

**Anthony and Mary Massei Living Trust
August 13, 2002
California Cooperative Forest Management Plan**

**For Landowner:
Anthony and Mary Massei Living Trust
August 13, 2002
1835 Liberty Ct.
Fortuna CA 95540**

**Prepared By
Hohman and Associates Forestry Consulting
PO Box 733, Hydesville, CA 95547**

CFIP Project #: 21-NCR-HUM-001

State Contract #: 8GB19384

Property Name: Anthony and Mary Massei Living Trust, August 13, 2002

Property Location Address: APN 316-195-002, 316-196-004, 316-196-007

Owner Name (s): Anthony and Mary Massei Living Trust, August 13, 2002, 1835 Liberty Ct., Fortuna CA 95540, 707-499-2585

Responsible Contact: Anthony J. Massei, 1835 Liberty Ct., Fortuna CA 95540 707-499-2585

Plan Author: Stephen Hohman, PO Box 733, Hydesville, CA 95547

Phone:707-768-3743 RPF#2652 Email: shohman@hohmanandassociates.com

Signature: _____

This 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 5 years but may include objectives that require a much longer time period.

This management plan template meets management plan requirements for grant agreements and other provisions available through CAL FIRE, NRCS, USFS and the American Tree Farm Association. Signature Pages are provided to document acceptance of this management plan in meeting those requirements.

This management plan is a tool for and belongs to the landowner. Signatures are only required for that entity providing funding as requested by the landowner.



SIGNATURES AND APPROVALS

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 California Department of Forestry and Fire Protections California Forest Improvement Program (CFIP), US Forest Service's Forest Stewardship Program (USFS), 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.

I have reviewed this plan and approve its content.

Landowner (s) _____ Date _____

USFS Forest Stewardship Program

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

Plan Preparer _____ Date _____

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

Stewardship Forester _____ Date _____

Forest Stewardship Tracking Number: _____

NRCS Cost Share Programs including EQIP

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 _____ RPF Number _____ Date _____

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 _____ Date _____

ATFS Program

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

ATFS Inspecting Forester _____ Number _____ Date _____

Certified Tree Farm Number: (e.g. AL 1234) _____ Date of ATFS Certification: _____

CAL FIRE CFIP MANAGEMENT PLAN CERTIFICATION PAGE

California Registered Professional Forester (RPF) Certification: 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): Stephen Hohman

Signature: _____ date _____

Organization/Company: Hohman & Associates Forestry Consultants

Address: P.O. Box 733
Hydesville, CA 95547

Phone: (707)-768-3743 RPF 2652

CAL FIRE Unit Certification: 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.

Name (Print or type): _____ RPF _____

Signature: _____ date _____

California Department of Forestry and Fire Protection

Unit:

Address: _____

CAL FIRE STATE OR REGION CFIP COORDINATOR: I certify that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards.

Name (Print or type): _____ RPF _____

Signature: _____ date _____

TABLE OF CONTENTS

Signature Pages.....	1-4
Table of Contents.....	5
Landowner Information.....	6
Management Plan History.....	6
Property Description.....	7
Property History	8
Current Property Conditions.....	9
Landowner Management Objectives.....	21
Management Plan Implementation	22
Forest Management Unit Information	26
Management Activity Schedule and Tracking	28
Planned Management Activities and Required Permits	30
California Environmental Quality Act and National Environmental Protection Act information.	31
Additional Professional Assistance	32
Property and Plan Maps	34
Appendix 1 – Selected Conservation Standards and Specifications	49
Appendix 2 -Tax and Business Management	57
Appendix 3 – Past Plans, Amendments and Updates	64
Appendix 4 – Confidential Addendum	297
Appendix 5 – Supporting Data (soil descriptions, growth model outputs, references, etc.).....	348

This Multi-Agency Cooperative Forest Management Plan was developed for use in California by CAL FIRE, the US Forest Service and Natural Resources Conservation Service using information from a national joint Forest Stewardship, American Tree Farm System, NRCS Planning Process and the California Forest Improvement Act.

Landowner Information

Landowner(s) Anthony and Mary Massei Living Trust, August 13, 2002

Mailing Address 1835 Liberty Ct., Fortuna CA 95540, 707-499-2585

Phone 707-499-2585 E-Mail mary.massei@yahoo.com

Landowner's Representative (if applicable) Anthony Massei

Mailing Address 1835 Liberty Ct., Fortuna CA 95540, 707-499-2585

Phone 707-499-2585 E-Mail mary.massei@yahoo.com

Management Plan History

Does a Management Plan exist for this property? Yes No

If Yes:

Type of Plan: (CFIP, EQIP, NTMP, FSP, CAP, Other) _____

Date of Original Plan Completion _____ Revision Dates _____

NOTE: Past Plans and Current Amendments are appended to this Document. However, adjacent land with harvest plans have utilized the same road system as the Massei property. Past plans and current amendments are appended to this document.

PROPERTY DESCRIPTION

Legal Property Description Section 12, T5N, R3E & Section 7, T5N, R4E, HB&M

Nearest city or Town Blue Lake, CA County Humboldt

Assessor's Parcel Number APN 316-196-004, 316-196-007, 316-195-002

GPS Coordinates 40.8326, -123.7677

Total ownership acreage 274 acres Total forested acreage 268 acres

Does Landowner reside on the property? Yes No

Describe the overall topography including slope, aspect and elevation: The property is generally east facing, with steep to gentle slopes. The elevation ranges from 1,240 feet to 2,480 feet above sea level.

Estimate percent of total acreage that is:

Complex topography (many steep ravines and aspects) 50 %
Simple topography (few ravines and changes of aspect) 50 %
Percent of Land: Flat (<5% grade) 10 Gentle (< 20% grade) 30 Steep (> 35% grade) 60

Transportation System:

Vehicle Access (check): Excellent (80% accessible) Good (at least 50%)
 Fair (at least 25%) Poor (less than 10%)

Estimated improved road length (rock surface) 1.5 Miles

Estimated unimproved road length 3/4 Mile

Watershed Information:

CALWATER 2.2 planning watershed: Cloney Gulch. Acres within this watershed: 1107.300203
= 5,133 Acres

Is there a 303d listing on watershed? Yes what are the factors? Property Drains to Redwood Creek, factors are Temperature and Sediment.

Tract and Farm number (if suitable): _____

PROPERTY HISTORY

The present property is composed of three parcels. The main parcel east of Redwood Creek was homesteaded and logged prior to the 1940's. The Massei brothers purchased this property as a timber investment and hunting property from Pete Thompson in 1943-44. The eastern portion of the property was primarily grassland with black oak, white oak and residual Douglas-fir left from the first harvest. The western parcels were later purchased and logged in the 1950's. These parcels were primarily residual Douglas-fir and tanoak. The entire property was later sold to Anthony Massei and his siblings in the early 80's. The parcels were again logged to pay the note on the property pulling 400-500 mbf from the property. The property contained residual timber scattered across the property post logging. The silvicultures back then were a mix of clear-cut and high-grading. The timber portion of the property was logged by tractor, with skid trails present throughout the parcel.

Present adjacent landowners include Southern Pacific Industries and private landowners. Some of these larger landowners run cattle as well as harvest timber east of the property. Harvest plans on adjacent lands have utilized the same road system as the Massei property within the last 20 years.

CURRENT PROPERTY CONDITIONS

Property Infrastructure

The property is located 11.8 air miles south east of Blue Lake, CA. Access to the property is limited by right of way from the north and west.

The property maintains two houses, a barn, utilities, septic and spring. Redwood Creek divides the property and is recorded as a fish bearing watercourse year around. Watercourses within the property leading to Redwood Creek appear to be spring related through most of the property. Water quality for domestic uses is by spring. Water samples should be tested for coliforms and other bacteria prior to consumption from spring heads due to the existence of livestock present.

The main line road system is rocky and unpaved within the property leading to the houses. The right of way entering from the west crosses Redwood Creek near the center of the property to reach the houses. Secondary roads are seasonal with some rock and are partially open to pick up traffic, with some only accessible by ATV or foot. Existing skid trails are present throughout the property and appear to serve the majority of the timbered areas. Past tractor crossings are present and would need evaluation of stability prior to future use. Primary access across Redwood Creek is by ford and shows deterioration. Installation of a permanent bridge is recommended, but will not be discussed further in the report. Several portions of the project area may need to be accessed through adjacent landowner property or additional watercourse crossings. Right of way agreements and 1600 agency permits must be obtained for truck road access prior to use. Be aware, permits generally take extended review periods.

Forest Infrastructure

Present forest structure consists of 40-60 year-old, Douglas-fir, Pacific madrone, Red Alder mixed with and other hardwoods.

Timber volume was assessed during preparation of this document. Timber types were determined by air photo and on the ground evaluation. Timber was sampled using a variable radius plot system. Plots were randomly established across the stands and a 40 BAF wedge prism was used to determine number of trees within the plot. Six or more plots were installed per stand type. Conifers and hardwood trees 4 inches in DBH and greater were tallied. Species, DBH, total height and visible defect were recorded.

Information was run in Assisi Manager Program per stand type. Volume was calculated using Wensel and Krumland's board foot volume equation coefficients from the publication *Volume and Taper Relationships for Redwood, Douglas-fir, and Other Conifers in California's North Coast* (University of California, Bulletin 1907). Volume calculated for Sitka Spruce, western hemlock and grand fir using Walters and Hann 1986. All conifer volumes are in Scribner board feet to a six-inch top by DBH and total height. Estimated red alder and other hardwood cubic volumes were calculated using volume tables developed by Pillsbury Kirkley Tarif. These volumes are in tons to a 5-inch top, height in feet by 5-foot increments.

Stand tables per timber type were then generated within the Assisi Manager Program. See the report attached in Appendix 5.

Further discussion of above types and regeneration levels can be found under the Forest Management Unit Information later in the document. Overall, the property is either densely stocked with young conifer or is composed of hardwood stocking and brush species.

The property contains several areas of tanoak hardwood content, with smaller areas of black oak species east of Redwood Creek. These areas are a mix of historic unstocked timber land in the form of conifers within primarily oak woodland. The soil types appear appropriate for timber and may need some clearing prior to planting within the tanoak stands. Alternately, the oak woodlands require removal of the conifer ingrowth.

Site class varies from II to III across the property. Site class was determined from California State Cooperative Soil-Vegetation Survey map and onsite evaluations.

Future harvest activity should include the Silvicultural practices of pre-commercial thinning, commercial thinning, single tree selection or group selection and stand rehabilitation. These methods provide the essential steps to creating a mature, healthy and aesthetically pleasing forest while still providing a moderate income. General guidelines for each method are as follows.

Commercial Thinning Harvest

Commercial thinning, including pre-commercial thinning, is the removal of trees in a young-growth stand to maintain or increase average stand diameter of the residual crop tree, promote timber growth and improve forest health. After operations, the residual stand shall consist primarily of healthy and vigorous dominant/codominant trees.

Post-Harvest Requirements:

1. A minimum of 100 trees per acre over 4-inches DBH where the preharvest dominant and codominant crown canopy is occupied primarily by trees smaller than 14 in. DBH.
2. A minimum of 100 ft² of basal area per acre where the preharvest dominant and codominant crown canopy is occupied primarily by trees greater than 14 inches DBH. In addition to meeting 100 sq. ft. in the Commercial Thin areas, the Seed Tree Retention standard of 14CCR 913.1(c)(1)(A) shall also be met.

Single Tree Selection Harvest

Selection harvest establishes and maintains a unevenaged stand structure. The method creates a multi-aged structure that promotes growth throughout a broad range of diameter classes while creating openings that encourage natural reproduction.

Post-Harvest Requirements:

1. The selection area shall retain a minimum of 75 square feet per acre of group A species on site II & III timberland and 50 square feet per acre of group A species

on site IV timberland. The residual stand shall contain at least 15 square feet of trees greater than 18 inches DBH that meet the phenotypic quality of tree requirements specified under the seed tree method (14 CCR 913.1(c)).

Group Selection Harvest

Group selection harvest is another way to establish and maintain a unevenaged stand structure. This method creates a multi-aged structure by creating a patchwork of age groups up to 2.5 acres in size. This also promotes growth throughout the stand with each group generally maintaining a certain range of diameter classes.

Post-Harvest Requirements:

1. At least 80% of the stocked plots must meet the stocking standards of 75 ft² of basal area per acre.
2. Not more than 20% of the stocked plots may meet stocking standards utilizing the 300 point count standard with trees that are at least 10 (ten) years old.
3. Group openings shall be no larger than 2.5 acres in size and shall be planted the first winter following operations such that they shall meet stocking within 5 years following the completion of operations.
4. The residual stand shall contain at least 15 square feet of trees greater than 18 inches DBH that meet the phenotypic quality of tree requirements specified under the seed tree method.

Rehabilitation Harvest

For the purposes of restoring and enhancing the productivity of commercial timberlands which do not meet the stocking standards of 50 square feet of conifer per acre or less than 150 point count prior to timber operations.

Pre-Harvest Requirements:

1. Provide a regeneration plan which includes site preparation, method of regeneration and species stocked.

Post-Harvest Requirements:

1. Within 5 years of completion of operation, the area shall be considered acceptably stocked, or shall be considered acceptably stocked if it contains at least 10 planted countable trees for each tree harvested on sites I, II, and III, and 5 planted countable trees for each tree harvested on sites IV and V.

Roads

The present road prisms within the property appear adequate, but show moderate signs of erosion. The primary route into the property contains areas of inadequate drainage and contains existing and potential future road failures. Road repairs have been listed below

under Management plan Implementation and are mapped on a Road Assessment Map at the end of the document.

As the road systems are opened to the vehicle traffic, the road should be graded and crowned or as sloped depending on the conditions within the area. See Appendix 1 for basic diagrams on road construction. Ditch relief culverts and or rolling dip installation shall be incorporated into the road system following spacing requirements.

Access and Security

Exploration of all the property lines did not occur during site visit. Establishment of property lines and right of ways is highly recommended for legal and financial protection.

Unknown if unwanted trespass activities are occurring. Issues can arise latter as the road systems are opened. Potential problems include hunters, firewood poachers, trash dumping, squatters and other illegal operations occurring on the property. The landowner will still be accountable for damaged occurring on the road system that causes environmental damage to lakes or watercourses, even if it was caused by trespassing.

Recreation and aesthetic values

No known recreational opportunities for the general public have been identified. For the owners of the property, the continued objective of timber & rangeland management shall greatly increase general recreation and aesthetic values.

Insect and Disease Problems

The property includes several low-level insect and disease problems. Pathogens present at low levels red ring rot, brown cubical butt rot, Douglas-fir beetle, Douglas-fir engraver beetle, flathead wood borer and the fungus Pholiota, which causes white rot.

The insect species are mostly found in suppressed or stressed trees. Trees attacked by porcupine and bear are highly susceptible to infection. These insect species can be kept at very low levels with judicious use of thinning and quick salvage of any dying trees. Unfortunately, red ring rot and damage by Pholiota can increase when the intensity of forest management increases. That is, increasing the rate of tree growth with the use of tree plantations or increasing the number of stumps left from thinning operations, acerbates the likelihood of damage from the diseases. By maintaining a reasonably vigorous forest with the use of selective logging to control tree density and to remove infected trees will prevent an increase in the insignificant levels of insects, disease, and other forest pests. Please see the Cal Fire and USFS fact sheets concerning the above insects and diseases attached in Appendix 5 at the end of the report. No disease out breaks noted by USFS within the general area of the project.

Climate Considerations and Carbon Sequestration

The proposed projects such as conifer thinning and pruning, hardwood removal and the brush raking of unproductive ground may result directly and indirectly in carbon sequestration and temporary, insignificant CO₂ emissions. Direct greenhouse gas (GHG) emissions from the proposed projects are estimated to be up to 415.51 metric tons of CO₂,

for the present and proposed projects, resulting from equipment emissions related to the removal of the vegetation.

Carbon sequestration is achieved through a repeating cycle of planting and growing of trees that remove CO₂ from the atmosphere and store carbon in tree fiber. An example of this is when a tree is harvested, most of the carbon-filled tree fibers become lumber that is sequestered in buildings while a new rotation of trees is planted and grown. Some of the tree fibers such as branches and tops are left in the forest where they are sometimes burned to reduce fire hazard. However, the vast majority of this material is left to decay and will emit CO₂ overtime; it also supplements the forest soils and forest duff layer where carbon is stored and serve as a substrate and nutrient for more tree growth. The forest landowners generally plan to continue the cycle and plant over 300 conifer trees per acre, creating new carbon sinks for the next cycle.

Adjacent Ownership Concerns

After review of aesthetic quality, wildfire, privacy, wildlife movement and habitat, noxious weeds, and other concerns, I do not believe that the property shall impact the neighboring properties surrounding the property. The proposed property management interacts adequately with neighboring properties, both industrial and the private parcels.

Economic Sustainability

Property Classification:

Property is classified by statute for assessment purposes into:

- Real property (including fixtures and improvements),
- Tangible personal property, and
- Intangibles

Real property includes the land; any right to possession of land; ownership or claim to ownership of land; *all standing timber*, whether planted or of natural growth and whether or not owned by the owner of the land; all mines, minerals, and quarries on the land; and any rights or privileges that are appurtenant to standing timber, mines, minerals, and quarries (Sec. 104, Rev. & Tax. Code; Reg. 121, 18 CCR;). Real property also includes any improvements on the land.

"Improvements" - Improvements include buildings, structures, fixtures, and fences erected on or affixed to land. Also defined as improvements are fruit and nut-bearing trees, ornamental trees, and vines that are not naturally growing on the land and not specifically exempt from taxation.

All nonexempt real property is assessed at its full cash value as of the 1975-76 tax year, adjusted for inflation. However, reassessments are made for any subsequent changes in ownership (unless specifically exempted) and for most new construction.

A presumption exists that the latest sales price, adjusted for inflation, reflects the property's full cash value; however, standard appraisal techniques are used to value property in instances when this presumption is inapplicable, and specific appraisal methodologies are provided for certain types of property, such as "enforceably restricted" and "open-space land".

Timberland Production Zone:

A county board of supervisors may designate areas of timberland in their counties as timberland preserves. The zoning designation is known as a Timberland Production Zone (TPZ). The land in a TPZ is restricted in use to the production of timber for an initial 10-year term and is considered "enforceably restricted. This property is currently zoned TPZ.

Land that is subject to enforceable restrictions is assessed by considering values of comparable lands subject to similar restrictions.

If the land is rezoned, i.e., removed from timberland production classification, a tax recoupment fee is payable based on a statutory factor multiplied by the last pre-timberland production classification assessed value of the property and on the number of years remaining in the 10-year term (Sec. 51140 through Sec. 51146, Govt. Code).

"Timber" - means trees of any species maintained for eventual harvest for forest products purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but does not mean nursery stock.

"Timberland" - means privately owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre.

"Timberland production zone" or "TPZ" - means an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses.

Valuation of "Enforceably Restricted" Timberland: (Sec. 434 and 434.5 Rev. & Tax Code)

Five site quality classifications, ranging from Site I as the most productive to Site V as the least productive or inoperable have been established for the Redwood Region, the Pine-Mixed Conifer Region, and the Whitewood Subzone of the Redwood Region (Sec. 434.5, Rev. & Tax. Code; Sec. 434, Rev. & Tax. Code).

The statute also sets forth the specific value per acre under each of the five site quality classifications for the three regions; these statutory values are subject to adjustment. By November 30 of each year, the SBE must certify to local assessors the current timberland values so determined (Sec. 434.5, Rev. & Tax. Code).

The value per acre of timberland zoned under the provisions of Section 51110 or Section 51113 of the Government Code shall be determined from the following schedule:

Redwood Region - means all those timberlands located in Del Norte, Humboldt, Sonoma, Marin, Monterey, Santa Cruz, and San Mateo Counties and that portion of Mendocino County which lies west and south of the main Eel River.

Whitewood Subzone of the Redwood Region - means that timberland located within the Redwood Region within which the assessor has determined that redwood did not exist as a species in the composition of the original timber stand, or which has not been replanted with redwood for commercial purposes.

To determine the actual tax burden per acre, the zone values are then multiplied by 1% to get the amount of tax per acre that the owner pays. This 1% is a statutory minimum applied throughout the state and can be taken for a state average.

Change of zoning from timberland production:

Upon rezoning, land formerly zoned as timberland production land will be assessed on the same basis as real property is assessed (Sec. 51140, Govt. Code; Sec. 51141, Govt. Code; Sec. 51142, Govt. Code). A tax recoupment fee, which is payable to the county in which the rezoning has taken place, will then be imposed. The fee is a multiple of the difference between the amount of the tax last imposed on the property before it was zoned for timberland production and the amount equal to the assessed valuation of the rezoned property times the tax rate of the current levy for the tax rate area.

"Open-space land" treatment:

Timberland may qualify for special treatment as "open-space land" (Sec. 51118, Govt. Code; Reg. 470, 18 CCR). In valuing open-space land that is "enforceably restricted" for the production of timber, a county assessor may not consider sales data but rather must use the present worth of the income that the future harvest of timber crops from the land and the income that other allowed compatible uses can reasonably be expected to yield under prudent management (Sec. 423.5, Rev. & Tax. Code; Reg. 53, 18 CCR).

Compatible use - is a use that does not significantly detract from the use of property for growing and harvesting timber and includes such uses as management for watershed, and for fish and wildlife habitat, and for grazing (Sec. 51104, Govt. Code). The capitalization rate used in valuing other open-space land, discussed at ¶20-194, must be used in valuing timberland.

Open-space land is "enforceably restricted" for purposes of reduced taxation if it is subject to a contract, agreement, scenic restriction entered into prior to January 1, 1975, open-space or agricultural conservation easement, or wildlife habitat contract.

Tax treatment of standing timber:

Although timberland is subject to property tax, the timber standing on the land is exempt from tax, including possessory interest taxation (Sec. 436, Rev. & Tax. Code;). However, trees standing on land not zoned as timber production may be assessed on the basis of their esthetic or amenity value (Sec. 436, Rev. & Tax. Code;).

Immature forest trees planted on lands not previously bearing merchantable timber or planted or of natural growth on land from which 70% of all merchantable timber over 16 inches in diameter has been removed are specifically exempt from property taxation (Sec. 3(j), Art. XIII, Cal. Const. ; Sec. 211, Rev. & Tax. Code;). Timber is considered immature until it is 40 years old or until it is declared mature by a committee named in the Constitution. The California Constitution authorizes the legislature to provide a system of taxation or exemption of timber or forest trees, including one not based on the value of the property.

Severance Tax:

Each producer of natural resources or timber in the state is required to pay a severance tax (Sec. 26-58-107, A.C.A.). Producers are required to obtain permits before engaging in the business of severing natural resources or timber (Sec. 26-58-106, A.C.A.). The failure to secure a permit is punishable by a fine.

Timber - means either softwood or hardwood species of trees suitable for use as sawlogs, pulpwood, veneer bolts or billets, stave bolts or billets, and splits, handle and other bolts or billets including chemical wood, cross ties, posts, poles, piling, chips, charcoal, or any now known or hereafter discovered use of wood or wood pulp.

Producer - means any person, firm, receiver, or other fiduciary, corporation, or association engaged in the business of severing natural resources (Sec. 26-58-101, A.C.A.).

Severing natural resources - generally means all natural products of the soil or water that are mined, dredged, or otherwise taken or removed, for commercial purposes, from the soil or water.

The timber yield tax rate for 2012 is 2.9%. Tax returns are filed with the SBE on or before the last day of the month following each calendar quarter (Sec. 38402, Rev. & Tax. Code). Tax payments are due on or before the last day of the month following each quarterly period in which the scaling date for the harvested timber occurs (Sec. 38401, Rev. & Tax. Code).

Exemptions:

Severance tax is not levied against an individual who occasionally severs natural resources or timber from his or her own property to be used in the construction, repair, or maintenance of his or her own structures or improvements (Sec. 26-58-108, A.C.A.).

Timber is exempt from tax, provided that its immediate harvest value within a quarter does not exceed \$3,000 (Sec. 38116, Rev. & Tax. Code; Reg. 1024, 18 CCR). The exemption prevents harvest value tax collection and administration costs that would otherwise exceed tax revenues collected from low timber

Current markets:

Current market conditions for timber products are moderate to poor in value, due to the present market recession. Log prices routinely outpaced inflation, but are presently so low that operation costs is inhibiting harvest. Operation cost includes, permits, logging cost, trucking cost, taxes, etc. Average log prices delivered to the mill for 2021 markets as of 6/2/2021 for the species on the property are as follows;

Redwood –\$1,250 per thousand board feet (mbf)

Douglas-fir –\$575 per mbf

Other Conifer -- \$340 to \$400 per mbf

Red Alder -- \$65 ton

Log prices are continually in flux depending on the market. Prior to commercial harvest, a contract with the licensed timber operator and a reputable saw mill should be assigned.

Soil Description, Site Description and Protection Measures

Soil types were determined from Natural Resource Conservation Service, Soil Resource Report for **Anthony and Mary Massei Living Trust**. Soils types within the project area are as follows;

Map Unit 445 – Burroin-Redtop Complex

Map Unit 446 – Bagaul-Burroin-Redtop Complex

Map Unit 447– Hullygully-Burroin Complex

Map Unit 469 – Burgsblock-Cookyork-Tannin Complex

Map Unit 452 – Tannin-Burgsblock-Rockyglen Complex

See Soil map at the end of the report.

Geology is primarily the Franciscan Formation and as per 1985 California Department of Conservation Division of Mines and Geology general map of the area depicts several areas of rotational slides, debris slide slopes and hummocky ground. Rocks throughout Redwood Creek are relatively weak and their slopes are prone to failure. Prior to harvest within these areas the stands should be reviewed by a licensed geologist. Please see geology map attached at the end of the report.

Streams, Wetlands, and Ponds

The project area contains one main watercourse and is identified by the USGS 7.5 minute maps as Redwood Creek. Redwood Creek bisects the property from southeast to northwest. Redwood creek flows to the Pacific Ocean near the town of Orick and is considered a fish bearing watercourse (Class I watercourse).

There are also several minor watercourses on the property, that are either storm flow activated (Class III watercourses) or spring fed (Class II watercourse). All the creeks eventually flow into Redwood Creek. Redwood Creek is a tributary to the Pacific Ocean.

Redwood Creek has been listed as sediment and temperature impaired under section 303d of the Clean Water Act. Redwood Creek contains resident steelhead trout. Redwood Creek and its tributaries maintains a healthy clarity and is an Anadromous river system, with an abundant amount of fish species present compared to watercourses further down in the state.

Beneficial uses of the Redwood Creek are:

- Groundwater Recharge
- Freshwater replenishment
- Water Contact Recreation
- Non-water Contact Recreation
- Cold Freshwater Habitat
- Wildlife Habitat
- Rare Threatened or Endangered Species
- Migration of Aquatic Organisms
- Spawning, Reproduction, and / or Early Development
- Water Quality Enhancement
- Native American Culture

Redwood Creek: Class I watercourse, the mainstem flows out of the headwaters to become a low gradient stream with short tributaries flowing into Redwood Creek. The upper watershed is mostly private timber lander. Percent canopy cover ranges from 70 to 90 percent throughout the upper reaches of the watercourses. The Canopies are composed of a mix of Redwood, Douglas fir, Big Leaf Maple, California bay Laurel, Incense Cedar, Tan Oak, Pacific Madrone, and Red Alder.

The watercourses have been designated per California Forest Practice Rules (FPR) 14CCR 916.5 watercourse designations. General designation descriptions and watercourse protections are as follows:

- Class I watercourse: Fish always or seasonally present or domestic water supply within 100 feet downstream of operations. Protect with a limited harvest and equipment buffer of 100+ feet depending on slope and disturbance.
- Class II watercourse: Aquatic habitat for nonfish aquatic species. Protect with a limited harvest and equipment buffer of 50+ feet depending on slope and disturbance.
- Class III watercourse: Capable of sediment transport to Class I & II waters. Protect with a limited equipment buffer of 25+ feet.

Please see the Project Map for watercourse designation.

Air Resources

Primary smoke occurs from brush pile burning. Piles are formed from harvest operations, brush removal for ranch management or forestry needs, and for fire safety. Broadcast

burning may be proposed for this property due to its location adjacent to off shore air flow. The property is primarily situated along a trending ridge with an elevation well above the nearest community. The property routinely has southerly wind that dissipates smoke across industrial timberland away from populations within the area. No significant impact is expected to the community, schools and to residents surrounding the property.

Fish & Aquatic Species

Redwood Creek is a fish bearing watercourses that exist within the property. Anadromous fish are present or have the potential to be present within the watercourse. Fish species include summer steelhead trout, coastal cutthroat trout, Chinook, Coho salmon and resident trout. Non fish species present within the watercourses include frogs, turtles and salamanders. Pacific tree frog and western toad are common species found throughout the property. Species of special concern within the project area include the northern red legged frog, foothill yellow legged frog, southern torrent salamander, tailed frog and the northwestern pond turtle.

Chinook & Coho salmon utilize a variety of freshwater habitats and tolerances and requirements change with season and age. Each of the four distinct life stages, Adult, Spawning/embryo/alevin, Parr, and Smolt, require specific habitat quality.

Summer stealhead are migrating fish that require deep holding pools with cover. Spawning occurs in cool, clear, and well-oxygenated streams. Preferred water temperatures are 10-15 degrees C. Juveniles migrate out to sea in 1 to 3 years.

Resident trout require deep to shallow holding pools with year around water. Preferred water temperatures are 10-15 degrees C, but survive in much higher temperatures throughout the drainages. Juveniles may or may not migrate from the holding pool. Lack of a food source or increase in water temperature drive them to other pools.

Southern Torrent Salamander are found in coastal forests of northwestern California, relatively common in preferred habitats of cold, well shaded permanent streams and spring seepages within redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer forests. Southern torrent salamander habitat is present within the project area.

Red-Legged Frogs are found in riparian areas and permanent bodies of relatively quiet water such as ponds, pools along streams, reservoirs, springs, lakes and marshes. This species has been recorded within the watershed. Habitat exists within and adjacent to the class II watercourses within the project area.

Foothill Yellow-legged Frogs prefer watercourses with bed load materials composed primarily of sand and gravels while larger rocks are sought out for cover. Regardless of season this frog is rarely found far from permanent water. Tadpoles require water for at least three to four months while completing aquatic development. This species has been recorded within the watershed and potential habitat exists within and adjacent to the class II watercourses.

Tailed Frogs are found in riparian areas where there are clear, cold swift-flowing mountain streams; sometimes found near water in damp forests or in more open areas in cold, wet weather. Key habitat components within cold swift-flowing streams are plunge pools and rocky substrates where tadpoles cling to surfaces with large sucker like mouth while eggs

are attached to downstream side of rocks. Habitat exists within the project area along the watercourses; however, none were identified during existing surveys.

Northwestern pond turtles range from the Oregon border south to Kern County. Specific habitat includes areas of permanent water such as lakes, ponds, marshes, rivers, sloughs, and drainage ditches. No areas of permanent standing water exist within the project boundary and no turtles have been observed in the watercourses.

Upland Wildlife

The property supports mammal species such as Black bear, black-tailed deer, coyote, mountain lion, striped skunk, raccoon, black-tailed jackrabbit, California ground squirrel, deer mouse, common wood rat and red tree vole. Representative birds include California quail, mountain quail, turkey, acorn woodpecker, scrub jay, American robin, western meadowlark, and red-tailed hawk. Bald eagles and golden eagles are also sometimes spotted on the property. Several pairs of Northern Spotted owls are present with the general area also. Typical reptiles found on the property are Northern alligator lizard, western fence lizard, common garter snake, and western rattlesnake. Please see an Initial Biological Scoping Report Attached.

There is no late seral habitat throughout the ownership. The property would be best described as type 4M in the WHR classification. Snags are distributed within the ownership. It is roughly estimated that approximately two snags per acre over 16" DBH exist within the property with the majority of the snags composed of Douglas fir. Downed woody debris (DWD) is moderately abundant throughout the property. Higher concentrations of merchantable DWD have accumulated within the watercourse and riparian areas.

Hardwoods are moderate to a high component throughout the ownership. The natural vegetation makeup consists primarily of conifers that are dominated by Douglas-fir with hardwoods intermixed within this matrix. Hardwoods, such as tan oak, pepper wood and red alder and other similar species often occupy drainages and wet areas in the early pioneer stages of forest development but are quickly replaced by the longer living, faster growing Douglas-fir. Similarly, tanoak and madrone often quickly occupy the drier; upslope sites following disturbance, but are eventually replaced with conifers.

List State and Federal threatened or endangered species - plants or animals

Numerous rare, threatened, or endangered animal and plant species and California Species of Concern are known to occur in the 9-quadrangle area in which the property is located. Of these, those that are known or likely to occur on the property include are listed within the Initial Biological scoping report within Appendix 5. Additional biological surveys are recommended before further operations on the property. These include 6 BIO's discussed within the initial Biological scoping report within Appendix 5.

LANDOWNER MANAGEMENT OBJECTIVES

Silvics (growing and tending of forests)

Desired Forest Condition: Provide a variety of diameters and ages of conifers and hardwoods throughout the stand. Provide continued shade and erosion protection adjacent to the watercourses.

Pest/Fire

Fire protection objectives: Provide release and shaded fuel breaks across the property and access roads to reduce ladder fuel concentrations. Provide other measures to reduce fire potential and increase fire safety.

Forest Health objectives including insects and disease: Maintain and reduce insect and disease populations. Remove infected trees.

Invasive species, plant and animal, concerns: Minimize impact to animals while reducing damage to commercial stock.

Trespass concerns: Establish property lines and install fences if needed to keep trespass to a minimum.

Wildlife

Desired species habitat improvement: Allow multiple habitats for the variety of wildlife that use the property. Provide improved habitat for deer and other wildlife species. Retain at least two snags per acre. If snag retention is not possible, implement the use of bird boxes to provide nesting/roosting habitat for wildlife.

Additional Objectives For:

Livestock: Minimize cattle within the timber stands.

Aesthetics: Maintain a mixed and open stand with a variety of tree diameters and heights.

Recreation: Maintain health of Redwood Creek habitat and allow for use of swimming holes, fishing and other recreational use of Redwood Creek.

Income: Sustainably harvest timber to provide a source of income over a periodic period of time.

Family Legacy: Maintaining the property within family and providing a parcel that will maintain value for the children.

Roads: Open road system in order to better manage the property

MANAGEMENT PLAN IMPLEMENTATION

Constraints and Proposed Alternatives

The proposed alternatives are presented below to determine the rationale for the management objectives. Proposed alternatives are as follows:

The first option is to sell the property to the state of California, who, in turn, would turn it into a park. The benefit is that the landowners receive income and the forests would be allowed to develop naturally. The disadvantage is that the landowners would not have ownership or control their property and the money obtained would be a one-time income.

The next option is to sell the property to developers who, in turn, subdivide and build on these landscapes. The benefit is that the landowners receive income. The disadvantage is that open space, wildlife habitat, and other watershed values are reduced or destroyed. The additional disadvantage is that the landowners have to leave their property. The money obtained would be a one-time income, and the landowners would have to find another source of future income.

Another option is not to have any management activities on the property. The benefit of this is that where man caused environmental impacts have occurred, these impacts would slowly heal over time. The disadvantages are that no income would be derived from the property, and that the fire danger would remain high.

Another option would be to annually harvest timber, but to discontinue all maintenance of the property. This would result in income from timber with the roads periodically managed at a higher cost.

The final choice and the option chosen by the landowner is to let the forests grow and harvest timber at a sustainable rate and to continue CFIP & NRCS grants to repair roads, and thin the forest stands to reduce fire danger. The advantage is that annual income from timber in combination grants pay for landowner expenses and maintenance of the road system and erosion sites. The property stays within the family and the wildlife and biological ecosystems stay intact. The disadvantage to this alternative is that the current market for timber is so low that it is presently not economical to harvest timber.

Silvics (Desired Forest Condition: Reforestation and Afforestation)

- Manage commercial timber stand types as described below in the *Forest Management Unit Information*.
- Apply for areas of restoration and reforestation on unstable slopes and areas of heavy brush.

Pests

- Inspect stand annually for potential insects, diseases and animal damage. Single tree or groups >.25 acre in size damaged or infected should be periodically removed from the stands. Lightly damaged or early decay stage trees may be removed and marketed to mills under a state 10% dead and dying permit. All non-merchantable should be piled and burned in order to reduce spread of disease or insect vectors.

Fire Protection

- During the course of fuel break prescriptions, all road systems should be opened on the property with a minimum 10-foot vegetation setback cleared on both sides of the road to allow for ingress and egress of fire engines.
- At a minimum, a 500 gallon poly tank should be placed on a rock pad where Cal Fire engines have ample turning radius, minimum ¼ acre pad. The poly tank should be connected to a stand pipe that contains a 2.5 fire thread outlet. Contact Cal fire, Humboldt County or check for requirements on line under fire Prevention/Protection.

Trespass concerns

- To reduce property theft and environmental damage to the property in the future, established property lines and fences should be installed. County survey records and contacts with adjacent landowners should be reviewed for pertinent information. If corners are not present a licensed surveyor from the area should be hired to install the missing lines. Occasionally, cost share with adjoining neighbors can reduce the cost.
- After lines are established, low-cost fences should be established to hinder trespass. Fences under 4 feet in height and with wide spacing of the fence material generally does not impede animal movement, only humans.

Wildlife

Maintain type 4S, 4M in the WHR classification. Snags are distributed within the ownership. It is roughly estimated that approximately two snags per acre over 16" DBH exist within the property. Two snags to the acre should be continued across the property. Additional snags present should be removed to decrease fire and insect damage as discussed above under pest. If snag retention is not possible, bird boxes will be used to provide nesting habitat for wildlife species. Downed woody debris (DWD) is moderately abundant throughout the property. Most of the merchantable DWD has been removed in the past harvests; however, in the older stands higher concentrations exist and have accumulated within the watercourse and riparian areas. To maintain DWD on the property, do not salvage woody debris within 100 feet of the watercourse. The retention of the woody debris allows the grubbing by wildlife and establishes sanctuary for smaller species. Outside of the watercourse area, woody debris may be removed if sound material is present for use.

Hardwoods are a moderate to high component throughout the ownership. The natural vegetation makeup consists primarily of conifers with Douglas Fir as the dominant species and hardwoods and other conifers intermixed within this matrix. Hardwoods, such as pepperwood, red alder, willow and other similar species often occupy drainages and wet areas should be retained. Hardwoods outside of the watercourse areas may be removed and replaced with, faster growing Douglas-fir.

Additional Objectives For:

Aesthetics: Following the shaded fuel break prescription along with maintaining a mixed diameter age stand discussed by unit below will provide a mosaic pattern similar to adjacent parcels. No significant aesthetic degradation is expected.

Income: There are many Calfire permits available to generate income on the property. The primary permits for property this size that a landowner may obtain include a fire prevention exemption permit, a timber harvest plan permit or a non-industrial timber management plan permit. The fire prevention permit provides a one-year window for the thinning of timber. The canopy shall be

maintained at 60%. This is similar to the fuel break prescription but allows removal of timber up to 30 inches in diameter, 6" on the stump. The timber harvest plan is a 5-year permit to harvest timber. This permit would follow the rehabilitation method and/or single tree selection method allowing a variety of diameters to be removed creating a mixed age and species stand. For long term income the use of a Cal Fire non-industrial timber management plan (NTMP) should be approved on the property. The document is a harvest document similar to a Timber Harvest plan, but it goes further with a sustained yield document that allows you to harvest timber periodically over the next 100 years. This permit is the costliest of the other two documents short term, but allows you to harvest timber for many years into the future making this permit the most cost-effective long-term permit. For more information contact Hohman and Associates, or reviews Cal Fire website, under forest practices.

Family Legacy: The first step would be the use of a NTMP permit to create a sustainable income while maintaining and encouraging a mixed stand.

Recreation: Managing the forest stand through fuels reduction and timber harvest will open the dense stands and allow opportunities for hiking, hunting and picture taking. No significant impact should occur as a result of recommended operations

Roads: Road repairs have been listed below and are mapped on a Road Assessment Map at the end of the document.

Repair pts.

General instructions: Sites are flagged in the field. Some crossings requiring CDFW 1600 replacements. Directions for critical dips and rolling dip locations are described by looking down stream, then reference left or right of the watercourse centerline. Culvert sizing has been provided in Appendix 5.

Point 1: Existing 18" diameter metal ditch relief culvert. Culvert is functioning and requires outlet mouth to be lined with ¼ yard of 4" to 6" diameter rock to slow dissipation.

Point 2: Existing 18" diameter culvert on a Class II watercourse. Culvert is undersized and misaligned. Install permanent 36" diameter culvert 30'+ long to grade. Install 6" to 18" diameter rock around inlet and outlet to protect from scour. Install critical dip on center of crossing and line with 4" – 6" diameter rock. Line the crossing approaches for 50' left and right of the culvert center line with 1"+/- crushed gravel 4" in depth. CDFW 1600 required.

Point 3: Existing 24" diameter culvert on a Class II watercourse. Culvert has failed. Install permanent 42" diameter culvert 40' long to grade. Install 6" to 18" diameter rock around inlet and outlet to protect from scour. Install critical dip on center of crossing and line with 4" – 6" diameter rock. Line the crossing approaches for 50' left and right of the culvert center line with 1"+/- crushed gravel 4" in depth. CDFW 1600 required.

Point 4: Inside ditch drains across adjacent tractor trail. Develop a 4' X 6' field of rock (5 cu yards) just past the intersection to reduce sediment within the ditch. Install 4" – 6" diameter rock within the field.

Point 5: Existing 24" diameter culvert on a Class II watercourse. Culvert is functioning adequately with no repair needed. Install 6" to 18" diameter rock below outlet to protect from scour. Install critical dip on center of crossing and line with 4" – 6" diameter rock. Line the crossing approaches for 50' left and right of the culvert center line with 1"+/- crushed gravel 4" in depth. CDFW 1600 required.

Point 6: Existing wet ford crossing on Redwood Creek, a class I watercourse. Ford is functioning adequately. Additional rock shall be installed during summer months to allow vehicle access. No log trucks shall access the crossing. The crossing may be armored with a clean mix of 6" to 24" diameter sharp angular rock, with the smaller diameter rock filling the voids around the larger diameters. The rock shall be keyed into the fill a minimum of 12". Running surface approaches shall be outsloped 3% to 5%. Line the crossing approaches for 50' left and right of the watercourse center line with 1"+/- crushed gravel 4" in depth. CDFW 1600 required.

In general, the road system should be graded and crowned or as sloped depending on the conditions within the area. See Appendix A for basic road construction guidelines. Additional ditch relief culverts and or rolling dip installation shall be incorporated into the road system following the spacing requirements shown listed below in the table.

Maximum suggested spacing for ditch relief culverts and/or rolling dip installations (in feet)				
Road grade (%)	Soil Erodibility (Erosion Hazard Rating)			
	Extreme	High	Moderate	Low
2	600-800			
4	530	600-800		
6	355	585	600-800	
8	265	425	525	600-800
10	210	340	420	555
12	180	285	350	460
14	155	245	300	365
16	135	215	270	345
18	115	190	240	310

FOREST MANAGEMENT UNIT INFORMATION:

Name or Unit # Massei CFIP Acres 268

Location (describe and map id): Please see Timber Stand Map located at the end of the document.

See stand tables attached in Appendix 5.

Objectives:

- Portions of stand contain small density, small diameter conifer stems. Needs precommercial release.
- Portions maintain high hardwood content. Reduce hardwood component and increase conifer stocking with group A species.
- Space existing conifer stand for better health and vigor. Remove older defective and slow growing conifers. Increase overall stand diameter and health.
- Minor Black oak stands present. Where feasible reduce conifer content to maintain group B species.

Description:

- The conifer stand is composed primarily of 4-60" diameter Douglas-fir, with a very minor component of Sitka spruce. The hardwood component is composed of mainly 4-48" diameter tanoak with a lesser amount of red alder, pacific madrone and other hardwoods. The conifer stand is patchy with dominant and codominant crowns. It contains 124 trees to the acre and a basal area of 107 square feet. The average quadratic mean diameter is 18+/- with a median tree height of 64 feet. Overall, the present conifer stocking is above the threshold of satisfactory conifer stocking as per California state forest practice rules. Harwood content is presently the dominant tree within the stand with an average of 148 trees to the acre and a basal area of 115 square feet. The average quadratic mean diameter for tan oak is 15.6+/- with a median tree height of 48 feet.
- The conifer stand contains an average of 9.649 thousand board feet to the acre with a total of 2.586 million board feet across the unit.
- Timber volume can be harvested by tractor and cable logging systems.

Unit Management Resource Concerns and Recommendations

- Apply for precommercial release of stand. Correct spacing and remove hardwoods. (Area A)
- Harvest tan oak and a mix of hardwood diameters following stand rehabilitation with heavy machinery. (Area B, C)
- Alternative stand replacement by use of herbicide uses such as Roundup, Triclopyr4 or Garlon 3A. (Area B, C)
- Replant with a minimum of 300 trees to an acre of Douglas-fir or redwood seedling mix. (Area B, C)
- Follow up with herbicide uses such as Garlon 3A to remove 1st year competition. (Area B, C)
- Plant areas of poor understory stocking with group A species minimum of 300 trees to a rate of 150 trees to the acre. (WLPZ)
- Dense vegetation present within the understory along the appurtenant road system within the stand, leading to high fire danger. Prepare fire exemption. (Mainline road)
- Prepare fire exemption to reduce stand density and market conifer with mills. (Entire property)
- Prepare conifer release within the Black oak stands to allow hardwood dominance. (Area D)
- Future needs. Harvest a mix of diameters following the selection silvicultural method to allow for stand growth and health. (Entire property)

MANAGEMENT ACTIVITY DECISIONS, SCHEDULE AND TRACKING

Estimate Only

Road Points	Acres/ feet	NRCS Practice Code (optional)	Treatment Activity Short Description 2021 - 2022	Dates		Cost Share Used? Type?	Net Cash Flow	
				Planned	Completed		Cost	Income
1		580	Rip Rap Outlet 4-6" dia @ 76.11 x 1 cu yard = \$76.11					
2	40'	578	Culvert Install 24" dia X 40' @ \$515.07 = \$20,602.80					
2		580	Culvert Rip Rap 6-18" dia @ 91.06 x 15 yards = \$1,365.95					
2	100'	560	Critical Dip Install (CD) @ \$7.83 x 100' = \$782.73					
2		580	CD Rip Rap 4-6" dia @ 76.11 x 3 cu yards = \$228.33					
2	100'	560	Gravel1"+/- @ \$5.74 x 100' = \$574					
3	40'	578	Culvert Install 30" dia X 40' @ \$515.07 = \$20,602.80					
3		580	Culvert Rip Rap 6-18" dia @ 91.06 x 15 yards = \$1,365.95					
3	100'	560	Critical Dip Install (CD) @ \$7.83 x 100' = \$782.73					
3		580	CD Rip Rap 4-6" dia @ 76.11 x 3 cu yards = \$228.33					
3	100'	560	Gravel1"+/- @ \$5.74 x 100' = \$574					
4		580	Rip Rap Field 4-6" dia @ 76.11 x 5 cu yard = \$380.55					
5		580	Culvert Rip Rap 6-18" dia @ 91.06 x 8 yards = \$728.48					
5	100'	560	Gravel1"+/- @ \$5.74 x 100' = \$574					
5	100'	560	Critical Dip Install (CD) @ \$7.83 x 100' = \$782.73					
5		580	CD Rip Rap 4-6" dia @ 76.11 x 3 cu yards = \$228.33					
6		580	Rock Ford Rip Rap 6-24" dia @ 91.06 x 25 = \$2,276.50					
6	100'	560	Gravel1"+/- @ \$5.74 x 100' = \$574					
A	14 acres	666, 384, 490	Pre thin- heavy@ \$800x14=\$11,200					
B	122 acres	384, 490, 314, 315, 682, 666	Site Prep heavy@ \$800x122=\$97,600 Trees and Tree plant mod@298X122=\$36,356 Follow Up = \$7,690					
C	82 acres	384, 490, 314, 315, 682, 666	Site Prep heavy@ \$680x82=\$82,960 Trees and Tree plant mod@298x82=\$24,436 Follow Up = \$9,440					
Group D	51 acres	E666j	Release Other@ \$400x51=\$20,400					
Mainline	6 acres	383, 384	Release Other@ \$700x6=\$4,200					
WLPZ	59 acres	682	Trees and Tree plant mod@298x59=\$17,582					

See 2020-2021 CFIP Cap Rates listed above attached in addendum 5.

USDA Codes and Rates listed above are on line with Natural Resource Conservation Service. Additional practices that apply to this project are listed as follows.

