufficient to support, and that, under normal circumstances do or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, wet meadows, river overflows, mud flats and natural ponds.
Wildland-Urban Interface	Any area where man-made improvements are built close to, or within, natural terrain and flammable vegetation, and where high potential for wildland fire exists.
Wildlife Tree	A snag or a live tree designated for wildlife habitat.
Windfall	Trees or parts of trees felled by high winds (see blowdown).
Yarding	The movement of forest products from the point of felling to a landing.
Yield table	A table showing the progressive change in a stand's development at periodic intervals covering the range of age of a species on given sites. It may include information on average diameter and height, basal area, number of trees, volumes of thinning and final cuts, and other essential data.
Yield tax	A tax levied on timber at the time it is harvested. It is based on stumpage (log value minus logging costs) value from Board of Equalization published quarterly reports.