314 Brush management	315 Herbaceous Weed Treatment	327 Conservation Cover
328 Prescribed Burning	382 Fencing	384 Lop & Scatter
383 Fuel Breaks	384 Slash Treatment	384 Dead & Dying Removal
490 Tree Site Preparation	560 Access Road	561 Heavy Use Road Rock
572 Soil Disposal	500 Obstruction Removal	580 Streambank Rock
578 Stream Culverts	578 Stream Fords	582 Fill Excavation
587 Cross Drains	587 Rock Check Dams	682 Tree Planting
614 Stock Troughs	642 Water Well	649 Nesting Box
654 Road Closure	655 Forest Trails and Landings	666 Forest Improvements
E391A Riparian Buffer Increase	E666j Oak Forest Regeneration	

PLANNED MANAGEMENT ACTIVITIES AND REQUIRED PERMITS

Management recommendations:

Project specifications, priorities, feasibility and alternatives are listed above within the project discussion. Project map and a schedule of proposed activities covering at least five years are identified above. See timeline using the Management Activity and Tracking Form above.

If /once a conservation project is selected, the site specific environmental/cultural (CEQA/NEPA) documentation will need to be completed with the schedule of activities, project map and project specifications.

Harvest Documents:

Most commercial biomass removal activities need a CAL FIRE permit. Identify needed or current Cal Fire THP, NTMP and/or Categorical Exclusion for proposed management activities.

NRCS projects require approval their dept. Other agencies may be notified of work proceeding. Commercial harvest requires a Cal Fire permit prior to operations.

Conservation Project Permits:

Under NRCS projects, road points A & B shall require Department of Fish and Game 1600 review and Dept. of Water Quality review.

Water Quality Best Management Practices or Agency Waiver

There may be permits requirements for dust control, water pickups, ponds, road maintenance, crossing replacements depending on property location in the State. Check with Department of Fish and Game 1600 review and Dept. of Water Quality review prior to operations.

Monitoring

Required monitoring for regulatory compliance may be required as part of above permits.

California Environmental Quality Act and National Environmental Protection Act information

Forest management activities including conservation practices may impact special environmental and/or cultural values. These values are often kept private for protection. Landowners need to know where they are and what they can do to protect them. When a project is proposed and a permit and/or government assistance is part of the project, environmental and cultural reviews by concerned agencies are necessary. Conservation projects using public

incentives will require the following environmental and archaeological documentation and should be added as an addendum.

Environmental

- See CNDDDB map of the location of known geological, biological or ecological values sites. See Appendix 4 for map and text concerning fish and wildlife importance.
- With any on the ground project a signed CAL FIRE CFIP Environmental Checklist (CEQA) or NRCS CPA-52 (NEPA). Checklist must be filled out by an RPF or certified planner.

Archaeology

- A confidential record check and survey has been completed for the property. Report is on file with Hohman and associates. RPF or a professional archeologist shall complete a Confidential Addendum with the state prior to operations. No surveys completed at this time.

ADDITIONAL PROFESSIONAL ASSISTANCE

Management Recommendations and Assistance for other lands or non-forested areas

List agencies and individuals that owner has or may consult for special sites, threatened and endangered species, desired species, livestock specialists, Native American cultural values, etc.

- **Natural Resource Conservation Service 707-442-6058**
- **California Department of Fish and Wildlife 707-725-1072**
- **Cal Fire Forestry Assistant Specialist 707-726-1253**
- **California Regional Water Quality 707-576-2621**
- **United States Fish & Wildlife Service 707-822-7201**
- **North Coast Unified Air Quality Management 707-443-3093**

Community/Agency Cooperation Mechanisms

List agencies and NGOs such as the local office of CAL FIRE, NRCS, the local RCD, Fire-safe Council, and etc with current contact names and numbers the owner can contact for guidance and help.



- **University of California Cooperative Extension 707-445-7351**
- **Forest Stewardship Helpline 800-738-TREE**
- **USDA Agriculture Commissioners 441-5261**
- **The Tree Farm System 707-445-4130**
- **Buckeye Conservancy 707-725-8847**
- **Forest Landowners of California 707-326-3778**

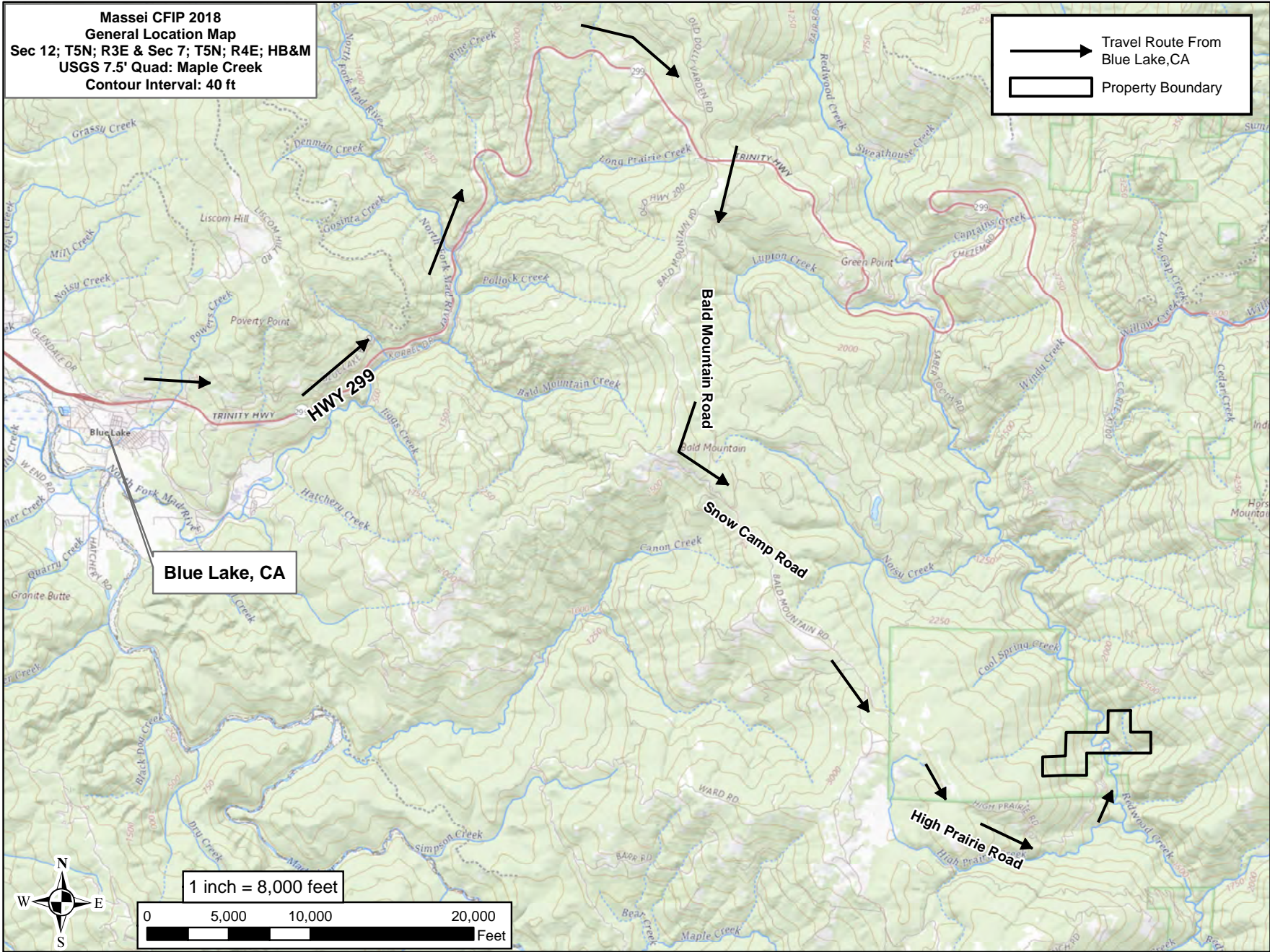
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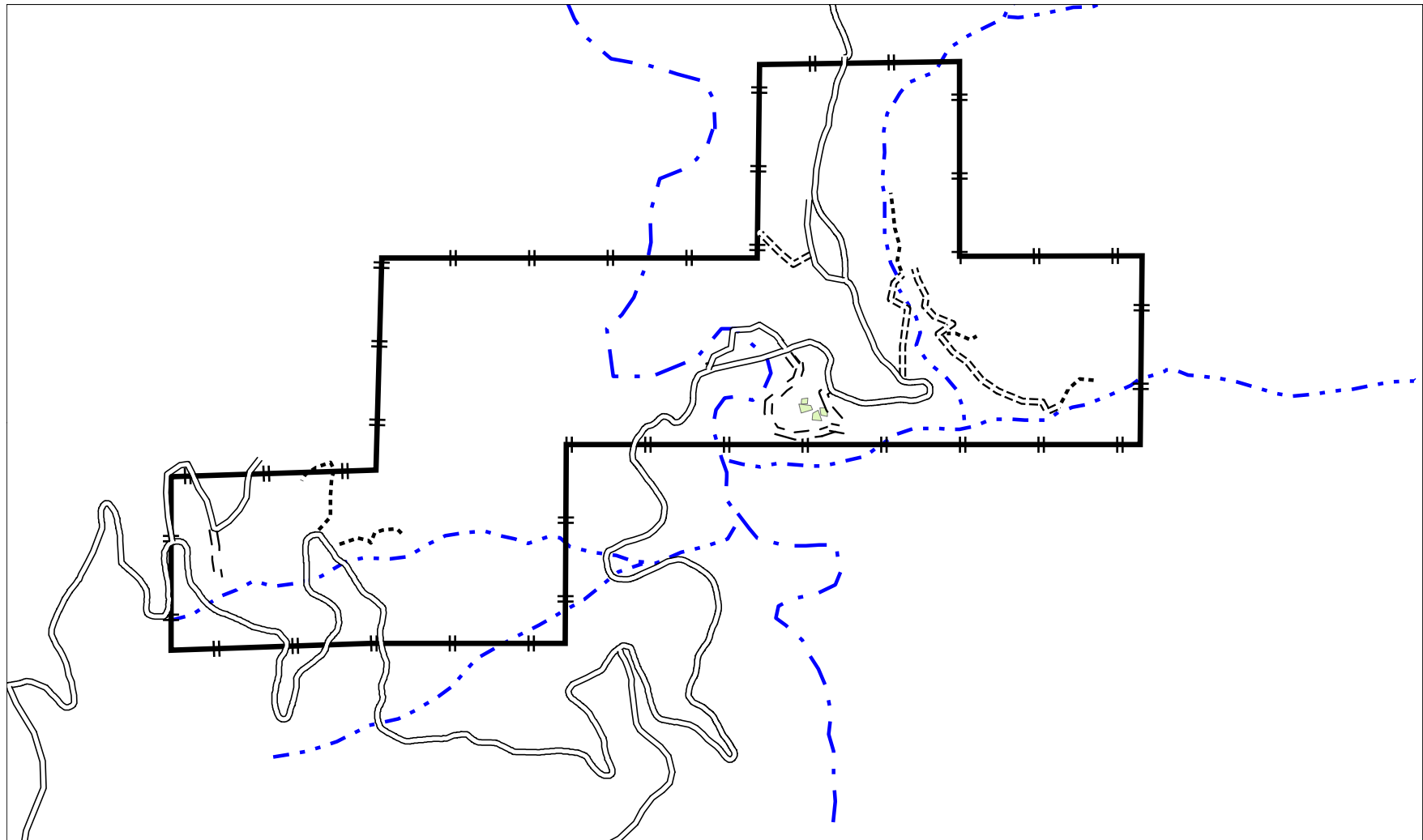
Property and Plan Maps

Ver. 10/27/11

**Massei CFIP 2018
General Location Map
Sec 12; T5N; R3E & Sec 7; T5N; R4E; HB&M
USGS 7.5' Quad: Maple Creek
Contour Interval: 40 ft**

 Travel Route From Blue Lake, CA
 Property Boundary

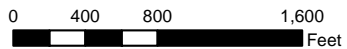




Massei CFIP
 APNs: 316-196-004, 316-196-007
 & 316-195-002

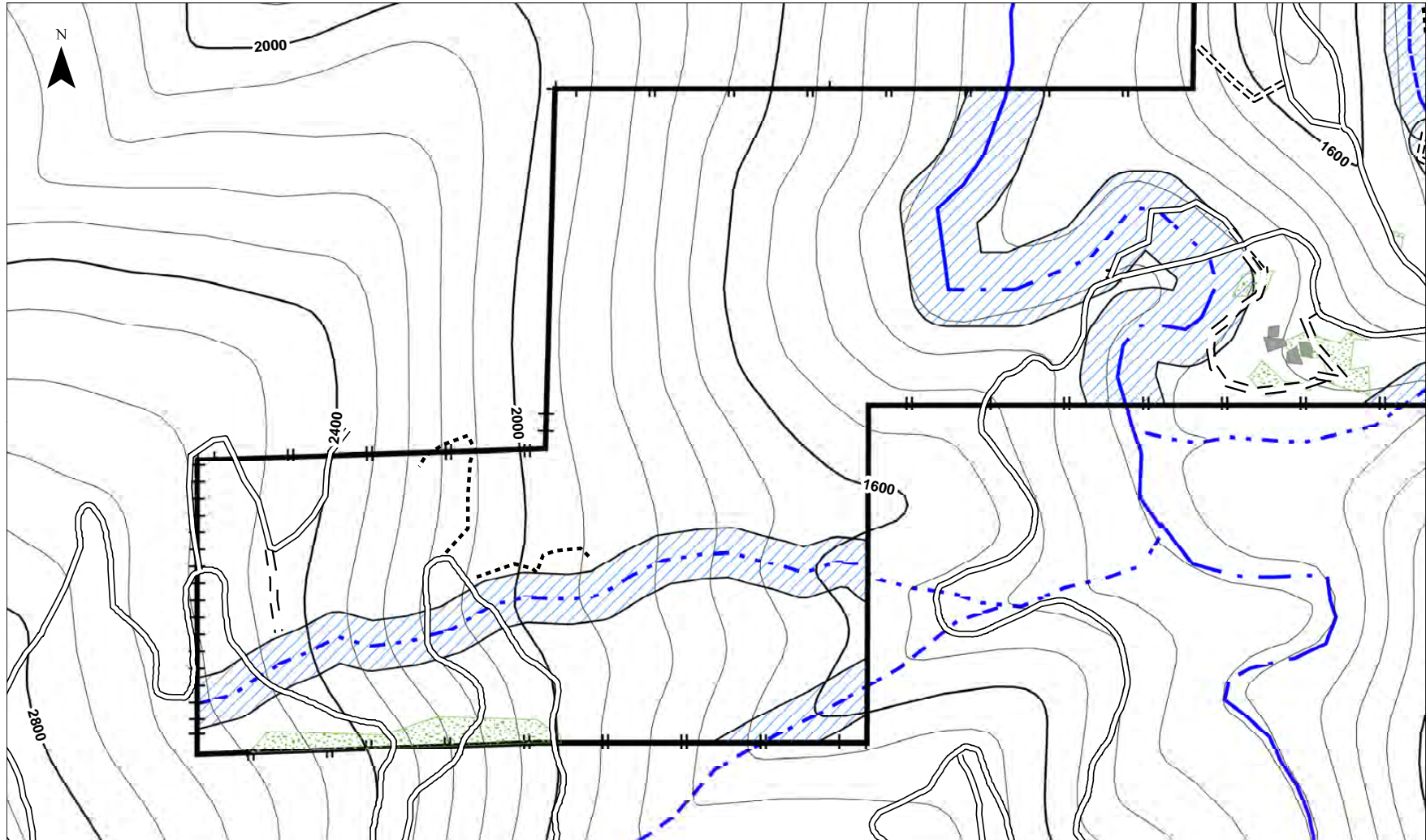
Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

- | | | | | | |
|--|-------------------------------|--|-----------------------|--|------------|
| | Parcel Boundary | | Permanent Rocked Road | | Skid Trail |
| | Class I Watercourse | | Seasonal Rocked Road | | Structures |
| | Standard Class II Watercourse | | Seasonal Dirt Road | | |



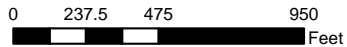
1 inch = 880 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/15/2021



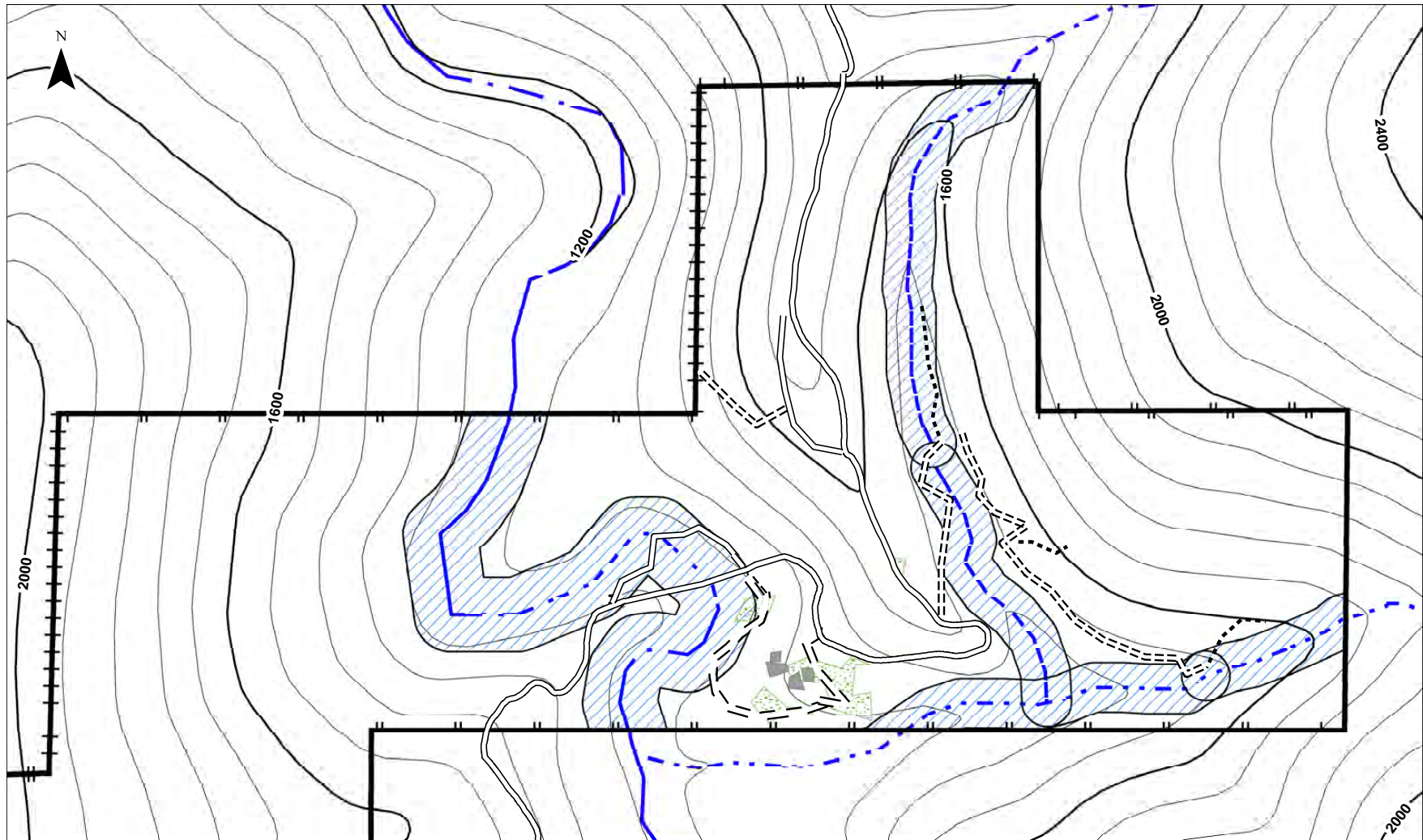
Massei CFIP
 Detail Map, Pg 1
 APNs: 316-196-004, 316-196-007
 & 316-195-002
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

- | | | | |
|-------------------------------|-----------------------|------------------------------------|-----------|
| Parcel Boundary | Permanent Rocked Road | Skid Trail | Structure |
| Class I Watercourse | Seasonal Rocked Road | Non-Stocked Area | |
| Standard Class II Watercourse | Seasonal Dirt Road | Watercourse & Lake Protection Zone | |



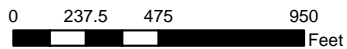
1 inch = 519 feet
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Hohman And Associates Forestry Consultants
 Date: 12/15/2021



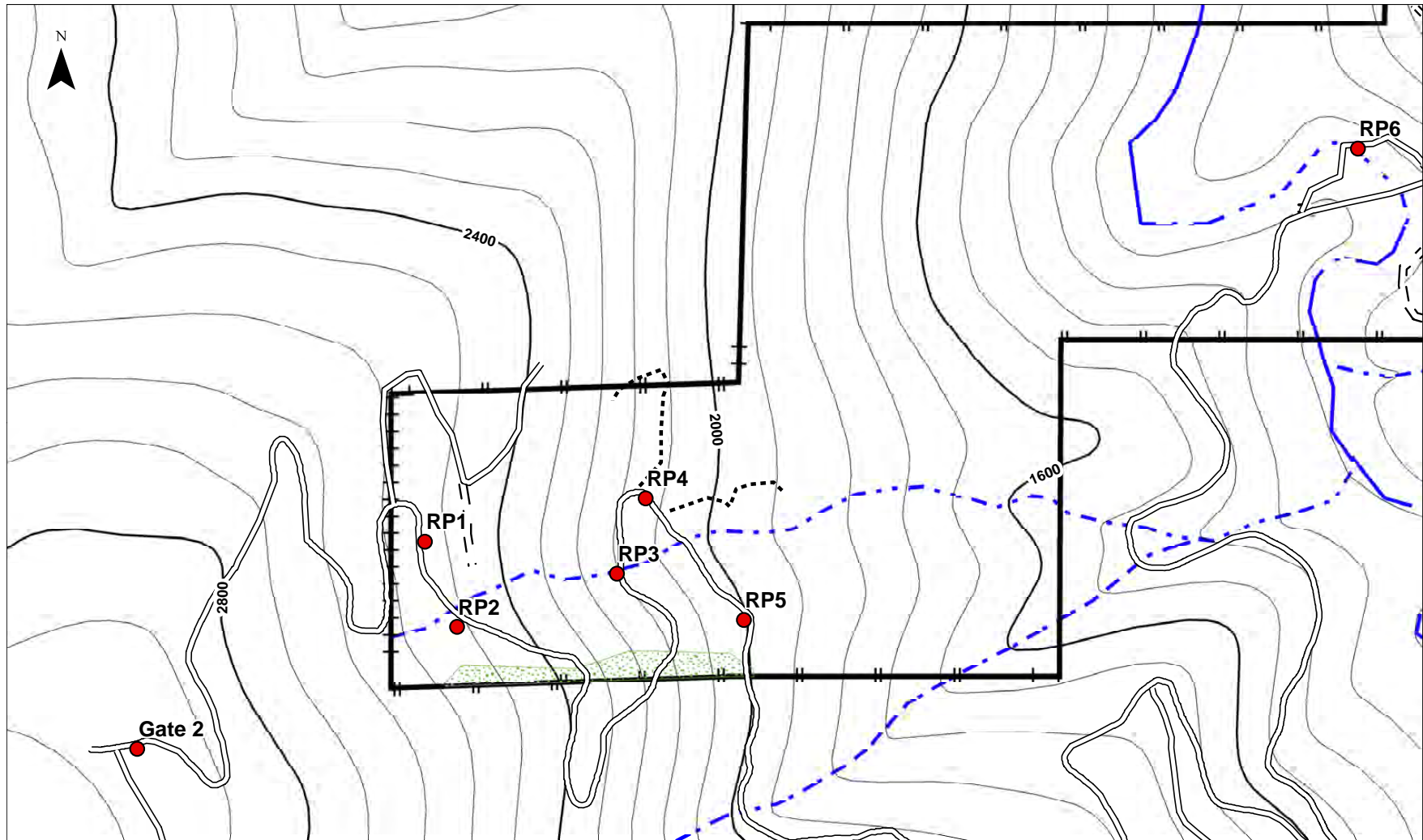
Massei CFIP
 Detail Map, Pg 2
 APNs: 316-196-004, 316-196-007
 & 316-195-002
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

- | | | | |
|-------------------------------|-----------------------|------------------------------------|-----------|
| Parcel Boundary | Permanent Rocked Road | Skid Trail | Structure |
| Class I Watercourse | Seasonal Rocked Road | Non-Stocked Area | |
| Standard Class II Watercourse | Seasonal Dirt Road | Watercourse & Lake Protection Zone | |



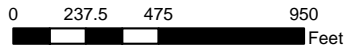
1 inch = 519 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/15/2021



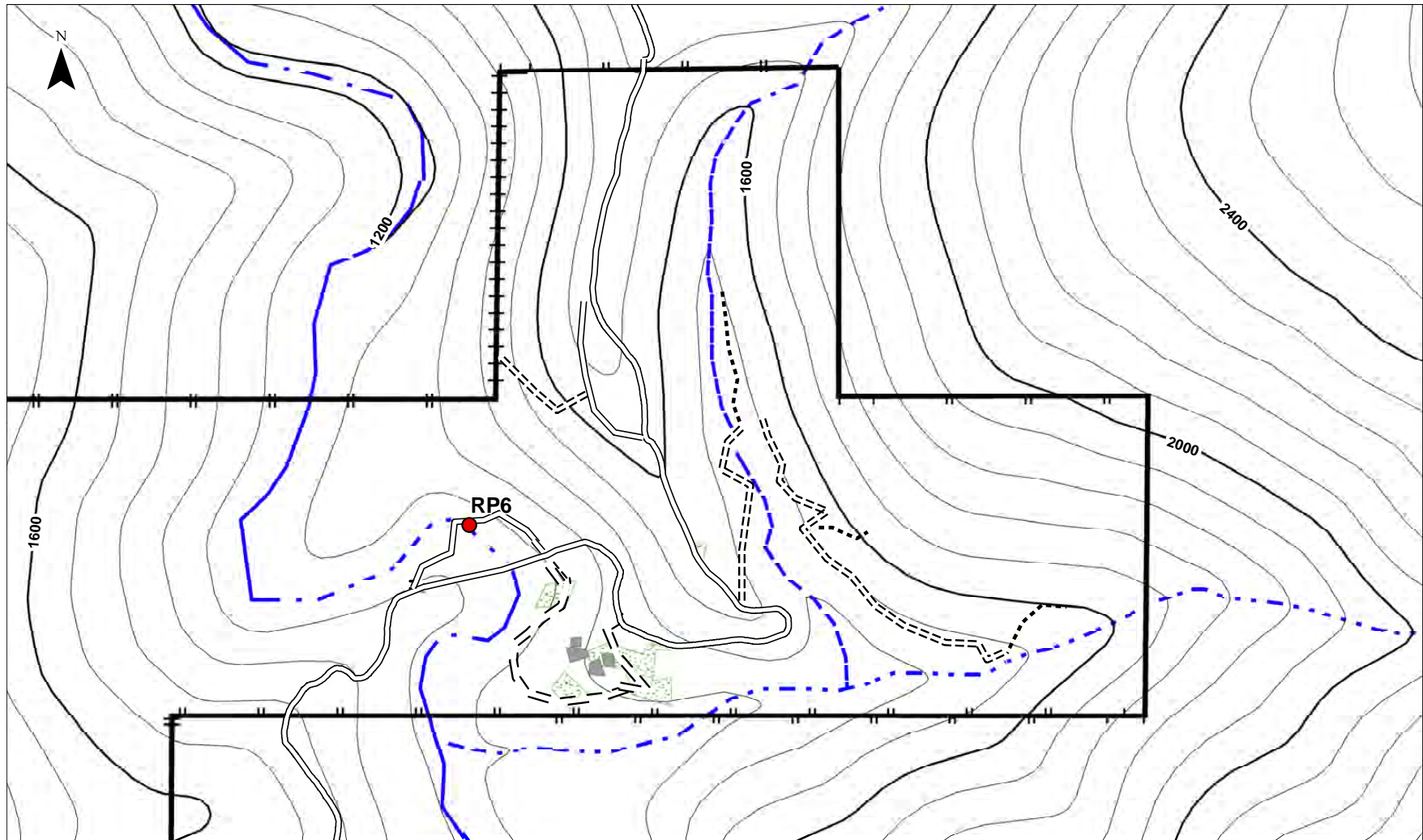
Massei CFIP
 Road Point, Pg 1
 APNs: 316-196-004, 316-196-007
 & 316-195-002
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

- | | | |
|-------------------------------|-----------------------|------------------|
| Parcel Boundary | Permanent Rocked Road | Skid Trail |
| Road Points | Seasonal Rocked Road | Non-Stocked Area |
| Class I Watercourse | Seasonal Dirt Road | Structure |
| Standard Class II Watercourse | | |



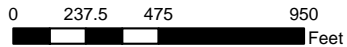
1 inch = 519 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/15/2021



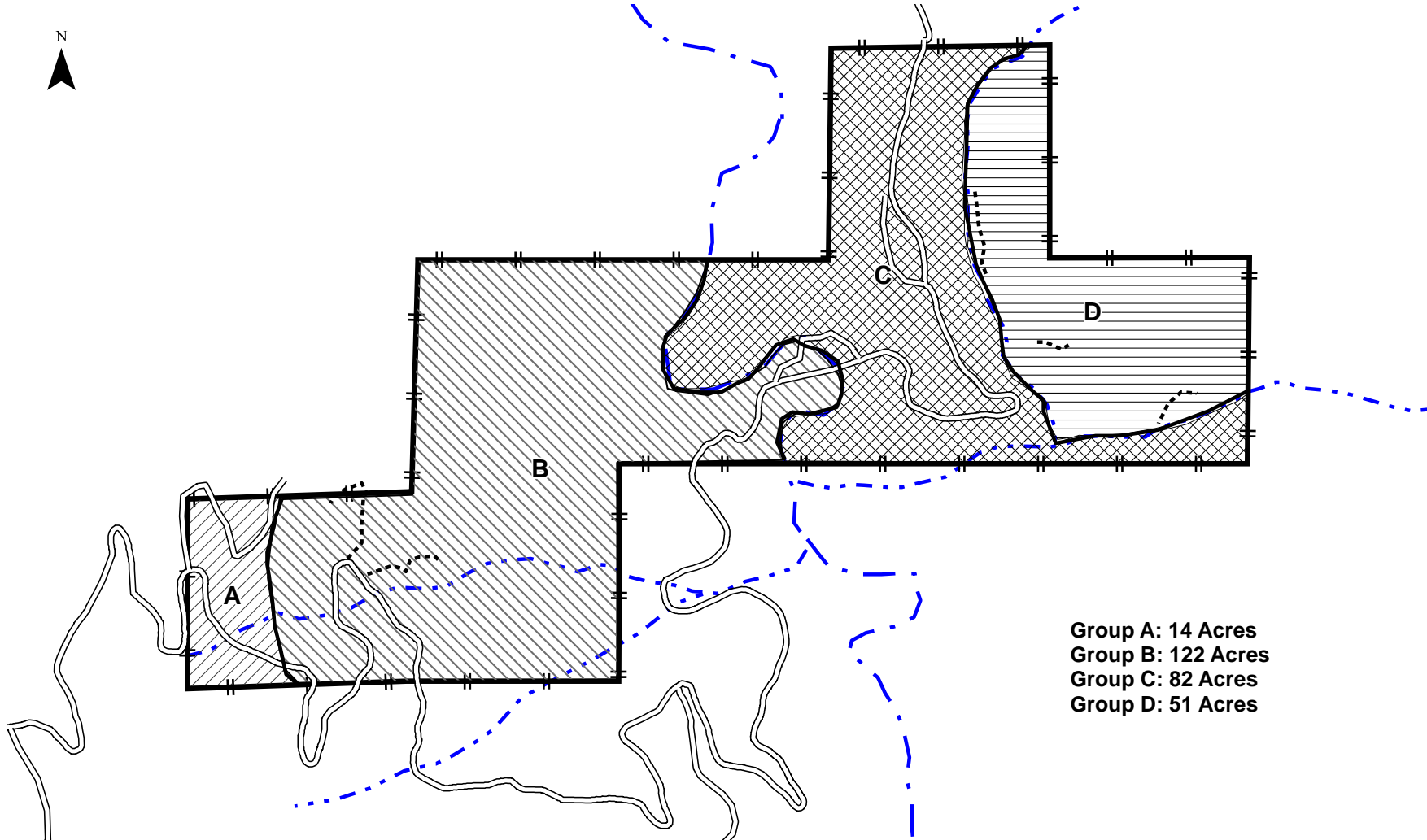
Massei CFIP
 Road Point, Pg 2
 APNs: 316-196-004, 316-196-007
 & 316-195-002
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

- | | | | | | |
|--|-------------------------------|--|-----------------------|--|------------------|
| | Parcel Boundary | | Permanent Rocked Road | | Skid Trail |
| | Road Points | | Seasonal Rocked Road | | Non-Stocked Area |
| | Class I Watercourse | | Seasonal Dirt Road | | Structure |
| | Standard Class II Watercourse | | | | |



1 inch = 519 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/15/2021

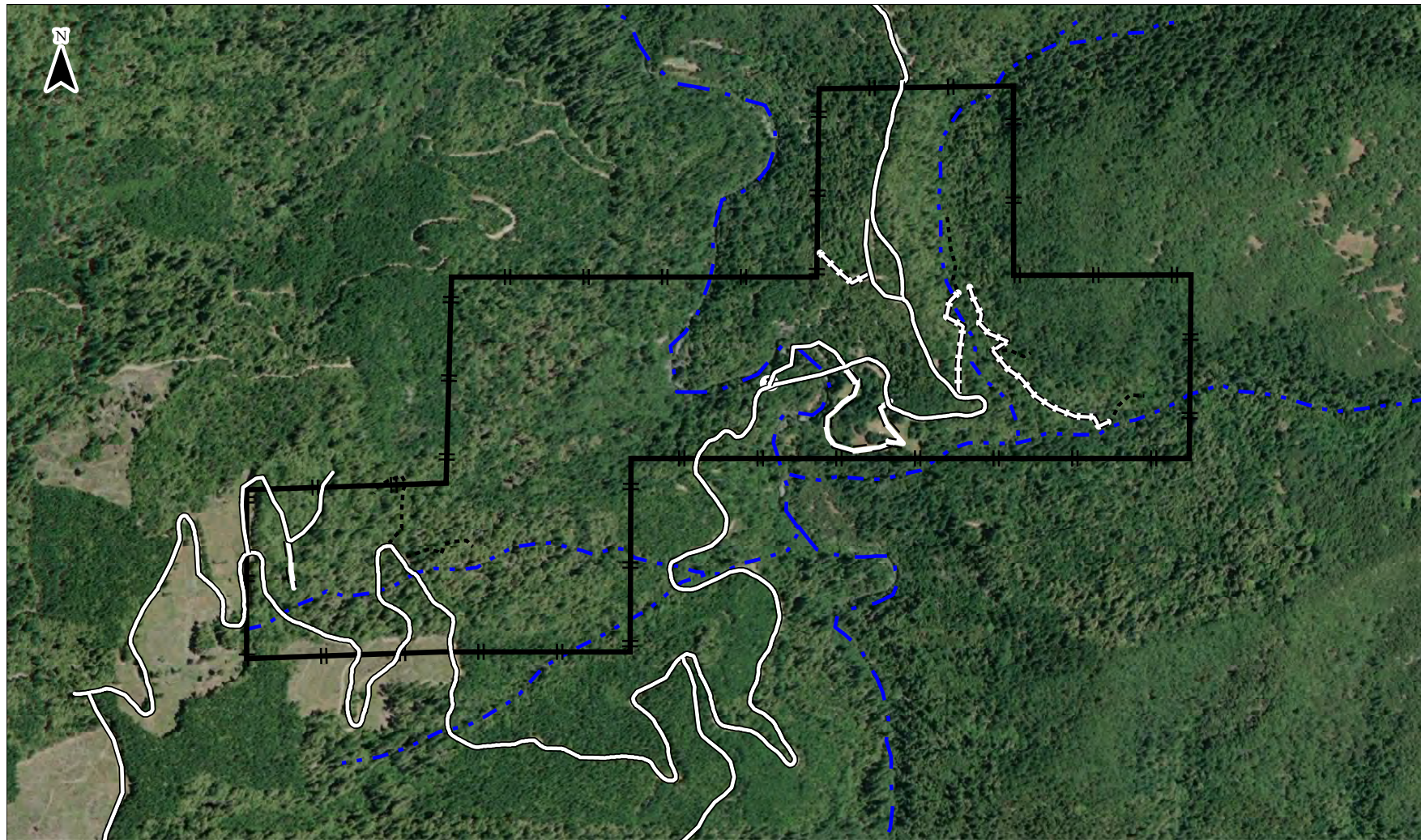


Group A: 14 Acres
Group B: 122 Acres
Group C: 82 Acres
Group D: 51 Acres


<p>Massei CFIP Management Unit Maps</p> <p>APNs: 316-196-004, 316-196-007</p> <p>Section 12; T5N; R3E; Section 7; T5N; R4E HB&M; Humboldt Located on the Maple Creek 7.5' USGS Quadrangle</p>		
<ul style="list-style-type: none"> Parcel Boundary Unit A Unit B Unit C 	<ul style="list-style-type: none"> Unit D Class I Watercourse Standard Class II Watercourse Skid Trail 	<ul style="list-style-type: none"> Permanent Rocked Road

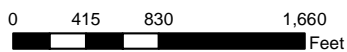
0 370 740 1,480 Feet
 1 inch = 808 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/15/2021



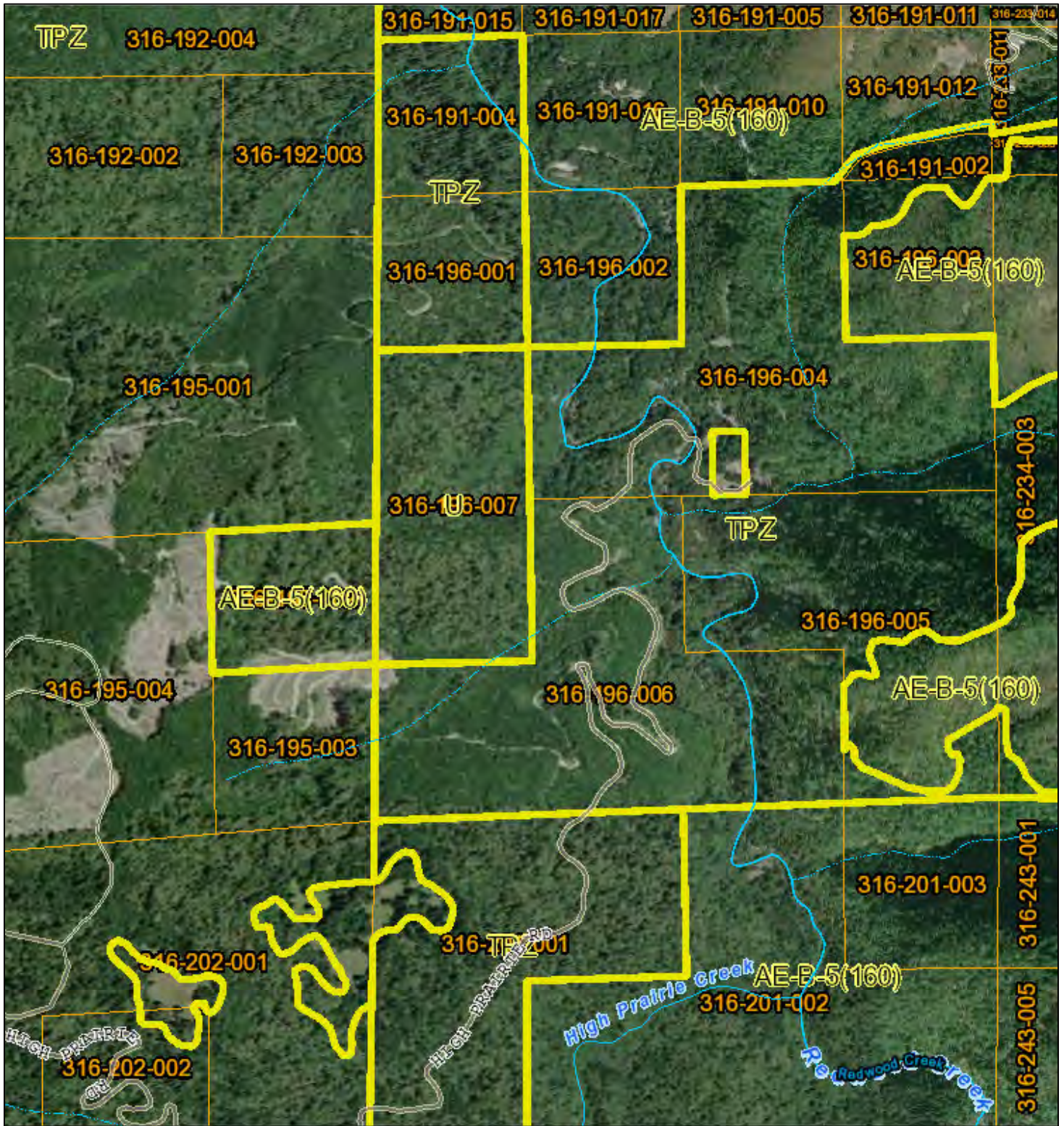
Massei CFIP
 Aerial Imagery
 APNs: 316-196-004, 316-196-007
 & 316-195-002
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

-  Parcel Boundary
-  Class I Watercourse
-  Standard Class II Watercourse
-  Permanent Rocked Road
-  Seasonal Rocked Road
-  Seasonal Dirt Road
-  Skid Trail



1 inch = 904 feet
 Contour Interval: 40'

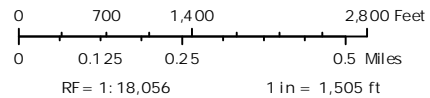
Hohman And Associates Forestry Consultants
 Date: 12/21/2021



Zoning

Humboldt County Planning and Building Department

- | | | | |
|---------------------------|---------------------------|------------------------|-----------|
| Highways and Roads | — Private or Unclassified | — Intermittent | ▭ Parcels |
| Principal Arterials | — Major River or Stream | — Subsurface | |
| — Minor Arterials | Blue Line Streams | — Zoning | |
| — Major Collectors | — Perennial 1-3 | — City Boundary | |
| — Minor Collectors | — Perennial >4 | — City Boundary (750K) | |
| — Local Roads | | — Counties | |



Printed: August 10, 2018

Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:

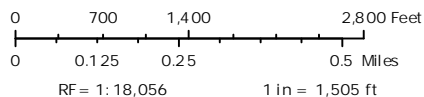
While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Source: Humboldt County GIS, Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, FRAP, FEMA, USGS



Massei Parcel Overview

Humboldt County Planning and Building Department



- Highways and Roads**
 - Private or Unclassified
 - Intermittent
 - Principal Arterials
 - Major River or Stream
 - Subsurface
 - Minor Arterials
 - Major Collectors
 - Minor Collectors
 - Local Roads
- Blue Line Streams**
 - Perennial 1-3
 - Perennial >4
- - - City Boundary
 - - - City Boundary (750K)
 - - - Counties
 - - - Parcels

Printed: August 8, 2018

Web AppBuilder 2.0 for ArcGIS

Map Disclaimer:

While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Source: Humboldt County GIS, Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community. Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, FRAP, FEMA, USGS



LIST 1
DETAIL

1 Property Address:

Ownership

County: **HUMBOLDT, CA**
 Assessor: **MARI WILSON, ASSESSOR**
 Parcel # (APN): **316-196-004-000**
 Parcel Status: **ACTIVE**
 Owner Name: **MASSEI ANTHONY J III & MARY R & ANNA M & ANTHONY J**
 Mailing Address: **1835 LIBERTY CT FORTUNA CA 95540**
 Legal Description: **T 5N R 4E SEC 7**

Assessment

Total Value: \$108,899	Use Code: 7005	Use Type: TIMBER PRESERVE
Land Value: \$58,907	Tax Rate Area: 057-004	County Zoning:
Impr Value: \$49,992	Year Assd: 2021	Census Tract:
Other Value:	Property Tax: \$1,148.88	Price/SqFt:
% Improved: 45%	Delinquent Yr:	
Exempt Amt:	HO Exempt: N	

Sale History

	Sale 1	Sale 2	Sale 3	Transfer
Document Date:	11/28/2006			11/28/2006
Document Number:	2006R34468			2006R34468
Document Type:	PARTIAL INTEREST			
Transfer Amount:				
Seller (Grantor):	MASSEI ANTHONY J III & M			

Property Characteristics

Bedrooms:	Fireplace:	Units:
Baths (Full): 1	A/C:	Stories: 1.0
Baths (Half):	Heating:	Quality: 5.0
Total Rooms: 2	Pool:	Building Class: D
Bldg/Liv Area: 860	Park Type:	Condition:
Lot Acres: 159.000	Spaces:	Site Influence:
Lot SqFt: 6,926,040	Garage SqFt:	Timber Preserve:
Year Built: 1960		Ag Preserve:
Effective Year:		



LIST 1
DETAIL

1 Property Address:

Ownership

County: **HUMBOLDT, CA**
 Assessor: **MARI WILSON, ASSESSOR**
 Parcel # (APN): **316-196-007-000**
 Parcel Status: **ACTIVE**
 Owner Name: **MASSEI ANTHONY J III LE**
 Mailing Address: **1881 LIBERTY CT FORTUNA CA 95540**
 Legal Description:

Assessment

Total Value: \$65,257	Use Code: 3005	Use Type: VACANT
Land Value: \$65,257	Tax Rate Area: 057-004	County Zoning:
Impr Value:	Year Assd: 2021	Census Tract:
Other Value:	Property Tax: \$688.48	Price/SqFt:
% Improved: 0%	Delinquent Yr:	
Exempt Amt:	HO Exempt: N	

Sale History

	Sale 1	Sale 2	Sale 3	Transfer
Document Date:				12/02/1994
Document Number:				1994R032686
Document Type:				
Transfer Amount:				
Seller (Grantor):				

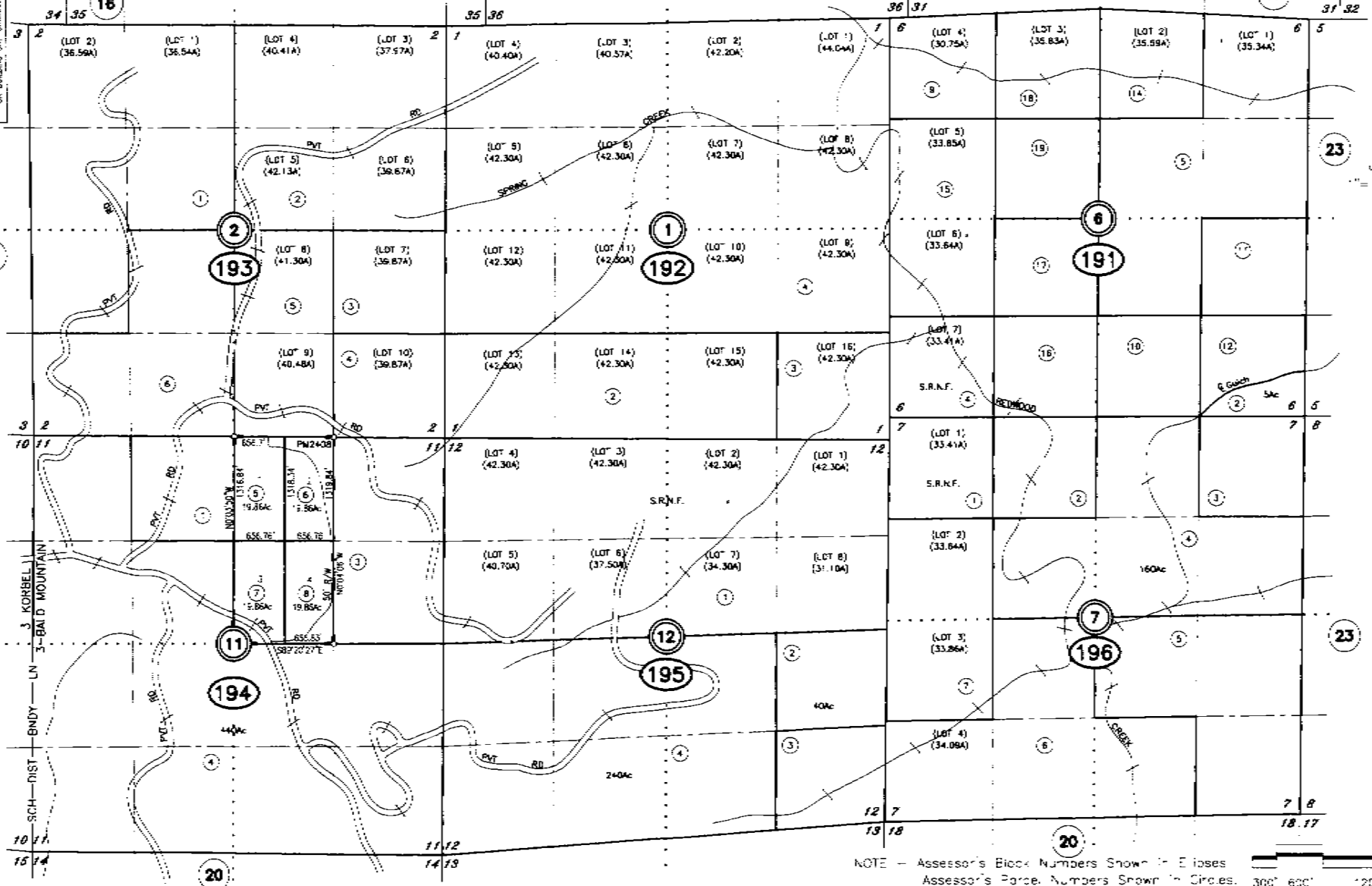
Property Characteristics

Bedrooms:	Fireplace:	Units:
Baths (Full):	A/C:	Stories:
Baths (Half):	Heating:	Quality:
Total Rooms:	Pool:	Building Class:
Bldg/Liv Area:	Park Type:	Condition:
Lot Acres: 81.500	Spaces:	Site Influence:
Lot SqFt: 3,550,140	Garage SqFt:	Timber Preserve:
Year Built:		Ag Preserve:
Effective Year:		

SECS 1, 2, 11 & 12, T5N, R3E & SECS 6 & 7, T5N, R4E H.B.& M.

17 316-19

ASSESSOR'S PARCEL MAP
 1. THIS MAP IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE ASSESSMENT PURSUIT ACT. NO LIABILITY IS ASSIGNED FOR ERRORS OR OMISSIONS. THE ASSESSEE SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF THE DATA AND FOR COMPLYING WITH LOCAL, STATE AND FEDERAL REQUIREMENTS FOR BUILDING SET BACKS.



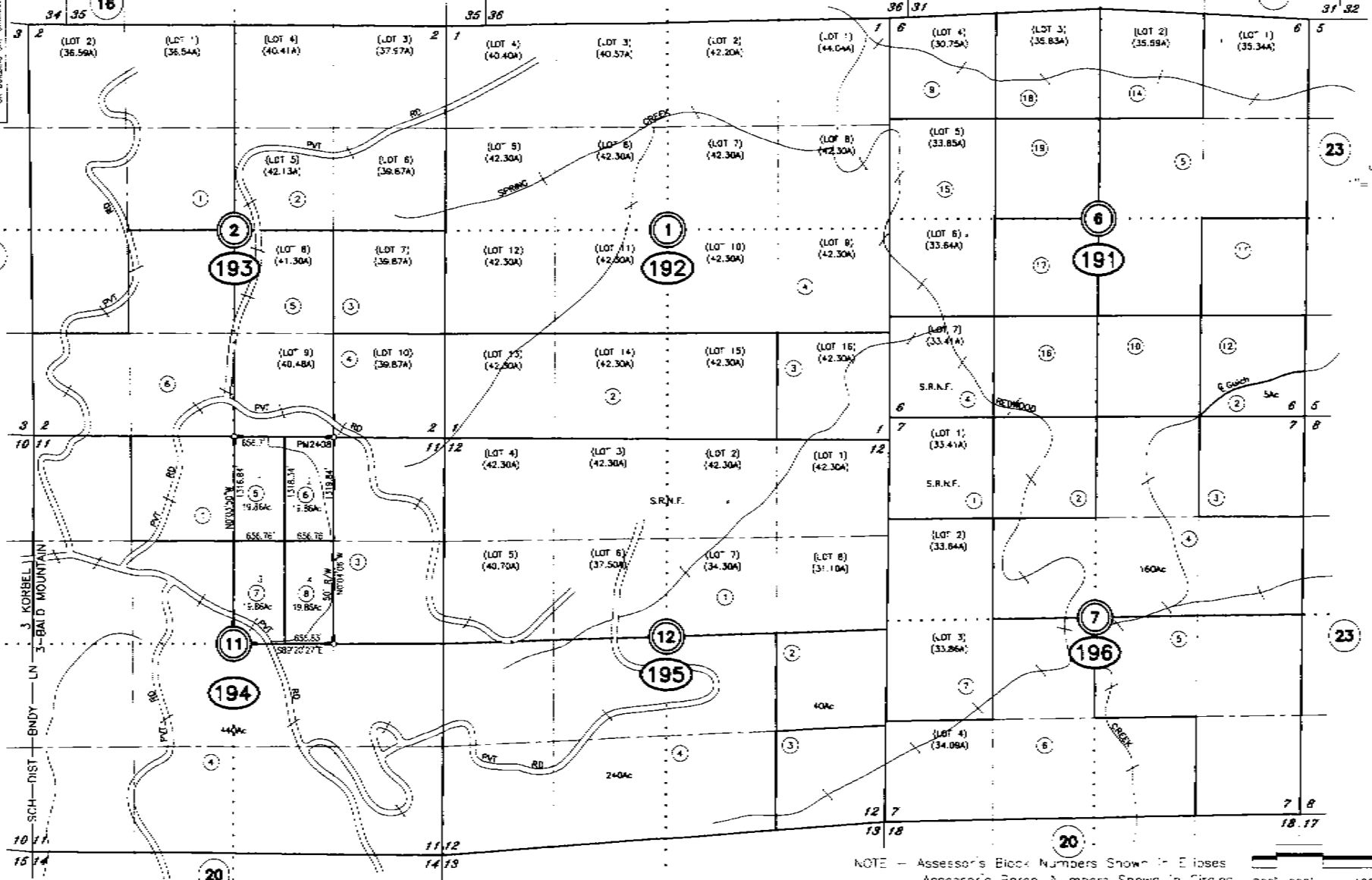
RS Bk 56 of surveys, Pg 137
 PM2408 of PM Bk 21, Pgs 79-80

NOTE - Assessor's Block Numbers Shown in Ellipses
 Assessor's Parcel Numbers Shown in Circles.
 Assessor's Map Bk. 316, Pg.19
 County of Humboldt, CA.
 Oct. 14, 2008

SECS 1, 2, 11 & 12, T5N, R3E & SECS 6 & 7, T5N, R4E H.B.& M.

316-19

ASSESSOR'S PARCEL MAP
 1. THIS MAP IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE ASSESSMENT PURSUE TO THE PROPERTY TAX LAWS OF THE STATE OF CALIFORNIA.
 2. NO LIABILITY IS ASSIGNED FOR ERRORS OR OMISSIONS.
 3. THE ASSessor'S OFFICE SHALL NOT BE HELD RESPONSIBLE FOR ANY DISCREPANCIES BETWEEN THIS MAP AND THE LOCAL OFFICIAL RECORDS OR RECORDS OF THE COUNTY OF HUMBOLDT, CALIFORNIA.



RS Bk 56 of surveys, Pg 137
 PM2408 of PM Bk 21, Pgs 79-80

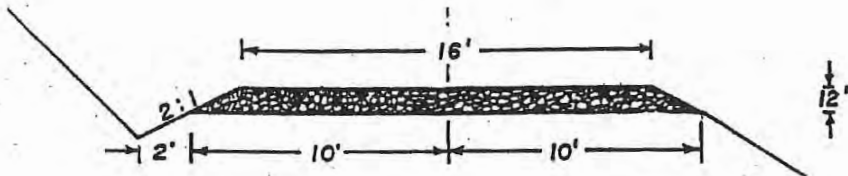
NOTE - Assessor's Block Numbers Shown in Ellipses
 Assessor's Parcel Numbers Shown in Circles.
 Assessor's Map Bk. 316, Pg.19
 County of Humboldt, CA.
 300' 600' 1200'
 Oct. 14, 2008

Appendix 1

Selected Standards and Specifications

PERMANENT ROAD

TYPICAL CROSS SECTION



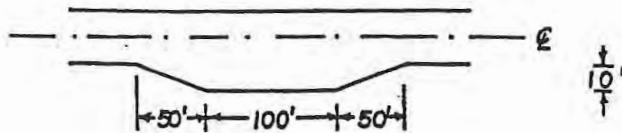
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
 ¼ : 1
 ½ : 1
 vertical

Side Slope
 10-30%
 30 - 50%
 50 + % (or sand, rock)

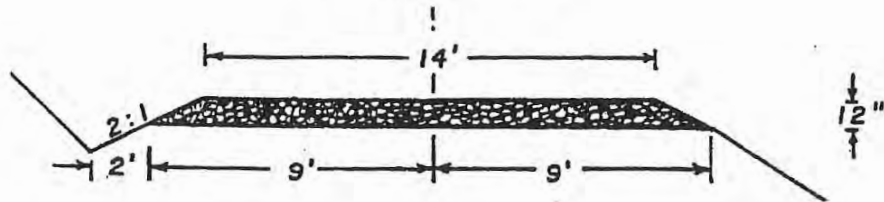
Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

TYPICAL TURNOUT PLAN



SEASONAL ROAD

TYPICAL CROSS SECTION



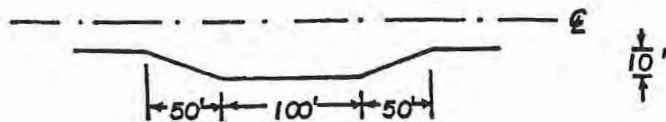
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
 $\frac{3}{4}$: 1
 $\frac{1}{2}$: 1
 vertical

Side Slope
 10-30%
 30 - 50%
 50 + % (or sand, rock)

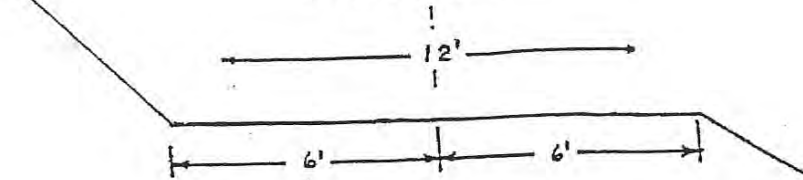
Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

TYPICAL TURNOUT PLAN



TEMPORARY ROAD

TYPICAL CROSS SECTION



Temporary roads will generally not be rocked. Outsloping of road surfaces may be incorporated where appropriate.

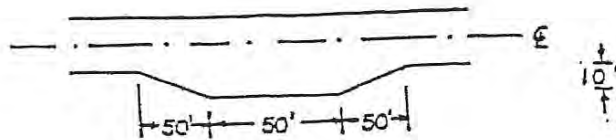
CUT SLOPES AND ROAD PLACEMENT

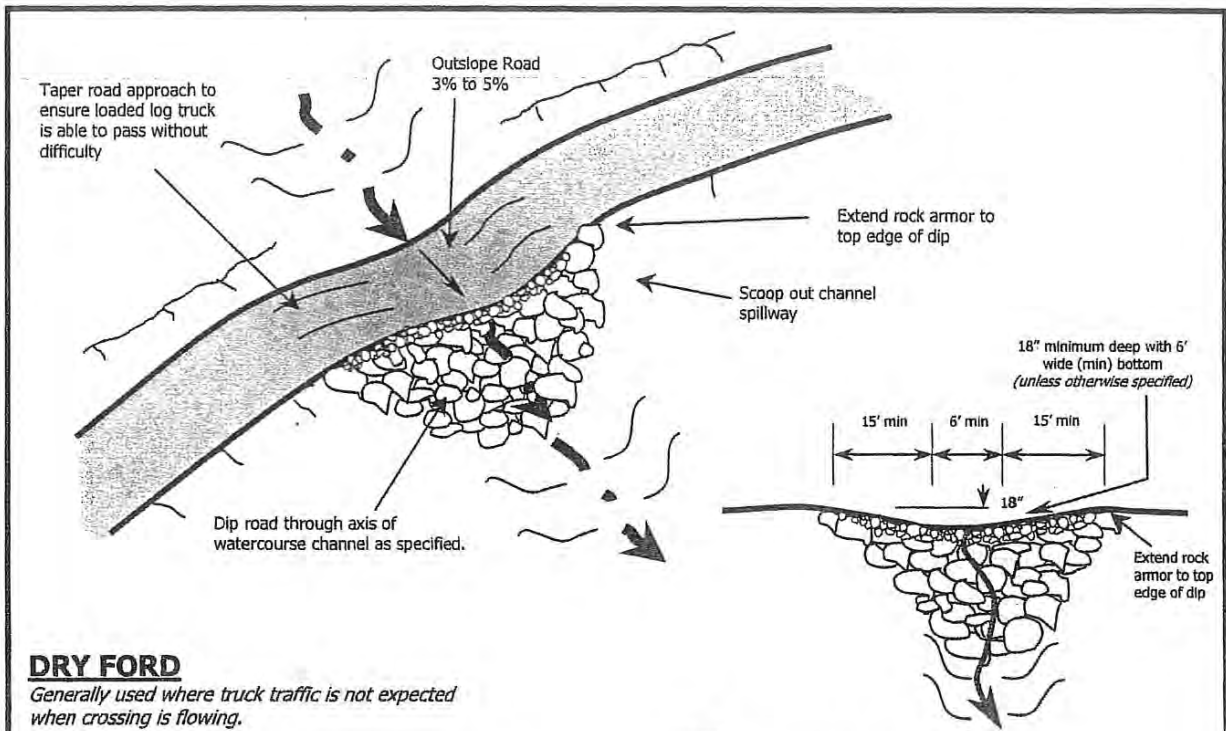
Cut Slope
 $\frac{3}{4} : 1$
 $\frac{1}{2} : 1$
 vertical

Side Slope
 10 - 30%
 30 - 50%
 50 ~ % (or sand, rock)

Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

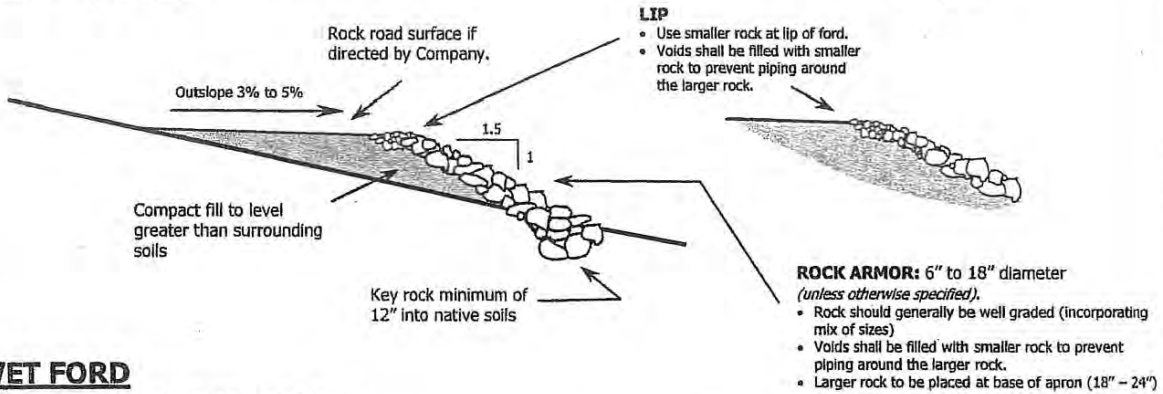
TYPICAL TURNOUT PLAN





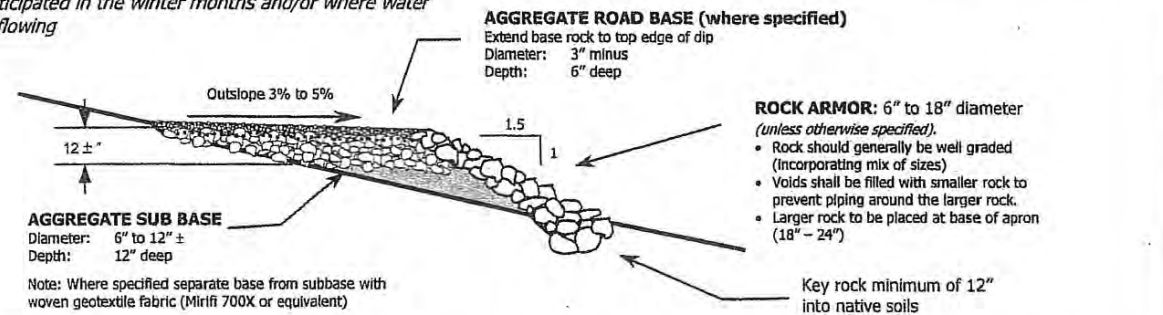
DRY FORD

Generally used where truck traffic is not expected when crossing is flowing.



WET FORD

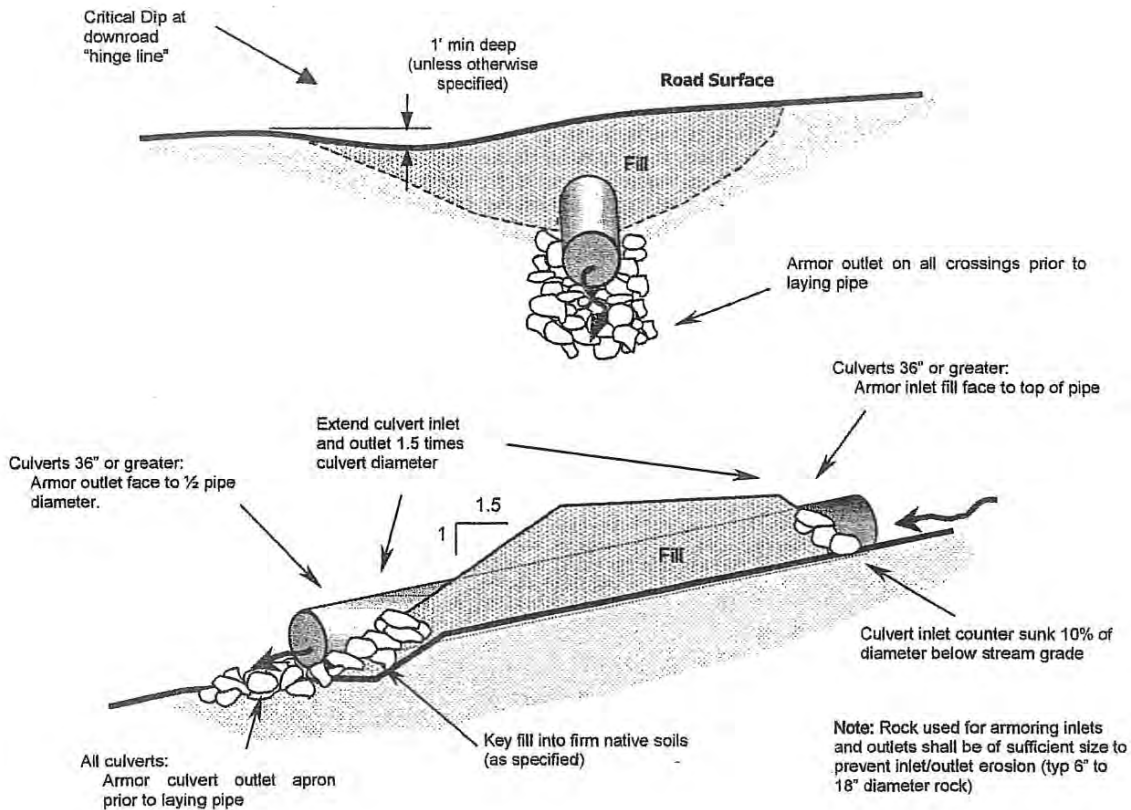
Generally used where 4x4 pickup traffic is anticipated in the winter months and/or where water is flowing



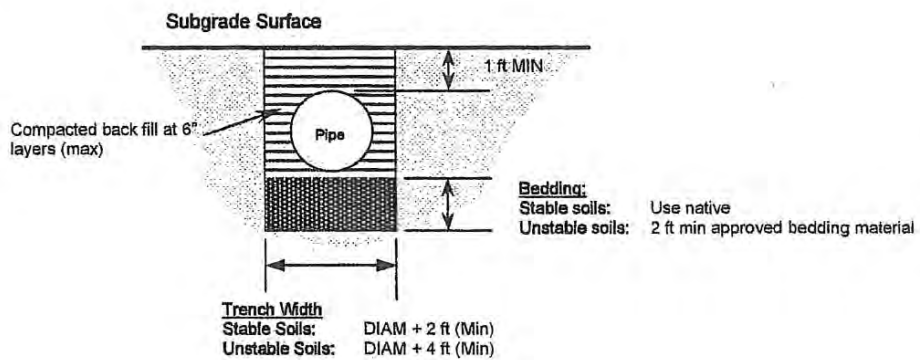
NOTE

- Details are typical and intended for use as a guideline. Adjustments to the actual design may need to occur in field during time of construction due to local site conditions.
- Refer to THP for specific design criteria where applicable.

	WET AND DRY FORD STANDARD PLANS	Standard Detail
--	--	-----------------



Note: Rock used for armoring inlets and outlets shall be of sufficient size to prevent inlet/outlet erosion (typ 6" to 18" diameter rock)

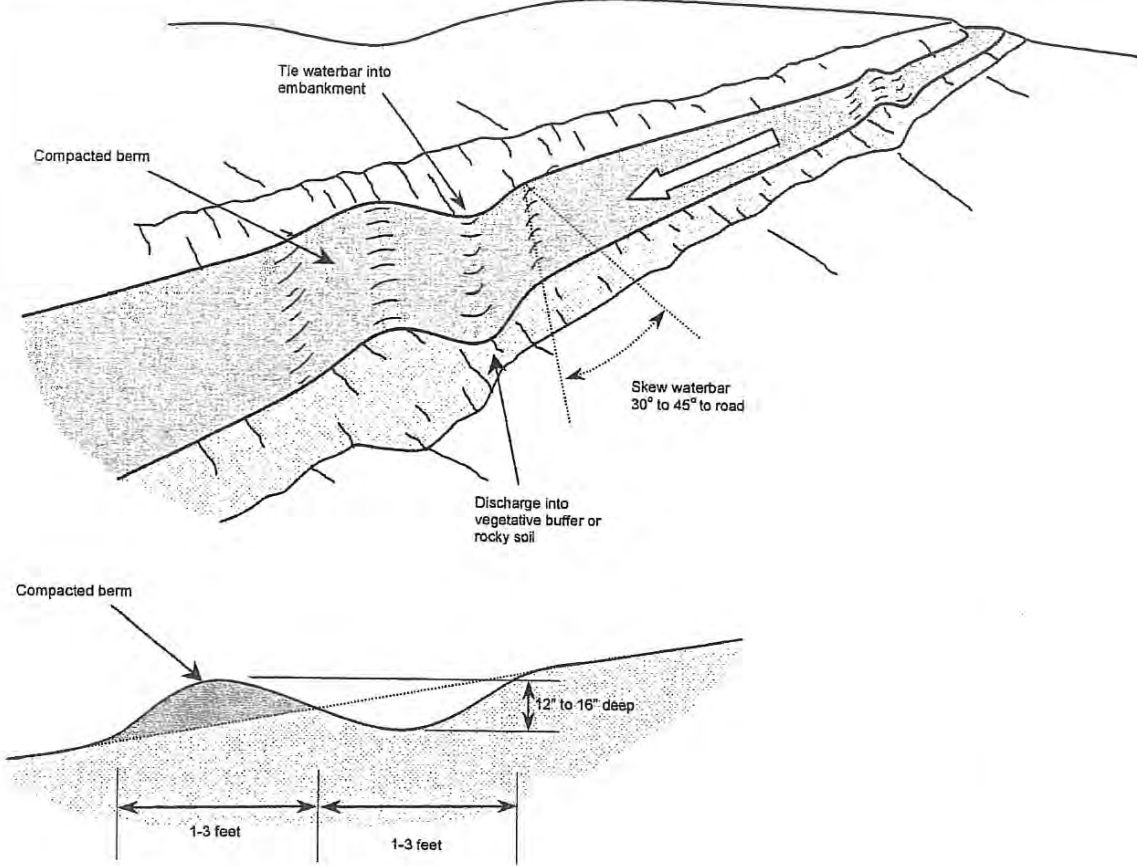


Notes:

- The culvert bed shall be clean and free of large woody debris and large rocks.
- Unsuitable foundation material (highly plastic material – "blue goo") shall be excavated below the invert elevation of the culvert to an approximate depth of 2 feet and a width of at least the culvert diameter plus 4 feet.
- Unsuitable material shall be replaced with selected granular foundation material and compacted to obtain a uniform foundation.
- Select mineral soil shall be used for culvert backfill. The back fill shall be free of lumps, chunks, highly plastic material, and organic material
- No rocks greater than 3" in any dimension placed closer than 1 foot to the culvert.
- Back fill shall be compacted to a degree greater than the surrounding soils. Soil moisture shall be adequate to achieve suitable compaction
- See Text for more detail.

**PERMANENT WATERCOURSE
CROSSING STANDARD PLAN**

Standard Detail

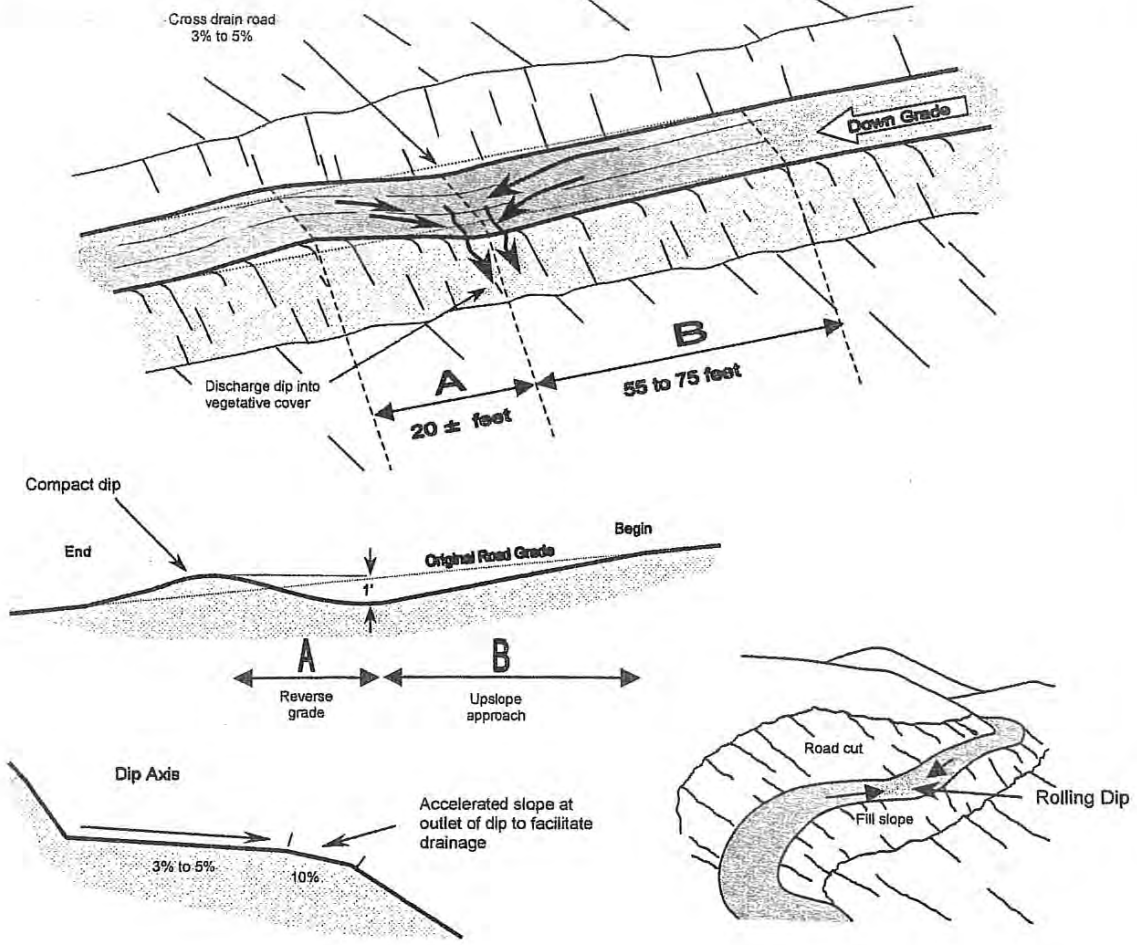


NOTES

1. Identify waterbar locations that take advantage of natural drainage features and minimize the amount of disturbance required for waterbar construction
2. All waterbars shall begin at the intersection of the roadbed surface and the cut slope and run the entire width of the road surface prism.
3. Waterbar length shall not exceed 1.5 times the width of the road surface.
4. Acceptable waterbars shall be skewed 30 to 45 degrees.
5. All waterbars shall have free flowing outlets with minimum 2% grade in the bottom of the channel that discharge onto vegetative surfaces or less erodible material where possible.
6. Native materials used to construct downslope berm shall be compacted with equipment to minimize wear resulting from trespass and/or administrative use.
7. Waterbar depth measured from the bottom of the waterbar channel to the top of the compacted berm must be between 12" and 16" high.
8. Compacted waterbars must be passable in a 4WD vehicle unless otherwise specified in the contract or by a logging supervisor in writing.

**WATERBAR
STANDARD PLAN**

Standard Detail



ROLLING DIP DIMENSIONS					
		MAIN LINE ROAD		SECONDARY ROAD	
Road Grade (%)	Depth of trough Depth below downslope crest (ft)	A: Reverse grade (Distance from trough to downroad crest (ft))	B: Upslope Approach (Distance from up-road start of rolling dip to trough (ft))	A: Reverse grade (Distance from trough to downroad crest (ft))	B: Upslope Approach (Distance from up-road start of rolling dip to trough (ft))
<6	1.0	20	65	15	55
6 - 8	1.0	20	75	15	65

NOTES:

- A rolling dip is a broad long permanent dip constructed into native soils. It is intended to drain the road while not significantly impeding traffic.
- The cross drain road (outslope) at 3% to 5%
- Dip outlets should be located to drain into areas with adequate sediment filter quality and non-erodible material such as rock, slash, brush, etc. Where specified, the bottom of the outfall of the dip will be surface rocked.
- Where natural slopes exceed 50%, fill shall not be pushed over the dip outlet. A backhoe or excavator may be required to pull back fill at outlet of existing dips.

	ROLLING DIP STANDARD PLAN	Standard Detail
--	--------------------------------------	-----------------

Appendix 2

Tax and Business Management

This section includes a series of statements related to tax and business management that should be included in plans.

Property tax –current tax status of the property is listed as timber production zone. There might be other specific property tax programs that you may be eligible to participate in. Please be aware of the program rules and regulations.

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

Estate tax –good estate planning can help to lessen tax liability when passing land to heirs. Landowners should seek good planning and tax advice from a registered CPA.

Record keeping –good record keeping can help landowners manage their assets; increase their revenues; and minimize their tax liability.

Land Use – Document the land use classifications of the property from the county land use plan.

Timber Yield Tax - Frequently Asked Questions

1. [What is the timber yield tax? \(#1\)](#)
 2. [How much is the timber yield tax and how is it calculated? \(#2\)](#)
 3. [When is the timber yield tax due? \(#3\)](#)
 4. [I did not harvest any timber this quarter; am I still required to file? \(#4\)](#)
 5. [Do you publish any information about the amount of timber harvested statewide and/or by county? \(#5\)](#)
 6. [Where can I obtain additional information about the timber yield tax? \(#6\)](#)
-

1. **What is the timber yield tax?**

The timber yield tax is a tax in lieu of ad valorem property taxes on timber paid by timber owners when they harvest their timber.

2. **How much is the timber yield tax and how is it calculated?**

The timber yield tax rate is currently 2.9 percent. The amount of tax is calculated according to the volume of timber you harvest, the established value for the species harvested ([Timber Harvest Value Schedules \(/proptaxes/timbertax.htm\)](#)), and the tax rate.

3. **When is the timber yield tax due?**

The tax is paid on a quarterly basis and is due on or before the last day of the month following the quarter in which the scaling date for the timber harvested occurs. For example, if the timber was scaled between January 1 and March 31 the taxes would be due on or before April 30.

4. **I did not harvest any timber this quarter; am I still required to file?**

You must file a return for every quarter for which you are registered as a timber owner, even if you do not harvest any timber or owe any tax.

5. **Do you publish any information about the amount of timber harvested statewide and/or by county?**

Yes. Information about the amount of timber harvested both statewide and by county is available in "[California Timber Harvest by County \(/proptaxes/timbertax.htm\)](#)" and "[California Timber Harvest Statistics \(/proptaxes/pdf/harvyr2.pdf\)](#)".

6. **Where can I obtain additional information about the timber yield tax?**

The [Publication 86, California Timber Yield Tax Brochure \(/proptaxes/pdf/pub86.pdf\)](#), is available on the Board's Web site. [Publication 87, Guide to the California Timber Yield Tax \(/proptaxes/pdf/pub87.pdf\)](#), may be obtained by calling the Information Center at 1-800-400-7115. Information Center staff will also be able to assist you with answers to general timber tax questions.

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California passes new lumber tax

By Brae Canlen

A proposed 1% additional sales tax on selected lumber products was **signed into California law** by Gov. Gerry Brown on Sept. 11, resulting in a transfer of fees from the timber industry to retail lumber sellers.

The new tax will be used to fund the regulatory activities of four state agencies involved in reviewing and monitoring timber harvest plans that are required for all private and public timber cutting. Currently, those costs are paid by the landowners and from state general fund expenditures.

The new tax originated with legislation supported by the California timber industry, which wanted the fees to be passed on to the end user to help level the playing field with timber producers outside California. These timber producers are not subject to California's heavy regulations, it argued, and thus enjoy a competitive advantage. The new California law will also lessen wildfire liability for landowners, another cost saving.

Those who opposed the legislation -- a group that included Home Depot, the National Lumber & Building Material Dealers Association (NLBMDA), and the West Coast Lumber & Building Materials Association (formerly the Lumber Association of California and Nevada or LACN) -- believed that the timber industry should not shift the fees to its own customers.

"Those who are being regulated should pay their own fees and build that into the cost of production," said Ken Dunham, executive director of the West Coast Lumber & Building Materials Association. Dunham also wondered how lumber retailers build a framework to collect taxes on lumber and engineered wood products by Jan. 1, 2013. "Sales tax in California does not break out lumber," Dunham told *Home Channel News*. "The [independent lumberyards] say there is no way they can have the software in place in time."

Lastly, there is the issue of exactly what "lumber products" and "engineered wood products" will be taxed. The California Board of Forestry & Fire Protection is scheduled to discuss this issue at a Sept. 12 hearing.

The new law does contain an unusual provision that promises to reimburse the retailer for costs associated with the costs of collection of the assessment. The amount and process will be determined by the State Board of Equalization. Dunham remained skeptical. "When is the check coming?" he asked.

Home → State Tax Laws → states → proptax → California

SEARCH

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Federal Income Taxes

State Tax Laws

Quick Reference

Property Taxes

New Developments

Estate Planning

Publications

Professional Research

Tax Workshops

Tax Policy

Links



California

For complete text of the California statutes and other property tax information please refer to the [California Franchise Tax Board](#).

Property Classification:

Property is classified by statute for assessment purposes into:

Real property (including fixtures and improvements),

Tangible personal property, and

Intangibles.

Real property includes the land; any right to possession of land; ownership or claim to ownership of land; *all standing timber*, whether planted or of natural growth and whether or not owned by the owner of the land; all mines, minerals, and quarries on the land; and any rights or privileges that are appurtenant to standing timber, mines, minerals, and quarries (Sec. 104, Rev. & Tax. Code; ; Reg. 121, 18 CCR;). Real property also includes any improvements on the land,

"Improvements" - Improvements include buildings, structures, fixtures, and fences erected on or affixed to land. Also defined as improvements are fruit and nut-bearing trees, ornamental trees, and vines that are not naturally growing on the land and not specifically exempt from taxation.

All nonexempt real property is assessed at its full cash value as of the 1975-76 tax year, adjusted for inflation. However reassessments are made for any subsequent changes in ownership (unless specifically exempted) and for most new construction.

A presumption exists that the latest sales price, adjusted for inflation, reflects the property's full cash value; however, standard appraisal techniques are used to value property in instances when this presumption is inapplicable, and specific appraisal methodologies are provided for certain types of property, such as "enforceably restricted" and "open-space land".

Timberland Production Zone:

A county board of supervisors may designate areas of timberland in their counties as timberland preserves. The zoning designation is known as a Timberland Production Zone (TPZ). The land in a TPZ is restricted in use to the production of timber for an initial 10-year term and is considered "enforceably restricted."

Land that is subject to enforceable restrictions is assessed by considering values of comparable lands subject to similar restrictions.

SECTION 51140 THROUGH 51146

If the land is rezoned, i.e., removed from timberland production classification, a tax recoupment fee is payable based on a statutory factor multiplied by the last pre-timberland production classification assessed value of the property and on the number of years remaining in the 10-year term (Sec. 51140 through Sec. 51146, Govt. Code).

"Timber" - means trees of any species maintained for eventual harvest for forest products purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but does not mean nursery stock.

"Timberland" - means privately owned land, or land acquired for state forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre.

"Timberland production zone" or "TPZ" - means an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses.

Valuation of "Enforceably Restricted" Timberland: (Sec. 434 and 434.5 Rev. & Tax Code)

Five site quality classifications, ranging from Site I as the most productive to Site V as the least productive or inoperable have been established for the Redwood Region, the Pine-Mixed Conifer Region, and the Whitewood Subzone of the Redwood Region (Sec. 434.5, Rev. & Tax. Code; Sec. 434, Rev. & Tax. Code).

The statute also sets forth the specific value per acre under each of the five site quality classifications for the three regions; these statutory values are subject to adjustment. By November 30 of each year, the SBE must certify to local assessors the current timberland values so determined (Sec. 434.5, Rev. & Tax. Code).

The value per acre of timberland zoned under the provisions of Section 51110 or Section 51113 of the Government Code shall be determined from the following schedule:

Redwood Region - means all those timberlands located in Del Norte, Humboldt, Sonoma, Marin, Monterey, Santa Cruz, and San Mateo Counties and that portion of Mendocino County which lies west and south of the main Eel River.

Whitewood Subzone of the Redwood Region - means that timberland located within the Redwood Region within which the assessor has determined that redwood did not exist as a species in the composition of the original timber stand, or which has not been replanted with redwood for commercial purposes.

Pine-Mixed Conifer Region - means all other timberlands outside the Redwood Region.

Redwood Region	2005
Site I	\$266
Site II	\$216
Site III	\$189
Site IV	\$164
Site V (and inoperable)	\$ 52

Pine-Mixed Conifer Region

Site I	\$145
Site II	\$102
Site III	\$ 80
Site IV	\$ 56
Site V (and inoperable)	\$ 30
Whitewood Subregion	
Site I	\$189
Site II	\$139
Site III	\$117
Site IV	\$ 87
Site V (and inoperable)	\$ 46

To determine the actual tax burden per acre, the zone values are then multiplied by 1% to get the amount of tax per acre that the owner pays. This 1% is a statutory minimum applied throughout the state and can be taken for a state average.

Change of zoning from timberland production

Upon rezoning, land formerly zoned as timberland production land will be assessed on the same basis as real property is assessed (Sec. 51140, Govt. Code; Sec. 51141, Govt. Code; Sec. 51142, Govt. Code). A tax recoupment fee, which is payable to the county in which the rezoning has taken place, will then be imposed. The fee is a multiple of the difference between the amount of the tax last imposed on the property before it was zoned for timberland production and the amount equal to the assessed valuation of the rezoned property times the tax rate of the current levy for the tax rate area.

"Open-space land" treatment:

Timberland may qualify for special treatment as "open-space land" (Sec. 51118, Govt. Code; Reg. 470, 18 CCR). In valuing open-space land that is "enforceably restricted" for the production of timber, a county assessor may not consider sales data but rather must use the present worth of the income that the future harvest of timber crops from the land and the income that other allowed compatible uses can reasonably be expected to yield under prudent management (Sec. 423.5, Rev. & Tax. Code; Reg. 53, 18 CCR).

Compatible use - is a use that does not significantly detract from the use of property for growing and harvesting timber and includes such uses as management for watershed, and for fish and wildlife habitat, and for grazing (Sec. 51104, Govt. Code). The capitalization rate used in valuing other open-space land, discussed at ¶20-194, must be used in valuing timberland.

Open-space land is "enforceably restricted" for purposes of reduced taxation if it is subject to a contract, agreement, scenic restriction entered into prior to January 1, 1975, open-space or agricultural conservation easement, or wildlife habitat contract.

Tax treatment of standing timber:

Although timberland is subject to property tax, the timber standing on the land is exempt from tax, including possessory interest taxation (Sec. 436, Rev. & Tax. Code;). However, trees standing on land not zoned as timber production may be assessed on the basis of their esthetic or amenity value (Sec. 436, Rev. & Tax. Code;).

Immature forest trees planted on lands not previously bearing merchantable timber or planted or of natural growth on land from which 70% of all merchantable timber over 16 inches in diameter has been removed are specifically exempt from property taxation (Sec. 3(j), Art. XIII, Cal. Const. ; Sec. 211, Rev. & Tax. Code;). Timber is considered immature until it is 40 years old or until it is declared mature by a committee named in the Constitution. The California Constitution authorizes the legislature to provide a system of taxation or exemption of timber or forest trees, including one not based on the value of the property.

Severance Tax:

Each producer of natural resources or timber in the state is required to pay a severance tax (Sec. 26-58-107, A.C.A.). Producers are required to obtain permits before engaging in the business of severing natural resources or timber (Sec. 26-58-106, A.C.A.). The failure to secure a permit is punishable by a fine.

Timber - means either softwood or hardwood species of trees suitable for use as sawlogs, pulpwood, veneer bolts or billets, stave bolts or billets, and splits, handle and other bolts or billets including chemical wood, cross ties, posts, poles, piling, chips, charcoal, or any now known or hereafter discovered use of wood or wood pulp.

Producer - means any person, firm, receiver, or other fiduciary, corporation, or association engaged in the business of severing natural resources (Sec. 26-58-101, A.C.A.).

Severing natural resources - generally means all natural products of the soil or water that are mined, dredged, or otherwise taken or removed, for commercial purposes, from the soil or water.

The timber yield tax rate for 2005 is 2.9%. Tax returns are filed with the SBE on or before the last day of the month following each calendar quarter (Sec. 38402, Rev. & Tax. Code). Tax payments are due on or before the last day of the month following each quarterly period in which the scaling date for the harvested timber occurs (Sec. 38401, Rev. & Tax. Code).

Exemptions

Severance tax is not levied against an individual who occasionally severs natural resources or timber from his or her own property to be used in the construction, repair, or maintenance of his or her own structures or improvements (Sec. 26-58-108, A.C.A.).

Timber is exempt from tax, provided that its immediate harvest value within a quarter does not exceed \$3,000 (Sec. 38116, Rev. & Tax. Code, ; Reg. 1024, 18 CCR,). The exemption prevents harvest value tax collection and administration costs that would otherwise exceed tax revenues collected from low timber

Appendix 3

Past Plans, Amendments and Updates

Ver. 10/27/11

FOR ADMIN. USE ONLY
Amendments-date & S or M

TIMBER HARVESTING PLAN

FOR ADMIN. USE ONLY

- 1. 1/22/02 M 7. _____
- 2. 2/26/02 M 8. _____
- 3. 5/9/02 M 9. _____
- 4. 3/20/03 M 10. _____
- 5. _____ 11. _____
- 6. _____ 12. _____

STATE OF CALIFORNIA
DEPARTMENT OF FORESTRY
AND FIRE PROTECTION
RM-63 (01-00)

THP Name: **WARD ROAD 2000**
(In the CDF FPS, this is "THP Description")

STCO THP 24-0002
Setting ID 530704-unit A 530704-unit B

Source code 826xxx

THP No. 1-01-311 HUM

Dates Rec'd AUG 21 2001

Date Filed AUG 31 2001

Date Approved NOV 8, 2001

Date Expires NOV 7, 2004

Extensions 1) [] 2) []

If this is a Modified THP, check box:

This Timber Harvesting Plan (THP) form, when properly completed, is designed to comply with the Forest Practice Act (FPA) and Board of Forestry and Fire Protection rules. See separate instructions for information on completing this form. NOTE: The form must be printed legibly in ink or typewritten. The THP is divided into six sections. If more space is necessary to answer a question, continue the answer at the end of the appropriate section of your THP. If writing an electronic version, insert additional space for your answer. Please distinguish answers from questions by *font change*, bold or underline.

SECTION I - GENERAL INFORMATION

This THP conforms to my/our plan and upon approval, I/we agree to conduct harvesting in accordance therewith. Consent is hereby given to the Director of Forestry and Fire Protection, and his or her agents and employees, to enter the premises to inspect timber operations for compliance with the Forest Practice Act and Forest Practice Rules.

1. TIMBER OWNER(S) OF RECORD: Name ~~Simpson Timber Company~~ Simpson Resource Company
Per Am 1/22/02
Address PO Box 68

City Korbel State CA Zip 95550 Phone (707)668-4400
Signature [Signature] Date 8/20/01

NOTE: The timber owner is responsible for payment of a yield tax. Timber Yield Tax information may be obtained at the Timber Tax Section, MIC: 60, State Board of Equalization, P.O. Box 942879, Sacramento, California 94279-0060; phone 1-800-400-7115; BOE Web Page at <http://www.boe.ca.gov>.

2. TIMBERLAND OWNER(S) OF RECORD: Name ~~Simpson Timber Company~~ Simpson Resource Company
Per Am 1/22/02
Address Same as #1

City _____ State _____ Zip _____ Phone _____
Signature [Signature] Print Neal Ewald Date 8/20/01

3. LICENSED TIMBER OPERATOR(S): Name ~~Simpson Timber Company~~ Ann #3 Lic. No. A-6968
(If unknown, so state. You must notify CDF of LTO prior to start of operations) Simpson Resource Company
Address Same as #1 Korbel Division

City _____ State _____ Zip _____ Phone _____
Signature [Signature] Print John Plantin Date 8/15/01
Adm Chg per RPF ltr 6/26/02

4. PLAN SUBMITTER(S): Name ~~Simpson Timber Company~~ Simpson Resource Company
Korbel Division
Address Same as #1 Adm Chg per RPF ltr 6/26/02

City _____ State _____ Zip _____ Phone _____
(Submitter must be from 1, 2, or 3 above. He/she must sign below. Ref. Title 14 CCR 1032.7 (a))
Signature [Signature] Print John Plantin Date 8/15/01

RECEIVED

AUG 21 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

- 5. a. List person to contact on-site who is responsible for the conduct of the operation. If unknown, so state and name must be provided for inclusion in the THP prior to start of timber operations.

Name Michael L. Kennedy, RPF # 2090, and Otto van Emmerik

Address Simpson Timber Company, PO Box 68

City Korbel State CA Zip 95550 Phone (707)668-4400

- b. Yes No Will the timber operator be employed for the construction and maintenance of roads and landings during conduct of timber operations? If no, who is responsible?

c. Who is responsible for erosion control maintenance after timber operations have ceased and until certification of the Work Completion Report? If not the LTO, then a written agreement must be provided per 14 CCR 1050 (c).

Simpson Timber Company, License # A-6968. As per 14 CCR 914.9(p), the erosion control maintenance period on permanent and seasonal roads and associated landings that are not abandoned shall be three years.

- 6. a. Expected date of commencement of timber operations:
 date of THP conformance, or _____ (date)

- b. Expected date of completion of timber operations:
 3 years from date of THP conformance, or _____ (date)

7. The timber operation will occur within the:

- COAST FOREST DISTRICT
- Southern Subdistrict of the Coast F. D.
- SOUTHERN FOREST DISTRICT
- High use subdistrict of the Southern F. D.
- NORTHERN FOREST DISTRICT
- The Tahoe Regional Planning Authority Jurisdiction
- A County with Special Regulations, identify: _____
- Coastal Zone, no Special Treatment Area
- Special Treatment Area(s), type and identify: _____
- Other _____

8. Location of the timber operation by legal description:

Base and Meridian:		<input type="checkbox"/> Mount Diablo	<input checked="" type="checkbox"/> Humboldt	<input type="checkbox"/> San Bernardino	
<u>Section</u>	<u>Township</u>	<u>Range</u>	<u>Acreage</u>	<u>County</u>	<u>7.5' Quad*</u>
<u>6</u>	<u>5N</u>	<u>3E</u>	<u>5</u>	<u>HUM</u>	<u>Korbel</u>
<u>7</u>	<u>5N</u>	<u>3E</u>	<u>117</u>	<u>HUM</u>	<u>Korbel</u>
<u>8</u>	<u>5N</u>	<u>3E</u>	<u>41</u>	<u>HUM</u>	<u>Maple Creek</u>

TOTAL ACREAGE 163 (Logging Area Only)

Planning Watershed: CALWATER Version, Identification Number, and Name:

CalWater V2.2, A portion of 1109.300602, Dry Creek, and portion of 1109.300601, Lower Cannon Creek

- 9. Yes No Has a Timberland Conversion been submitted? If yes, list expected approval date or permit number and expiration date if already approved.

- 10. Yes No Is there an approved Sustained Yield Plan for this property? Number _____ Date app. _____

- Yes No Has a Sustained Yield Plan been submitted but not approved? Number _____ Date sub. _____

- 11. Yes No Is there a THP or NTMP on file with CDF for any portion of the plan area for which a Report of Satisfactory Stocking has not been issued by CDF?
If yes, identify the THP or NTMP number(s): _____
- Yes No Is there a contiguous even aged unit with regeneration less than five years old or less than five feet tall? If yes, explain. Ref. Title 14 CCR 913.1 (933.1, 953.1) (a)(4).

- 12. Yes No Is a Notice of Intent necessary for this THP?
 Yes No If yes, was the Notice of Intent posted as required by 14 CCR 1032.7 (g)?

13. RPF preparing the THP: Name John Davis RPF Number 2670

Address Simpson Timber Company, PO Box 68

City Korbel State CA Zip 95550 Phone (707)668-4414

- a. Yes No I have notified the plan submitter(s), in writing, of their responsibilities pursuant to 14 CCR 1035 of the Forest Practice Rules.
 Yes No I have notified the timber owner and the timberland owner of their responsibilities for compliance with the Forest Practice Act and rules, specifically the stocking requirements of the rules and the maintenance of erosion control structures of the rules.
- b. Yes No I will provide the timber operator with a copy of the portions of the approved THP as listed in 14 CCR 1035 (e). If "no", who will provide the LTO a copy of the approved THP?

I or my supervised designee will meet with the LTO prior to commencement of operations to advise of sensitive conditions and provisions of the plan pursuant to 14 CCR 1035.2.

c. I have the following authority and responsibilities for preparation and administration of the THP and timber operation. (Include both work completed and work remaining to be done):

I will perform work that the Forest Practice Rules specifically require be done by the RPF who prepared the plan. I will be available for counsel and guidance regarding conformance with the THP and with the Forest Practice Rules at the request of the LTO. I will have authority to submit plan amendments if deemed necessary during operations. I do not assume responsibility for additional work requiring an RPF when the services of the RPF who prepared the plan are not specified by the Forest Practice Rules, unless said work is performed by myself or under my direction.

d. Additional required work requiring an RPF, which I do not have the authority or responsibility to perform:


The plan submitter may designate any RPF to conduct post approval field work that requires an RPF.

e. After considering the rules of the Board of Forestry and Fire Protection and the mitigation measures incorporated in this THP, I have determined that the timber operation:

- will have a significant adverse impact on the environment. (Statement of reasons for overriding considerations contained in Section III).
- will not have a significant adverse impact on the environment.

Registered Professional Forester: I certify that I, or my supervised designee, personally inspected the THP area, and this plan complies with the Forest Practice Act, the Forest Practice Rules and the Professional Foresters Law. If this is a Modified THP, I also, certify that: 1) the conditions or facts stated in 14 CCR 1051 (a) (1) - (16) exist on the THP area at the time of submission, preparation, mitigation, and analysis of the THP and no identified potential significant effects remain undisclosed; and 2) I, or my supervised designee, will meet with the LTO at the THP site, before timber operations commence, to review and discuss the contents and implementation of the Modified THP.

Signature _____



Date _____

8/15/01

LICENSED TIMBER OPERATOR RESPONSIBILITY ACKNOWLEDGEMENT

(As per Section 1035.3 Title 14, CCR)

Harvesting Plan Number: _____

LICENSED TIMBER OPERATOR INFORMATION

Name: Simpson Timber Company

Street Address/PO Box: P.O. Box 68 City: Korbelt Zip Code: 95550

Telephone Number: 707-668-4400 LTO Number: A-6968

As the LTO listed above I acknowledge responsibility for the following:

- 1) Inform the responsible RPF or plan submitter orally or in writing of any site conditions which in The LTO's opinion prevent implementation of the approved plan and amendments.
2) Be responsible for the work of his or her employees and familiarize all employees with the intent and details of the operational and protection measures of the plan and amendments that apply to their work.
3) Keep a copy of the applicable approved plan and amendments available for reference at the site of active timber operations.
4) Comply with all provisions of the Act, Board rules and regulations and the applicable approved plan, and amendments.
5) Attend an on-site meeting or discuss archaeological site protection with the RPF or supervised designee familiar with on-site conditions.
6) To inquire of the plan submitter, timberland owner or their authorized agent, RPF who wrote the plan, or the supervised designee, if any mitigation measures or specific operating instructions are contained in the Confidential Archaeological Addendum or any other confidential addendum to the plan.
7) Provide the RPF responsible for professional advice throughout the timber operations, the name, address and phone number of an on-site contact employee authorized by the LTO to receive RPF advice.
8) Keep the RPF responsible for professional advice throughout the timber operations advised of the status of timber operation activity.
9) Within 5 days before, and not later than the startup of timber operations, notify the RPF of the start of timber operations.
10) Within 5 days before, and not later than the shutdown of a timber operation, the LTO shall notify the RPF of the shutdown of timber operations.
11) Cease operations, except for emergencies and operations needed to protect water quality, upon receipt of written notice of an RPF's withdrawal of professional services from the plan. The LTO shall not resume operations until written notice is received from the plan submitter that another RPF has visited the site and accepts responsibility for providing advice regarding the plan as the RPF of record.

In addition to the above, I have specific responsibilities for the following: _____

I have read and understand my responsibilities as the Licensed Timber Operator summarized above and specifically described in 14 CCR 1035.3. I will fulfill my legal obligation as stated in the forest practice rules, and agree to fulfill my responsibilities as described above.

LTO Signature: [Signature] Title: Timberland Operations Mgr - Korbelt

Responsible On-Site Contact (if different)

Name: John Davis

Printed Name: [Signature] Date: 8/15/01

Street Address/PO Box #: P.O. Box 68 City: Korbelt Zip: 95550

Telephone Number: 707-668-4414


REGISTERED PROFESSIONAL FORESTER (RPF) RESPONSIBILITY ACKNOWLEDGEMENT
(As per Section 1035.1 Title 14, CCR)

RPF Certified to Provide Professional Advice:

Name: John Davis
Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550
Telephone Number: 707-668-4414 RPF Number: 2670

As of January 1, 2001, I have read and understand my responsibility as RPF, as described under 14 CCR 1035.1(a-g). I agree to fulfill my responsibilities as an RPF as they pertain to this plan.

Yes No I have been retained as the RPF, available to provide professional advice to the licensed timber operator and timberland owner upon request throughout the active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

RPF Signature: 

PLAN SUBMITTER RESPONSIBILITY ACKNOWLEDGEMENT

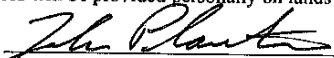
(As per Section 1035 Title 14, CCR)
PLAN SUBMITTER

Name: Simpson Timber Company
Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550
Telephone Number: 707-668-4400

As of January 1, 2001, I have read and understand my responsibilities as Plan Submitter as described under 14 CCR 1035. I certify that I have fulfilled my legal obligation as stated in the forest practice rules, and agree to fulfill my responsibility as the plan submitter as it pertains to this plan.

Yes No I have retained the services of an RPF to provide professional advice to the LTO and timberland owner upon request throughout active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

Yes No I have authorized the timberland owner, _____ to perform the services of a professional forester, understanding that the services will be provided personally on lands owned by the timberland owner.

PLAN SUBMITTER SIGNATURE: 

TIMBERLAND OWNER RESPONSIBILITY ACKNOWLEDGEMENT
(As per Section 1035(d)(2)(B) Title 14, CCR)

TIMBERLAND OWNER

Name: _____
Street Address/PO Box: _____ City: _____ Zip Code: _____
Telephone Number: _____

As of January 1, 2001, I have read and understand my responsibilities as timberland owner as described under 14 CCR 1035(d)(2)(A - C). I certify that I have fulfilled my legal obligation as stated in the forest practice rules, and agree to fulfill my responsibilities as the timberland owner as it pertains to this plan.

I understand that I have been authorized by the plan submitter to perform the services of a professional forester pursuant to the Landowner exception in Public Resources Code Section 757, and such services will be personally performed only on those lands that I own.

TIMBERLAND OWNER'S SIGNATURE: _____

SECTION II - PLAN OF TIMBER OPERATIONS

NOTE: If a provision of this THP is proposed that is different than the standard rule, the explanation and justification should normally be included in Section III unless it is clearer and better understood as part of Section II.

- 14. a. Check the Silvicultural methods or treatments allowed by the rules that are to be applied under this THP. Specify the option chosen to demonstrate Maximum Sustained Production (MSP) according to 14 CCR 913 (933, 953) .11. If more than one method or treatment will be used show boundaries on map and list approximate acreage for each.

Form with checkboxes and numerical inputs for silvicultural methods: Clearcutting (20 ac), Shelterwood Seed Step, Selection (13 ac), Commercial Thinning (106 ac), Road right-of-way (24 ac), etc.

Total acreage 163 ac. Explain if total is different from that in 8. MSP option chosen: (a) [X] (b) [] (c) []

Note: The commercial thinning and shelterwood removal step silvicultural methods will be applied to the same acreage.

- b. If Selection, Group Selection, Commercial Thinning, Sanitation Salvage or Alternative methods are selected the post harvest stocking levels (differentiated by site if applicable) must be stated. Note mapping requirements of 1034 (x) (12).

Average post harvest stocking levels in the shelterwood removal/ commercial thinning areas will be 100 square feet of basal area per acre. The Average post harvest stocking level in the selection areas that correspond to WLPZs and HRAs will be 75 square feet per acre.

- c. [X] Yes [] No Will evenage regeneration step units be larger than those specified in the rules (20 acres tractor, 30 acres cable)? If yes, provide substantial evidence that the THP contains measures to accomplish any of subsections (A) - (E) of 14 CCR 913 (933, 953) .1 (a) (2) in Section III of the THP. List below any instructions to the LTO necessary to meet (A) - (E) not found elsewhere in the THP. These units must be designated on map and listed by size.

The shelterwood removal/commercial thinning area (Unit B) is 106 acres. The area will meet the stocking standards set forth in 14 CCR 913.3(a)(1)(A) and the intensity of the ground disturbance will not resemble that of a clearcut and the harvest will not have an adverse cumulative impact on wildlife, therefore is not held to the size limitations of 14 CCR 913.1(a).

- d. Trees to be harvested or retained must be marked by or marked under the supervision of the RPF. Specify how the trees will be marked and whether harvested or retained.

All merchantable conifers and hardwoods will be harvested from within the clearcut area. The trees to be harvested from within the selection and shelterwood removal/commercial thinning prescription areas will be marked with a BLUE paint stripe and a butt mark.

- [] Yes [X] No Is a waiver of marking by the RPF requirement requested? If yes, how will LTO determine which trees will be harvested or retained? If yes and more than one silvicultural method, or Group Selection is to be used, how will LTO determine boundaries of different methods or groups?

e. Forest products to be harvested: **Sawlogs, chip logs, chips, and hog fuel**

- f. Yes No Are group B species proposed for management?
- Yes No Are group B or non-indigenous A species to be used to meet stocking standards?
- Yes No Will group B species need to be reduced to maintain relative site occupancy of A species?

If any answer is yes, list the species, describe treatment, and provide the LTO with necessary felling and slash treatment guidance. Explain who is responsible and what additional follow-up measures of manual treatment or herbicide treatment are to be expected to maintain relative site occupancy of A species. Explain when a licensed Pest Control Advisor shall be involved in this process.

g. Other instructions to LTO concerning felling operations.

N/A

h. Yes No Will artificial regeneration be required to meet stocking standards?

Artificial regeneration will be used to meet stocking standards within the clearcut areas. The selection areas and the Shelterwood removal/commercial thinning areas will be stocked upon completion.

i. Yes No Will site preparation be used to meet stocking standards? If yes, provide the information required for a site preparation addendum, as per 14 CCR 915.4 (935.4, 955.4).

The following site preparation addendum is included to comply with 14 CCR 915.4 and 14 CCR 916.9(q):

- a. Site preparation may be required to achieve a desirable level of stocking following harvest.
- b. Broadcast burning in the clearcut area and burning of landing piles and large concentrations of slash may be used as site preparation.
- c. Mechanical site preparation will not be conducted. Tractors may be used for firebreak construction within areas allowing heavy equipment operations and within cable yarding areas as designated on the THP maps. Tractors and track loaders may be used for piling in ground based yarding areas and along roads. Equipment operation shall be restricted as per the winter operations plan included in this THP.
- d. No trees will be retained for the purposes of meeting stocking in the clearcut portions of the plan. Trees retained within WLPZs shall not have concentrations of slash piled against them.
- e. Machine piling may occur within ground based operations areas and along roads
- f. The boundaries of the site preparation areas do not differ from the logging area boundaries.
- g. Mr. Michael L. Kennedy is the person responsible for the conduct of site preparation activities. He may be reached at the address given in Item #5 of Section I of the THP. Site preparation activities may occur from the time of plan approval until stocking requirements are met.

NOTE:

Broadcast burning may occur on this THP for site prep and fuel load reduction. Broadcast burning shall occur under fuel moisture conditions such that WLPZs will be protected from high intensity burning. Broadcast burning shall not be initiated within WLPZs or within Class III watercourse channels. The WLPZ retention guidelines specified in Item 26 of this THP shall apply to broadcast burning as the enforceable retention standard.

Soil stabilization as described under Item 18 shall be applied in WLPZs following broadcast burning if encroachment of ground fires has resulted in exposure of bare mineral soil areas greater than 100 square feet or which is likely to result in the transport of sediment to Coho and chinook bearing waters.

j. If the rehabilitation method is chosen provide a regeneration plan as required by 14 CCR 913 (933, 953) .4 (b).

PESTS

15. a. Yes No Is this THP within an area that the Board of Forestry and Fire Protection has declared a

Zone of Infestation or Infection, pursuant to PRC 4712 - 4718? If yes, identify feasible measures being taken to mitigate adverse infestation or infection impacts from the timber operation. See 14 CCR 917 (937, 957) .9 (a).

- b. Yes No If outside a declared zone, are there any insect, disease or pest problems of significance in the THP area? If yes, describe the proposed measures to improve the health, vigor, and productivity of the stand(s).

HARVESTING PRACTICES

16. Indicate type of yarding system and equipment to be used:

- | | | | | | | | | |
|---------------------|--------------------------|------------------------------------|--------------|--------------------------|--------------------|----------------|-------------------------------------|------------|
| GROUND BASED | | | CABLE | | | SPECIAL | | |
| a. | <input type="checkbox"/> | Tractor, including end/long lining | d. | <input type="checkbox"/> | Cable, ground lead | g. | <input type="checkbox"/> | Animal |
| b. | <input type="checkbox"/> | Rubber tired skidder, Forwarder | e. | <input type="checkbox"/> | Cable, high lead | h. | <input type="checkbox"/> | Helicopter |
| c. | <input type="checkbox"/> | Feller buncher | f. | <input type="checkbox"/> | Cable, Skyline | i. | <input checked="" type="checkbox"/> | Other |

Ground based yarding with an option to cable yard. Includes: tractor, skidder, feller buncher & shovel yarding.*

* All tractor operations restrictions apply to ground based equipment.

17. Erosion Hazard Rating: Indicate Erosion Hazard Ratings present on THP. (Must match EHR worksheets)

- Low Moderate High Extreme

If more than one rating is checked, areas must be delineated on map down to 20 acres in size (10 acres for high and Extreme EHRs in the Coast District).

18. Soil Stabilization: In addition to the standard waterbreak requirements describe soil stabilization measures or additional erosion control measures to be implemented and the location of their application. See requirements of 14 CCR 916.7 (936.7, 956.7), and 923.2 (943.2, 963.2) (m), and 923.5 (943.5, 963.5) (f).

“Watersheds with threatened or impaired values” means any planning watershed where populations of anadromous salmonids that are listed as threatened, endangered, or candidate under the State or Federal Endangered Species Acts with their implementing regulations, are currently present or can be restored. This THP is in the greater Mad River watershed, which meets this definition due to the presence of coho salmon, chinook salmon and steelhead. As such, 14 CCR 916.9(m) applies, which states that all tractor roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following yarding and prior to either (1) the start of any rain which causes overland flow across or along the disturbed surface within a WLPZ or within any ELZ or EEZ designated for watercourse or lake protection, or (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch. Also 14 CCR 916.9(n) applies, which states that within WLPZs, and within any ELZ or EEZ designated for watershed or lake protection, treatments to stabilize soils, minimize soil erosion, and prevent discharge of sediment into waters in amounts deleterious to aquatic species or the quality and beneficial uses of water, or that threaten to violate applicable water quality requirements, shall be applied in accordance with the following standards:

- (1) The following requirements shall apply to all such treatments.
 - A. They shall be described in the plan.
 - B. For areas disturbed from May 1 through October 15, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface.
 - C. For areas disturbed from October 16 through April 30, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days, whichever is earlier.
- (2) The traveled surface of logging roads shall be treated to prevent waterborne transport of sediment and concentration of runoff that results from timber operations.
- (3) The treatment for other disturbed areas, including: (A) areas exceeding 100 contiguous square feet where timber operations have exposed bare soil, (B) approaches to tractor road watercourse crossings between the drainage facilities closest to the crossing, (C) road cut banks and fills, and (D) any other area of disturbed soil that threatens to discharge sediment into waters in amounts deleterious to the quality and beneficial uses of water, may include, but need not be limited to, mulching, rip-rapping, grass seeding, or chemical soil stabilizers. Where straw, mulch, or slash is used, the minimum coverage shall be 90%, and any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of timber operations. The RPF may propose alternative treatments that will achieve the same level of erosion control and sediment discharge prevention.

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SEP 24 2001

PART OF PLAN

- (4) Where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from timber operations, the ground shall be treated by measures including, but not limited to, seeding, mulching, or replanting, in order to retain and improve its natural ability to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.

Where seeding is the method chosen for stabilization, an herbaceous cover crop of legumes and grasses will be applied to exposed mineral soil at rates between 20 and 30 pounds/acre (depending on site specific requirements). Seed selected for the mix will include such species as annual rye grass, orchard grass, subterranean clover, white clover, and big trefoil. Simpson uses a specialized seed mix of legumes and grasses that has lighter seed and provides better ground coverage than standard grass seed mixes. Minimum application rate for this seed mix is 20 pounds/acre; standard grass seed mix is applied at 30 pounds/acre. Straw mulch will be applied to a depth of at least two inches and with 90% surface coverage.

Additionally, the following areas will be treated for soil stabilization within this THP:

1. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the roadbed that has access to a watercourse or lake which is protected by a WLPZ (14 CCR 923.2(m)).
2. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of a landing and that has access to a watercourse or lake (923.5(f)(4)).

PROCEDURES FOR GROUND BASED AND CABLE YARDING OPERATIONS BETWEEN OCTOBER 15TH AND JUNE 1ST

NOTE: Simpson Timber Company and the California Department of Fish and Game have developed procedures and mitigations designed to further reduce the potential for ground-based or cable yarding operations conducted between Oct. 15th to June 1st of any year to cause a significant adverse impact to aquatic habitats that support anadromous salmonoid populations. Refer to item #23 for all procedures addressed. The procedures listed below apply directly to soil stabilization measures within WLPZ's. These procedures are intended to augment, not replace, the rules and mitigation provided above.

- From October 15 to June 1 Simpson shall treat with seed, mulch, or slash (per Procedure 5 in Item (3) of the Winter Operating Plan), all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within all Class I and Class II WLPZs, and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ), by the end of the working day. Application of erosion control materials beyond Class I or Class II WLPZ widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery. (Note: This procedure is not intended to be implemented within the 25-50 foot wide special operating zone bordering Class I WLPZs associated with even aged management prescriptions).
- From October 15 to June 1 prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or Simpson seed mix), and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"-4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 25 pounds per acre equivalent Simpson seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"-4" straw mulch.

** NOTE: If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

14 CCR 916.9(o) As part of the plan, the RPF shall identify active erosion sites in the logging area, assess them to determine which sites pose significant risks to the beneficial uses of water, assess them to determine

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SEP 24 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

10

PART OF PLAN

whether feasible remedies exist, and address in the plan feasible re-mediation for all sites that pose significant risk to the beneficial uses of water.

Note: There appears to be a possible small unstable area in a meadow near the south edge of Unit A. Operations will avoid this area. In addition the RPF has designated the area immediately to the North as an HRA. No active unstable features were identified within the proposed harvest units or along the proposed appurtenant roads. The DMG Northcoast watersheds mapping CD ROM was consulted and the USGS 7½ minute quad relevant to this THP (Korbcl) did Show a possible dormant earthflow underlying a portion of the harvest area. The map has been included as part of a geologic reconnaissance report in Section V.

- 19. Yes No Are tractor or skidder constructed layouts to be used? If yes, specify the location and extent of use:
- 20. Yes No Will ground based equipment be used within the area(s) designated for cable yarding? If yes, specify the location and for what purpose the equipment will be used. See 14 CCR 914.3 (934.3, 954.3) (e).
- 21. Within the THP area will ground based equipment be used on:
 - a. Yes No Unstable soils or slide areas? Only allowed if unavoidable.
 - b. Yes No Slopes over 65%?
 - c. Yes No Slopes over 50% with high or extreme EHR?
 - d. Yes No Slopes between 50% and 65% with moderate EHR where heavy equipment use will not be restricted to the limits described in 14 CCR 914 (934, 954) .2 (f) (2) (i) or (ii)?
 - e. Yes No Slopes over 50% which lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake?

If a. is yes, provide site specific measures to minimize effect of operations on slope stability below. Provide explanation and justification in section III as required per 14 CCR 914 (934, 954) .2 (d). CDF requests the RPF consider flagging tractor road locations if "a." is yes. If b., c., d. or e. is yes:

- 1) the location of tractor roads must be flagged on the ground prior to the PHI or start of operations if a PHI is not required, and
- 2) you must clearly explain the proposed exception and justify why the standard rule is not feasible or would not comply with 14 CCR 914 (934, 954).

The location of heavy equipment operation on unstable areas or any use beyond the limitations of the standard rules must be shown on the map. List specific instructions to the LTO below.

- 22. Yes No Are any alternative practices to the standard harvesting or erosion control rules proposed for this plan? If yes, provide all the information as required by 14 CCR 914 (934, 954) .9 in Section III. List specific instructions to the LTO below.

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SEP 24 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

PART OF PLAN

WINTER OPERATIONS

23. a. Yes No Will timber operations occur during the winter period? If yes, complete "b, c, or d." State in space provided if exempt because yarding method will be cable, helicopter, or balloon.
- b. Yes No Will mechanical site preparation be conducted during the winter period? If yes, complete "d".
- c. I choose the in-lieu option as allowed in 14 CCR 914 (934, 954) .7 (c). Specify below the procedures listed in subsections (1) and (2), and list the site specific measures for operations in the WLPZ and unstable areas as required by subsection (3), if there will be no winter operations in these areas, so state.
- d. I choose to prepare a winter operating plan per 14 CCR 914 (934, 954) .7 (b).

NOTE: "Winter period" means the period between November 15 and April 1, except as noted under special County Rules at Title 14 CCR 925.1, 926.18, 927.1, and 965.5... (a) except as otherwise provided in the rules: (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations. (2) Installation of drainage facilities and structures is required from October 15 to November 15 and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.

14 CCR 916.9(k) From October 15 to May 1, the following shall apply:

- (1) no timber operations shall take place unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR 914.7(a) [934.7(a), 954.7(a)],
- (2) unless the winter period operating plan proposes operations during an extended period with low antecedent soil wetness, no tractor roads shall be constructed, reconstructed, or used on slopes that are over 40 percent and within 200 feet of a Class I, II, or III watercourse, as measured from the watercourse or lake transition line,
- (3) operation of trucks and heavy equipment on roads and landings shall be limited to those with a stable operating surface.

Stable operating surface (14 CCR 895.1) means that throughout the period of use, the operating surface of a logging road or landing does not either (1) generate waterborne sediment in amounts sufficient to cause a turbidity increase in downstream Class I, II, III, or IV waters that is visible or would violate applicable water quality requirements; or (2) channel water for more than 50 feet that is discharged into Class I, II, III, or IV waters.

WINTER PERIOD OPERATING PLAN (14 CCR 914.7(b))

This winter period timber operating plan is being included to address timber operations during the winter period, pursuant to 14 CCR 914.7(b). Timber felling, tree planting operations, and administrative access are the only operations planned for the winter period. Heavy equipment will not be utilized in timber felling operations during the winter period. Timber fellers will use low impact all terrain vehicles ("quads") when using seasonal or temporary roads to access the harvest area during winter period. Other winter period timber operations are not currently planned, but could be implemented at the beginning of the winter period, if unseasonably dry weather persists and /or at the end of the winter period if early spring drying has occurred (see yarding limitations specified in 914.7(b) (3) below). Log hauling will occur only during the extended dry, rainless period where the soils are not saturated (as defined in 14 CCR 895.1).

- (1) Erosion Hazard Ratings are discussed under Item 17 and shown on the attached plan maps. The EHR worksheets are provided in Section V - Attachments.
- (2) No mechanical site preparation is proposed during the winter period.
- (3) The types of yarding equipment that may be used on this plan are discussed in Section II, Item 16, and shown on the attached plan maps. As stated in Item 16, Cable & Yarding and Ground Based Yarding (including tractors, skidders, shovel loaders, and feller bunchers) may be used in the operations described in this THP.

Note: The following procedures and mitigations were developed and designed to further reduce the

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SEP 24 2001

12

PART OF PLAN

COAST AREA OFFICE
RESOURCE MANAGEMENT

potential for ground based and cable yarding operations conducted between Oct. 15th and June 1st of any year to cause a significant adverse impact to aquatic habitats that support anadromous salmonid populations. These procedures are intended to augment the Forest Practice Rules and not replace any current regulations. It is to be understood that the following collaborative operating procedures developed by Simpson Timber Company and the California Department of Fish and Game cover a time period exceeding the defined FPA Winter Operating Period (14 CCR 895.1).

Simpson Timber Company and Department of Fish and Game Procedures for Ground Based and Cable Yarding Operations between October 15 and June 1

The ground based and cable yarding operations procedures described below are a result of collaborative discussions between the California Department of Fish and Game (Department), and Simpson Timber Company (Simpson). These procedures are mitigation measures designed to reduce the potential for direct and indirect adverse impacts to aquatic habitats that support anadromous salmonid populations as a result of otherwise lawful timber harvesting operations.

The following apply to all timber operations on Simpson lands. These procedures are pursuant to the California Forest Practice Rules (FPRs), Title 14, California Code of Regulations, Chapter 4 (14 CCR), Sections 895.1, 914, 914.2(c), 914.2(i), 914.3(e), 914.6, 914.7(c)(1), 914.7(c)(3), 914.8, 914.9, 916.2, 916.3, 916.4(b), 916.4(c), 916.5, 916.7, 923, and 1038. The procedures do not replace the Revised Final Rule Language for Protection for Threatened and Impaired Watersheds, 2000.

The specific goals of these procedures are to:

1. Feasibly reduce sediment delivery to watercourses and filter strip areas resulting from yarding operations,
2. permit Simpson yarding flexibility during the period October 15 to June 1 while feasibly preventing yarding related adverse sediment and/or turbidity impacts to receiving waters in threatened and impaired watersheds,
3. Provide a basis for adaptive management to assist the Department, Simpson, Department of Forestry and Fire Protection, National Marine Fisheries Service, Regional Water Quality Control Board, Department of Mines and Geology, and others in determining watershed specific and site-specific variations on these procedures which achieve equal or better protection for anadromous fish resources,
4. Determine the limits of effectiveness which may be achieved by these yarding procedures.

These procedures reflect the level of risk related to yarding operations between October 15 and June 1 the Department is currently willing to accept on the behalf of anadromous salmonids, including federally-listed threatened (FT) and state-candidate coho salmon (*Oncorhynchus kisutch*) (coho), FT chinook salmon (*Oncorhynchus tshawytscha*) (chinook), and federal-candidate threatened steelhead (*Oncorhynchus mykiss*) (steelhead) in accordance with the Department's public trust responsibility.

The Department is concerned regarding sediment and/or turbidity increases in Class I, Class II and Class III watercourses and drainage facilities leading into them. The Department's concerns include, but are not limited to, potential adverse impacts during critical life history stages for anadromous salmonids and their habitat, including: spawning, incubation of eggs, emergence from redds, juvenile survival in low flow rearing habitat, juvenile overwintering, and smoltification/out migration. The Department and Simpson believe timber management-related sediment increases in anadromous fish habitat can degrade habitat conditions during some or all anadromous fish life history stages.

RECEIVED

SEP 24 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

13

PART OF PLAN

Adverse effects associated with increased fine sediment in salmonid habitat are well documented (see, for example, review by Hicks et al. 1991) and include the following:

- a) complete redd failure or reduced survival of eggs to hatching and emergence,
- b) reduced or eliminated spawning substrates,
- c) reduced rearing space area and complexity due to infilling of pools,
- d) chronic turbidity and,
- e) a reduction in the production of aquatic benthic macroinvertebrates and algae due to substrate coating with fines or partial to complete burial of cobble/gravel substrates.

The Department recognizes the difficulty associated with completely eliminating sediment discharges to watercourses during and following timber operations, regardless of the time of year they are conducted. However, the Department and Simpson agree that potential yarding related sediment impacts to watercourses may be further feasibly reduced through additional efforts to eliminate channelized runoff resulting from timber operations. The Department and Simpson further recognize runoff cannot be completely prevented from leaving harvest units and associated roads, landings, and ditches as channelized flow. However, both the Department and Simpson agree the application of the measures within this agreement will further minimize sediment impacts to watercourses associated with ground based and cable yarding between October 15 and June 1.

PROCEDURES

- 1) Yarding operations or runoff from yarding operations during the period October 15 to June 1 shall not result in a visible increase in turbidity in watercourses or hydrologically connected facilities (e.g. ditches, landings, roads) which discharge into watercourses.
- 2) Cable yarding which achieves the least amount of ground disturbance shall be used to the maximum extent feasible. Ground based yarding operations shall use minimal ground disturbing equipment (e.g. tracked shovel loaders) without bladed skid trail construction or reconstruction to the maximum extent feasible. Where this is not feasible, yarding operations from October 15 to June 1 shall be limited to skid trails for ground-based equipment or cable yarding roads (cable corridors) which are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II, or III watercourses. The intent is to have no or minimal skid trail construction or reconstruction near any watercourse, and no channelized flow resulting from timber operations or facilities reaching Class I, II, or III watercourses or hydrologically connected ditches.
- 3) Construction and use of skid trails from October 15 to June 1 shall not occur within at least 100 feet, slope distance, of the upper extent (e.g. top or head) of any designated Class II watercourse, and on slopes greater than 30% within at least 100 feet of Class III watercourses. (Note: Long-line yarding or lifting logs with a shovel loader from outside this zone is permitted as long as the skid trails are hydrologically disconnected, as in Procedure 2). The intent is to minimize the amount of ground disturbance created by tractor operations near watercourses between October 15 and June 1.
- 4) From October 15 to June 1 Simpson shall treat with seed, mulch, or slash (per Procedure 5), all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within all Class I and Class II WLPZs, and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ), by the end of the working day. Application of erosion control materials beyond Class I or Class II WLPZ widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery. (Note: This procedure is not intended to be implemented within the 25-50 foot wide special operating zone bordering Class I WLPZs associated with even aged management prescriptions).

RECEIVED

SEP 24 2001

14

PART OF PLAN

COAST AREA OFFICE
RESOURCE MANAGEMENT

- 5) From October 15 to June 1, prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or Simpson seed mix), and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"- 4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 25 pounds per acre equivalent Simpson seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"- 4" straw mulch.

** Note. If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

Source Cited:

Hicks, B.J., J.D. Hall, P.A. Bisson, and J.R. Sedell. 1991. Responses of salmonids to habitat changes. Pages 483-518 in W.R. Meehan, ed. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19.

- (4) Timber operations, as described in this winter operating plan, may occur throughout the winter period.
- (5) Erosion control facilities timing will be as follows (also see discussion in (3) above):
As per CCR 914.6(a):
- (a) except as otherwise provided for in the rules
- (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations.
 - (2) Installation of drainage facilities and structures is required from October 15 to November 15 and from April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.
- (b) Waterbreaks shall be constructed concurrently with the construction of firebreaks and immediately upon conclusion of use of tractor roads, roads, layouts, and landings which do not have permanent and adequate drainage facilities, or drainage structures.

In addition, as required by CCR 916.9(m), all tractor roads shall have drainage and/or drainage collection and storage facilities installed as soon as practical following yarding and prior to either

- (1) the start of any rain which causes overland flow across or along the distributed surface within a WLPZ or within any ELZ designated watercourse or lake protection, or
 - (2) any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.
- (6) The predominant form of precipitation within this plan is rain. Minor amounts of contributing precipitation is also found in fog drip, and occasional frozen forms, such as sleet, hail and snow.
- (7) Ground condition limitations will be as discussed in (3) above.
- (8) Silvicultural systems are discussed in Section II, Item 14 and shown on the attached plan maps. Exposed mineral soil is expected primarily on skid trails associated with tractor and skidder yarding. Exposed mineral soil is not expected to be significant in feller-buncher operations, shovel-loader yarding, or cable logging areas. Operational limits on tractor and skidder yarding to minimize soil erosion during the winter period are discussed in (3) above.
- (9) The only operations within WLPZ's will be the free felling of timber and yarding as described in (3) above.
- (10) Equipment use limitations will be as discussed in (3) above.
- (11) The only known unstable area is a possible small unstable area in a meadow near the south edge of Unit

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SEP 24 2001

15

PART OF PLAN

COAST AREA OFFICE
RESOURCE MANAGEMENT

A. Operations will avoid this area. In addition the RPF has designated the area immediately to the North as an HRA. As stated in Section III– *Stand Description*—14CCR 916.9(o). The unstable feature has been avoided due to its exclusion from operations. No active unstable features were identified within the proposed harvest units or along the proposed appurtenant roads. The unstable feature has been avoided due to its exclusion from operations.

14 CCR 916.9(l) Construction or reconstruction of logging roads, tractor roads, or landings shall not take place during the winter period unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR 914.7(a) [934.7(a), 954.7(a)] that specifically address such road construction. Use of logging roads, tractor roads, or landings shall not take place at any location where saturated soil conditions exist, where a stable logging road or landing operating surface does not exist, or when visibly turbid water from the road, landing, or skid trail surface or inside ditch may reach a watercourse or lake. Grading to obtain a drier running surface more than one time before re-incorporation of any resulting berms back into the road surface is prohibited.

This THP does not propose to construct or reconstruct any logging roads, tractor roads, or landings during the winter period.

ROADS AND LANDINGS

24. Will any roads be constructed? Yes No, or reconstructed? Yes No. If yes, check items "a." through "g."
 Will any landings be constructed? Yes No, or reconstructed? Yes No. If yes, check items "h." through "k."
- a. Yes No Will new or reconstructed roads be wider than single lane with turnouts?
 - b. Yes No Are logging roads proposed in areas of unstable soils or known slide-prone areas?
 - c. Yes No Will new roads exceed a grade of 15% or have pitches of up to 20% for distances greater than 500 feet? Map must identify any new or reconstructed road segments that exceed an average 15% grade for over 200 feet.
 - d. Yes No Are roads to be constructed or reconstructed, other than crossings, within the WLPZ of a watercourse? If yes, completion of THP Item 27 a. will satisfy required documentation.
 - e. Yes No Will roads be located across more than 100 feet of lineal distance on slopes over 65%, or on slopes over 50% which are within 100 feet of the boundary of a WLPZ?
 - f. Yes No Will any roads or watercourse crossings be abandoned?
 - g. Yes No Are exceptions proposed for flagging or otherwise identifying the location or roads to be constructed?
 - h. Yes No Will any landings exceed one half acre in size? If any landing exceeds one quarter acre in size or requires substantial excavation the location must be shown on the map.
 - i. Yes No Are any landings proposed in areas of unstable soils or known slide prone areas?
 - j. Yes No Will any landings be located on slopes over 65% or on slopes over 50% which are within 100 feet of the boundary of a WLPZ?
 - k. Yes No Will any landings be abandoned?

25. If any section in "item 24" above is answered yes, specify site-specific measures to reduce adverse impacts and list any additional or special information needed by the LTO concerning the construction, maintenance, and/or abandonment of roads or landings, as required by 14 CCR Article 12. Include required explanation and justification in THP Section III.

In regard to Item # 24

This plan proposes to construct approximately 2,300 feet of new seasonal road. This proposed road is located on mild slopes, gentle ridge tops and will aid in facilitating cable and tractor harvesting now and in the future. Every effort has been made to limit the amount of new road construction by repairing and utilizing existing skid trails and old roads that exists throughout the plan area. 11 permanent stream crossings and 2 temporary crossings are planned at the locations shown on the THP maps. A description of the proposed culvert installations and the proposed 1603 request are discussed below. An approved 1603 permit will be obtained from the California Department of Fish and Game prior to the installation of the stream crossings.

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 PART OF PLAN OCT 16 2001
 COAST AREA OFFICE
 RESOURCE MANAGEMENT

In addition, approximately 15,366 feet of existing haul road will have some level of roadside clearing for road maintenance. The portions of existing roads requiring this clearing are those located within and between the THP areas (see plan maps). Along these existing haul roads, trees and brush will be removed for a distance of 25 feet from the outside edge of the road surface. Merchantable timber along these roads will be harvested and loaded out under this plan. Unmerchantable timber and associated brush will be cleared to improve road drying, clear road ditch lines, and increase line-of-sight for safety. All harvesting will comply with guidelines within Simpson's HCP. Simpson has found that removing the near road canopy has greatly reduced the maintenance needs along these sections of roads while providing positive advantages like quicker road drying times and increased road driving safety. Clearing along these older haul roads will be in conjunction with the road maintenance program discussed later in this section and will be beneficial to overall road maintenance within the Cumulative Impact Assessment Area (CIAA).

In compliance with 14 CCR 1034 (x)(7), the locations of the crossings within the plan area are depicted on the THP map. All permanent culverts (P) will be of sufficient length to extend beyond the fill material as per 14 CCR 914.8 (e) and will be installed in the stream channel at the existing gradient. A critical dip will be installed at specific creek crossings to prevent the diversion of water should the culvert plug. After the completion of operations, or prior to the winter period, the inlet and the outlet of these class II crossings will be stabilized by armoring with rock, grass seeding, and straw mulching the exposed area.

As agreed to at the time of the PHI, all woody debris shall be removed from the crossing prior to the installation of the new culverts.

As agreed to at the time of the PHI, all permanent crossings shall have the inlets and outlets rock armored.

As agreed to at the time of the PHI, the landing adjacent to point 4 will not be used.

In regard to Item #24 and in accordance with 14CCR 923.9(b) the maximum width of the single lane roads are as specified in the attached Simpson Timber Company Road Construction and Stream Crossing Installation Specifications. These have been included in attachments section V and as part of the 1603 permit in Item 26.

Temporary Crossing shall be removed in the following manner:

Fills shall be excavated to form a channel, which is as close as feasible to the natural watercourse grade and orientation and is wider than the natural channel. The excavated material and any cut bank shall be sloped back from the channel and stabilized to prevent slumping and to minimize soil erosion. This material shall be treated with grass seed and straw mulch as described in item #18. All temporary stream crossings shall be completely removed by October 15th in the year of operation

WATERCOURSE AND LAKE PROTECTION ZONE (WLPZ) AND DOMESTIC WATER SUPPLY PROTECTION MEASURES

- 26. a. Yes No Are there any watercourse or lakes which contain Class I through IV waters on or adjacent to the plan area? If yes, list the class, WLPZ or ELZ width, and protective measures determined from Table I and/or 14 CCR 916 (936, 956) .4 (c) of the WLPZ rules for each watercourse. Specify if Class III or IV watercourses have WLPZ, ELZ, or both.
- b. Yes No Are there any watercourse crossings that require mapping per 14 CCR 1034 (x) (7)?
- c. Yes No Will tractor road watercourse crossings involve the use of a culvert? If yes state minimum diameter and length for each culvert (may be shown on map).
- d. Yes No Is this THP Review Process to be used to meet Department of Fish and Game CEQA review requirements? If yes, attach the 1603 Addendum below or at the end of this Section II; provide the background information and analysis in Section III; list instructions for LTO below for the installation, protection measures, and mitigation measures; as per THP Form Instructions or CDF Mass Mailing, 07/02/1999, "Fish and Game Code 1603 Agreements and THP Documentation".

A 1603 permit will be obtained from the Department of Fish and Game prior to the installation of these permanent culverts and temporary crossings. All pertinent operational information approved or

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prescribed by the DF&G will be implemented and the approved, signed copy of the 1603 permit with all its attachment will be on site with the LTO prior to installing any culverts. The RPF feels that the 1603 agreement should be under attachment rather than included in section II of the THP because of the above mentioned reasons. A detailed description of each crossing is provided below.

WATERCOURSE PROTECTION MEASURES

As per 14CCR 916(b)(1) & (2):

(b) Protection of the quality and beneficial uses of water during the planning, review, and conduct of timber operations shall comply with all applicable legal requirements including those set forth in any applicable water quality control plan adopted or approved by the State Water Resources Control Board. At a minimum, the LTO shall not do either of the following during timber operations:

(1) Place, discharge, or dispose of or deposit in such a manner as to permit to pass into the waters of the state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water;

(2) Remove water, trees or large woody debris from a watercourse or lake, the adjacent riparian area, or the adjacent flood plain in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water.

There are no Class I watercourse or restorable Class II watercourses within or adjacent to the harvest area.

As per 14 CCR 916.4 (a) The RPF or supervised designee shall conduct a field examination of all lakes and watercourses and shall map all lakes and watercourses which contain or conduct Class I, II, III or IV waters.

(1) As part of this field examination, the RPF or supervised designee shall evaluate areas near, and areas with the potential to directly impact, watercourses and lakes for sensitive conditions including, but not limited to, existing and proposed roads, skidtrails and landings, unstable and erodible watercourse banks, unstable upslope areas, debris, jam potential, inadequate flow capacity, changeable channels, overflow channels, flood prone areas, and riparian zones wherein the values set forth in 14 CCR §§ 916.4(b) [936.4(b), 956.4(b)] are impaired. The RPF shall consider these conditions, and those measures needed to maintain, and restore to the extent feasible, the functions set forth in 14 CCR §§ 916.4(b) [936.4(b), 956.4(b)], when proposing WLPZ widths and protection measures. The plan shall identify such conditions, including where they may interact with proposed timber operations, that individually or cumulatively significantly and adversely affect the beneficial uses of water, and shall describe measures to protect and restore to the extent feasible, the beneficial uses of water. In proposing, reviewing, and approving such measures, preference shall be given to measures that are on-site, or to offsite measures where sites are located to maximize the benefits to the impacted portion of a watercourse or lake.

- Point 4 is associated with an existing road/landing where a class II creek drains onto the landing. There will be a ditch constructed along the east side of the landing and the water diverted into a 36" culvert and back into the natural stream channel. Considering this, the use of this seasonal road is not expected to adversely affect beneficial uses of water.

(a) The following protection will be provided to the Class II and III watercourse within this plan:

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OCT 16 2001

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PART OF PLAN

Class II Watercourses:

- Minimum Class II WLPZ widths as stated in the Forest Practice Rules (14 CCR 916.5) are:

Slope	Class II WLPZ width
<30%	50 feet
30-50%	75 feet
>50%	100 feet (25 feet less for cable yarding operations)

Average side slope was determined as per 14 CCR 916.5(a)(3). These zones shall be clearly identified on the ground by the an RPF, or supervised designee, with paint, or other suitable means (flagging) prior to the pre-harvest inspection.

- Where it exists prior to operations, at least 70% of the total canopy will be retained in Class II WLPZs.
Retained canopy shall be left in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of operations. Residual overstory canopy will be composed of at least 25% of the existing overstory conifers.

Existing canopy closure within WLPZs ranges from 60% to 100%. Utmost care will be taken during logging operations to minimize tree canopy damage, particularly when yarder skyline cables must pass through a WLPZ.

- In regard to 14CCR 916.9(t), large woody debris (LWD) will not be removed from the stream channel or from the WLPZ.
- Where they exist, at least 2 living conifers per acre at least 16 inches diameter breast high and 50 feet tall within 50 feet of the watercourse will be retained in accordance with 14 CCR 916.3(g).
- At least 75% surface cover and undisturbed area shall be retained to act as a filter strip for raindrop energy dissipation and for wildlife habitat in accordance with 14 CCR 916.4(b)(6).
- In accordance with 14CCR 916.5(e)(E), for Class II watercourses, “to ensure retention of shade canopy filter strip properties and the maintenance of wildlife values... a base mark shall be placed below the cut line of the residual or harvest trees within the zone... In planning watersheds determined to contain coho salmon, chinook salmon, or steelhead, tree marking must be completed prior to the preharvest inspection.”

Harvest trees in WLPZs for this THP will be marked with a BLUE paint stripe and butt mark.

- Trees will be felled away from watercourses as stated under 14 CCR 914.1(a):
“To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses and lakes.”

- In regard to 14CCR 916.9(c):

Simpson Timber typically maintains a minimum canopy in excess of what is required by the Forest Practice Rules. This THP proposes to maintain a 70% total canopy. Due to the minimal harvest, the total canopy will likely be greater than 70%. This enhanced canopy retention provides abundant shade and a filter strip in excess of what is needed. In considering the enhanced WLPZ’s already prescribed in this THP no further protection measures are needed, so, within the clearcut area, the silviculture prescription between the required WLPZ and 100’ will be clearcut. The silvicultural prescription between the required WLPZ and 100’, within the shelterwood removal/commercial thinning area will be shelterwood removal/commercial thinning.

Note:

An SOZ will be established within 100 feet of the Class II watercourses in Uuit A. The protective measures within this SOZ are as follows:

- All hardwoods and non-merchantable conifers will be retained in Unit A. If these trees are knocked down,

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during operations they will be left in place.

- Establish a 100 foot ELZ for all C II watercourses within Unit A.
- Establish a 100 foot No Burn zone for all C II watercourses within Unit A. No intentional burning shall occur in this area and all reasonable efforts shall be made to prevent encroachment of fire into this zone.

Class III Watercourses:

- Directional falling away from watercourses as per 14 CCR 914.1(a):

“To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses and lakes.”
- In accordance with 14 CCR 916.4(c)(1):

“Where operations occur adjacent to Class III watercourses, the RPF shall designate in the THP an equipment limitation zone (ELZ) of at least 25 feet where sideslope steepness is less than 30% and at least 50 feet where sideslope steepness is 30% or greater unless explained and justified otherwise in the THP and approved by the director.”
- If soil and debris are deposited during timber operations in a Class III watercourse, it will be treated in accordance with 14 CCR 916.4(c)(3):

“Soil deposited during timber operations in a Class III watercourse other than at a temporary crossing shall be removed and debris deposited during timber operations shall be removed or stabilized before the conclusion of timber operations, or before October 15. Temporary crossings shall be removed before the winter period, or as approved by the Director.”

Regarding 14 CCR 916.9(e) and Class III watercourses: 916.9(e)

Because of the above rationale, STCo and the RPF believe that it is a mistake to perpetuate this interpretation of the channel zone definition; but because of the very real need for timely approval of THPs, *Simpson will not cut trees within the “channel zone” of the Class III streams in this THP and will continue to work towards a resolution of this matter.*

In regard to 26(b) above and to the Department of Fish and Game 1603 permitting process, a copy of a proposed 1603 application (Forms 2023 and 2024) and a copy of Simpson’s Road Construction and Stream Crossing Installation Specifications are attached to this plan in Section V. The road construction and crossing installation document discusses the installation of drainage structures, illustrates a typical watercourse crossing culvert installation, and demonstrates the proper installation of critical dips, outsloped rolling dips, insloped rolling dips, and typical ditch relief culvert installation. The specifications discussed in the document are requirements from Simpson to the operator to achieve quality results. Communications regarding road construction and stream crossing installations is of utmost importance to Simpson in complying with the Forest Practice Rules and protecting the downstream beneficial uses of water. The following is a description of proposed watercourse crossing installations and upgrades as identified on the THP maps:

In accordance with 14CCR 923.3(e), all permanent watercourse crossings are sized to accommodate a 100-flood flow.

Installation of Stream Crossings on Existing Roads:

Point 1: - Class II stream

Replace existing 30” CMP with a 48” CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 2: - Class II stream

Install a 30" CMP where water is now running across an existing road. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 3: - Class II stream

Replace existing 12" CMP with a 42" CMP and return water to the natural channel. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 4: - Class II stream

Ditch the channel along the edge of an existing road and landing and install a 36" CMP to divert water back into the channel. Grass seed and straw mulch exposed soil as described under item #18.

Point 5: - Class III stream

Install a 30" CMP to relieve ponding water above the road during wet periods. Grass seed and straw mulch exposed soil as described under item #18.

Point 6: - Class II stream

Remove old humboldt crossing and replace it with a 42" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 7: - Class III stream

Install a 24" CMP, water presently dissipates in a flat area above the road. Grass seed and straw mulch exposed soil as described under item #18.

Point 8: - Class II stream

Remove old humboldt crossing and replace it with a 42" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 9: - Class II stream

Install a 30" CMP and divert water that is currently running down the road back into the natural stream channel. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 12: - Class II stream

Remove old humboldt crossing and replace it with a 24" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 13: - Class II stream

Replace existing 12" CMP with a 30" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Installation of Temporary Stream Crossings on New Road Construction:**Point 10:** - Class II stream

This is an old Humboldt crossing that has begun to fail. As agreed to on the PHI, this crossing should be used as is with enough work to make it useable for hauling. The crossing will be utilized and removed the first year of operations. Upon conclusion of the use of the crossing, it shall be excavated to entirely remove the Humboldt crossing. Grass seed and straw mulch exposed soil as described under item #18.

This point has had approximately 30 cubic yards of material collapse on the lower end of the crossing. It appears during high flow events some headward erosion may still be occurring. Because of of this the crossing will be treated as stated above.

Point 11: - Class III stream

Temporary crossing. Grass seed and straw mulch exposed soil as described under item #18.

PART OF PLAN

21

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For the temporary Class III watercourse crossing the following shall apply:

Temporary class III truck road crossings shall be constructed in one of the following ways:

1. Spittler type crossing that utilizes logs, hay bales and clean fill installed and removed in such a way as to minimize sediment input into the watercourse.
2. Culvert type crossing that utilizes metal or plastic pipe that is large enough to pass summer flow (12" minimum) using hay bales and clean soil as fill material.
3. Dry ford crossing with rolling dip through stream channel, if channel is dry at the time of crossing except at point 5.

All temporary class III crossings shall be pulled prior to October 15th, and exposed soil shall be treated with grass seed and straw mulch as described under item 18.

Installation of Temporary Tractor Crossings of watercourses:

This plan proposes 3 tractor crossings of watercourses. These crossings will cross class III watercourses. These crossings have not been identified with individual points but are shown on the map with a unique symbol.

Temporary class III tractor crossings shall be constructed in one of the following ways:

4. Spittler type crossing that utilizes logs, hay bales and clean fill installed and removed in such a way as to minimize sediment input into the watercourse.
5. Culvert type crossing that utilizes metal or plastic pipe that is large enough to pass summer flow (12" minimum) using hay bales and clean soil as fill material.
6. Dry ford crossing with rolling dip through stream channel, if channel is dry at the time of crossing.

All temporary class III crossings shall be pulled prior to October 15th, and exposed soil shall be treated with grass seed and straw mulch as described under item 18.

NOTE:

No significant impacts are anticipated as a result of new road construction or stream crossing installations. The stabilization measures described under Items 18 and 25 will be implemented. After completion of operations and prior to the winter period the proposed roads and landings will be drained properly and the appropriate waterbars will be installed to minimize potential probable erosion.

Regarding 14 CCR 916.9(r), if surface stabilization is needed on roads within or appurtenant to this THP area during dry weather, existing a historically used draft location outside of the THP area will be used, or chemical stabilizers will be applied.

WATER DRAFTING PLAN

14 CCR 916.9(r) states that water drafting for timber operations from within a channel zone of a natural watercourse or from a lake shall conform to the following standards:

- (1) The RPF shall incorporate into the THP:
 - (A) a description and map of proposed water drafting locations
Water will be drafted from Canon Creek where it crosses Simpson Timber Company's 4000 truck road in T5N, R2E, section 11, HBM. The location is shown on the appurtenant roads map.
 - (B) the watercourse or lake classification
Canon Creek is a Class I watercourse.
 - (C) the general drafting location use parameters (i.e., yearly timing, estimated total volume needed, estimated total uptake rate and filling time, and associated water drafting activities from other THPs)
Drafting will occur during spring, summer, and fall months. Estimated maximum volume used per day is 9000 gallons for all THPs to be serviced by this drafting location. During summer flows, maximum

PART OF PLAN

22

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OCT 25 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

diversion rate shall not exceed 220 gallons per minute. Spring and fall diversion rates shall not exceed 350 gallons per minute.

(2) On Class I and Class II streams where the RPF has estimated that:

- (A) bypass flows are less than 2 cubic feet per second, or
- (B) pool volume at the water drafting site would be reduced by 10%, or
- (C) diversion rate exceeds 350 gallons per minute, or
- (D) diversion rate exceeds 10% of the above surface flow;

no water drafting shall occur unless the RPF prepares a water drafting plan to be reviewed by DFG and approved by the Director.

(A) Bypass flows exceed 2 cubic feet per second. Measurements taken in July 2000 indicate that flow is approximately 3.8 cubic feet per second.

(B) Pool volume will not be reduced by 10% or greater.

(C) Diversion rate will not exceed 350 gallons per minute (350 gallons per minute is 0.78 cubic feet per second).

(D) Diversion rate will exceed 10% of the surface flow.

The water drafting plan shall include, but not be limited to:

1. disclosure of estimated percent streamflow reduction and duration of reduction,
2. discussion of the effects of single pumping operations, or multiple pumping operations at the same location,
3. proposed alternatives and discussion to prevent adverse effects (e.g. reduction in hose diameter, reduction in total intake at one location, described allowances for recharge time, and alternative water drafting locations),
4. conditions for operators to include an operations log kept on the water truck containing the following information: Date, Time, Pump Rate, Filling Time, Screen Cleaned, Screen Conditions, and Bypass flow observations,
5. a statement by the RPF for a pre-operations field review with the operator to discuss the conditions in the water drafting plan.

1. At a bypass flow of 3.8 cubic feet per second, a truck that drafts at a maximum 0.78 cubic feet per second reduces streamflow by 20%. Assuming that bypass flow will decrease to 2.0 cubic feet per second, a truck that drafts at a maximum 0.78 cubic feet per second reduces streamflow by 39%. A 3000-gallon capacity water tank will fill in approximately 8½ minutes if it drafts at a maximum 350 gallons per minute.

2. Pool volume will not be reduced. The maximum water drafting rate, 0.78 cubic feet per second, is less than the bypass flow. Approximately 25½ minutes would be needed to fill a 3000-gallon capacity water truck three times on any given day (drafting at a maximum 350 gallons per minute), 1.8% of the total minutes in a day. Temporary reductions in surface flow will therefore be insignificant. Multiple pumping operations at the same location are not expected to occur.

3. STCO's drafting screen specifications, included in Section VI of the THP, are intended to prevent adverse effects.

4. Operators will keep an operations log on the water truck containing the following information: date, time, pump rate, filling time, screen cleaned, screen conditions, and bypass flow observations.

5. A pre-operations field review will be held with the operator to discuss conditions in the water drafting plan.

(3) Intakes shall be screened in Class I and Class II waters. Screens shall be designed to prevent the entrainment or impingement of all life stages of fish or amphibians. Screen specifications shall be included in the plan.

All intake hoses will be screened in accordance with Simpson Timber Company's Drafting Screen Specifications, included in Section VI.

(4) Approaches to drafting locations within a WLPZ shall be surfaced with rock or other suitable material to avoid generation of sediment.

The approaches to the Canon Creek drafting location are surfaced with rock.

STCO'S DRAFTING SCREEN SPECIFICATIONS

In 1997, Simpson Timber Company designed a drafting screen for use on all pumping site locations in class I (fish bearing)

PART OF PLAN

23

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OCT 25 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

streams. This screen was design to meet or exceed the Fish Screening Criteria published by the State of California's Resources Agency Department of Fish and Game (CDF&G) on April 14, 1997. The CDF&G criteria appears to be modified from Fish Screening Criteria for Anadromous Salmonids published by the National Marine Fisheries Service, Southwest Region (NMFS), January 1997. Some of the specific modifications apply to "Not Self-Cleaning" screens such as Simpson's design.

The screen is an open top box constructed from a framework of 1" angle iron with 1/16" mesh screen attached to the four vertical sides. Each side is 3' long by 2' high. The bottom of the box is a 3' x 3' piece of plywood inserted within the framework. The drafting hose is placed in the middle of the box.

Approach Velocity

Approach velocity is defined as the local velocity component perpendicular to the screen face. For non self-cleaning screens, the CDF&G criteria requires an approach velocity of no more than ¼ of the velocity allowed on a self-cleaning screen, or ¼ of 0.40 feet per second (fps). An instantaneous velocity of 0.10 fps is beyond the accuracy of our flow meter (0.50 fps); however, the flow meter will measure 0.10 fps in an averaging mode. Simpson's drafting screen is designed to have no measurable flow, in the averaging mode, at the screen's surface while pumping. This velocity is slow enough that you should barely be able to detect water movement when holding your hand against the drafting box screen while drafting.

Screen Area

"The required wetted screen area (square feet), excluding the area affected by structural components, is calculated by dividing the maximum diverted flow (cubic feet per second) by the allowable approach velocity (feet per second)" (CDF&G, Fish Screening Criteria, 1997). Drafting pumps operate at or below 400 gpm, or 0.891 cfs.
(0.891 cfs / 0.10 fps = 8.91 square feet)

Simpson's drafting box design provides 24 square feet of screened area when submerged to the level of the top angle iron rail. When submerged to a depth of nine inches, or a maximum of fifteen inches sideboard exposed, the screen provides nine square feet of screen area. As a safety buffer the drafting box should always be submerged at least one foot deep.

Sweeping Velocity

Sweeping velocity is the velocity component parallel to screen face. This is essentially the stream flow outside of the box that helps prevent debris buildup on the screen surface. The CDF&G Fish Screening Criteria, Section 3a, requires that the sweeping velocity should be at least two times the allowable approach velocity. In this case a sweeping velocity of 0.20 fps should be met if there is any measurable flow past the face of the screen.

Screen Openings

Square screen openings, such as is used in Simpson's drafting screen, will not exceed 3.96mm (5/32 inches), or when steelhead fry are present, 2.38mm (3/32 inches) measured diagonally. Simpson assumes that any Class I stream that we draft from potentially has steelhead fry and thus have design the screen with the more restrictive criteria. The 1/16 inch mesh provides for diagonal openings of 3/32 inches.

With regular maintenance and cleaning, Simpson's drafting screen should meet or exceed the criteria set forth in CDF&G's and NMFS fish screening

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RESOURCE MANAGEMENT

PART OF PLAN

24

NOTIFICATION OF LAKE OR STREAMBED ALTERATION FORM (FG 2023)

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION
(See attachment/enclosure for instructions)

1601 (Public) 1603 (Private) Timber Harvest Plan Commercial Gravel Extraction

Applicant Information

	Name	Address	Telephone Number
Applicant	GERHARD E. LARSEN	P.O. Box 68 Korbel, CA 95550	Business: (707) 668-4463 (707) 668-4400 Fax: (707) 668-4402
Operator	SIMPSON TIMBER COMPANY	Same as above	Business: (707) 668-4400 Fax: (707) 668-4402
Contractor (if known):	N/A		Business: Fax:
Contact Person (if not applicant):	John Davis	SAME AS ABOVE	Business: (707) 668-4414 Fax: (707) 668-4402
Property Owner:	SIMPSON TIMBER COMPANY	SAME AS ABOVE	Business: (707) 668-4400 Fax: (707) 668-4402

Project Information

County	Assessor's Parcel Number	Section	Range	Township	USGS Map
Humboldt	N/A	6, 7, 8	3E	5N	KORBEL AND MAPLE CREEK
Name of River, Stream, or Lake:	UNNAMED TRIBUTARIES TO CANON CREEK				
Tributary To?	Mad River				
Proposed Start Date:	4-01-02	Proposed Completion Date:	11-1-02	Project Cost (see instructions):	\$1031.00
				Number of Stream Encroachments (Timber Harvest Plans Only):	15

Attachments/Enclosures

Please attach or enclose the following documents listed below and check the boxes of the documents attached or enclosed.

<input checked="" type="checkbox"/> Project Description (below)	<input checked="" type="checkbox"/> Map showing the location of the project, including distances	<input checked="" type="checkbox"/> *Construction plans pertaining to the project (*STCo Road Construction and Siting)
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PART OF PLAN

OCT 25 2001

COAST AREA OFFICE
RESOURCE MANAGEMENT

		Crossing Installation Specifications attached)
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Please attach or enclose the following documents listed below, if applicable, and check the boxes of the documents attached or enclosed.

Completed CEQA documents:	<input type="checkbox"/> Environmental Impact Report <input type="checkbox"/> Negative Declaration <input type="checkbox"/> Mitigated Negative Declaration <input type="checkbox"/> Notice of Exemption (*THP Cumulative Impacts Assessment is Functional Equivalent to CEQA)		
Copies of all applicable local, State, or federal permits, agreements, or other authorizations:	<input type="checkbox"/> Local. Describe:		
	<input checked="" type="checkbox"/> State. Describe: Proposed California Timber Harvest Plan STCo #24-0002		
	<input type="checkbox"/> Federal. Describe:		

NOTIFICATION OF LAKE OR STREAMBED ALTERATION
(Continued)

Name of Applicant: Gerhard E. Larsen

Project Description

Please describe your project or activity in detail belowand, if necessary, on separate attached pages.

Please see attached pages for Simpson's Road Construction and Stream Crossing Installation

Specifications(Korbel Operations),and STCo THP 24-0002

Installation of Stream Crossings on Existing Roads:

Point 1: - Class II stream

Replace existing 30" CMP with a 48" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 2: - Class II stream

Install a 30" CMP where water is now running across an existing road. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 3: - Class II stream

Replace existing 12" CMP with a 42" CMP and return water to the natural channel. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 4: - Class II stream

Ditch the channel along the edge of an existing road and landing and install a 36" CMP to divert water back into the channel. Grass seed and straw mulch exposed soil as described under item #18.

Point 5: - Class III stream

Install a 30" CMP to relieve ponding water above the road during wet periods. Grass seed and straw mulch exposed soil as described under item #18.

Point 6: - Class II stream

Remove old humboldt crossing and replace it with a 42" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 7: - Class III stream

Install a 24" CMP, water presently dissipates in a flat area above the road. Grass seed and straw mulch exposed soil as described under item #18.

Point 8: - Class II stream

Remove old Humboldt crossing and replace it with a 42" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 9: - Class II stream

Install a 30" CMP and divert water that is currently running down the road back into the natural stream channel. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 12: - Class II stream

Remove old Humboldt crossing and replace it with a 24" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Point 13: - Class II stream

Replace existing 12" CMP with a 30" CMP. A critical dip may be installed at this point. Grass seed and straw mulch exposed soil as described under item #18.

Installation of Stream Crossings on New Road Construction:PT. 10 and 11 are Temporary CrossingsPoint 10: - Class II stream

This is an old Humboldt crossing that has begun to fail. As agreed to on the PHI, this crossing should be used as is with enough work to make it useable for hauling. The crossing will be utilized and removed the first year of operations. Upon conclusion of the use of the crossing, it shall be excavated to entirely remove the Humboldt crossing. Grass seed and straw mulch exposed soil as described under item #18.

Point 11: - Class III stream

Temporary crossing. Grass seed and straw mulch exposed soil as described under item #18.

For all temporary Class III watercourse crossings the following shall apply:

Temporary class III truck road crossings shall be constructed in one of the following ways:

1. Spittler type crossing that utilizes logs, hay bales and clean fill installed and removed in such a way as to minimize sediment input into the watercourse.
2. Culvert type crossing that utilizes metal or plastic pipe that is large enough to pass summer flow (12" minimum) using hay bales and clean soil as fill material.
3. Dry ford crossing with rolling dip through stream channel, if channel is dry at the time of crossing except at point 5.

All temporary class III crossings shall be pulled prior to October 15th, and exposed soil shall be treated with grass seed and straw mulch as described under item 18.

All temporary class III crossings shall be pulled prior to October 15th, and exposed soil shall be treated with grass seed and straw mulch as described under item 18 of THP STCo# 24-0002.

Continued on separate page(s)

I hereby certify that all information contained in this notification is true and correct and that I am authorized to sign this document. I understand that in the event this information is found to be untrue or incorrect, I may be subject to civil or criminal prosecution and the Department may consider this notification to be incomplete and/or cancel any Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand that this notification is valid only for the project described herein and that I may

PART OF PLAN

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OCT 25 2001

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RESOURCE MANAGEMENT

be subject to civil or criminal prosecution for undertaking a project that differs from the one described herein, unless I have notified the Department of that project in accordance with section 1601 or 1603 of the Fish and Game Code.

I understand that a Department representative may need to inspect the property where the project described herein will take place before issuing a Lake or Streambed Alteration Agreement pursuant to this notification. In the event the Department determines that a site inspection is necessary, I hereby authorize the Department to enter the property where the project described herein will take place to inspect the property at any reasonable time and certify that I am authorized to grant the Department permission to access the property.

I request the Department to first contact me at (insert telephone number) (707) 668 4463 to schedule a date and time to enter the property where the project described herein will take place and understand that this may delay the Department's evaluation of the project described herein.

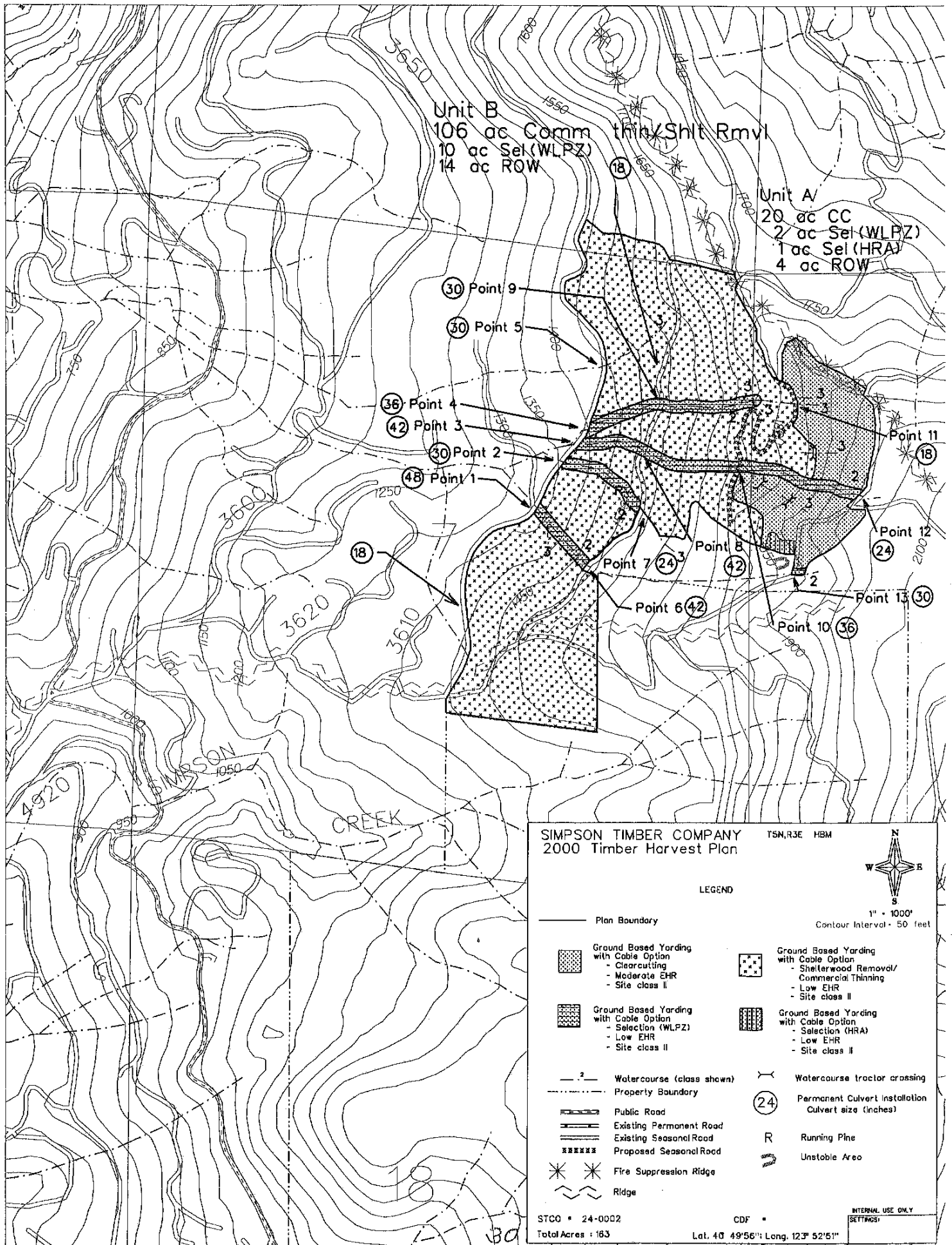
Operator or Operator's Representative

Date

For Department Use Only			
Notification No.:		Date Received:	
		Fees enclosed?	<input type="checkbox"/> Yes \$ _____ <input type="checkbox"/> No
Notification Complete?	<input type="checkbox"/> Yes. 5-day letter sent on (date):		<input type="checkbox"/> No. Notification materials and application fee returned on (date):
Notes:			

PART OF PLAN

RECEIVED
OCT 25 2001
COAST AREA OFFICE
RESOURCE MANAGEMENT



PROJECT QUESTIONNAIRE FORM (FG 2024)

STATE OF CALIFORNIA - THE RESOURCES AGENCY

GRAY DAVIS, GOVERNOR



DEPARTMENT OF FISH AND GAME

**Lake and Streambed Alteration Program
Project Questionnaire**

Please complete the following questionnaire and submit it with your notification package to expedite the Department's review of your proposed project or activity. Please attach or enclose any additional information or documents that support or relate to your response.

	Yes	Maybe/ Uncertain	No	Please explain if you responded "yes" or "maybe/uncertain"
1. Will the project or activity involve work on the bank of a river, stream, or lake?	X			Excavator activity will occur on the banks of the mapped class II and III stream crossings. The attached 1603 description overview discusses the intent of the proposed watercourse crossings.
2. If you answered "yes" to #1, will the project or activity involve any of the following:				
a. Removal of any vegetation?	X			Minor vegetation removal will occur at the proposed crossing sites.
b. Excavation of the bank?	X			Minor bank excavation will occur for proper pipe placement.
c. Placement of piers?			X	
d. Placement of bank protection or stabilization structures or materials (e.g., gabions, rip-rap, concrete slurry/sacks)?	X			Rip-rap or seed and straw mulch will be used as required by the Forest Practice Rules (FPR) and as normally recommended by the Dept. of Fish and Game.
3. Will the project or activity take place in, adjacent to, or near a river that has been designated as "wild and scenic" under state or federal law?			X	
4. Will the project or activity involve work in the bed or channel of a river, stream, or lake?				Excavation of bed materials will occur for proper pipe placements on new culvert installations and temporary dry fords.
5. Will the project or activity involve the placement of any permanent or temporary structure in a river, stream, or lake?	X			This project proposes the repair of 10 existing class II and 1 existing class III watercourse crossings, the installation of 1 new class II and 1 new class III watercourse crossing, and the

	Yes	Maybe/ Uncertain	No	Please explain if you responded "yes" or "maybe/uncertain"
				installation of 3 temporary class III watercourse tractor crossings.
6. Will the project involve the use of material from a streambed?	X			Earthen Materials removed from the streambeds of the class II and III watercourses may be recycled as fill material at the proposed crossing sites. No debris or waste material removed from the streambed will be incorporated as fill material. Upon completion of operations excess materials or debris will be safely placed in a stable location away from the high water mark of any stream channel.
7. Will the project or activity result in the disposal or deposition of debris, waste, or other material in a river, stream, or lake?	X			Earthen Materials removed from the streambeds of the class II and III watercourses may be recycled as fill material at the proposed crossing sites. No debris or waste material removed from the streambed will be incorporated as fill material. Upon completion of operations excess materials or debris will be safely placed in a stable location away feet from the high water mark of any stream channel.
a. If you answered "yes" to #7, describe the material that will be disposed of or deposited in the river stream, or, lake:	Earthen materials including soil, sand, gravel and/or boulders removed from the stream beds or banks may be deposited back into the channel as a natural source of fill materials, road surface materials, or rip-rap. Neither debris nor waste will be used as fill material.			

	Yes	Maybe/ Uncertain	No	Please explain if you responded "yes" or "maybe/uncertain"
8. Will any type of equipment be used in a river, stream, or lake?			X	
a. If you answered "yes" to #8, describe the type of equipment that will be used:				
9. Does the project or activity area flood or periodically become inundated with water?			X	
10. Will water need to be diverted from a river, stream, or lake for the project or activity?		X		If water is present at the time of installation, diversion will take place.
11. If you answered "yes" to #10, please answer the following:				
a. Will this be a temporary diversion?	X			
b. Will water quality be affected by the deposition of silt, an increase in water temperature, a change in the pH level, or in some other way?			X	
c. Will the water be diverted by means of a dam, reservoir, or other water impoundment structure?			X	If needed water will be diverted by means of a mechanical pump.
12. Will the project or activity be done pursuant to a water right application or permit?			X	
13. Has a wildlife assessment or study been completed for the area where or near where the project or activity will take place? (If "yes", please attach or enclose a copy of the assessment or study.)	X			A wildlife assessment has been done in conjunction with the proposed THP. (See attached THP)
14. May the project or activity affect fish, amphibians, insects, or other aquatic resources?	X			Direct impacts to individual aquatic species may occur at the crossing sites, however aquatic species as a whole will benefit from the proposed activities because it will reduce the potential for sediment introduction into watercourses
15. May the project or activity affect terrestrial wildlife?			X	
16. Are any endangered or rare plant species thought or known to occur in the area where the proposed project or activity will take place?			X	
17. Are any endangered or threatened fish, bird, or animal species				No known threatened or endangered species exist within the project sites. Northern Spotted Owls are known to exist within

	Yes	Maybe/ Uncertain	No	Please explain if you responded "yes" or "maybe/uncertain"
thought or known to occur in the area where the proposed project or activity will take place?	X			this portion of Simpson's property. This project will have no impact on this species. Coho salmon do exist within the Mad River watershed but are unable to navigate the streams within the project area.
18. Have you contacted any other local, State, or federal agency regarding the project or activity?	X			The attached THP and this proposed 1603 agreement have been submitted to CDF.
a. If you answered "yes" to #18, please list the names of the agencies you have contacted:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION 135 Ridgway Ave. Santa Rosa, CA 95402-0670			
19. Have you applied for or obtained any permit, agreement, or other authorization for your project or activity from any government agency?	X			STCo THP # 24-0002
If you answered "yes" to #19, please list the names or describe the permit, agreement, or authorization you have applied for or obtained:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION 135 Ridgway Ave. Santa Rosa, CA 95402-0670 CDF has been sent a copy of the proposed THP. They will make the determination of approval.			
20. Have any environmental documents pertaining to your project or activity been prepared?	X			STCo THP # 24-0002
a. If you answered "yes" to #20, please list the environmental documents that have been prepared:	See the Cumulative Impacts section within the attached THP.			

I hereby certify that all information contained in this notification is true and correct and that I am authorized to sign this document. I understand that in the event this information is found to be untrue or incorrect, I may be subject to civil or criminal prosecution and the Department may consider this notification to be incomplete and/or cancel any Lake or Streambed Alteration Agreement issued pursuant to this notification.

Operator or Operator's Representative _____ Date _____

SIMPSON TIMBER COMPANY ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS (Korbel Operations)

The following road construction specifications were developed for company and contract road construction sides as general guidelines only. When questions arise that are not addressed in these guidelines the RPF should be contacted for clarification prior to continuing the project. The California Forest Practice Rules will be closely adhered to during all phases of the road construction process, and a copy of the Timber Harvest Plan will be on site at all times. A copy of the engineer's report should be used to obtain specific road location, road gradient, and culvert sizing information.

I. RIGHT-OF-WAY AND PIONEERING

1. **Clearing limits will normally range from 75' to 100'.**
2. All trees over 12 inches within 5 feet of the cut slope upper limit will be cleared.
3. Slash and other debris from road construction will not be incorporated into the road prism, fills or sidecast material. When feasible slash and debris will be placed parallel to the toe of road fill slopes as a filter windrow. Slash will not be bunched against residual trees or placed in locations where it may gain entry into Class I, II, or III watercourses.
4. Large redwood stumps and rocks that will be at least 12 inches below sub-grade can be left in place, but second growth redwood and all fir stumps must be removed to prevent slumps in road when material rots.
5. On slopes greater than 35 percent, the organic layer of the soil shall be substantially removed prior to fill placement.

II. EXCAVATION AND CONSTRUCTION

1. **Minimum road width specifications will be:**
 - a) **Permanent Road - 16' wide running surface plus inside ditch and occasional turnout.**
 - b) **Seasonal Road (Rocked) - 14' wide running surface plus inside ditch.**
 - c) **Seasonal Road (Dirt) - 14' wide running surface, outsloped, with rolling dips, occasional turnout.**
 - d) **Temporary Road - 12' wide running surface. Typically outsloped, rolling dips, not rocked.**

Note: See attached typical cross section diagrams

2. **Greater road widths will only be allowed to satisfy requirements of alignment, safety and equipment. Curves will be widened to an additional width based on the following table:**

100 feet + radius	+ 3 feet
75 – 100 feet radius	+ 5 feet
50 – 74 feet radius	+ 8 feet

3. **Final grades shall not exceed 15 percent except where specified or approved by Simpson. Breaks in grade are not to exceed 4 percent per 200 feet of road length except where the grade may change from plus to minus or vice-versa; the intent being to create long rolls in the grade.**
4. All overhanging cut slopes will be removed.
5. Cut slope ratio will vary based on steepness of sideslope and soil characteristics, see attached cross section diagrams.

6. For areas requiring “end-haul” or some degree of “waste management” (hill slopes greater than 65 percent, locations where sidecast could directly enter stream channels, areas designated in the THP or Engineering Report) excess material shall be deposited in a safe, stable location where downstream beneficial uses of water will not be adversely affected. Waste material will be seeded and mulched prior to the onset of winter.
7. On slopes greater than 50 percent, fills greater than 4 feet in vertical height at the outside shoulder of the road shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade.
8. Adequate compaction will be provided for all fill materials during road construction and all fills are to be constructed in one foot lifts.
9. Fills, including through fills across watercourses, shall be constructed in a manner to minimize erosion using techniques such as insloping, berms, rock armoring of fill slopes or other suitable methods specified in the engineering report.
10. Crowned road prisms with inboard ditch will generally be used on Permanent and Seasonal Roads that are to be rocked. Where these roads cross watercourses, the road prism shall have a gradual transition to an insloped vertical curve as the road approaches and leaves the crossing (Critical Dip). Minimum cross drain frequency will be based on the attached table.
11. If road rocking is designated as part of the project, a minimum compacted depth of 12” (pit run) is specified unless otherwise indicated.
12. An out-sloped road prism will generally be used for dirt Seasonal and Temporary Roads. Rolling dips will be incorporated into the road prism at a frequency based on the above mentioned table. A combination of dips and waterbars may be necessary to meet Forest Practice Rules. When rolling dips or culvert installation is not feasible waterbars will be installed at a spacing which is appropriate to prevent water accumulation and erosion along the road surface.
13. Turnouts will be placed at reasonable intervals along the alignment and will be located where a minimum of excavation will be required to increase the road width. A standard design for a turnout is presented with the typical cross section diagrams.
14. **No road construction shall occur under saturated soil conditions, except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs. During any period of intense or prolonged rainfall, road construction earthwork will be halted and erosion control measures installed.**

III. DRAINAGE STRUCTURES

1. Locations and size of culverts will be shown on plans or designated by Simpson.
2. Permanent watercourse crossings, road approaches and associated fills shall be constructed to prevent the potential diversion of stream overflows down the road and to minimize fill erosion should the drainage structure become obstructed (Critical Dip).
3. Necessary erosion protection measures will be installed concurrently with the fill at all culvert watercourse crossings.
4. All watercourse crossings will be aligned with the natural grade and course of the stream. An exception to this would be a crossing requiring a small culvert but with extensive fill. In this case contact the RPF or appropriate STCo representative.
5. Culverts will be filled in with soil under haunches with a shovel or other means taking care to leave no

voids. Culverts will be compacted as they are backfilled.

6. When designated inlets and outlets of culvert stream crossings will be protected from erosion with rock rip rap or other suitable measures. The erosion protection will extend at least 1 foot above the expected head and tail water elevations at the culvert. All bare soil on fill slopes at the culvert crossing will be seeded and/or mulched to prevent erosion and promote revegetation.
7. No culvert shall be allowed to discharge on erodible material. When downspouts are used, they will be adequately secured to the culvert and they will be supported at intervals along their entire length.
8. Ditches will be V-shaped, have a minimum grade of 2%, and be approximately 1 foot deep relative to the subgrade. Ditches will be excavated into the road subgrade and not undercut the road cut slope. The ditch alignment should be pulled away from the cut slope to provide storage room for hillslope ravel, slumps and protection of ditch conveyance capability.
9. Ditch relief culverts will be installed at intervals based on the attached spacing chart
10. Ditch drains will normally consist of culverts with a minimum size of 18 inches.
11. Ditch drains will discharge prior to an existing watercourse to prevent sediment input into Class I and II streams and onto stable landforms with adequate energy dissipation and sediment filtering capacity. Outlets onto areas prone to gullyng, slumping or land-sliding will be avoided
12. Ditch drains will have a grade which is at least 2 percent greater than a contributing ditch to prevent ponding and to ensure that they are self cleaning.
13. In general, steeper road grades (>12%) will utilize cross drains, and more moderate grades will utilize rolling dips.

IV. LANDING CONSTRUCTION

Landings will be constructed to the minimum width, size and number consistent with the yarding and landing systems to be used. Landing size and location will be designated by Simpson.

1. No landing construction shall occur under saturated soil conditions.
2. No fill or sidecast shall be placed on slopes greater than 65 percent.
3. On slopes greater than 50 percent, fills greater than 4 feet in vertical height at the outside shoulder of the landings shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade.

4. Waste organic material such as uprooted stumps, cull logs, accumulation of limbs and branches, or unmerchantable trees will not be buried in landing fills. Slash and other organic debris may be placed and stabilized at the toe of landing fills to restrain excavated soil from moving downslope.
5. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake shall be seeded, planted, mulched, removed, or treated to adequately reduce soil erosion.
6. Landings shall be sloped (approximately 2%) to prevent water from accumulating on the landings. Concentrated flows should not be channeled over fills and should only be discharged onto stable soil. Discharge points will be located on stable landforms and adequate erosion protection and energy dissipation will be employed.

V. **EROSION CONTROL**

1. **Appropriate erosion control measures will be utilized to minimize erosion and prevent sediments from entering watercourses during all construction activities. Erosion control measures to be utilized will include minimizing disturbed areas, road surfacing, dispersing runoff into vegetated filter areas, armoring with rock rip rap and revegetating disturbed surfaces as soon as practical.**
2. Where construction activities are conducted in close proximity of watercourses, additional erosion control protection measures will be utilized to trap sediments and prevent their entry into the watercourse. As required, slash filter windrow, silt fences, mulching and straw bale check dams will be used to control runoff over fill slopes and along concentrated runoff flow paths. Temporary sediment retention ponds may be constructed.

VI. REVEGETATION

1. **Prior to the first winter period following construction, all new cut and fill slopes on road construction within the WLPZ of Class I or II watercourse shall be seeded and mulched.**

SITE SPECIFIC REQUIREMENTS

THP #(STCO): _____
 Road Name: _____
 Area Name: _____
 Simpson Contact Person: _____ Phone #: _____
 Gate Combinations: _____
 Culvert supplied by Simpson? _____
 Culvert to be picked up at: _____
 Seed/ straw supplied by Simpson? _____
 Seed/straw to be picked up at: _____
 1603 Permit needed? _____ (If yes, will be supplied by Simpson)
 Check items located at the site: _____
 Copy of THP _____
 Copy of 1603 Permit _____
 Other: _____

Site Specific Requirements are as follows:

I have read the "Road Construction and Stream Crossing Installation Specifications" and the "Site Specific Requirements" and understand all the rules and policies.

Company Name: _____

Contractor Name: _____

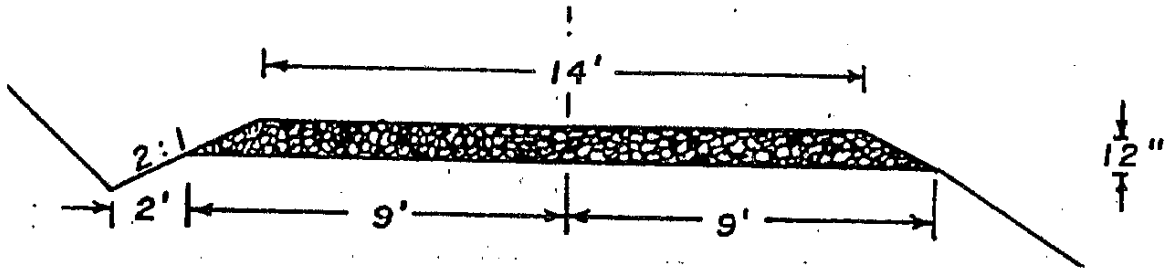
Contractor Address: _____

 Signature Date

SIMPSON TIMBER COMPANY
 CALIFORNIA SOUTHERN OPERATIONS
 ROAD SPECIFICATIONS

SEASONAL ROAD

TYPICAL CROSS SECTION



CUT SLOPES AND ROAD PLACEMENT

Cut Slope

3/4 : 1
 1/2 : 1
 vertical

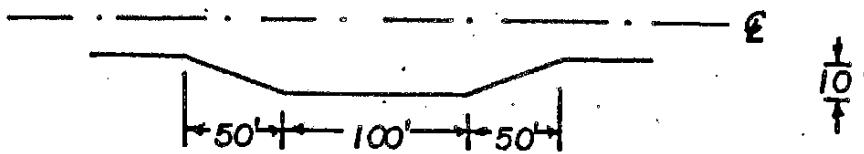
Side Slope

10-30%
 30 - 50%
 50 + % (or sand, rock)

Road in solid

centerline to ditch
 load carrying portion (' outside centerline to ditch)
 entire subgrade full bench

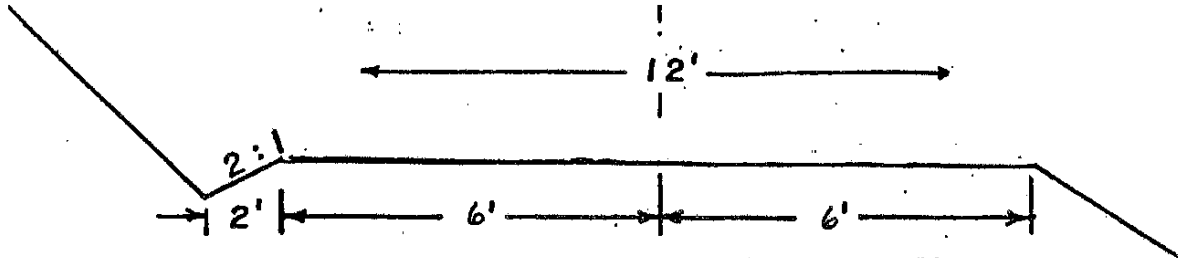
TYPICAL TURNOUT PLAN



**SIMPSON TIMBER COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

TEMPORARY ROAD

TYPICAL CROSS SECTION



Temporary roads will generally not be rocked. Outsloping of road surfaces may be incorporated where appropriate, and will be detailed in the engineering report. Outsloped road specifications are attached.

CUT SLOPES AND ROAD PLACEMENT

Cut Slope

- ¾ : 1
- ½ : 1
- vertical

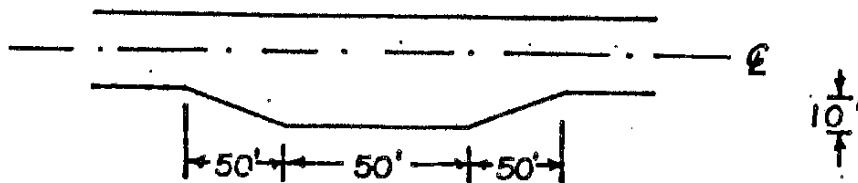
Side Slope

- 10 - 30%
- 30 - 50%
- 50 + % (or sand, rock)

Road in solid

- centerline to ditch
- load carrying portion (4' outside centerline to ditch)
- entire subgrade full bench

TYPICAL TURNOUT PLAN

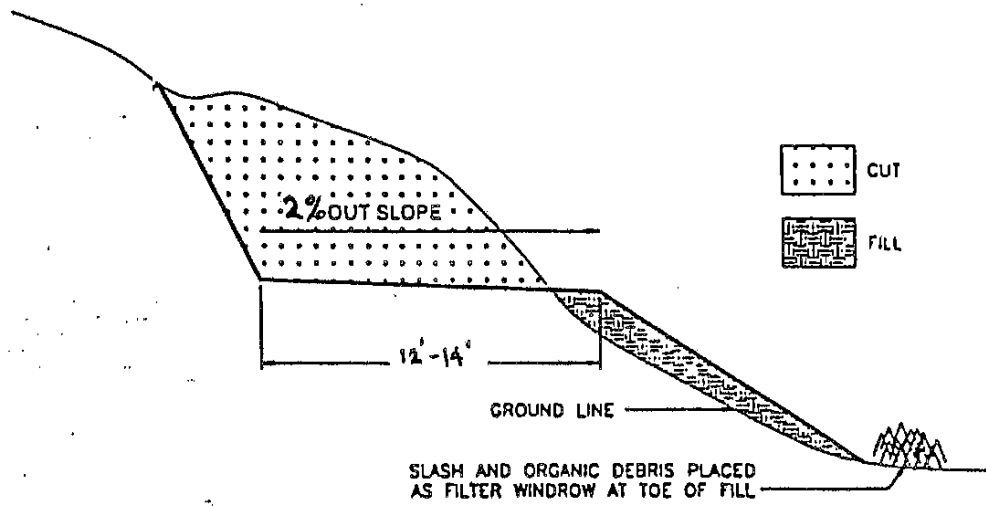


SECTION II - GENERAL INFORMATION
SIMPSON TIMBER COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS

AUGUST 13, 2001

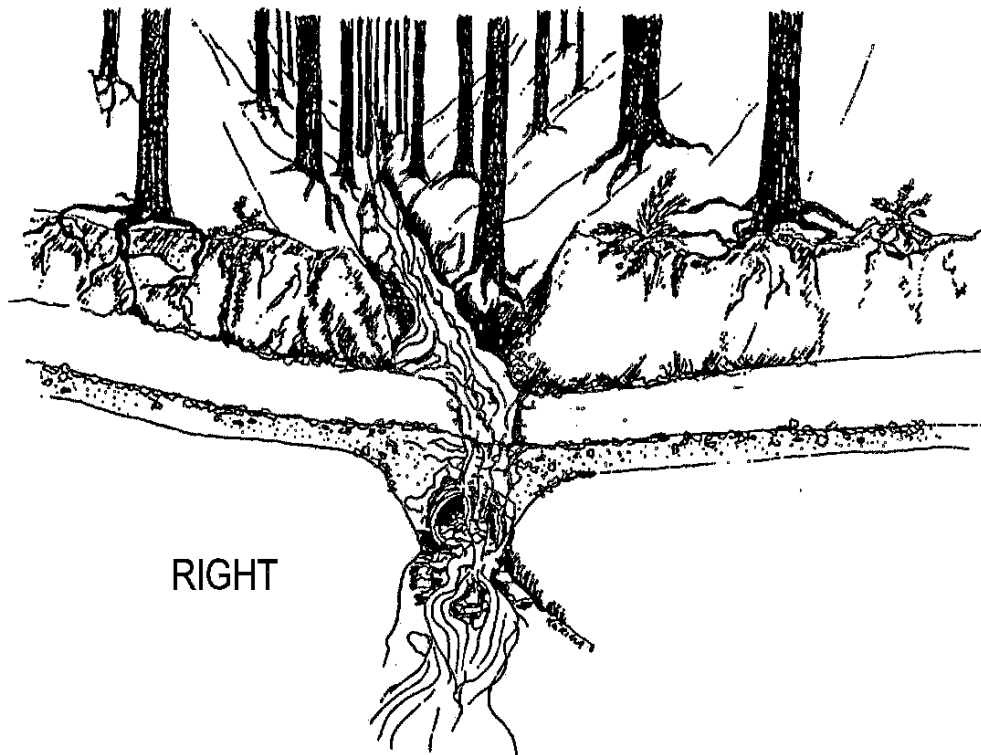
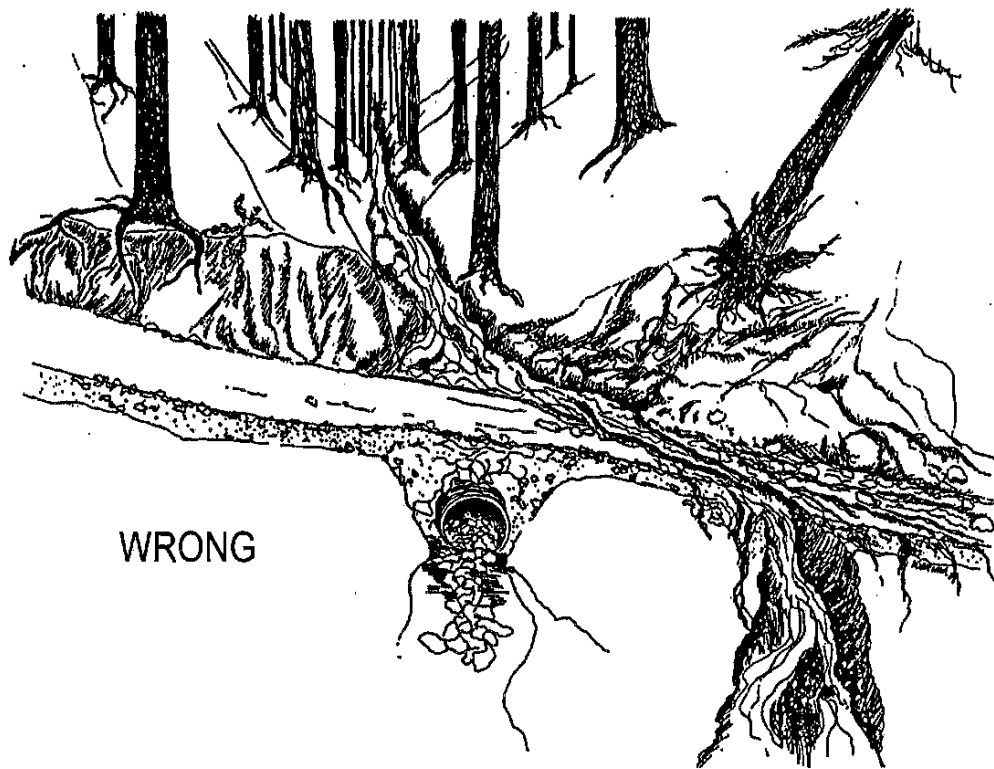
OUTSLOPED ROAD

TYPICAL CROSS SECTION



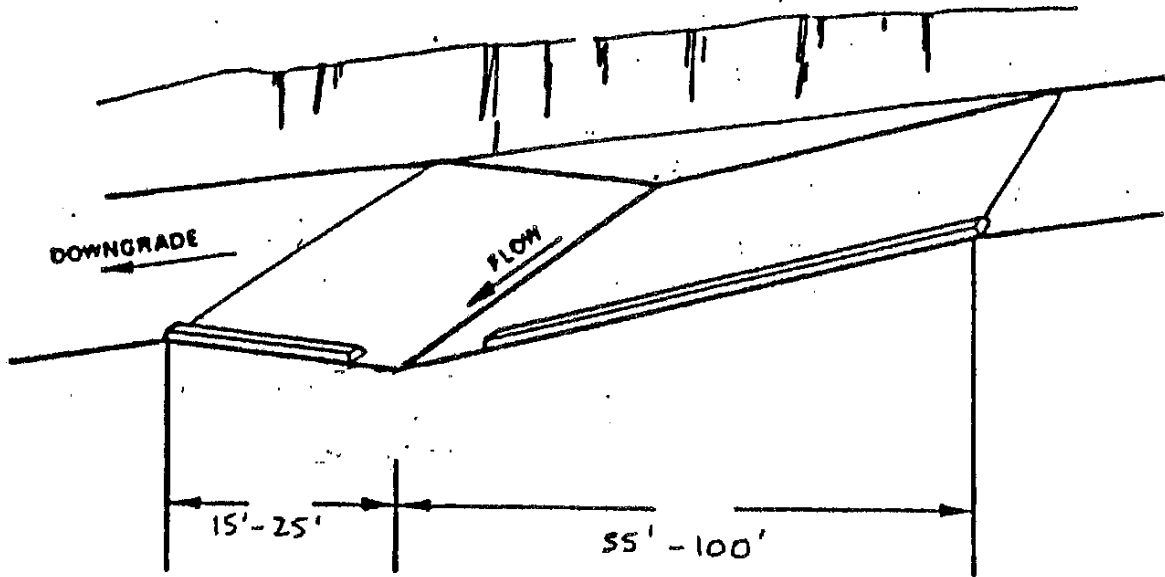
Maximum suggested spacing for ditch relief culverts and/or rollin dip installations (in feet)				
Road grade (%)	Soil erodibility (Erosion Hazard Rating)			
	Extreme	High	Moderate	Low
2	600-800			
4	530	600-800		
6	355	585	600-800	
8	265	425	525	600-800
10	210	340	420	555
12	180	285	350	460
14	155	245	300	365
16	135	215	270	345
18	115	190	240	310

CRITICAL DIP

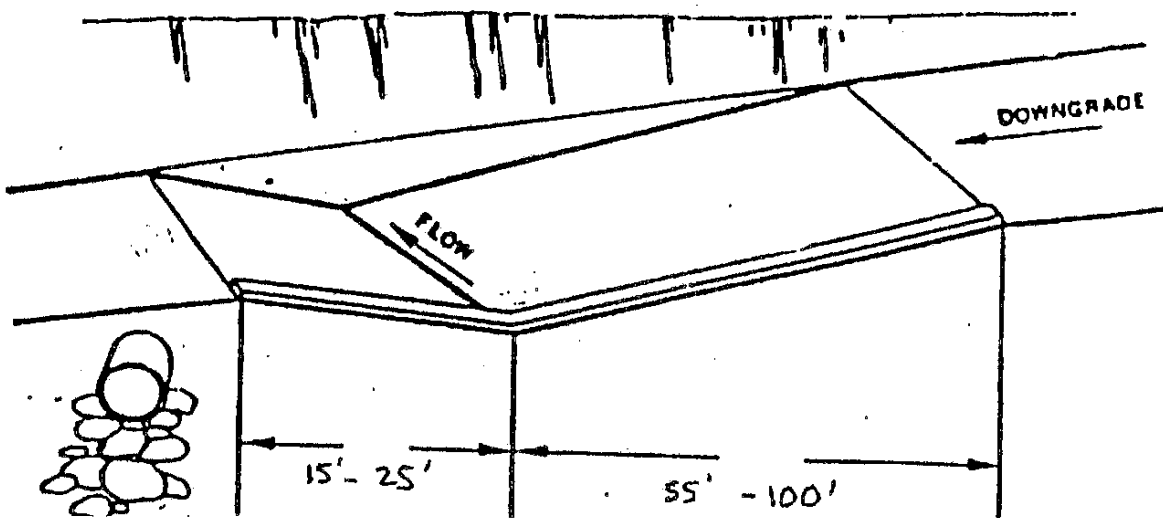


TYPICAL ROLLING DIP DESIGNS

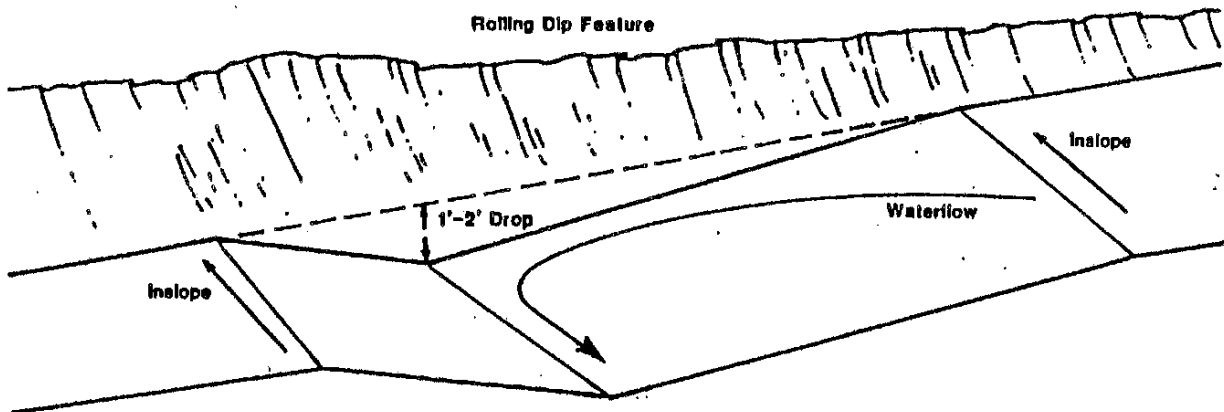
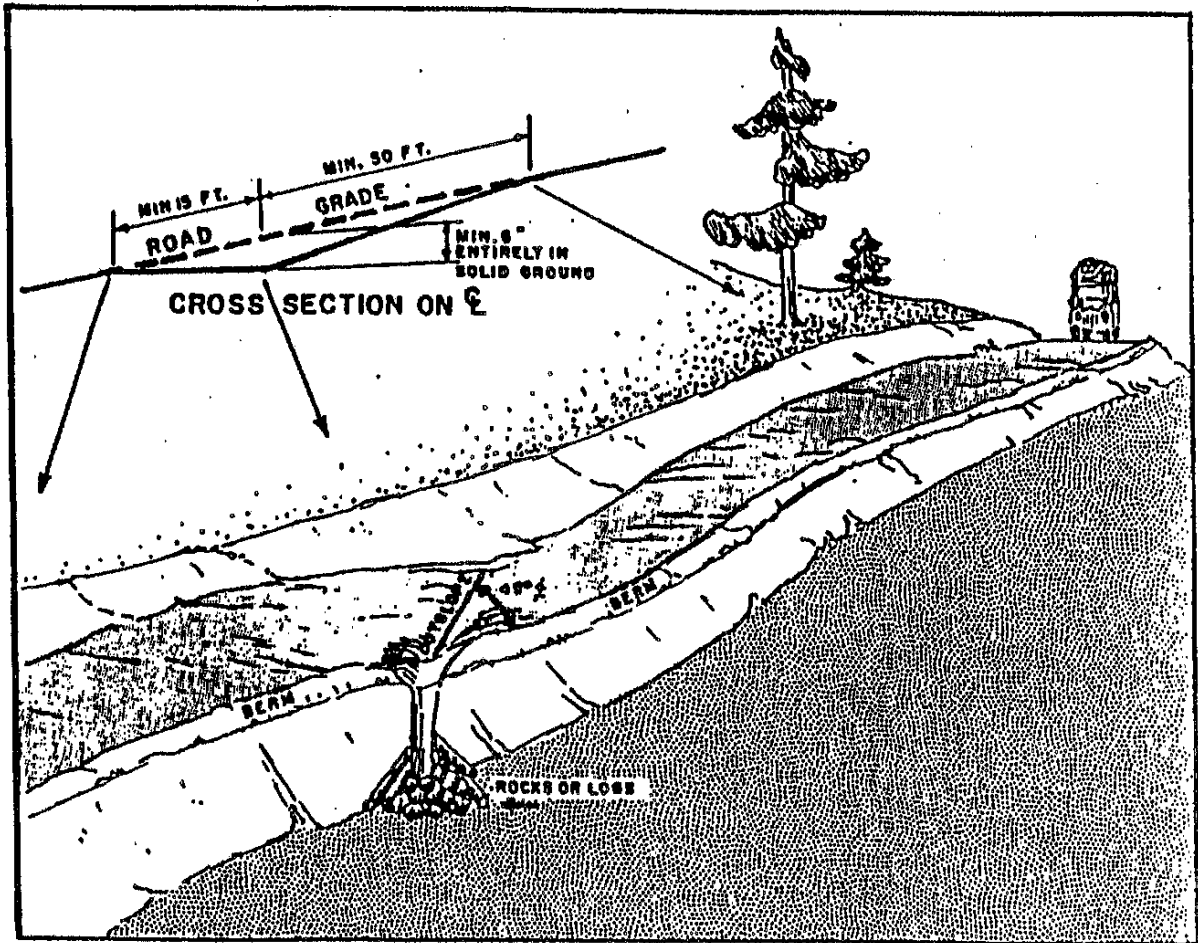
OUTSLOPED ROLLING DIPS



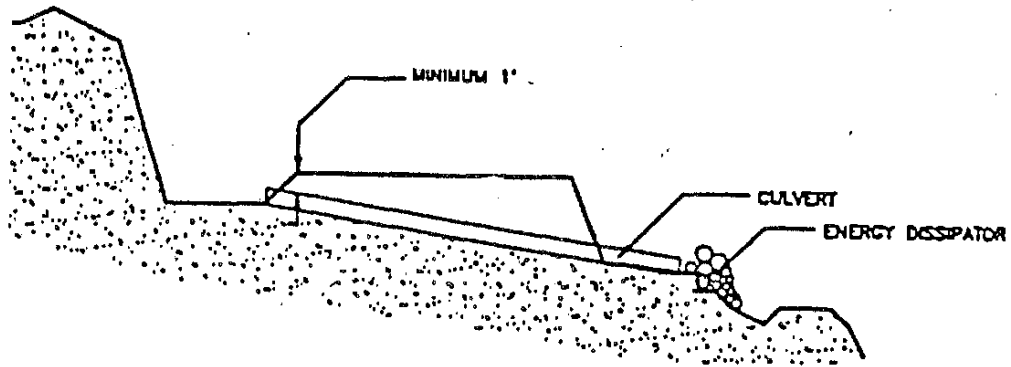
INSLOPED ROLLING DIPS



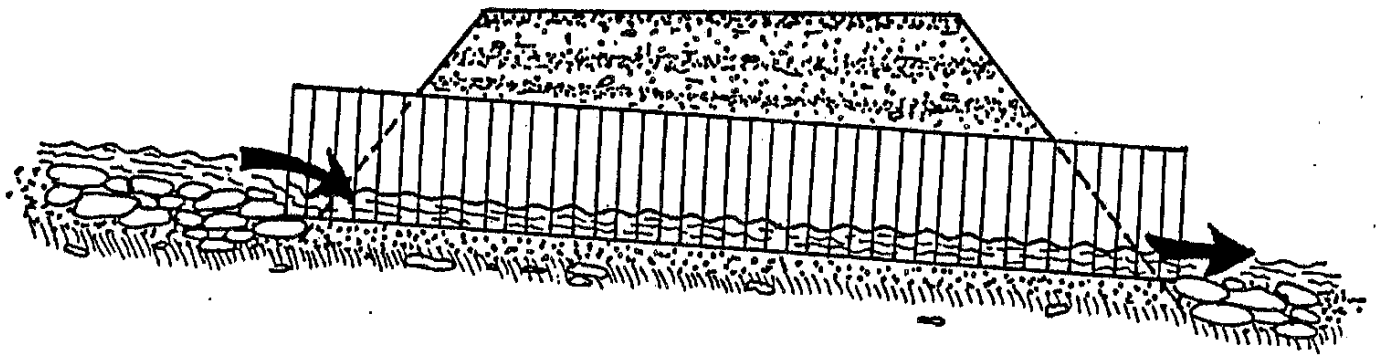
TYPICAL DRAINAGE DIP INSTALLATION



TYPICAL DITCH RELIEF CULVERT INSTALLATION



The culvert inlet should be at lowest point of ditch to capture all water. Armoring of inlet and/or outlet will be assessed on an individual basis, (refer to THP and engineer report).

TYPICAL WATERCOURSE CROSSING CULVERT INSTALLATION

The culvert should be aligned with the natural stream channel, and set slightly below the original stream grade. Armoring of inlet and/or outlet will be assessed on an individual basis, (refer to THP and engineer report).

27. Are site specific practices proposed in-lieu of the following standard WLPZ practices?
- a. Yes No Prohibition of the construction or reconstruction of roads, construction or use of tractor roads or landings in Class I, II, III, or IV watercourses, WLPZs, marshes, wet meadows, and other wet areas except as follows:
 (1) At prepared tractor road crossings.
 (2) Crossings of Class III watercourses which are dry at time of timber operations.
 (3) At existing road crossings.
 (4) At new tractor and road crossings approved by Department of Fish and Game.
- b. Yes No Retention of non-commercial vegetation bordering and covering meadows and wet areas?
- c. Yes No Directional felling of trees within the WLPZ away from the watercourse or lake?
- d. Yes No Decrease of width(s) of the WLPZ(s)?
- e. Yes No Protection of watercourses which conduct class IV waters?
- f. Yes No Exclusion of heavy equipment from the WLPZ except as follows:
 (1) At prepared tractor road crossings.
 (2) Crossings of Class III watercourses which are dry at time of timber operations.
 (3) At existing road crossings.
 (4) At new tractor and road crossings approved by Department of Fish and Game.
- g. Yes No Establishment of ELZ for Class III watercourses unless sideslopes are <30% and EHR is low?
- h. Yes No Retention of at least 50% of the overstory canopy in the WLPZ?
- i. Yes No Retention of at least 50% of the understory in the WLPZ?
- j. Yes No Are any additional in-lieu or any alternative practices proposed for watercourse or lake protection?

NOTE: A yes answer to any of items "a." through "j." constitutes an in-lieu practice. If any item is answered yes, refer to 14 CCR 916 (936, 956).1 and address the following for each item checked yes:

1. The RPF shall state the standard rule;
2. Explain and describe each proposed practice;
3. Explain how the proposed practice differs from the standard practice;
4. The specific location where it shall be applied, see map requirements of 14 CCR 1034 (x) (15) and (16);
5. Provide in THP Section III an explanation and justification as to how the protection provided is equal to the standard rule and provides for the protection of the beneficial uses of water, as per 14 CCR 916 (936, 956) .1 (a). Reference the in-lieu and location to the specific watercourse to which it will be applied.

28. a. Yes No Are there any landowners within 1000 feet downstream of the THP boundary whose ownership adjoins or includes a class I, II, or IV watercourse(s) which receives surface drainage from the proposed timber operations? If yes, the requirements of 14 CCR 1032.10 apply. Proof of notice by letter and newspaper should be included in THP Section V. If No, "28 b." need not be answered.
- b. Yes No Is an exemption requested of the notification requirements of 14 CCR 1032.10? If yes, an explanation and justification for the exemption must appear in THP Section III. Specify if requesting an exemption from the letter, the newspaper notice or both.
- c. Yes No Was any information received on domestic water supplies that required additional mitigation beyond that required by standard Watercourse and Lake Protection rules? If yes, list site specific measures to be implemented by the LTO.

Note: A conversation with Bill Blackwell, a Sierra Pacific employee, during the week of 11/13/00 revealed no domestic water intakes downstream of the THP area.

29. Yes No Is any part of the THP area within a Sensitive Watershed as designated by the Board of Forestry and Fire Protection? If yes, identify the watershed and list any special rules, operating procedures or mitigation that will be used to protect the resources identified at risk?

HAZARD REDUCTION

30. a. Yes No Are there roads or improvements which require slash treatment adjacent to them? If yes, specify the type of improvement, treatment distance, and treatment method.
- b. Yes No Are any alternatives to the rules for slash treatment along roads and within 200 feet of structures requested? If yes, RPF must explain and justify how alternative provides equal fire protection. Include a description of the alternative and where it will be utilized below.
31. Yes No Will piling and burning be used for hazard reduction? See 14 CCR 917.1-.11, 937.1-.10, or 957.1-.10, for specific requirements. Note: LTO is responsible for slash disposal. This responsibility cannot be transferred.

BIOLOGICAL AND CULTURAL RESOURCES

32. a. Yes No Are any plant or animal species, including their habitat, which are listed as rare, threatened or endangered under federal or state law, or a sensitive species by the Board, associated with the THP area? If yes, identify the species and the provisions to be taken for the protection of the species.
- b. Yes No Are there any non-listed species which will be significantly impacted by the operation? If yes, identify the species and the provisions to be taken for the protection of the species.

NOTE: See THP Form Instructions or the CDF Mass Mailing, 07/02/1999, section on "CDF Guidelines for Species Surveys and Mitigations" to complete these questions.

Item #32a:

The Species Status Table (below) includes species listed as rare, endangered or threatened, Board of Forestry Sensitive Species, Department of Fish and Game Species of Special Concern, and listed plants whose range may encompass the THP and its associated biological assessment area (BAA - see definition in Section IV). This table is intended to provide a quick reference for the status of these species within the BAA. A species is considered "present" if it was ever observed within the THP or BAA, or if its presence was indicated in the appropriate area by the California Natural Diversity Data Base. For the purpose of this evaluation, the term "habitat" was defined as a site that has all the necessary components to fulfill the natural history requirements of that species. Similarly, the term "possible" means that although this species was not found in the referenced area, it is possible that existing habitat could sustain the species. For a complete evaluation of these species, refer to Wildlife Information in Section III of this THP.

There are other listed species that are considered extremely unlikely to exist within either the THP or BAA due to their specific habitat requirements. For this reason a full biological review of these species was not done and they were not included in the table below. They are, however, included in a table under Wildlife Information in Section III of this THP.

NOTE: Specific Plant Information:

STCO assesses potential impacts to sensitive plants as a result of planned timber harvesting operations using the STCO Rare Plant Assessment Key. This plant habitat Assessment/ screening Key is used for every planned THP to discriminate potential plant species associates based on geographical location and habitat type. The rare plant key is used for both State and/or Federally listed plants as well as California Native Plant Society (CNPS) plant listings. STCO and the Department of Fish and Game have developed, in a collaborative effort, comprehensive Phase II (interim period) Plant Protection Measures (PPMs) to address protection of sensitive plants species throughout STCO ownership. For purposes of clarity, the PPMs have been provided in their entirety in Sec III Item 32(b) below - along with a discussion of the assumptions and specific risk minimization measures that are to be implemented in this THP as a result of the agreement.

Plants listed in the table below are State and Federally listed species that have a range that may encompass the THP, the BAA, or the Botanical Management Unit (BMU) which is described below in Sec. III Item 32(b). All other sensitive plant taxa that might reasonably be associated with the proposed plan area are discussed in Sec III Item 32(b) Plant Species of Concern in Section II that follows.

Note: A floristic survey was conducted on 3/26/2001 and 4/18/2001. The results have been included in the attachments. One additional runner of running pine was located at the North end of the harvest area. Efforts will be made to avoid this runner during operations. In the event it is damaged, a healthy mat has been located and protected in the WLPZ further to the south.

SPECIES STATUS TABLE				
SPECIES	Habitat Present In THP	Species Observed in THP	Habitat Present in BAA	Species Observed in BAA
Amphibians				
Foothill yellow-legged frog	No	No	yes	yes
Northern red-legged frog	Yes	No	yes	yes
Southern torrent salamander	Yes	No	yes	yes
Tailed frog	Yes	No	yes	yes
Del Norte salamander	Yes	No	yes	yes
Reptiles				
western pond turtle	No	No	yes	yes
Fish				
Steelhead	No	No	yes	yes
Coho salmon	No	No	yes	yes
Coastal cutthroat trout	No	No	yes	yes
Chinook salmon	No	No	yes	yes
Birds				
Bald eagle	No	No	yes	yes
peregrine falcon	No	No	possible	no
marbled murrelet	No	No	no	no
Northern spotted owl	Yes	No	yes	yes
Golden eagle	No	No	possible	no
Great blue heron	No	No	yes	yes
Great egret	No	No	yes	yes
Northern goshawk	No	No	no	no
Osprey	No	No	yes	yes
Ruffed grouse	Yes	No	yes	yes
purple martin	Possible	No	yes	no
yellow warbler	Possible	No	possible	no
yellow breasted chat	Possible	No	possible	no
Cooper's hawk	Yes	No	yes	no
Sharp-shinned hawk	Yes	No	yes	no
Black-capped Chickadee	Possible	No	possible	no
Vaux's swift	Possible	No	possible	no
Mammals				
Pacific fisher	Yes	No	yes	yes
Red tree vole	Yes	No	yes	yes
white-footed vole	Possible	No	possible	no
Townsend's Western big-eared bat	No	No	no	no
Plants (State and/or Federally Listed)				
western lily	no	No	no	no

On Simpson's timberlands, many forest types and stages of forest development exist, providing a wide variety of habitats for many species. This project will markedly change the habitat of the THP area, which will affect wildlife in different ways. Many species will benefit from removal of the closed forest canopy due to the rapid re-vegetation that is typical on such sites, with grass and brush species quickly invading, and planted conifers gradually re-establishing forest conditions. This re-growth provides increased browse for creatures as large as deer and black bear, and dense cover for rodents and other small mammals that, in turn, attract carnivores and raptors. Timber harvesting is also likely to increase downed large woody debris, which can be beneficial to many forms of wildlife. Although this project may adversely impact some individuals of selected species that currently use this site, the operations proposed in this THP should not have a significant adverse impact on any wildlife species.

Simpson's wildlife staff (under the direction of Lowell Diller, Ph.D., Simpson Senior Wildlife Biologist) has reviewed the wildlife information and analysis included in this THP and in the attached Biological Review and is in agreement with the analysis and findings.

PROVISIONS FOR PROTECTION OF SPECIES

Northern spotted owl: This plan is being submitted under 14 CCR 919.9(d). A copy of Simpson's Habitat Conservation Plan for the Northern Spotted Owl (HCP) and the Section 10(a) permit issued by the U.S. Fish and Wildlife Service have been provided and are on file at the CDF Santa Rosa and Fortuna offices. Compliance with the requirements of this THP, applicable Forest Practice Rules (FPR), and the HCP will provide adequate provisions for the protection of the northern spotted owl. As a means of achieving the goals of Simpson's HCP, numerous live trees will be retained within this THP in an HRA and WLPZs. Simpson intends to address post-harvest habitat structure similarly on other THPs throughout its ownership. Trees thus retained will provide nesting and roosting habitat after completion of timber harvesting operations, and will accelerate recolonization of the site by northern spotted owls.

Coho and chinook salmon and Steelhead trout: The protection measures described throughout this THP will provide adequate protection for coho, chinook and steelhead and their habitat. The implementation of the 1973 Z'berg-Nejedly Forest Practice Act, and the FPR authorized by that Act, have greatly changed the manner in which timber harvesting operations are conducted. One of the primary goals of the FPR is to protect the water quality and biological characteristics of California's watercourses and lakes. Specific measures that have been included in this THP to insure watershed integrity and minimize impacts to watercourses within this plan and the assessment area include:

- Operation of heavy equipment restricted to moderate terrain.
- Enhanced WLPZs on selection designated Class II watercourses with 70% total canopy retention.
- Exclusion of equipment from the Class III watercourse ELZs.
- Restricted winter operations
- Simpson's enhanced road maintenance program.
- Upgrading and installation of stream crossings on existing roads within the THP area (Points 1-9, 11, and 12).

These management practices, coupled with standard protection measures provided in the FPRs, will insure that water quality and watershed resources are not significantly or adversely affected by this THP or when this THP is considered in conjunction with other projects in the basin.

Compliance with the requirements of this THP, applicable FPR, and Simpson's HCP will provide adequate protection for this species. NOTE: A further comprehensive discussion and consideration of listed species is found in Section III Item 32(a) in this THP.

Item 32 (b) Non Listed Species:

INTRODUCTORY DISCUSSION OF CEQA CONTEXT FOR THP UNLISTED PLANTS AND ANIMALS

The plan submitter, the Department of Forestry and the review team agencies have significant roles in the unique process for review and approval of Timber Harvesting Plans ("THPs") pursuant to the Forest Practice Act and the California Environmental Quality Act. Each THP must comply with the minimum prescriptive standards of the Forest Practice Rules, which themselves are designed programmatically to avoid or substantially reduce significant environmental effects. In addition, each THP must adopt feasible measures to mitigate or avoid significant environmental effects that are not reduced or avoided through application of the prescriptive minimum standards. A THP evaluates such potential individual and cumulative effects and provides feasible measures to avoid or reduce potentially significant effects to relative insignificance.

In the context of Environmental Impact Reports ("EIRs") the CEQA guidelines require the lead agency to find that a CEQA project "may" have a significant effect and, therefore, to prepare an EIR (rather than a shorter negative declaration) to investigate that potential if the project "threatens to . . . reduce the number or restrict the range of an endangered, rare or threatened species." 14 CCR § 15065. This provision does not mandate a finding that the potential impacts are in fact significant for every project -- it merely requires an EIR to evaluate the potential for such impacts to be significant and, if so, to adopt measures to substantially reduce or avoid such impacts.

In the certified regulatory program context, including the THP process, EIR requirements are not directly applicable. In other words, because the THP process is a certified regulatory program under CEQA, the potential of a THP to reduce the number or restrict the range of such a species does not trigger the requirement to prepare an EIR. However, by analogy, a THP does evaluate the actual potential for such impacts to be significant impacts on the species. If such impacts would occur

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RESOURCE MANAGEMENT

53

PART OF PLAN

THP does evaluate the actual potential for such impacts to be significant impacts on the species. If such impacts would occur under a THP as initially planned or proposed, feasible measures must be adopted to avoid such impacts or reduce them to insignificance--either in THP preparation or in the review of the plan by CDF and the Review Team.

Where species are actually listed as threatened or endangered under the federal or state endangered species Act, "take" of listed animal species is often prohibited under those acts (plants have unique salvage provisions in this context). In addition, the CEQA guidelines presume that such species meet the guidelines' definitions for endangered, rare and threatened species and therefore trigger the evaluation discussed above (and the requirement for mitigation if the evaluation determines that significant impacts would in fact occur). Notably, for purposes of evaluating potentially significant effects under CEQA, the CEQA guidelines do not necessarily limit species considered endangered, threatened or rare to those that are actually listed. Where an unlisted animal or plant species "can be shown" to meet the guidelines' definitions for endangered, threatened or rare species, such species are considered as such in the evaluation of potentially significant effects. However, under the CEQA guidelines' applicable definitions, "can be shown" clearly means that substantial evidence must be provided in the context of a specific THP review that a relevant species is, in fact, "endangered" (survival and reproduction in the wild are in immediate jeopardy from one or more causes), "threatened" (likely to be endangered within the foreseeable future throughout all or significant portion of its range) or "rare" (although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens). 14 CCR 15380. The CEQA definitions of endangered and threatened species are very similar to those of the California Endangered Species Act (see Fish and Game Code section 2062 and 2067). Neither the federal or state ESAs designate species as "rare."

In the plant context, it is sometimes argued that virtually any plant (i.e., one that has not been officially listed by the Department or the Fish and Wildlife Service) that has been placed on the California Native Plant Society list category 2 "qualifies for listing" and therefore must be treated as endangered, threatened or rare for purposes of CEQA. As shown above, the definitions provide that the species status must be "shown" in the context of CEQA. The Native Plant Society's list, although a valuable tool, does not and cannot be used as a presumption that such species qualify to be treated as listed. It cannot substitute for the Review Team's and Lead Agency's judgment and evaluation required to determine in the CEQA process that a species does in fact qualify to be treated as if it were listed under the federal or state ESAs. Finally, even if such a determination is made, it does not mandate avoidance of any and all "risk" to the species. It merely triggers the evaluation of risks to determine whether a potential effect will, in fact, be significant on such species under the THP as planned and proposed and, therefore, that additional feasible measures to reduce or avoid the impacts to insignificance will be necessary.

Where a species is not listed or cannot be shown to meet CEQA's definitions of threatened, rare or endangered species, Simpson nevertheless evaluates the potential for significant impacts. Surveys to determine individual presence, however, may not be necessary to evaluate that risk if it can be determined on some other basis that there would not be significant risk or where feasible biological survey protocols do not exist to provide accurate survey results. The potential for individual and cumulative effects may be evaluated on the basis of the information that is reasonably available. An evaluation that considers the generally known sensitivities of wildlife species to timber harvesting activities in the regional context is a proper basis for determining the "potential" for significant individual or cumulative effects to a species. In the case where reasonably available information does not demonstrate significant threats from Simpson's approach to timber harvesting, that analysis is sufficient under CEQA to support a finding that no significant effects will occur. Impacts to individuals could not reasonably be found to be significant in such a context and, therefore, there would be no basis for requiring surveys of all such species.

See Section III Item 32(b) for further discussion and consideration of non listed species.

33. Yes No Are there any snags which must be felled for fire protection or safety reasons? If yes, describe which snags are going to be felled and why.

Snags will be felled or retained as per 14 CCR 919.1(a), (b), (c), (d), (e), and (f). Snags within the plan area will be retained to the extent that their presence does not compromise the safety of personnel working on timber harvesting operations or those travelling on roads appurtenant to the THP. If snags are extremely soft, decayed, or are determined to present a safety hazard due to their proximity to landings, roads, people, or equipment, they will be felled. Observations of recently harvested areas on Simpson's ownership demonstrate that existing snags can and will be retained. Implementation of Simpson's Green Tree Retention Guidelines (see Section IV) and Simpson's Terrestrial Dead Wood Management Plan (see Section V) will assure that snags and green trees for snag recruitment will be retained as timber harvesting operations progress across the landscape.

34. Yes No Are any Late Succession Forest Stands proposed for harvest? If yes, describe the measures to be

implemented by the LTO that avoid long-term significant adverse effects on fish, wildlife and listed species known to be primarily associated with late succession forests.

35. Yes No Are any other provisions for wildlife protection required by the rules? If yes, describe.

If a species listed as Rare, Threatened, or Endangered is discovered during timber operations the LTO shall stop operations and notify Simpson's Wildlife Department personnel and the RPF who prepared the THP. Appropriate steps shall then be taken to comply with the laws under which activities affecting that species are regulated.

No nesting birds of prey were detected during the layout of this THP. Should nesting birds of prey be detected within or adjacent to the harvest area during operations, the LTO shall stop operations and notify Simpson's forestry staff. Simpson's biologists will then be consulted and protection needed to assure successful fledging of the young will be afforded to the site and the nest tree shall be retained.

36. a. Yes No Has an archaeological survey been made of the THP area?
b. Yes No Has a current archaeological records check been conducted for the THP area?
c. Yes No Are there any archaeological or historical sites located in the THP area? Specific site locations and protection measures are contained in the Confidential Archaeological Addendum in Section VI of the THP, which is not available for general public review.
37. Yes No Has any inventory or growth and yield information designated "trade secret" been submitted in a separate confidential envelope in Section VI of this THP?

38. Describe any special instructions or constraints that are not listed elsewhere in Section II.

DIRECTOR OF FORESTRY AND FIRE PROTECTION

This Timber Harvesting Plan conforms to the rules and regulations of the Board of Forestry and Fire Protection and the Forest Practice Act:

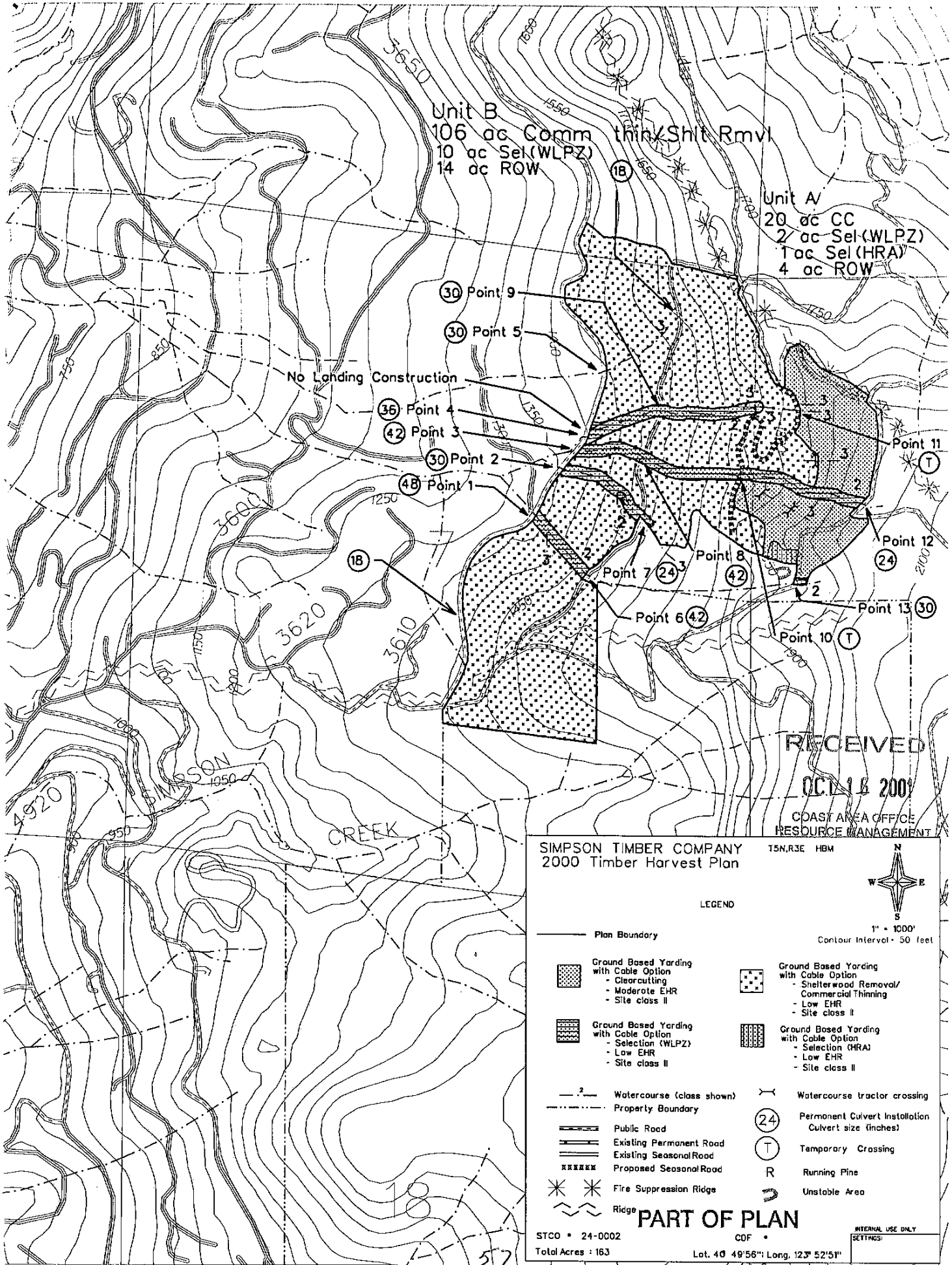
By: Alleah S. Middling
(Signature)

November 8, 2001
(Date)

Alleah S. Middling
(Printed Name)

Division Chief, Forest Practice
(Title)





Unit B
 106 ac Comm thin/Shlt Rmvl
 10 ac Sel (WLPZ)
 14 ac ROW

Unit A/
 20 ac CC
 2 ac Sel (WLPZ)
 1 ac Sel (HRA)
 4 ac ROW

No Landing Construction

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SIMPSON TIMBER COMPANY
 2000 Timber Harvest Plan

15N,R3E HBM

LEGEND

- Plan Boundary
- ▨ Ground Based Yarding with Cable Option - Clearcutting - Moderate EHR - Site class II
- ▩ Ground Based Yarding with Cable Option - Selection (WLPZ) - Low EHR - Site class II
- ▧ Ground Based Yarding with Cable Option - Selection (HRA) - Low EHR - Site class II
- 2 — Watercourse (class shown)
- - - Property Boundary
- == Public Road
- == Existing Permanent Road
- == Existing Seasonal Road
- Proposed Seasonal Road
- * * Fire Suppression Ridge
- ~ ~ Ridge
- ⌵ Watercourse tractor crossing
- ⊙ 24 Permanent Culvert Installation - Culvert size (inches)
- ⊙ T Temporary Crossing
- ⊙ R Running Pine
- ⊙ U Unstable Area

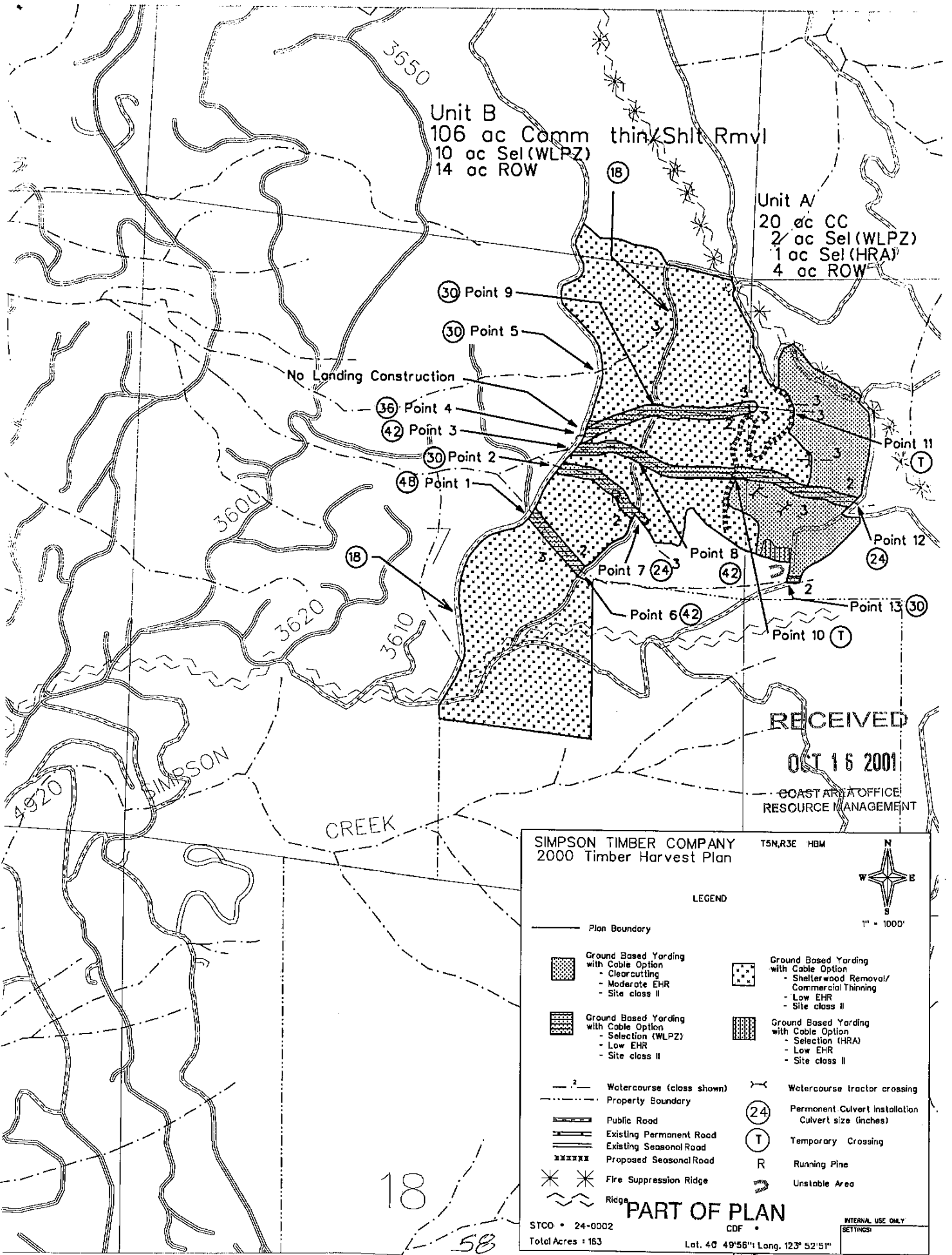


PART OF PLAN

STCO • 24-0002
 Total Acres : 163

COF •
 Lot. 40 49'56" Long. 123° 52'51"

INTERNAL USE ONLY
 SETTINGS:



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 RESOURCE MANAGEMENT

SIMPSON TIMBER COMPANY T5N,R3E H2M
2000 Timber Harvest Plan

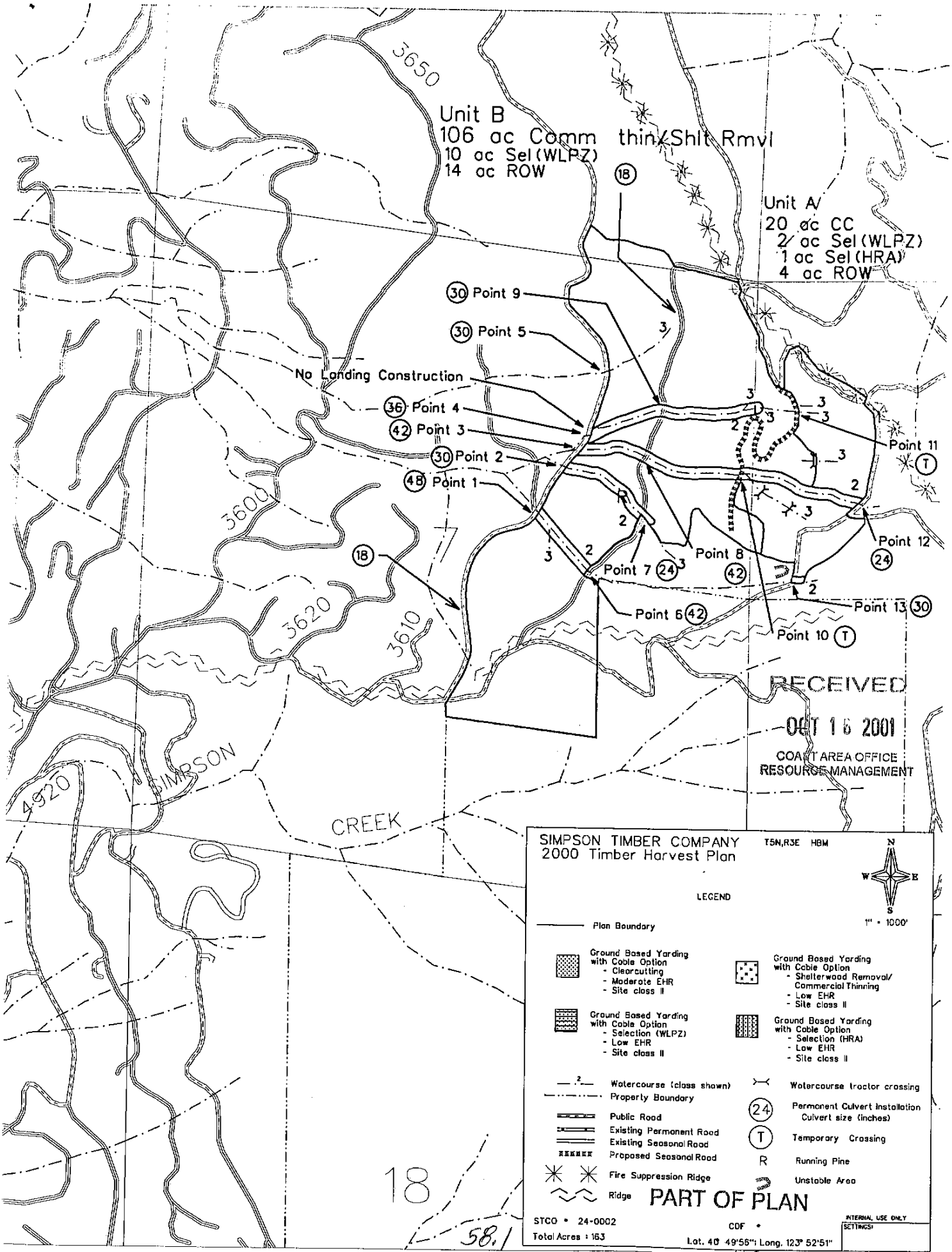
LEGEND

<ul style="list-style-type: none"> Plan Boundary Ground Based Yarding with Cable Option - Clearcutting - Moderate EHR - Site class II Ground Based Yarding with Cable Option - Selection (WLPZ) - Low EHR - Site class II Watercourse (class shown) Property Boundary Public Road Existing Permanent Road Existing Seasonal Road Proposed Seasonal Road Fire Suppression Ridge Ridge 	<ul style="list-style-type: none"> Ground Based Yarding with Cable Option - Shelterwood Removal/ Commercial Thinning - Low EHR - Site class II Ground Based Yarding with Cable Option - Selection (HRA) - Low EHR - Site class II Watercourse tractor crossing Permanent Culvert installation - Culvert size (inches) Temporary Crossing Running Pine Unstable Area
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PART OF PLAN

STCD • 24-0002 CDF •
 Total Acres : 153 Lat. 40° 49' 56" N Long. 123° 52' 51" W

INTERNAL USE ONLY
 SETTINGS:



Unit B
 106 ac Comm thin/Shlt Rmvl
 10 ac Sel (WLPZ)
 14 ac ROW

Unit A/
 20 ac CC
 2 ac Sel (WLPZ)
 1 ac Sel (HRA)
 4 ac ROW

No Landing Construction

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 COAST AREA OFFICE
 RESOURCE MANAGEMENT

SIMPSON TIMBER COMPANY
 2000 Timber Harvest Plan

TSN,RSE HBM

LEGEND

- Plan Boundary
- Ground Based Yarding with Cable Option - Clearcutting - Moderate EHR - Site class II
- Ground Based Yarding with Cable Option - Selection (WLPZ) - Low EHR - Site class II
- Ground Based Yarding with Cable Option - Selection (HRA) - Low EHR - Site class II
- Ground Based Yarding with Cable Option - Shelterwood Removal/ Commercial Thinning - Low EHR - Site class II
- Watercourse (class shown)
- Property Boundary
- Public Road
- Existing Permanent Road
- Existing Seasonal Road
- Proposed Seasonal Road
- Fire Suppression Ridge
- Ridge
- Watercourse tractor crossing
- Permanent Culvert Installation
Culvert size (inches)
- Temporary Crossing
- Running Pine
- Unstable Area

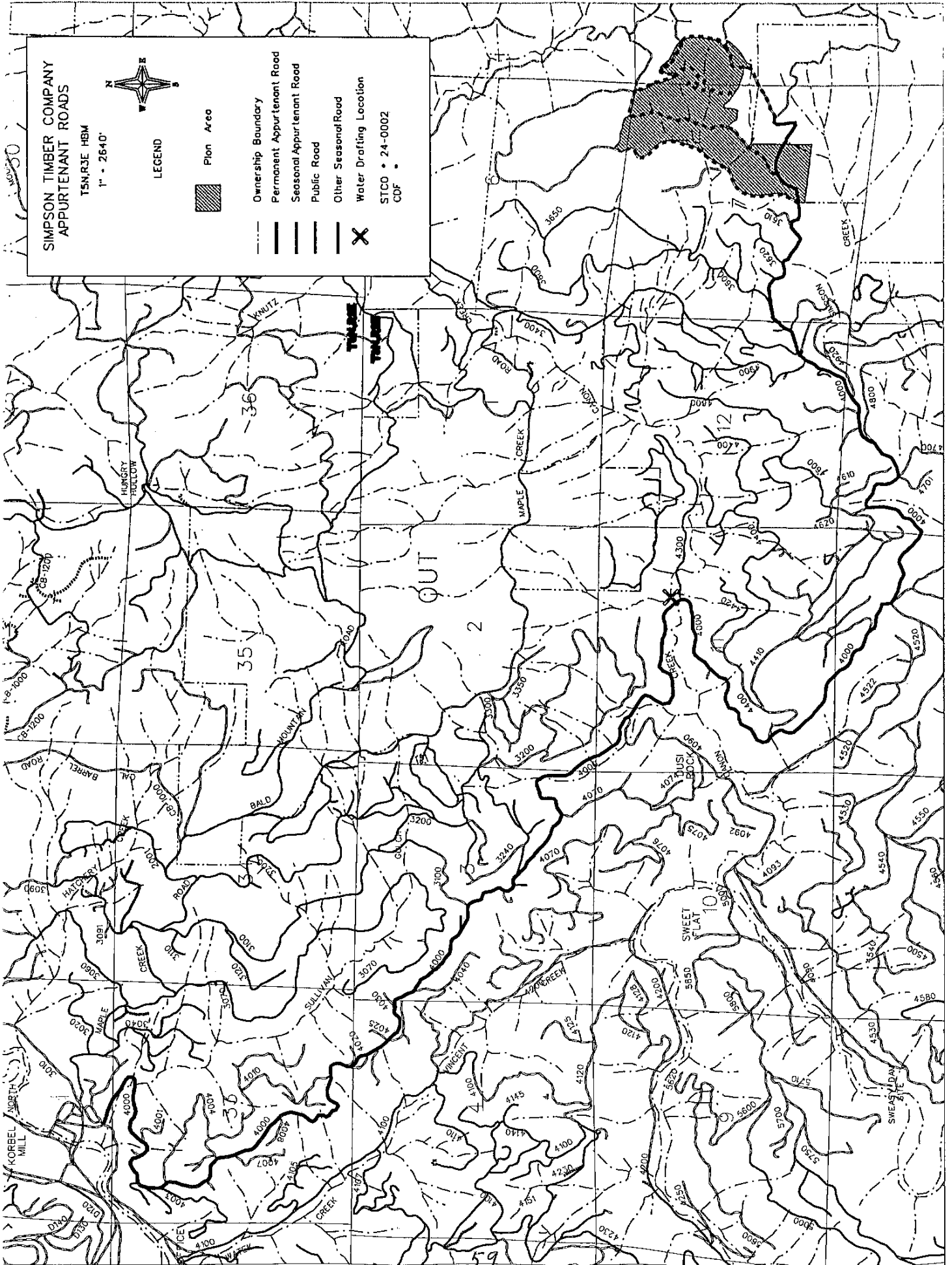


PART OF PLAN

STCO • 24-0002
 Total Acres • 163

CDP •
 Lat. 40° 49' 56" N Long. 123° 52' 51" W

INTERNAL USE ONLY
 SETTINGS:

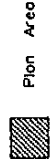


**SIMPSON TIMBER COMPANY
APPURTENANT ROADS**

TSN,R3E HBM
1" = 2640'



LEGEND



Plan Area

Ownership Boundary

Permanent Appurtenant Road

Seasonal Appurtenant Road

Public Road

Other Seasonal Road

Water Drafting Location

STCO • 24-0002

CDF

D. The authorization granted by this permit is subject to Permittees' full and complete compliance with and implementation of the "Habitat Conservation Plan for the Northern Spotted Owl on the California Timberlands of Simpson Timber Company" dated April 15, 1992 (HCP) and the "Implementation Agreement Simpson Timber Company Northern Spotted Owl Habitat Conservation Plan" dated September 17, 1992, (IA) both of which documents are incorporated herein as terms and conditions of the permit. All activities authorized herein must be carried out in accordance with and for the purposes described in the application submitted, the HCP and the IA.

E. Permittees are authorized to take, as that term is currently defined in 16 U.S.C. § 1532(19) and 50 C.F.R. § 17.3, up to 50 pair of Northern Spotted Owls (Strix occidentalis caurina) incidental to the commercial timber harvesting operations and related activities within the location identified in condition H during the first 10 years of the permit period and as conditioned herein.

F. The General provisions contained in 50 C.F.R. 13, Subpart D, and specific provisions of 50 C.F.R. § 17.32 are hereby incorporated as conditions of this permit. The continued validity or renewal of this permit is subject to Permittees' complete and timely compliance with all permit conditions, including the filing of all required information and reports as provided in the HCP and IA.

G. By accepting this permit permittees acknowledge that they understand and agree to abide by all of the terms and conditions of the permit,

H. The location where authorized activities may be conducted under the permit consists of commercial timberlands located in Del Norte, Humboldt, Mendocino, and Trinity Counties, California owned by Permittees at the time of permit issuance and commercial timberlands within these counties in which Permittees hold timber harvesting rights at the time of permit issuance and commercial timberlands acquired by Permittees after the effective date of the permit within Humboldt, Del Norte and Mendocino Counties and commercial timberlands within these counties in which Permittees acquire timber harvesting rights after the effective date of the permit.

I. First annual report due on or before December 15, 1993. Subsequent annual reports due on or before December 15th of each year permit is in effect. Reports shall be sent to: Regional Director, U.S. Fish and Wildlife Service, 911 NE 11th Avenue, Portland, Oregon 97232 and Field Supervisor, Sacramento Field Station, U.S. Fish and Wildlife Service, 2800 Cottage Way, Room 1803, Sacramento, California 95825.

Simpson

Simpson Timber Co.

Redwood Division

P.O. Box 68

900 Riverside Rd.

Korbel, California 95550 707-668-4400

November 9, 2000

R. H. Emmerson & Son LLC

PO Box 496014

Redding CA 96049-6014

Dear Mr. Emmerson:

Simpson Timber Company is currently preparing a Timber Harvest Plan in Sections 6, 7, and 8 of Township 5 North, Range 3 East HBM, in Humboldt County.

Your property is located within 1000' downstream and adjacent to the proposed plan area in the vicinity of the Ward Road. The plan area includes unnamed tributaries to Simpson Creek and Canon Creek. Simpson Timber Company is requesting information on any domestic water supply intakes located within or below the plan area. If you have any knowledge of any water intakes within the described area, please reply to the above address within the next 10 days.

By providing this information you can help Simpson Timber Company in developing necessary protection for this stream which will insure that our operations will not adversely affect domestic water sources. If you have any questions or concerns relating to this request, please contact me at the above address or by telephone at (707) 668-4414.

Sincerely,

John Davis

RPF #2670

Simpson Timber Company

114

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(2015.5 C.C.P.)

this space is for the County Clerk's Filing Stamp

STATE OF CALIFORNIA

County of Humboldt

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-mentioned matter. I am the principal clerk of the printer of THE TIMES-STANDARD, a newspaper of general circulation, printed and published daily in the City of Eureka, County of Humboldt, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Humboldt, State of California, under the date of June 15, 1967 Consolidated Case Number 27009 and 27010; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit.

November 13

All in the year 2000

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Eureka, California,
this 13 day of November, 2000
[Signature]
Signature

Proof of Publication of

DOMESTIC WATER SUPPLY

DOMESTIC WATER SUPPLY

Simpson Timber Company is developing a Timber Harvest Plan in the South East 1/4 of section 6, the East 1/2 of Section 7, and the Northwest 1/4 of section 8 Township 5 North Range 3 East, HBM, in the Ward Road area of Humboldt County. The plan includes unnamed tributaries to Canon Creek and Simpson Creek, both tributaries to the Mad River. Simpson is requesting information on domestic water supply intakes located within or 1000 feet below Simpson Timber Company ownership in sections 7 and 8 of Township 5 North Range 3 East, HBM. If your domestic water intake is located in this area, please contact Simpson Timber Company within the next 10 days at P.O. Box 68, Korbet, CA 95550. Please include your name, address and telephone number in your response. Thank you!
John Davis
1/13

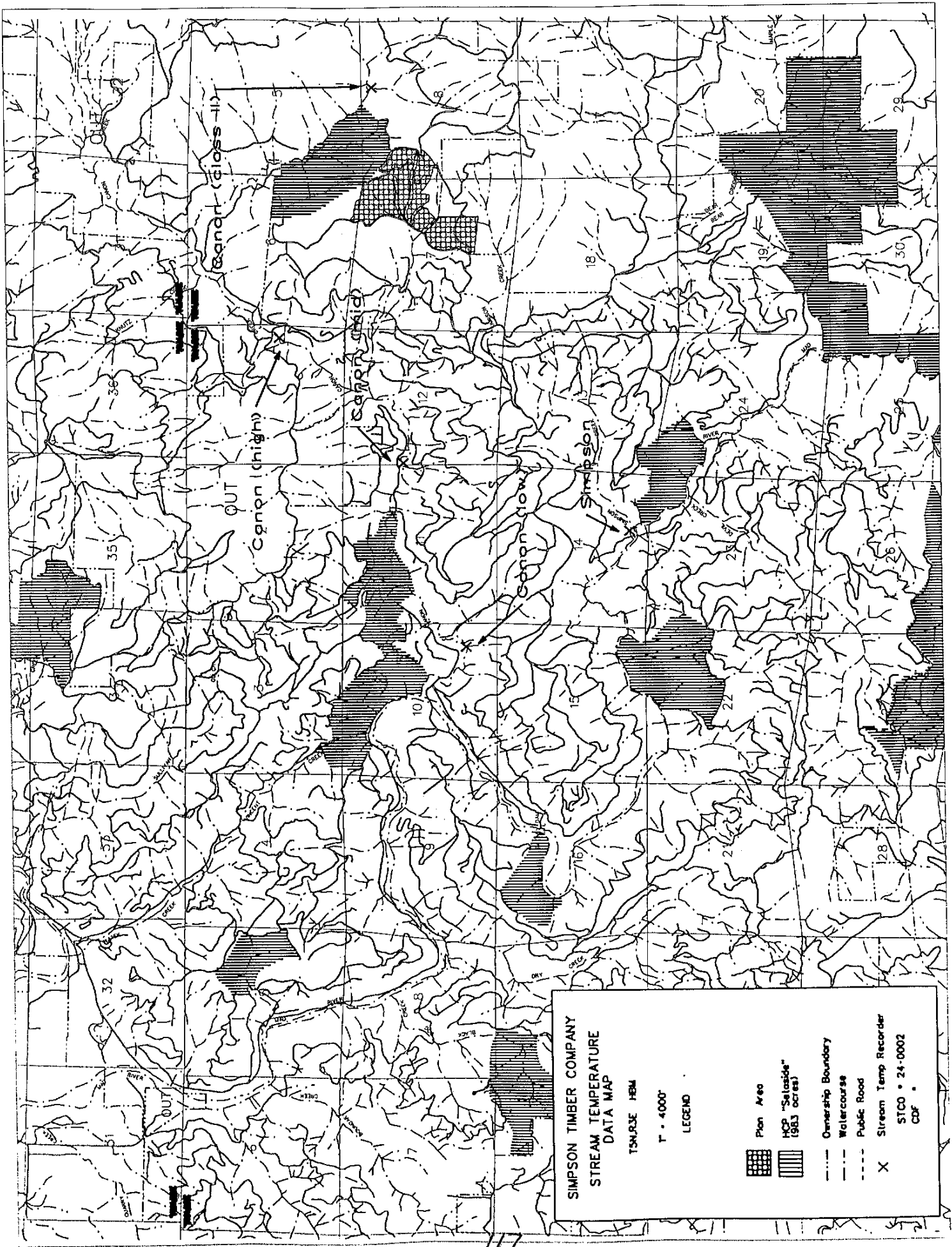
115

Summary of Stream Temperatures across STCO Property

Site Id = Based on Township(00) ; Range(00) ; Section(00) ; Site Number(00)
 Interval = The recording interval (hours:min.) used to collect the data.
 Highest 7 Day Period = The period in which the highest 7DMAVG was recorded.
 7DMAVG = 7 Day Moving Average. This is the highest average temperature during a 7 day period.
 7DMMX = 7 Day Mean of the Maximum daily temperatures for the same period as the 7DMAVG.
 Max Date = The date of the maximum temperature recorded
 Max = The Maximum temperature recorded
 Min after Max = The Minimum temperature following Max Date. Intended to show diurnal fluctuation for the Max Date

Stream Name	Site ID	General Location	Class	Year	Dates Monitored	Interval	Highest 7 Day Period	7DMAVG	7DMMX	Max Date	Max	Min after Max
Cañon (low)	05021001	site #1: below rockpit	1	1994	6/17 to 9/13	1:12	8/14 to 8/20	16.7	18.3	7/18	19.1	14.3
Cañon (low)	05021001	site #1: below rockpit	1	1995	6/29 to 8/25	1:12	8/1 to 8/7	16.9	18.1	7/16	19.4	15.5
Cañon (low)	05021001	site #1: below rockpit	1	1996	7/2 to 8/27	1:12	7/25 to 7/31	17.7	19.1	7/3	19.9	16.4
Cañon (low)	05021001	site #1: below rockpit	1	1997	6/19 to 9/14	1:12	7/14 to 7/20	18.8	21.6	7/15	22.1	16.7
Cañon (low)	05021001	site #1: below rockpit	1	1998	6/12 to 9/20	0:08	7/21 to 7/27	18.5	20.2	7/19	21.2	17.0
Cañon (low)	05021001	site #1: below rockpit	1	1999	6/3 to 10/6	1:12	8/21 to 8/27	17.6	18.9	6/22	20.0	14.7
Cañon (Low)	05021001	site #1: below rockpit	1	2000	6/10 to 10/9	1:12	7/29 to 8/4	18.2	19.7	6/27	21.1	16.1
Cañon (mid)	05021201	site #2: above 4300 crossing	1	1994	6/17 to 9/14	1:12	8/14 to 8/20	15.8	18.0	8/14	18.4	13.1
Cañon (mid)	05021201	site #2: above 4300 crossing	1	1999	6/24 to 9/18	1:12	8/24 to 8/30	16.8	17.4	7/11	17.8	15.3
Cañon (mid)	05021201	site #2: above 4300 crossing	1	2000	6/10 to 10/9	1:12	7/29 to 8/4	17.9	19.6	8/1	20.3	16.6
Cañon (high)	05020101	site #3: at Maple Creek Rd.	1	1994	6/17 to 9/14	1:12	8/14 to 8/20	14.9	15.9	8/14	16.2	14.0
Cañon (high)	05020101	site #3: at Maple Creek Rd.	1	1999	6/22 to 9/18	1:12	8/23 to 8/29	16.0	17.1	8/29	17.8	15.2
Cañon (class II)	05030801	herp site in headwaters	2	1996	8/17 to 10/10	1:12	8/24 to 8/30	12.4	12.9	8/24	13.3	12.0
Simpson	05021401	near confluence w/Mad	1	1997	6/20 to 9/14	1:12	8/31 to 9/6	15.3	16.2	8/7	17.0	13.9
Simpson	05021401	near confluence w/Mad	1	1999	6/22 to 9/18	1:12	8/24 to 8/30	15.1	16.1	8/29	16.8	14.3

116



Amphitheater Slope

Disrupted Ground

Debris Slide (dashed line indicates dormant)

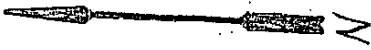
Transitional/Rotational Slide (dashed line indicates dormant)
Earthflow (dashed line indicates dormant)
Inner Gorge

Active Slide (too small to delineate @ 1:24000)

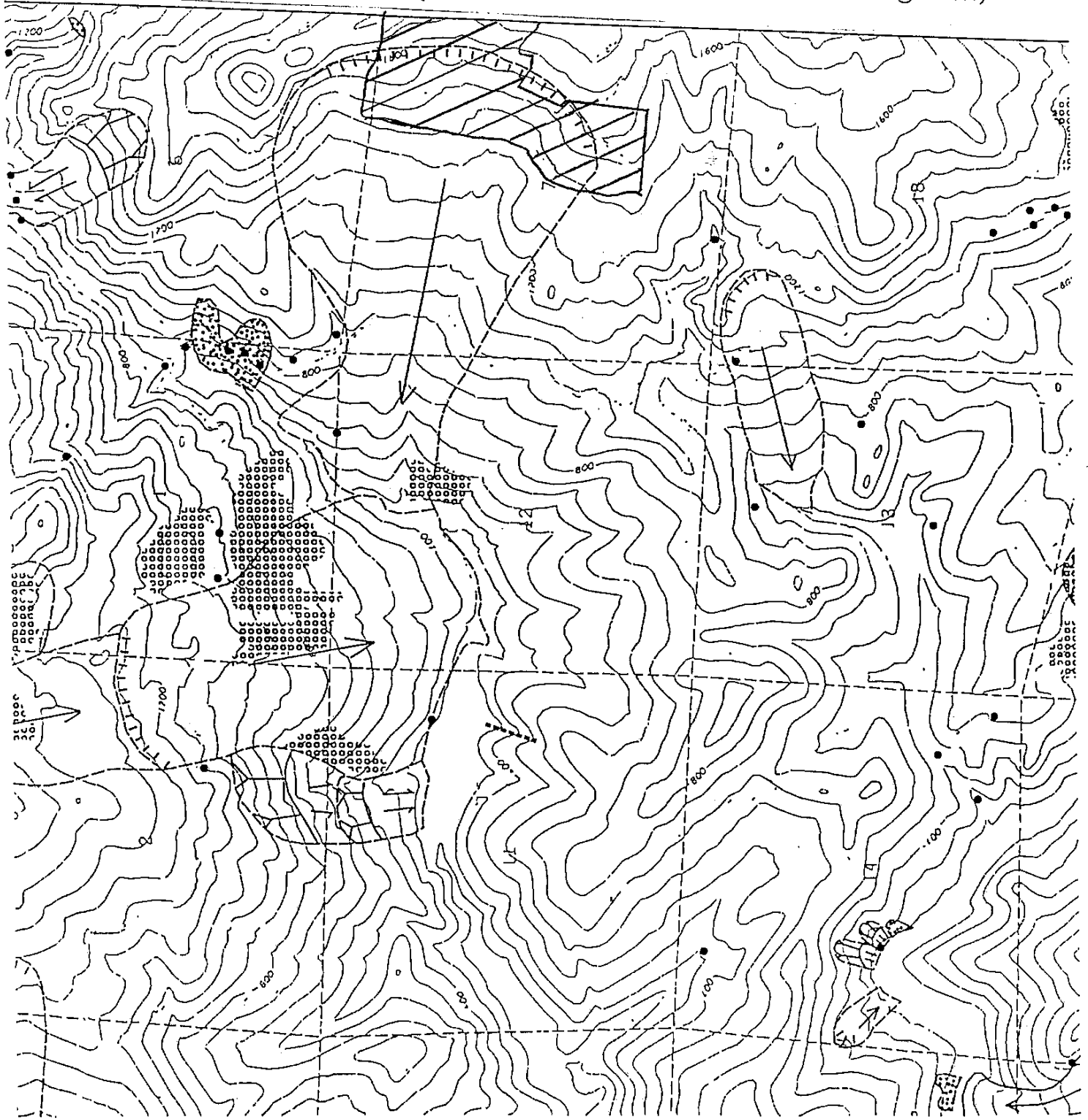
Torrent Tracks (active)

Torrent Tracks (dormant)

Inner Gorge (too small to delineate @ 1:24000)



Plan Area



FOR ADMIN. USE ONLY

TIMBER HARVESTING PLAN

FOR ADMIN. USE ONLY

- Amendments-date & S or M
1. 7.
2. 8.
3. 9.
4. 10.
5. 11.
6. 12.

STATE OF CALIFORNIA
DEPARTMENT OF FORESTRY
AND FIRE PROTECTION
RM-63 (01/00)
THP Name: Ward Road 2014
(In the CDF FPS, this is the "THP Description")
GDRCo number: 26-1204
FRIS setting id(s) A: 530717, B:530712

THP No. 1-13-022 HUM
Dates Rec'd MAR 27 2013
Date Filed APR 06 2013
Date Approved JUNE 25, 2013
Date Expires JUNE 14, 2018
Extensions 1) [] 2) []

If this is a Modified THP, check box: []

One 2-year extension possible

This Timber Harvesting Plan (THP) form, when properly completed, is designed to comply with the Forest Practice Act (FPA) and Board of Forestry and Fire Protection rules. See separate instructions for information on completing this form. NOTE: The form must be printed legibly in ink or typewritten. The THP is divided into six sections. If more space is necessary to answer a question, continue the answer at the end of the appropriate section of your THP. If writing an electronic version, insert additional space for your answer. Please distinguish answers from questions by font change, bold or underline. Answers and supporting text in Sections I and II are distinguished from form questions by font change and bolding. References to the AHCP are in italics and underlined.

Note to THP reviewer: This THP is prepared to include selected operational measures in accordance with Green Diamond Resource Company's Aquatic Habitat Conservation Plan (AHCP). Under the AHCP Green Diamond has agreed to implement additional measures to protect certain aquatic species and their habitats in exchange for issuance of incidental take authorization under the federal Endangered Species Act. Except where expressly stated otherwise, the AHCP is not incorporated by reference to be part of this THP. Rather, the substantive requirements of the AHCP are restated in the THP, and certain sections of the AHCP are referenced only for ease of implementation. References pertaining to the AHCP are shown in italicized font and underlined. The AHCP can be viewed at the National Marine Fisheries Service web site http://swr.nmfs.noaa.gov/ahcp.htm.

The protection measures proposed in this plan will provide protection that meets or exceeds the standard forest practice rules. This plan is prepared in accordance with 14CCR 916.9(w)(2) and 923.9(f)(2) which state that: The provisions of 14 CCR 916.9 and 923.9 shall not apply to a plan that is subject to a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Game Code.

SECTION I - GENERAL INFORMATION

This THP conforms to my/our plan and upon approval, I/we agree to conduct harvesting in accordance therewith. Consent is hereby given to the Director of Forestry and Fire Protection, and his or her agents and employees, to enter the premises to inspect timber operations for compliance with the Forest Practice Act and Forest Practice Rules.

AHCP Hydrographic Planning Area (HPA) Group: [] Humboldt Bay [X] Korbelt [] Coastal Klamath [] Smith River

1. TIMBER OWNER(S) OF RECORD: Name Green Diamond Resource Company
Address P.O. Box 68
City Korbelt State CA Zip 95550 Phone (707) 668-4400
Signature Print Otto van Emmerik Date

NOTE: The timber owner is responsible for payment of a yield tax. Timber Yield Tax information may be obtained at the TimberTax Section, MIC: 60, State Board of Equalization, P.O. Box 942879, Sacramento, California 94279-0060; phone 916-938-7115; BOE Web Page at http://www.boe.ca.gov.

RECEIVED

MAR 27 2013

COAST AREA OFFICE
RESOURCE MANAGEMENT

2. TIMBERLAND OWNER(S) OF RECORD: Name Green Diamond Resource Company
Address P.O. Box 68
City Korbelt State CA Zip 95550 Phone (707) 668-4400
Signature Print Otto van Emmerik Date

3. LICENSED TIMBER OPERATOR(S): Name Green Diamond Resource Company Korbel Division Lic. No. A-6968

(If unknown, so state. You must notify CDF or LTO prior to start of operations.)

Address P.O. Box 68
City Korbel State CA Zip 95550 Phone (707) 668-4400
Signature _____ Print David Carter Date _____

4. PLAN SUBMITTER(S): Name Green Diamond Resource Company

Address P.O. Box 68
City Korbel State CA Zip 95550 Phone (707) 668-4400
(Submitter must be from 1, 2, or 3 above. He/she must sign below. Ref. Title 14 CCR 1032.7 (a))

Signature _____ Print Otto van Emmerik Date _____

5. a. List person to contact on-site who is responsible for the conduct of the operation. If unknown, so state and name must be provided for inclusion in the THP prior to start of timber operations.

Name The responsible RPF, Zachariah D. Mohrmann or David Carter (LTO)
Address Green Diamond Resource Company, P.O. Box 68
City Korbel State CA Zip 95550 Phone 707-668-4400

b. Yes No Will the timber operator be employed for the construction and maintenance of roads and landings during conduct of timber operations? If no, who is responsible?

N/A

c. Who is responsible for erosion control maintenance after timber operations have ceased and until certification of the Work Completion Report? If not the LTO, then a written agreement must be provided per 1050 (c).
Green Diamond Resource Company, Lic. No. A-6968 923.4(a) The prescribed maintenance period for erosion controls on permanent and seasonal roads and associated landings and drainage structures that are not abandoned in accordance with 14 CCR 923.8, shall be at least one year.

6. a. Expected date of commencement of timber operations:

date of conformance, Or _____

b. Expected date of completion of timber operations:

5 years from date of conformance, or _____ (date)

This THP has been prepared to be completed with the definition of "feasible" under 895.1 and the requirements of 898.1(c). If after the THP has been approved circumstances arise that require an extension, an extension will be applied for consistent with the requirements of PRC Section 4590.

7. The timber operation will occur within the:

- COAST FOREST DISTRICT The Tahoe Regional Planning Authority Jurisdiction
- Southern Subdistrict of the Coast F.D. A County with Special Regulations, identify:
- SOUTHERN FOREST DISTRICT Special Treatment Area(s), identify: _____
- High use subdistrict of the Southern F.D. _____
- NORTHERN FOREST DISTRICT Coastal Zone _____

8. Location of the timber operation by legal description: **U.S.G.S. 7.5 min. Quadrangles; Maple Creek, CA 1977, Korbelt, CA 1979**

Base and Meridian: Mount Diablo Humboldt San Bernardino

Section	Township	Range	Acreage	County	Assessor's Parcel Number*
<u>6</u>	<u>5N</u>	<u>3E</u>	<u>3.6</u>	<u>Humboldt</u>	
<u>7</u>	<u>5N</u>	<u>3E</u>	<u>55.3</u>	<u>Humboldt</u>	
<u>8</u>	<u>5N</u>	<u>3E</u>	<u>4.5</u>	<u>Humboldt</u>	
TOTAL ACREAGE			<u>63.4</u>	(Logging Area Only)	* Optional

Planning Watershed: CALWATER Version, Identification Number, and Name:

V2.2 1109.300602 Lower Canon Creek

9. Yes No Has a Timberland Conversion been submitted? If yes, list expected approval date or permit number and expiration date if already approved
N/A
10. Yes No Is there an approved Sustained Yield Plan for this property? Number _____ Date app. _____
 Yes No Has a Sustained Yield Plan been submitted but not approved? Number _____ Date sub. _____
11. Yes No Is there a THP or NTMP on file with CDF for any portion of the plan area for which a report of satisfactory stocking has not been issued by CDF?
 If yes, identify the THP or NTMP number(s): _____
 Yes No Is there a contiguous even aged unit with regeneration less than five years old or less than five feet tall? If yes, explain. Ref. Title 14 CCR 913.1 (933.1, 953.1) (a)(4).
12. Yes No Is a Notice of Intent necessary for this THP?
 Yes No If yes was the Notice of Intent posted as required by 14 CCR 1032.7 (g)?
13. RPF preparing the THP: Name Zachariah D. Mohrmann RPF Number 2871
 Address P.O. Box 68
 City Korbelt State CA Zip 95550 Phone (707) 668-4447
- a. Yes No I have notified the plan submitter(s), in writing, of their responsibilities pursuant to 14 CCR 1035 of the Forest Practice Rules.
 Yes No I have notified the timber owner and the timberland owner of their responsibilities for compliance with the Forest Practice Act and rules, specifically the stocking requirements of the rules and the maintenance of erosion control structures of the rules.
- b. Yes No I will provide the timber operator with a copy of the portions of the approved THP as listed in 14 CCR 1035 (f). If "no", who will provide the LTO a copy of the approved THP?

I or my supervised designee will meet with the LTO prior to commencement of operations to advise of sensitive conditions and provisions of the plan pursuant to Title 14 CCR 1035.2. Green Diamond Resource Company has been an industrial timber and timberland owner for many years and is aware of their responsibilities under the FPR's. The RPF is an employee of Green Diamond Resource Company.

- c. I have the following authority and responsibilities for preparation and administration of the THP and timber operation. (Include both work completed and work remaining to be done):

In addition to the preparation of this THP, I will perform additional work that the Forest Practice Rules (FPR) specifically require be performed by the RPF who prepared the plan. As part of the THP preparation I am responsible for flagging and tree marking that is required to be done prior to the PHI. I do not assume responsibility for additional work requiring an RPF when the services of the RPF who prepared the plan are not specified by the FPR, unless said work is performed by myself or under my direction. As an RPF employed by Green Diamond Resource Company, I will be available to provide advice and guidance regarding the conduct of timber operations pursuant to this THP. I or my supervised designee shall be present on the logging area at a sufficient frequency to know the progress of operations and to advise the LTO and timberland owner. I shall also inform the LTO during operations of any mitigation measures incorporated into the plan that are intended to address operations that have a high likelihood of resulting in immediate, significant and long term harm to the natural resources of the State.

- d. Additional required work requiring an RPF, which I do not have the authority or responsibility to perform:

Green Diamond's Forestry Superintendent, Nick d'Usseau (RPF # 2191), is designated as the RPF responsible for all other aspects of this THP which require an RPF.

- e. After considering the rules of the Board of Forestry and Fire Protection and the mitigation measures incorporated in this THP, I have determined that the timber operation:

will have a significant adverse impact on the environment. (Statement of reasons for overriding considerations contained in Section III)

will not have a significant adverse impact on the environment.

Registered Professional Forester: I certify that I, or my supervised designee, personally inspected the THP area, and this plan complies with the Forest Practice Act, the Forest Practice Rules and the Professional Foresters Law. If this is a Modified THP, I also certify that: 1) the conditions or facts stated in 14 CCR 1051 (a) (1) - (16) exist on the THP area at the time of submission, preparation, mitigation, and analysis of the THP and no identified potential significant effects remain undisclosed; and 2) I, or my supervised designee will meet with the LTO at the THP site, before timber operations commence, to review and discuss the contents and implementation of the Modified THP.

Signature Signatures are provided on page 1.1. Date _____

State of California
Department of Forestry and Fire Protection

(Administrative Use Only-Area _____)
(Plan No. _____)
(Date Received _____)
(Amendment Number _____)

LICENSED TIMBER OPERATOR RESPONSIBILITY ACKNOWLEDGEMENT

(As per 14 CCR §§ 1035.3(a)(1)-(2), 1092.14(a)(1)-(2).)

Harvesting Plan Number: 26-1204

Licensed Timber Operator Information

Name: Green Diamond Resource Company
Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550
Telephone Number: 707-668-4400 LTO Number: A-6968

I hereby agree to abide by the terms and specifications of the plan. I have read and understand my responsibility as LTO, as described under 14 CCR §§ 1022.4, 1090.12 and 1092.14. I agree to fulfill my responsibilities as an LTO as they pertain to this plan.

LTO Signature: See Signature page 1.1 Title: Logging Superintendent-Korbel

David Carter

Responsible On-Site Contact (if different)

Name: _____
Printed Name: _____ Date: _____
Street Address/PO Box: _____ City: _____ Zip: _____
Telephone Number: _____

REGISTERED PROFESSIONAL FORESTER (RPF) RESPONSIBILITY ACKNOWLEDGEMENT
(As per Section 1035.1 Title 14, CCR)

RPF Certified to Provide Professional Advice:

Name: Zachariah D. Mohrmann

Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550

Telephone Number: (707) 668-4484 RPF Number: 2871

As of January 1, 2001, I have read and understand my responsibility as RPF, as described under 14 CCR 1035.1(a-g). I agree to fulfill my responsibilities as an RPF as they pertain to this plan.

Yes No I have been retained as the RPF, available to provide professional advice to the licensed timber operator and timberland owner upon request throughout the active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

RPF Signature: Signatures are provided on page 1.1.

PLAN SUBMITTER RESPONSIBILITY ACKNOWLEDGEMENT
(As per Section 1035 Title 14, CCR)

Plan Submitter

Name: Green Diamond Resource Company Korbel Division

Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550

Telephone Number: 707-668-4454

As of January 1, 2001, I have read and understand my responsibilities as Plan Submitter as described under 14 CCR 1035. I certify that I have fulfilled my legal obligation as stated in the forest practice rules, and agree to fulfill my responsibility as the plan submitter as it pertains to this plan.

Yes No I have retained the services of an RPF to provide professional advice to the LTO and timberland owner upon request throughout active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

Yes No I have authorized the timberland owner, _____ to perform the services of a professional forester, understanding that the services will be provided personally on lands owned by the timberland owner.

Plan Submitter Signature: Signatures are provided on page 1.1.

SECTION II - PLAN OF TIMBER OPERATIONS

NOTE: If a provision of this THP is proposed that is different than the standard rule, the explanation and justification should normally be included in Section III unless it is clearer and better understood as part of Section II.

Note to Reviewer: For purposes of this THP, the term "(RMZ)" (Riparian Management Zone) is listed along with WLPZ in the plan to show the relationship to Green Diamond's Aquatic Habitat Conservation Plan. The (RMZ) serves the same function as a WLPZ.

14. a. Check the Silvicultural methods or treatments allowed by the rules that are to be applied under this THP. Specify the option chosen to demonstrate Maximum Sustained Production (MSP) according to 14 CCR 913 (933, 953) .11. If more than one method or treatment will be used show boundaries on map and list approximate acreage for each.
- | | | | | | | | | | | | |
|-------------------------------------|------------------------|-------------|-----|--------------------------|-------------------------------------|-------|-----|-------------------------------------|---------------------|------------|-----|
| <input checked="" type="checkbox"/> | Clearcutting | <u>51.7</u> | ac. | <input type="checkbox"/> | Shelterwood Prep. Step | _____ | ac. | <input type="checkbox"/> | Seed Tree Seed Step | _____ | ac. |
| | | | | <input type="checkbox"/> | Shelterwood Seed Step | _____ | ac. | <input type="checkbox"/> | Seed Tree Rem. Step | _____ | ac. |
| | | | | <input type="checkbox"/> | Shelterwood Removal Step | _____ | ac. | <input type="checkbox"/> | Transition | _____ | a. |
| <input checked="" type="checkbox"/> | Selection | <u>9.9</u> | ac. | <input type="checkbox"/> | Group Selection | _____ | ac. | <input type="checkbox"/> | Sanitation Salvage | _____ | ac. |
| <input type="checkbox"/> | Commercial Thinning | _____ | ac. | <input type="checkbox"/> | Road Right of Way | _____ | ac. | <input type="checkbox"/> | Fuel Break | _____ | ac. |
| <input type="checkbox"/> | Special Treatment Area | _____ | ac. | <input type="checkbox"/> | Rehabilitation of Understocked Area | _____ | ac. | <input type="checkbox"/> | Non-Timberland Area | _____ | ac. |
| <input type="checkbox"/> | Alternative | _____ | ac. | <input type="checkbox"/> | Conversion | _____ | ac. | <input checked="" type="checkbox"/> | No Harvest | <u>1.8</u> | ac. |
- Total Acreage 63.4 ac. Explain if total is different from that listed in 8. MSP Option Chosen: (a) (b) (c)

****Note:** Additional discussion of silvicultural treatments is included in Section III Item #14.

- b. If Selection, Group Selection, Commercial Thinning, Sanitation Salvage or Alternative methods are selected the post harvest stocking levels (differentiated by site if applicable) must be stated. Note mapping requirements of 1034 (x)(12)

Post harvest stocking level for areas designated as Selection (WLPZ/RMZ) within the plan area shall not be less than the minimums set forth in 14CCR 913.2 (a)(2)(A)(2). Minimum post harvest stocking level shall not be less than 75 sq. ft. conifer BA/ac.

- c. Yes No Will evenage regeneration step units be larger than those specified in the rules (20 acre tractor, 30 acre cable)? If yes, provide substantial evidence that the THP contains measures to accomplish any of subsections (A)-(E) of 14 CCR 913 (933, 953).1 (a)(2) in Section III of the THP. List below any instructions to the LTO necessary to meet (A) - (E) not found elsewhere in the THP. These units must be designated on map and listed by size

Harvest Unit A includes 24.9 acres of clearcutting that will be shovel logged. Unit B includes 26.8 acres of clearcut that will be shovel logged. See THP Section III, Addendum to Item 14(c).

- d. Trees to be harvested or retained must be marked by or marked under the supervision of the RPF. Specify how the trees will be marked and whether harvested or retained.

Within the Clearcut portions of the plan all merchantable trees will be harvested with the exception of tagged wildlife trees. Harvest trees within clearcuts will not be marked. Wildlife retention trees marked with yellow tags and pink flagging shall not be cut unless a safety hazard exists. Within the WLPZ (RMZ/RSMZ) Selection portions of the plan all harvest trees will be marked with yellow paint within Unit A and blue paint in Unit B. All trees marked for harvest will have a stripe located above DBH and a basal mark on the low side of the stump.

- Yes No Is a waiver of marking by the RPF requirement requested? If yes, how will LTO determine which trees will be harvested or retained? If yes and more than one silvicultural method, or Group Selection is to be used, how will LTO determine boundaries of different methods or groups?

Clearcut boundaries are delineated by red and white flagging, or by previous clearcut lines. Boundaries between clearcuts and WLPZs (RMZs) are delineated by pink and blue flagging. Boundaries between clearcuts and Slope Stability Management Zones (SSS) are delineated by white SSS flagging with blue dots and Pink flagging.

e. Forest products to be harvested: Sawlogs, veneer logs, chip logs, pulp logs, hog fuel/biomass, and fuelwood.

- f. Yes No Are group B species proposed for management?
 Yes No Are group B or non-indigenous A species to be used to meet stocking standards?
 Yes No Will group B species need to be reduced to maintain relative site occupancy of A species.

If any answer is yes, list the species, describe treatment, and provide the LTO with necessary felling and slash treatment guidance. Explain who is responsible and what additional follow-up measures of manual treatment or herbicide treatment are to be expected to maintain relative site occupancy of A species. Explain when a licensed Pest Control Advisor shall be involved in this process.

N/A

g. Other instructions to LTO concerning felling operations.

- Harvest trees in WLPZ/RMZ Selection areas are marked with yellow paint in Unit A and blue paint in Unit B.
- To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses.
- LTO will abide by all applicable Forest Practice Rules.

h. Yes No Will artificial regeneration be required to meet stocking standards?

It is anticipated that these stands will meet minimum state stocking standards without planting due the large number of redwood sprouts and natural seeding from adjacent stands and WLPZs. Green Diamond may interplant the clearcut units to ensure an even distribution of regeneration and full site occupancy.

i. Yes No Will site preparation be used to meet stocking standards? If yes, provide the information required for a site preparation addendum, as per 14 CCR 915.4 (935.4, 955.4).

The Site Preparation Addendum is written in compliance with 14CCR 915.4, with references to GDRCo's AHCP. Site preparation activities shall be designed to prevent soil disturbance within, and minimize soil movement into the channels of watercourses. Site specific measures and burning restrictions intended to accomplish this goal are stated below within sections of the site preparation addendum. This information is provided in addition to the information required under 14 CCR 915.4. Site preparation activities will be limited to the clearcut portions of the plan.

Site Preparation Addendum

a. At the completion of harvest operations, an assessment of the harvest area will be made to determine the extent of site preparation needed.

b. If necessary, site preparation treatments may include one or more of the following methods:

- Broadcast burning or pile burning
- Mechanical piling of slash and brush with an excavator equipped with a thumb attachment in areas designated for ground based yarding.
- Yum yarding and or chipping on site.
- Hand slashing of residual hardwoods and brush.

c. In accordance with AHCP 6.2.4.2.3: (1), Green Diamond will minimize the use of machine piling with tractor-and-brushrake; other mechanized methods or equipment will be used preferentially. Heel boom track loaders or excavators may be used for piling within ground based operations areas.

Yes No Is fire trail construction proposed?

Fire trail construction shall be in accordance with the following:

6.2.4.2.6 Fireline Drainage

All firelines that are not in an RMZ or EEZ will have drainage facilities adequate to prevent the delivery of sediment to RMZs or EEZs.

6.2.4.2.7 Fireline Construction with Tractors

- 1. Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th.**
- 2. If the proposed fireline location may cause hillslope sediment delivery to a RMZ or EEZ adjacent to a Class I, II, or III watercourse, then equipment use will be limited to slopes less than 45%.**
- 3. If the proposed fireline location is not likely to cause sediment delivery to a RMZ, and if slopes are greater than 50%, then tractors will operate only on fireline segments less than 100'.**

6.2.4.2.8 Fireline Construction, Reconstruction, and use within RMZs and EEZs

Green Diamond will limit fireline construction, reconstruction, and use within RMZs and EEZs as follows:

- 1. Firelines will only be constructed or reconstructed with handtools.**
- 2. Existing skid roads or firelines within RMZs or EEZs will be constructed for fireline usage only if they are located advantageously for fire containment. Reconstruction will only be done with handtools, and only to the minimum width required for fire containment. All prior drainage failures on the existing skid roads or firelines will be remedied during construction.**
- 3. All constructed or reconstructed firelines within RMZs or EEZs will have drainage structures that will minimize the movement of sediments from the exposed fireline surface but are not subject to the 100 square foot ground disturbance standard for seeding and mulching as described in Section 6.2.1.**

Yes No Is broadcast burning proposed for site preparation?

d. If burning is deemed necessary, burning operations will be conducted according to the provisions of a project type burn permit issued by the California Department of Forestry and Fire Protection. Burning can occur after merchantable logs have been harvested, and up until stocking has been met. The following burning restrictions will apply:

- Burning will be conducted under fuel moisture conditions that will minimize encroachment of high intensity burning into WLPZs (RMZs), and prevent large fuels from being completely consumed.
- Residual trees, LWD, vegetation and duff within the WLPZs (RMZs), ELZs and EEZs shall be protected from site preparation burning by not lighting directly within the WLPZs (RMZs), ELZs or EEZs established for watercourse protection.
- Residual trees and snags within the harvest unit shall not have slash concentrations piled against them.
- Soil stabilization, as described under item 18, shall be applied in WLPZs (RMZs) following broadcast burning if encroachment of ground fires has resulted in exposure of bare mineral soil areas greater than 100 square feet or which is likely to result in the transport of sediment to Class I or II waters.

e. No exceptions or alternatives to the standard rules are proposed for site preparation in this THP.

f. The boundaries for site preparation are the same as those shown on the THP Silviculture Maps for clearcutting.

g. Mr. Michael Alcorn is the person responsible for the conduct of site preparation activities. He can be reached at the address given in item #5 of Section I of the THP.

- h. Yarding of slash concentrations, if required, may take place during timber operations. Per AHCP 6.2.4.2.3 (3), Mechanized slash piling with shovel logging equipment (on slopes averaging less than 30% and if operating on slash) may be conducted concurrent with shovel harvesting operations during the winter period subject to limitations under AHCP 6.2.4.7. Besides this exception, use of mechanical site preparation methods will be limited to the period beginning May 15th and ending October 15th. AHCP 6.2.4.2.3 (2): Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th. ACHP 6.2.4.2.7 (1).

BURN PRESCRIPTION

Broadcast burning may occur on this THP for site prep and fuel load reduction. Superior site productivity on these specific harvest units is the goal of site prep. Fuel load reduction is a critical long-term goal that requires continued perseverance by the landowner to protect the timber productivity of the entire assessment area as well as public safety and the quality of the water, wildlife habitat and other public trust resources present on TPZ lands.

Proper fuel moisture and weather conditions are key elements to success. Broadcast burning shall occur under fuel moisture conditions that will minimize encroachment of high intensity burning into WLPZs (RMZs). Broadcast burning shall not be initiated within (RMZs), WLPZs, EEZs or ELZs established for watercourse protection. Encroachment of ground fire and some scorching of trees on the boundary of WLPZs (RMZs) is expected. This will be minimally impactful to desirable WLPZ (RMZ) conditions such as filtration capacity and temperature moderation. In that it will simulate natural fire effects in the forest environment, it will create more desirable habitat characteristics over time, such as decadent trees and higher incidence of snags and LWD.

The burning shall occur after sufficient rain has fallen to raise the fuel moisture within WLPZs (RMZs). Clearcut areas will be burned as separate units on opposite sides of WLPZs (RMZs). The fuel load in the first unit shall be substantially consumed before ignition of the second unit; or sufficient time shall elapse between ignition of the units that the convection column of the area ignited first, has had time to subside and is not likely to significantly damage the retained stand in the WLPZ (RMZ).

- j. If the rehabilitation method is chosen provide a regeneration plan as required by 14 CCR 913(934,954).4(b).
 N/A

PESTS

15. a. Yes No Is this THP within an area that the Board of Forestry and Fire Protection has declared a Zone of Infestation or Infection pursuant to PRC 4712 - 4718? If yes, identify feasible measures being taken to mitigate adverse infestation or infection impacts from the timber operation. See 14 CCR 917(937, 957).9(a).
- b. Yes No If outside a declared zone, are there any insect, disease or pest problems of significance in the THP area? If yes, describe the proposed measures to improve the health, vigor and productivity of the stand(s).

Item 15 a cont. Sudden Oak Death (SOD)

a) The counties regulated for SOD at this time are: Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma.

b) Known host species at this time are:

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acer macrophyllum</i>	bigleaf maple	<i>Maianthemum racemosum</i>	false Soloman's seal
<i>Adiantum jordanii</i>	California maidenhair fern	<i>Quercus agrifolia</i>	coast live oak
<i>Aesculus californica</i>	California buckeye	<i>Quercus chrysolepis</i>	canyon live oak
<i>Arbutus menziesii</i>	madrone	<i>Quercus kelloggii</i>	California black oak,
<i>Arctostaphylos manzanita</i>	manzanita	<i>Quercus parvula var. shrevei</i>	Shreve's oak
<i>Frangula californica</i>	California coffeeberry	<i>Rhododendron spp</i>	rhododendron (including azalea)
<i>Frangula purshiana</i>	casacara	<i>Rosa gymnocarpa</i>	wood rose
<i>Heteromeles arbutifolia</i>	toyon	<i>Trientalis latifolia</i>	western starflower
<i>Lithocarpus densiflorus</i>	tanoak	<i>Umbellularia californica</i>	California bay laurel
<i>Lonicera hispidula</i>	California honeysuckle	<i>Vaccinium ovatum</i> ,	evergreen huckleberry
<i>Adiantum aleuticum</i>	Western maidenhair fern		

Basal trunk/burl sprouts, small branches (less than one inch in diameter), and leaves of *Sequoia sempervirens* (coast redwood), and small branches (less than one inch in diameter), and leaves of *Pseudotsuga menziesii* (Douglas-fir).

- c) Host material may be removed from this THP area in the form of sawlogs, veneer logs, chip logs, pulp logs, hog fuel and fuelwood.
- d) Host material shall not be moved outside of the regulated area without amendment of appropriate state and federal permits to this THP.
- e) This THP shall serve as a compliance agreement for movement of host material within the regulated area.
- (1) The potential destinations of regulated host materials are:
- California Redwood Company, Korbel
 - Resale Lumber Products, Arcata
 - Sierra Pacific Industries, Eureka Dock
 - Humboldt Redwood Company, Scotia
 - Fairhaven Power Plant, Fairhaven
 - Blue Lake Power, Blue Lake
- Firewood in the form of cut rounds or split bolts shall not be transported out of the regulated area.
- (2) Although the destination is known and stated above, other destinations for log shipment may be amended to the THP.
- (3) Material smaller than 4" in diameter must be moved in a closed container except split firewood bolts.
- (4) Movement of material greater than 4" in diameter does not require a closed container.
- (5) The LTO shall inspect all log trucks before they leave the harvest area and remove all tops less than 4" in diameter and debris of host plant species including limbs, twigs, and leaves.
- f) This THP will serve as a SOD compliance agreement with Humboldt County Department of Agriculture for the movement of host material within the regulated area. If SOD conditions change, the THP shall be amended to reflect those changes.
- g) The RPF responsible for the THP shall be responsible for amending or extending the above restrictions and for informing the LTO of the operational requirements.

HARVESTING PRACTICES

16. Indicate type of yarding system and equipment to be used:

GROUND BASED*		CABLE		SPECIAL	
a)	<input type="checkbox"/> Tractor, including end/long lining	d)	<input type="checkbox"/> Cable, ground lead	g)	<input type="checkbox"/> Animal
b)	<input type="checkbox"/> Rubber tired skidder, Forwarder	e)	<input type="checkbox"/> Cable, high lead	h)	<input type="checkbox"/> Helicopter
c)	<input checked="" type="checkbox"/> Feller buncher	f)	<input checked="" type="checkbox"/> Cable, Skyline	i)	<input checked="" type="checkbox"/> Other : Shovel Loader
(All tractor operations restrictions apply to ground based equipment)				Yoder	

17. Erosion Hazard Rating: Indicate Erosion Hazard Ratings present on THP. (Must match EHR worksheets)

Low Moderate High Extreme

If more than one rating is checked, areas must be delineated on map to 20 acres in size (10 acres for high and extreme EHRs in the Coast District). Refer to EHR worksheet in Section V and the Detailed THP map in Section II.

18. Soil Stabilization:

In addition to the standard waterbreak requirements describe soil stabilization measures or additional erosion control measures to be implemented and the location of their application. See requirements of 14 CCR 916.7 (936.7, 956.7), and 923.2 (943.2, 963.2) (m), and 923.5 (943.5, 963.5) (f).

NOTE: Road related activities in this THP will comply with the requirements of the California Water Quality Control Board(CWQCB) Order R1-2010-0044 (Waste Discharge Requirements for Discharges Related to Road Management and Maintenance Activities conducted pursuant to GDRCo's AHCP).

Forest management related activities in this THP will comply with the requirements of the CWQCB Order R1-2012-0087 (Waste Discharge Requirements for Discharges Related to GDRCO's Forest Management Activities Conducted

Within The Area Covered By Its AHCP). A discussion of the orders is located in Section III, Item #25 of the THP, and a copy of the orders are on file at the Cal Fire Santa Rosa, and Fortuna offices.

Erosion control measures in this plan shall meet or exceed the measures contained in 14CCR 916.7 for the reduction of soil loss.

Within WLPZs (RMZs) adjacent to Class I and II waters, and EEZs, areas where bare mineral soil exceeding (100) continuous square feet in size, exposed by timber operations, shall be treated for reduction of soil loss. Treatment shall be done prior to October 15th except that such bare areas created after October 15th shall be so treated prior to the end of logging operations, or within 10 days, whichever ever comes first. Stabilization measures shall be included and explained in the THP or other required notices. Stabilization measures shall be selected that will prevent significant movement of soil into Class I and II waters and may include, but need not be limited to, mulching, rip-rapping, grass seeding, or chemical soil stabilizers.

- a. This section does not apply to the traveled surface of logging roads. Erosion control measures on road surfaces are specified in 14CCR 923.
- b. Where mineral soil has been exposed by timber operations on approaches to watercourse crossings of Class I or II waters, or Class III waters if an EEZ or WLPZ (RMZ) is required, the disturbed area shall be stabilized to the extent necessary to prevent the discharge of soil into watercourses or lakes in amounts deleterious to the quality and beneficial uses of water.
- c. Where necessary to protect beneficial uses of water from timber operations, protection measures, such as seeding, mulching, or replanting, shall be specified to retain and improve the natural ability of the ground cover within the standard width of the WLPZ (RMZ) to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.

Soil Stabilization Measures: Soil stabilization, as required by 14 CCR 916.7, 923.2(m), 923.5(f)(4), and 923.8(b) will be accomplished by seeding, mulching, rip-rapping or removal of soil. When seeding and/or mulching is the method chosen for stabilization, the minimum standards for seeding and mulching operations are 30 pounds per acre of seed and a minimum mulching depth of 2 inches, covering at least 90% of the exposed surface area. The 2 inch mulching depth shall be measured at the time of application.

NOTE: Green Diamond Resource Company and the California Department of Fish and Game have developed procedures and mitigations designed to further reduce the potential for ground based or cable yarding operations conducted between Oct. 15th and June 1st of any year to cause a significant adverse impact to aquatic habitats that support anadromous salmonid populations. Refer to item #23 for all procedures addressed. The procedures listed below apply directly to soil stabilization measures within WLPZs. These procedures are intended to augment, not replace, the rules and mitigation provided above.

- From October 15 to *June 1* Green Diamond shall treat with seed, mulch, or slash [per Procedure 5) in Item (3) of the Winter Operating Plan], all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within all Class I and Class II WLPZs(RMZs), and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ), by the end of the working day. Application of erosion control materials beyond Class I or Class II WLPZ/(RMZ) widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery. (Note: This procedure is not intended to be implemented within the 25-50 foot wide special operating zone bordering Class I WLPZs(RMZs) associated with even aged management prescriptions).
- From October 15 to *June 1*, prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or Green Diamond seed mix), and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"- 4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 25 pounds per acre equivalent Green Diamond seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"-4" straw mulch.

**** NOTE:** If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

Additional Soil Stabilization Measures:

1. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the roadbed which has access to a watercourse or lake which is protected by WLPZ will be treated to reduce soil erosion. 923.2(m)
2. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and which has access to a watercourse or lake will be treated to adequately reduce soil erosion. 923.5(f)(4). GDRCo will also comply with AHCP section 6.2.3.7.6. which states that *On side slopes greater than 50%, Green Diamond will seed, plant, mulch, remove or treat sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake to minimize soil erosion.* GDRCo will comply with the rule that provides the greater protection.
3. Overhanging or unstable concentrations of slash, woody debris and soil along the downslope edge of landings shall be removed or stabilized when they are on slopes over 65%, or on slopes over 50% within 100 feet of a WLPZ (RMZ). 923.5(f)(1)
4. Landings shall be sloped or ditched to prevent water from accumulating on the landings. Discharge points shall be located and designed to reduce erosion. 923.5(f)(3).
5. *Where sections of skyline road upslope of WLPZs (RMZs) or EEZs have created furrowing of the ground which can channelize surface flow and result in gullyng and possible delivery of sediments into or through the WLPZ (RMZ) or EEZ, those affected areas will be treated with the installation of one hand-built waterbar per 50 lineal feet of affected skyline road, except in areas of known erodible soil types and on formations or slopes greater than 65%, where waterbars will be placed after a linear disturbance distance of 30 feet and the spacing between waterbars thereafter will be 20 feet. AHCP 6.2.4.8.2*
6. *Cable Logging Suspension: Green Diamond will fully suspend logs above the ground when cable yarding across Class I and II RMZs, and to the extent practicable when cable yarding across Class III EEZs AHCP 6.2.4.8.1.*

Yes No Within the THP area are there seasonal dirt road watercourse crossings that are within 1) 1000' of a Class I watercourse where coho are present? 2) the Mather, McKinleyville, McKay, Salmon/SF Elk River, Rio Dell, or Carlotta tract? 3) a coho planning watershed that has been identified as containing highly erodible soils at the crossing? If yes, then describe mitigation measures to be used at the approach to watercourse crossings to create and maintain a stable operating surface and minimize the generation of fine sediment.

Yes No Are Tractor, Skidder or Forwarder operations proposed?

In addition to Forest Practice Rules related to soil stabilization and erosion control, Green Diamond's road maintenance and inspection program, discussed in Section V of the addendum, will be implemented on this THP area and on Green Diamond's property within the watershed assessment area.

Erosion Control Facilities (Waterbreaks):

1. 14 CCR 914.6 (a): except as otherwise provided for in the rules: (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations. (2) Installation of drainage facilities and structures is required from October 15 to November 15 and from April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.
2. 14 CCR 914.6 (b): Waterbreaks shall be constructed concurrently with the construction of firebreaks and immediately upon conclusion of use of tractor roads, roads, layouts, and landings which do not have permanent and adequate drainage facilities, or drainage structures.

3. 14 CCR 914.6 (c): Distances between waterbreaks shall not exceed the following standards:

MAXIMUM DISTANCE BETWEEN WATERBREAKS

Estimated Hazard Rating	U.S. Equivalent Measure Road or Trail Gradient (in percent)				Metric Measure Road or Trail Gradient (in percent)			
	10 or less	11-25	26-50	>50	10 or less	11-25	26-50	>50
	Feet	Feet	Feet	Feet	Meters	Meters	Meters	Meters
Extreme	100	75	50	50	30.48	22.86	15.24	15.24
High	150	100	75	50	45.72	30.48	22.35	15.24
Moderate	200	150	100	75	60.96	45.72	30.48	22.35
Low	300	200	150	100	91.44	60.96	45.72	30.48

The appropriate waterbreak spacing shall be based upon the erosion hazard rating and road or trail gradient.

GEOLOGY:

Consulting the Kilbourne, 1985 Korb 7 1/2 minute quad Geology and Geomorphic Features Related to Landsliding revealed a large mapped Dormant Earthflow. Unit B is completely within this mapped feature. Unit A is immediately adjacent to upper extent of the mapped feature. A previous THP which overlaps Unit A of this THP (1-01-311Hum) disclosed a small unstable feature in a meadow. This feature was not opeated on within the previous THP and is outside the proposed boundary of Unit A of this THP. The CLFA "guide to Determining the Need for Input from a Licensed Geologist during THP Preparation" methodology was used during the layout of the THP. Additionally GDRCo Staff geologists reviewed the layout of Harvest Unit B in the field. No active unstable features were identified within the THP project area.

- 19. Yes No Are tractor or skidder constructed layouts to be used? If yes, specify the location and extent of use:
- 20. Yes No Will ground based equipment be used within the area(s) designated for cable yarding? If yes, specify the location and for what purpose the equipment will be used? See 14 CCR 914.3 (934.3, 954.3) (e).
- 21. Within the THP area will ground based equipment be used on:
 - a) Yes No Unstable soils or slide areas? Only allowed if unavoidable.
 - b) Yes No Slopes over 65%?
 - c) Yes No Slopes over 50% with high or extreme EHR?
 - d) Yes No Slopes between 50% and 65% with moderate EHR where heavy equipment use will not be restricted to the limits described in 14 CCR 914 (934,954).2(f)(2)(i) or (ii)?
 - e) Yes No Slopes over 50% which lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake?

If a. is yes provide site specific measures to minimize effect of operations on slope stability below. Provide explanation and justification in Section III as required per 14 CCR 914 (934, 954).2(d). CDF requests the RPF consider flagging tractor road locations if "a." is yes.

If b., c., d. or e. is yes:

- 1) The location of tractor roads must be flagged on the ground prior to the PHI or start of operations if a PHI is not required, and
- 2) you must clearly explain the proposed exception and justify why the standard rule is not feasible or would not comply with 914 (934, 954).

The location of heavy equipment operation on unstable areas or any use beyond the limitations of the standard rules must be shown on the map. List specific instructions to the LTO below.

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Ground Based Equipment Operations:

Yes No Will tractors, skidders, or forwarders be used for yarding operations.

Yes No Will shovel loaders and/or feller bunchers be used for falling or yarding operations.

Shovel and Feller Buncher Operations: See GDRCo guidelines for Shovel Logging and Feller Bunchers in Section III. These general guidelines are not considered operational limitations so they are included in Section III of the plan.

Ground based equipment operations shall be subject to the limitations set forth for tractors in 14 CCR 914.2(f).

22. Yes No Are any alternative practices to the standard harvesting or erosion control rules proposed for this plan? If yes, provide all the information as required by 14 CCR 914 (934,954).9 in Section III. List specific instructions to the LTO below. N/A

WINTER OPERATIONS

23. a. Yes No Will timber operations occur during the winter period? If yes, complete "b, c, or d." State in space provided if exempt because yarding method will be cable, helicopter, or balloon.
- b. Yes No Will mechanical site preparation be conducted during the winter period. If yes, complete "d".
- c. I choose the in-lieu option as allowed in 14 CCR 914 (934, 954).7(c). Specify below the procedures Listed in subsections (1) and (2), and list the site specific measures for operations in the WLPZ and unstable areas as required by subsection (3), if there will be no winter operations in these areas, so state.
- d. I choose to prepare a winter operating plan per 14 CCR 914 (934, 954).7 (b).

NOTE:

- This winter period timber operating plan is being included to meet the requirements of 14 CCR 914.7(b) but includes additional measures for GDRCo's AHCP.

Winter Operating Plan:

In compliance with Green Diamond's AHCP the winter period for this plan is defined as the period from October 16th through May 14th. This is a longer time period than the winter period defined in 14CCR 895.1 which goes from November 15th to April 1. References to the "Winter Period" in this plan refers to the longer period as defined in the AHCP.

Timber falling may occur at any time during the winter period. Yarding and hauling may be implemented at any time during the winter period if haul roads and landings associated with harvesting operations are in accordance with the restrictions contained in items 7 and 10 of this winter period plan.

- 1) Erosion Hazard Ratings are discussed in Section II, Item #17 and shown on the THP Silviculture Map in Section II. Erosion hazard ratings for this plan are low and moderate.
- 2) Mechanical site preparation may be used to pile slash to improve planting conditions, reduce fire hazards or concentrate slash for burning. Mechanical site preparation, if required, will be done with a shovel loader or excavator and limited to areas of ground based operations. Use of mechanical site preparation methods will be limited to the period beginning May 15th and ending October 15th. Mechanized slash piling with shovel logging (Helms, 1998) equipment may be conducted concurrent with shovel harvesting operations during the winter period, subject to all limitations under Section 6.2.4.7 and items (a) and (b) below.

(a) Site preparation operations with shovel logging equipment are limited to slopes averaging less than 30% gradient.

(b) Shovel logging equipment will operate on a slash surface during site preparation operations.

AHCP 6.2.4.2.3 (2): Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th. AHP 6.2.4.2.7 (1)

- 3) The types of yarding equipment which may be used on this plan, are discussed in Section II Item #16 and shown on the attached plan maps. The following types of equipment may be used with their associated limitations:

Feller-buncher and Loader "shovel" yarding (no skid trail construction) – Where appurtenant haul roads are not surfaced for all weather conditions or do not have appropriate drainage facilities, or when the operation involves use of constructed skid trails for skidding and forwarding, Green Diamond will not carry out feller-buncher or shovel logging operations during the winter period. In accordance with the restrictions contained in items 7 and 10 of this winter period plan, feller buncher harvesting and shovel yarding may occur at any time during the winter period on this plan. The equipment used in these operations is based on hydraulic excavators. These machines have wide track undercarriages with sufficient surface area to limit ground pressure to the point that there is little potential for soil compaction and disturbance. Other constraints inherent in the design and operation of this machinery are:

- They operate on top of slash and debris, not in prepared bare soil skid trails.
- Their design limits operation to mild or moderate slopes.

All winter period feller-buncher and shovel yarding operations shall be subject to the following constraints:

- Haul roads used to access such operations must be surfaced for all weather conditions, with appropriate drainage facilities installed.
- Entrances and exits to the operating unit that are used by equipment for daily refueling shall be rocked or treated with slash to prevent rutting and to avoid generating sediment that might be transported to a ditch during rainfall. If a road drainage ditch must be crossed to access the operating area, a minimum 12 inch diameter culvert shall be installed, if necessary to protect the integrity of the ditch and ensure that any potential impact from the operation is disconnected from ditches and watercourses.
- Operations will be limited to areas with slopes that average less than 35%.
- Feller-buncher and shovel logging operations will cease during storm events where logging operations, combined with significant rainfall, are likely to cause delivery of sediments in WLPZs (RMZs) or EEZs along Class I, II or III watercourses. AHCP 6.2.4.7 In addition, prior to operations resuming after a storm, a Green Diamond supervisor shall assess soil moisture conditions on the site and determine that it is appropriate to resume operations.
- Only wide track (low ground pressure) equipment will be used and this equipment will operate only on slash and duff (operating on bare soil is prohibited).

Green Diamond has demonstrated that, with strict adherence to the above constraints, this type of operation can be conducted during the winter period while protecting water quality, soil stability, and road integrity.

Cable Yarding - In accordance with the restrictions contained in items 7 and 10 of this winter period plan, cable yarding may occur at any time during the winter period on this plan.

The following procedures and mitigations were developed and designed to further reduce the potential for ground based and cable yarding operations (during the period from Oct. 15th to June 1st of any year) to cause a significant adverse impact to aquatic habitats that support anadromous salmonid populations. These procedures are intended to augment the Forest Practice Rules and not replace any current regulations. It is to be understood that the following collaborative operating procedures developed by GDRCo and the California Department of Fish and Game covers a time period exceeding the defined FPA Winter Operating Period (895.1) for cable and ground based yarding operations.

Green Diamond Resource Company and Department of Fish and Game Procedures for Ground Based and Cable Yarding Operations between October 15 and June 1

The ground based and cable yarding operations procedures described below are a result of collaborative discussions between the California Department of Fish and Game (Department), and GDRCo. These procedures are mitigation measures designed to reduce the potential for direct and indirect adverse impacts to aquatic habitats that support anadromous salmonid populations as a result of otherwise lawful timber harvesting operations.

The following apply to all timber operations on Green Diamond lands. These procedures are pursuant to the California Forest Practice Rules (FPRs), Title 14, California Code of Regulations, Chapter 4 (14 CCR), Sections 895.1, 914, 914.2(c), 914.2(i), 914.3(e), 914.6, 914.7(c)(1), 914.7(c)(3), 914.8, 914.9, 916.2, 916.3, 916.4(b), 916.4(c), 916.5, 916.7, 923, and 1038. The procedures do not replace the Revised Final Rule Language for Protection for Threatened and Impaired Watersheds, 2000.

The specific goals of these procedures are to:

- a. feasibly reduce sediment delivery to watercourses and filter strip areas resulting from yarding operations,
- b. permit Green Diamond yarding flexibility during the period October 15 to June 1 while feasibly preventing yarding related adverse sediment and/or turbidity impacts to receiving waters in threatened and impaired watersheds,
- c. provide a basis for adaptive management to assist the Department, Green Diamond, Department of Forestry and Fire Protection, National Marine Fisheries Service, Regional Water Quality Control Board, Department of Mines and Geology, and others in determining watershed specific and site-specific variations on these procedures which achieve equal or better protection for anadromous fish resources,
- d. determine the limits of effectiveness which may be achieved by these yarding procedures.

These procedures reflect the level of risk related to yarding operations between October 15 and June 1 the Department is currently willing to accept on the behalf of anadromous salmonids, including federally-listed threatened (FT) and state-candidate coho salmon (*Oncorhynchus kisutch*) (coho), FT chinook salmon (*Oncorhynchus tshawytscha*) (chinook), and federal-candidate threatened steelhead (*Oncorhynchus mykiss*) (steelhead) in accordance with the Department's public trust responsibility.

The Department is concerned regarding sediment and/or turbidity increases in Class I, Class II and Class III watercourses and drainage facilities leading into them. The Department's concerns include, but are not limited to, potential adverse impacts during critical life history stages for anadromous salmonids and their habitat, including: spawning, incubation of eggs, emergence from redds, juvenile survival in low flow rearing habitat, juvenile overwintering, and smoltification/out migration. The Department and Green Diamond believe timber management-related sediment increases in anadromous fish habitat can degrade habitat conditions during some or all anadromous fish life history stages.

Adverse effects associated with increased fine sediment in salmonid habitat are well documented (see, for example, review by Hicks et al. 1991) and include the following:

- a. complete redd failure or reduced survival of eggs to hatching and emergence,
- b. reduced or eliminated spawning substrates,
- c. reduced rearing space area and complexity due to infilling of pools,

- d. chronic turbidity and,
- e. a reduction in the production of aquatic benthic macroinvertebrates and algae due to substrate coating with fines or partial to complete burial of cobble/gravel substrates.

The Department recognizes the difficulty associated with completely eliminating sediment discharges to watercourses during and following timber operations, regardless of the time of year they are conducted. However, the Department and Green Diamond agree that potential yarding related sediment impacts to watercourses may be further feasibly reduced through additional efforts to eliminate channelized runoff resulting from timber operations. The Department and Green Diamond further recognize runoff cannot be completely prevented from leaving harvest units and associated roads, landings, and ditches as channelized flow. However, both the Department and Green Diamond agree the application of the measures within this agreement will further minimize sediment impacts to watercourses associated with ground based and cable yarding between October 15 and June 1.

Procedures

- a. Yarding operations or runoff from yarding operations during the period October 15 to June 1 shall not result in a visible increase in turbidity in watercourses or hydrologically connected facilities (e.g. ditches, landings, roads) which discharge into watercourses.
- b. Cable yarding which achieves the least amount of ground disturbance shall be used to the maximum extent feasible. Ground based yarding operations shall use minimal ground disturbing equipment (e.g. tracked shovel loaders) without bladed skid trail construction or reconstruction to the maximum extent feasible. Where this is not feasible, yarding operations from October 15 to June 1 shall be limited to skid trails for ground-based equipment or cable yarding roads (cable corridors) which are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II, or III watercourses. The intent is to have no or minimal skid trail construction or reconstruction near any watercourse, and no channelized flow resulting from timber operations or facilities reaching Class I, II, or III watercourses or hydrologically connected ditches.
- c. Construction and use of skid trails from October 15 to June 1 shall not occur within at least 100 feet, slope distance, of the upper extent (e.g. top or head) of any designated Class II watercourse, and on slopes greater than 30% within at least 100 feet of Class III watercourses. (Note: Long-line yarding or lifting logs with a shovel loader from outside this zone is permitted as long as the skid trails are hydrologically disconnected, as in Procedure 2). The intent is to minimize the amount of ground disturbance created by tractor operations near watercourses between October 15 and June 1. (note: no construction or use of skid trails is proposed in this plan during the winter period.)
- d. From October 15 to June 1 Green Diamond shall treat with seed, mulch, or slash (per Procedure 5), all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within at least the first (nearest) 100 feet slope distance (above the watercourse) of all Class I Watercourses, within Class II WLPZs(RMZs), and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ) by the end of the working day. Application of erosion control materials beyond 100 feet slope distance of Class I watercourses, Class II WLPZ widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery. (Note: This procedure is not intended to be implemented within the 25-50 foot wide special operating zone bordering Class I WLPZs(RMZs) associated with even aged management prescriptions).
- e. From October 15 to June 1 prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or Green Diamond seed mix), and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"- 4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 25 pounds per acre equivalent Green Diamond seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"-4" straw mulch.

**** Note.** If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

Sources Cited:

Hicks, B.J., J.D. Hall, P.A. Bisson, and J.R. Sedell. 1991. Responses of salmonids to habitat changes. Pages 483-518 in W.R. Meehan, ed. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19.

- 4) This winter operating plan cover the winter operating period from *October 16 to May 14*. See *Table I* for summary of timing for various operations during the winter and non-winter periods.
- 5) **Erosion Control Timing:**
923.2(q) Drainage facilities on roads shall be in place and functional by October 15. An exception is that waterbreaks do not need to be constructed on roads in use after October 15 provided that all such waterbreaks are installed prior to the start of rain that generates overland flow.

Timing of Waterbreaks on Roads, Landings and Skid Trails:

As per 914.6 the following standards are applicable to the construction of waterbreaks:

- (a) except as otherwise provided for in the rules:
- (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operation. *This measure will apply to GDRCo's AHCP winter period from October 16th to May 14th. An exception to this rule applies to roads and landings in use during an "unseasonably dry fall" October 16th through November 15th or "early spring drying" May 1st through May 14th, as defined by the AHCP. Installation of drainage structures during these exception periods will follow the measures stated below in 14CCR 923.2(q).*
 - (2) Installations of drainage facilities and structures is required from October 15th to November 15th and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.
- (b) Waterbreaks shall be constructed concurrently with the construction of firebreaks and immediately upon conclusion of use of tractor roads, roads, layouts, and landings which do not have permanent and adequate drainage facilities, or drainage structures.

Erosion Control Timing for Felling, Yarding and Loading Operations and Road Construction:

Measures Common to All Felling, Yarding, and Loading Operations

Any bare mineral soil exposure, greater than 100 square feet in WLPZs(RMZs) or EEZs that is caused by logging activities, will be mulched and seeded or treated by other means prior the end of logging operations or prior to October 15, whichever comes first. Seeding will be at a rate of at least 30 pounds per acre and mulching to a depth of at least 2 inches (before settling) with 90% surface coverage. AHCP 6.2.4.4

Construction of Features (New Road and Landing Construction)

1. *All watercourse crossings and cross drains will be installed and functional prior to October 15th.*
2. *By October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse AHCP 6.2.3.8.3.*

Seeding and Mulching (New Road and Landing Construction)

Prior to the beginning of the first winter period following construction, Green Diamond will seed all new cut and fill slopes on roads constructed within an (RMZ) or EEZ of a Class I, II, or III watercourse at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage. AHCP 6.2.3.8.4

Refer to the erosion control measures for road and landing construction in Item#24. Erosion control timing is also discussed in Section II Item #18.

- 6) The predominant form of precipitation within this plan is rain. Minor amounts of contributing precipitation are also found in fog drip, and occasional frozen forms including sleet, hail, and snow.

- 7) **Ground Conditions:** The following restrictions shall apply to wet weather ground conditions:

Road and Landing Use Limitations (AHCP 6.2.3.10)

Turbidity Restrictions

1. Green Diamond will cease log hauling, road decommissioning, road upgrading, road construction, and use of landings when the use of any portion of a road or landing results in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse.
2. Use of roads for log hauling, road decommissioning, road upgrading, road construction, and use of landings, will not resume until the road surface has dried sufficiently to allow use without resulting in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse. This criterion will apply any time of year (including during summer storms) AHCP 6.2.3.10.1.

Surfacing for Roads and Landings

1. Green Diamond will not use roads during the winter period for hauling (logs and rock) unless they have surfacing specifications of a minimum compacted depth of 12 inches of rock.
2. Only rock that is durable and does not break down with vehicle or heavy equipment use will be applied to road surfaces.
3. During the winter period, Green Diamond will not use vehicles on roads for administrative purposes unless the roads have rock applied as needed to prevent runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface which drains into a Class I, II, or III watercourse. AHCP 6.2.3.5.10 Note exception in AHCP 6.2.3.10.4 in part 10 of winter plan for exceptions.

Saturated soil conditions, as defined in 14 CCR 895.1 means:

That soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur.

Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.

Stable Operating Surface as defined in 14 CCR 895.1 means:

A road or landing surface that can support vehicular traffic and has a structurally sound road base appropriate for the type, intensity and timing of intended use.

- 8) **Silvicultural systems** are discussed in Item #14 Sections II & III and shown on the attached plan map. Operational limits are discussed in (3) & (7) above. This plan includes the clearcut and selection silvicultural methods.

- 9) **Operations within WLPZs (RMZs):**

Management-related Ground Disturbance Treatment

1. Any ground disturbance caused by management activities that is larger than 100 square feet within a WLPZ (RMZ) will be mulched and seeded or otherwise treated to reduce the potential for sediment delivery from sheet and gully erosion.
2. Minimum standards for seeding and mulching operations are 30 pounds per acre of seed and a minimum mulching depth of two inches, covering at least 90% of the surface area. AHCP 6.2.1.2.7
3. Hand-constructed firelines (established by removing the duff and litter layers to expose, but not disturb, the mineral soil) will not be subject to the 100-square foot ground disturbance standard, but other measures will be applied as necessary to ensure that hand-constructed firelines within a Class I WLPZ (RMZ) do not deliver sediment to Class I watercourses.

Landings on Roads within WLPZs (RMZs)

1. Green Diamond will not use landings on roads (including roadside decking) within WLPZs (RMZs) from October 16th through May 14th.
2. Ditchlines and drainage facilities associated with existing roads within WLPZs (RMZs) that are used for landings or roadside decking during the summer period will be repaired immediately following completion of operations and prior to October 16th.
3. Any proposed use of existing landings and roads within a WLPZ (RMZ) will be discussed and mapped in THPs AHCP 6.2.3.10.5.

- Timber falling in WLPZs (*RMZs*) will comply with 14CCR 916.3(b). The following site specific mitigation measures already incorporated in the plan for timber operations associated with WLPZs (*RMZs*) are designed to protect the downstream beneficial uses of water and include:
 - Limited timber harvesting within Class II WLPZs(*RMZs*)
 - Enhanced canopy retention on Class II WLPZs(*RMZs*)
 - Road maintenance and inspection program.
 - No heavy equipment within WLPZs (*RMZs*).
 - Winter period equipment restrictions discussed in (3)&(7) above.
 - Where there is reasonable expectation that slash, debris, soil or other material resulting from operations, falling or associated activities, will be deposited on Class II waters below the watercourse transition line, those activities shall be deferred until equipment is available for its removal or another procedure and schedule for completion of corrective work is approved by the director.
 - Accidental depositions of soil or other debris below the watercourse transition line in waters classed as I, II or IV shall be removed immediately after the deposition or as approved by the director.

10) Equipment use limitations

Road and Landing Use Limitations

Turbidity Restrictions

1. Green Diamond will cease log hauling, road decommissioning, road upgrading, road construction, and use of landings when the use of any portion of a road or landing results in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse.
2. Use of roads for log hauling, road decommissioning, road upgrading, road construction, and use of landings, will not resume until the road surface has dried sufficiently to allow use without resulting in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse. This criterion will apply any time of year (including during summer storms) AHCP 6.2.3.10.1.

Seasonal Restrictions

1. Green Diamond will carry out hauling or loading during the winter period only on rocked surfaces.
2. Hauling and loading will be allowed on unsurfaced roads from May 1st through May 14th if "early spring drying" occurs or from October 16th through November 15th if an "extended dry fall" occurs. AHCP 6.2.3.10.2

ATVs and Vehicular Use of Seasonal Roads

1. Green Diamond will use only ATVs on unsurfaced seasonal roads during the winter period.
2. Other vehicular use of seasonal roads will be allowed from May 1st through May 14th if "early spring drying" occurs, or from October 16th through November 15th if an "extended dry fall" occurs.
3. Any damage caused to drainage or erosion control structures by using ATVs on any road will be repaired immediately following damage.
4. Exceptions for seasonal road use during the winter period for management include fire control vehicles for site preparation burning, pickup access for transportation of monitoring supplies and equipment, and pickup trucks and vans for transportation of seedlings and reforestation crews. Upon completion of each specified activity all drainage facilities will be returned to the condition prior to road use or brought up to a condition where they are functioning properly. AHCP 6.2.3.10.4

Road Maintenance:

1. Green Diamond may carry out patch (spot) rocking, brushing, cleaning inlets and outlets of culverts, cleaning ditches where poor drainage is occurring, repairing or maintaining existing waterbars, replacement of a failed or imminently failing culvert along a needed access road, and site specific road surface grading for maintaining the integrity of the road surface year-round, including during the winter period.
2. Grading will not be used to blade off wet soil to provide conditions for extended periods of operation on a deteriorated road surface. AHCP 6.2.3.9.2

6.2.3.11 (Emergency Road Repair and Unscheduled Road Maintenance Repairs on Seasonal Roads)

If there is an imminent threat to life, property, or public safety, or a potential for a massive sediment input with catastrophic environmental consequences, and the appropriate emergency response action is otherwise prohibited by this Section of this Plan, Green Diamond will notify the Services' designated contacts, but a formal notification will not be required prior to response actions being taken.

During winter road inspections, GDRCo may discover a condition on a seasonal road that is causing or may cause environmental impacts, in the form of sediment delivery to Class I, II, or III watercourses. GDRCo will apply all the guidelines listed below to determine if the maintenance problem can be remedied during the winter period.

The environmental impact of accessing the site with appropriate equipment and conducting the repairs during the winter period is less than the potential environmental impact of delaying the repair until the summer period.

Repairs, including installation of erosion control devices, can be accomplished in one day.

The equipment used to repair the site will not cause deformation that causes rutting and loss of integrity of the road surface at the repair site and along the road accessing the repair site.

All needed erosion control devices are in place and functional upon completion of maintenance repairs at the repair site itself, and along the seasonal road used to access the repair site. This includes pre-existing devices on the seasonal access road and devices installed as part of the repair. At least once during the remainder of the winter period, GDRCo will assess the installed erosion control devices for effectiveness and repair/replace materials as necessary and feasible.

The smallest equipment necessary to complete the job will be used (e.g. mini excavator, small backhoe, grader, etc.).

No rain forecasted for the next 24 hours.

Also refer to the operational restrictions in Table 1.

11) Unstable Areas:

There were no active unstable features identified within the THP project area.

TABLE 1: TIMING AND LIMITATIONS FOR VARIOUS THP RELATED ACTIVITIES*

Winter Period Oct 16 – May 14

ACTIVITY	Summer Period	Winter Period with Unseasonably Dry Fall	Core Winter Period	Winter Period with Early Spring Drying
	May 15 – Oct 15	Oct 16 – Nov 15	Nov 16 – April 30	May 1 – May 14
YARDING				
Cable and Helicopter	Yes	Yes	Yes	Yes
Ground Base Feller Buncher and Shovel:	Yes	Yes	Yes ⁽⁴⁾	Yes
Ground Base: Tractor, Skidder, Forwarder	Yes	Yes ⁽⁴⁾	None	Yes ⁽⁴⁾
ROADS				
Road & Landing Construction	Yes	None	None	None
Road Decommissioning	Yes	Yes ^(1,3)	None	None
Road Upgrading	Yes	Yes ^(1,3)	None	Yes ⁽²⁾
Hauling and Loading	Yes	Yes	Yes	Yes
On Permanent Rocked Roads	Yes	Yes	Yes	Yes
On Unsurfaced Roads	Yes	Yes ⁽¹⁾	None	Yes ⁽²⁾
Use of Helicopter Landings	Yes	Yes	Yes	Yes
Use of Landings and Roadside Decking in RMZs	Yes ⁽⁵⁾	None	None	None
Mechanized Site Preparation	Yes	Yes If ⁽⁶⁾	Yes If ⁽⁶⁾	Yes If ⁽⁶⁾
Skid Trail Construction & Reconstruction	Yes	None	None	None
Vehicle Use of Unsurfaced Roads	Yes	Yes ⁽¹⁾	ATV's only	Yes ⁽²⁾

Notes:

1. "Unseasonably Dry Fall" Period from Oct 16th to Nov 15th when less than 4" of cumulative rainfall*** occurs from Sept 1 through Oct 15". Activity will cease when cumulative rainfall reaches 4" between Oct 16th and Nov 15th.
2. "Early Spring Drying" defined as no measurable rainfall has occurred within the last 5 days and no rainfall is forecast by the Natl. Weather Service for the next 5 days. No installation or replacement of Class I watercourse crossings, or watercourse crossings where significant flows prevent effective diversion around the work site. Erosion control supplies on site and installed by the end of each operational day.
3. Each project site can be completed that operational day with erosion control structures installed, or if site requires multiple days for completion, a long range Natl. Weather Service forecast of no rain for the next 5 days has been issued.
4. Activity is conditioned on the use of procedures and limitations specified in the Section II for tractor operations, if applicable.
5. Ditch lines and drainage facilities associated with existing roads within RMZs that are used for landings or roadside decking during the summer period will be repaired immediately following completion of operations and prior to October 16. Any proposed use of existing landings and roads within an RMZ will be discussed and mapped in THPs.
6. Mechanized slash piling with shovel logging equipment (on slopes averaging less than 30% and if operating on slash) may be conducted concurrent with shovel harvesting operations during the winter period, subject to all limitations under AHCP 6.2.4.7

* Time Schedules and Limitations in this table are derived from Green Diamond's Aquatic Habitat Conservation Plan (AHCP). Additional limitations may also apply as noted throughout Section II of the plan.

** Within the THP area on seasonal dirt road watercourse crossings that are within 1) 1000' of a Class I watercourse where coho are present? 2) the Mather, McKinleyville, McKay, Salmon/SF Elk River, Rio Dell, or Carlotta tract? 3) a coho planning watershed that has been identified as containing highly erodible soils at the crossing will have mitigation measures applied at the approach to watercourse crossings to create and maintain a stable operating surface, and minimize the generation of fine sediment.

*** To track the cumulative rainfall and insure compliance with the AHCP regarding a potential "dry fall", GDRCo used a variety of weather stations that are distributed across the AHCP area. The following RAWS and NSW/FAA weather stations were used to monitor the rainfall: Crescent City (Jack McNamara Field), Gasquet California, Yurok California, School House California, Westside California, Kneeland, Hoopa, Big Hill, and Arcata Airport. Each weather station is tracked independently and the conditions that occur at each of these sites are extrapolated only to specific geographic locations, integrating localized conditions such as orographic effect. In 2007, the cumulative rainfall from September 1 through October 15 at most of these sites equaled or exceeded 4 inches and therefore GDRCo did not extend the summer season beyond October 15 in any part of the AHCP area. GDRCo is also working with Humboldt State University on a cooperative project to install an addition four weather stations within the experimental watersheds. These data along with existing RAWS and NSW/FAA stations will be available "live" to GDRCo employees and the general public to monitor current weather conditions.

ROADS AND LANDINGS

24. Will any roads be constructed? Yes No, or reconstructed? Yes No. If yes, check items "a." through "g."
 Will any landings be constructed? Yes No, or reconstructed? Yes No. If yes, check items "h." through "k."
- a. Yes No Will new or reconstructed roads be wider than single lane with turnouts?
 - b. Yes No Are logging roads or landings proposed in areas of unstable soils or known slide-prone areas?
 - c. Yes No Will new roads exceed a grade of 15% or have pitches of up to 20% for distances greater than 500 feet? Map must identify any new or reconstructed road segments that exceed an average 15% grade for over 200 feet. [See Item 24(c)]
 - d. Yes No Are roads to be constructed or reconstructed, other than crossings, within the WLPZ (RMZ) of a watercourse? If yes, completion of THP item 27a. will satisfy required documentation.
 - e. Yes No Will roads be located across more than 100 feet in length be located on slopes over 65%, or on slopes over 50% which are within 100 feet of the boundary of a WLPZ?
 - f. Yes No Will any roads or watercourse crossings be abandoned? [See Item 24(f)]
 - g. Yes No Are exceptions proposed for flagging or otherwise identifying the location of roads to be constructed?
 - h. Yes No Will any landings exceed one half acre in size? If any landing exceeds one quarter acre in size or requires substantial excavation the location must be shown on the map.
 - i. Yes No Are any landings proposed in areas of unstable soils or known slide prone areas?
 - j. Yes No Will any landings be located on slopes over 65% or on slopes over 50% which are within 100 feet of the boundary of a WLPZ? (RMZ)
 - k. Yes No Will any landings be abandoned? [See Item 24(k)]
 - l. Yes No **Road Daylighting**

25. If any section "in item 24" is answered yes, specify site-specific measures to reduce adverse impacts and list any additional or special information needed by the LTO concerning the construction, maintenance and/or abandonment of roads or landings as required by 14 CCR Article 12. Include required explanation and justification in THP Section III.

Yes No **Are there other approved Timber Harvest Plans on Green Diamond Resource Co property that share appurtenant roads with the proposed Timber Harvest Plan?**
 If yes list those plans. Green Diamond Resource Co shall not submit a final completion report on this proposed Timber Harvest Plan until these listed plans have commenced operations. In the unique situation where one of these existing, listed plans will not be operated at all, the associated road work points on appurtenant roads, shared with this plan, shall be amended into this proposed plan and fixed in the time frame stipulated in the original plan (or site specific rationale for extending the repair date shall be provided and approved).

STATE ID
1-10-096

14CCR923.4(h) During timber operations, road running surfaces in the logging area shall be treated as necessary to prevent excessive loss of the road surface materials, including, but not limited to, rocking, watering, chemically treating, asphaltting or oiling.

24(a) Road Construction:

This plan includes approximately 1650 feet of proposed temporary road. There are three watercourse crossings associated with temporary road construction. Temporary roads will be abandoned prior to plan completion.

Refer to the "ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS" at the end of Section II.

Seasonal Restrictions for Road and Landing Construction:

Green Diamond will not construct or rock new roads during the winter period (October 16th through May 14th). AHCP 6.2.3.5.2

Construction of Features

1. All watercourse crossings and cross drains will be installed and functional prior to October 15th.

2. By October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse AHCP 6.2.3.8.3.

Seeding and Mulching (Road Construction)

Prior to the beginning of the first winter period following construction, Green Diamond will seed all new cut and fill slopes on roads constructed within a WLPZ(RMZ) or EEZ of Class I, II, or III watercourses at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage. AHCP 6.2.3.8.4

Soil Moisture Conditions (Road and Landing Construction)

Green Diamond will not construct roads when soil moisture conditions would result in:

1. Reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performances;
2. Inadequate traction without blading wet soil; or
3. Soil displacement in amounts that cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II, III or IV watercourse; except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs. AHCP 6.2.3.5.23 & 6.2.3.7.3

Within the AHCP area, all appurtenant dirt roads associated with this THP will be hydrologically disconnected during the life of the THP. This work will be done at the end of operations or prior to the onset of the winter period.

For both new road construction and existing road maintenance in areas where existing road bank cuts have exhibited failures and have the potential to deliver to a watercourse, GDRCo will implement the following measures to the extent feasible to prevent sediment discharges to watercourses: Hydrologically disconnecting the bank cut discharge from watercourses, buttressing, or other measures and by installing and maintaining effective erosion control materials. This work will be done at the end of operations or prior to the onset of the winter period.

Green Diamond will install additional ditch relief structures to adequately disconnect roads from watercourses and to meet the maximum spacing specifications of AHCP section 6.2.3.6.12 (AHCP Section 6.2.3.4.9)

24(C) Road Grade Exceeding 20-percent:

One section of each proposed temporary road within unit A has a grade in excess of 20%.

Approximately 425-feet of the 261204TA1 road has an proposed grade in excess of 20%. This section of road does not cross any watercourses. As it makes a switch before the MR 3690 junction the proposed grade is within 75-feet of a the RMZ and Tier A flagging, however there is a elevation divide between the two which will keep any drainage from the 261204TA1 from reaching this watercourse.

Approximately 75-feet of the proposed 261204TA2 road may have a grade in excess of 20%. This steep pitch is on the north approach of a Class III watercourse (RP 13). Disconnect structures shall be installed on both approaches to this watercourse to minimize sediment introduction into the watercourse. Both approaches shall be straw seed and mulched for a minimum of 50-feet prior to winter period year of use.

24(f&k) Road Abandonment Plan:

Approximately 2110 feet of existing seasonal road at the top of Unit A is proposed to be abandoned after use. In addition, there are 2 sections of proposed temporary road, totaling approximately 1650 feet within this plan that will be abandoned at completion of operations. There are three watercourse crossings associated with these two proposed temporary roads (261204TA2 and 261204TA2) which will be abandoned. Within Unit B there is approx. 315-feet of existing seasonal road to be abandoned. The following measures will be observed when abandoning roads:

As per 14 CCR 923.8: Temporary Road and Landing abandonment shall include the following measures:

- a. Abandoned road segments will be blocked so that standard production four wheel-drive highway vehicles cannot pass the point of closure at the time of abandonment. This will be done with the use of high dirt berms, drainage ditches, logs, trees, brush or pulled watercourse crossings.
- b. Stabilization of exposed soil on cuts, fills, or sidecast where deleterious quantities of eroded surface soils may be transported in a watercourse shall be stabilized as per Item 18 of this THP. Within WLPZs straw mulch will be applied to a depth of at least two inches and with 90% surface coverage.
- c. Grading or shaping of the road and landing surfaces to provide dispersal of water flow.
- d. Fills, sidecast and outside berms will be pulled where necessary to prevent discharge of material into watercourses due to the failure of cuts, fills or sidecast. Soil removed from outside berms and fills may be compacted against the road cut bank where feasible and shaped to fit the original slope contour, and to aid in outslipping. Where soil cannot be stabilized on site, it will be end-hauled to a stable location.
- e. Removal of watercourse crossings, other drainage structures and associated fills will be done in accordance with 14 CCR 923.3(d). Fills shall be excavated to form a channel which is as close as feasible to the natural watercourse grade and orientation and is wider than the natural channel. The excavated material and any resulting cut bank shall be sloped back from the channel and stabilized to prevent slumping and to minimize soil erosion. Exposed soils will be treated for soil stabilization in the amounts stated in Item #18.

Yes No Does this plan include decommissioning of seasonal or permanent roads?

As per 923.4(a) The erosion control maintenance period on permanent and seasonal roads and associated landings that are not abandoned in accordance with 14 CCR 923.8 shall be at least one year. The Director may prescribe a maintenance period extending up to three years in accordance with 14CCR 1050

For purposes of road maintenance requirements under 14 CCR 923.4, Green Diamond relies, in part, on the AHCP and programmatic approvals of DF&G and the North Coast Regional Water Quality Control Board. Further discussion of these agreements can be found in Section III Item #25, and copies of the agreements are on file with Cal Fire at the Santa Rosa and Fortuna offices.

During plan layout, a road inspection was conducted on roads appurtenant to this plan. Problems identified during the inspections have been documented and recommendations for their repair are provided in the attached road work table (AHCP 6.2.3.9.5 #1). The timing of this work is prioritized under the guidelines presented in the AHCP and programmatic agreements with DF&G and the NCRWQCB. If any of the identified sites prioritized as "Watch List" develop into an "Imminent Risk of Failure" condition, repair work will be carried out as soon as conditions and seasonal restrictions allow.

The road inspection assessed the following: (AHCP 6.2.3.9.5 #2)

- a. Adequate waterbar spacing, depth, and complete diversion of water flow onto undisturbed soil.
- b. Interception of the ditch line by ditch relief structures.
- c. Areas having poorly drained low spots or inadequately breached outside berms.
- d. That ditches are open and properly functioning, free of debris that could plug the ditch or a culvert and cause a diversion of water onto the road surface.
- e. Culverts are functioning properly (i.e., the culvert is not at risk of imminent failure, the culvert is not rusted out or separated at a joint; water is flowing through the pipe and not underneath; sediment and debris is not reducing the pipe capacity).
- f. Forest floor discharge sites below the outlets of drainage facilities for evidence of sediment delivery to Class I, Class II or Class III watercourses.

THP - Road Work Order

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MAY 17 2013

GDRCO # : 261204 THP Name : Ward Road 2014 Date Print : 5/17/2013						COAST AREA OFFICE RESOURCE MANAGEMENT
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
01	MR-3682	Seasonal	NO	NO	NO	
Current Condition: This site does not qualify as an Imminent Risk of Failure site. An abandoned Class II watercourse on the north edge of unit A appears stable and will not be used for operations, but will be monitored.			Required Work : Monitoring at this site will continue at least once a year through the life of the THP, then once every three years. No treatment is required at this time.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
02	MR-3682	Seasonal	NO	NO	NO	
Current Condition: This site does not qualify as an Imminent Risk of Failure site. An abandoned Class II watercourse near the north edge of unit A, appears stable and will not be used for operations, but will be monitored.			Required Work : Monitoring at this site will continue at least once a year through the life of the THP, then once every three years. No treatment is required at this time.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
02.1	MR-3682	Seasonal	YES	YES	YES	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site qualifies as an Imminent Risk of Failure site, but will not be treated until the year of use because it will be abandoned after use. An ephemeral Class III watercourse crossing with no drainage structure causes stream flow to divert down the inboard ditch approximately 75 feet south to a waterbar. There is no defined channel below the road, just a Class III wet area. There is to be no decking or loading along this stretch of road. GDRCO is proposing to use the road as it is, and abandon the crossing prior Winter Period of the year of use.			Required Work : If dry during operations use as is. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter). Excavate between the flagged top and bottom to construct a channel that drains the watercourse into the wet area below the road and abandon to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP prior to the winter period of the year of use.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
03	MR-3682	Seasonal	YES	YES	YES	Work will be completed prior to the Winter Period pending THP approval. If the approval date conflicts with seasonal road restrictions work will be completed the following year.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A legacy seasonal road alignment crosses a Class III watercourse with no drainage structure visible. There is a long, shallow sediment wedge upstream of the road and the watercourse channel is poorly defined in this area. A long excavation will be necessary to get the grade correct.			Required Work : Excavate between the flagged top and bottom including the sediment wedge and any buried woody debris. Install a 24 inch CMP that meets the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP. Rock armor may be necessary at the top of the excavation to minimize the potential for future head-cutting. Install a drainage facility on both approaches to hydrologically disconnect the watercourse from the road.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
04	MR-3682	Seasonal	YES	NO	YES	Prior to the Winter Period (Oct.16), unless 'Unseasonably Dry Fall conditions' are in effect (Oct.16 - Nov.15) of the year of use.
Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A seep on the cutbank of a road with no history of recent use runs across the road surface. The road is saturated, and runoff delivers to a Class III watercourse that begins immediately below the road.			Required Work : Install approximately 75 feet of inboard ditch on the south approach to an 18 inch ditch relief culvert, to be installed at the staked location, to convey water across the road.			

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GREEN DIAMOND
RESOURCE COMPANY

THP - Road Work Order

MAY 17 2013

COAST AREA OFFICE
RESOURCE MANAGEMENT

GDRCO # : 261204							
THP Name : Ward Road 2014							
Date Print : 5/17/2013							
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion	
				1600	ECP		
05	MR-3682	Seasonal	YES	YES	YES	Work will be completed prior to the Winter Period pending THP approval. If the approval date conflicts with seasonal road restrictions work will be completed the following year.	
<p>Current Condition: This site qualifies as an Imminent Risk of Failure site. A legacy seasonal road alignment crosses a Class II watercourse with no drainage structure visible. Water flows subsurface at a headcut near the top and reemerges at another headcut near the bottom. At high flows water runs over the road surface and diverts down a legacy skid road before making its way to the natural channel near the bottom. A long excavation will be necessary to get the grade correct.</p>						<p>Required Work : Excavate between the flagged top and bottom including the sediment wedge and any buried woody debris. Install a 48 inch CMP that meets the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP. Rock armor may be necessary at the top of the excavation to minimize the potential for future head-cutting.</p>	
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion	
				1600	ECP		
06	MR-3682	Seasonal	YES	YES	YES	Work will be completed prior to the Winter Period pending THP approval. If the approval date conflicts with seasonal road restrictions work will be completed the following year.	
<p>Current Condition: This site qualifies as an Imminent Risk of Failure site. A 30 inch CMP on a Class II watercourse has separated at the joints. The inlet is half buried and there is scour around the inlet indicating that the culvert is undersized and misaligned. A large sediment wedge has accumulated upstream of the road, and the culvert sits at a shallow gradient with a shotgunned outlet. Water bypasses the culvert, running subsurface on the sediment wedge, and emerges from below a completely rusted out 18 inch CMP that is lower in the fill and has a completely buried inlet. The outboard fill face has failed in the past, and there are cracks in the remaining fill.</p>						<p>Required Work : Excavate between the flagged top and bottom including the sediment wedge and any buried woody debris. Install a 48 inch CMP that meets the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP.</p>	
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion	
				1600	ECP		
07	MR-3690	Seasonal	YES	NO	YES	Prior to the Winter Period (Oct.16), unless 'Unseasonably Dry Fall conditions' are in effect (Oct.16 - Nov.15) of the year of use.	
<p>Current Condition: This site does not qualify as an Imminent Risk of Failure site. A class III watercourse runs across the road surface. The road is saturated, and runoff delivers to the watercourse channel below the road. The seasonal road shall be abandoned beyond RP 7 to THP and AHCP standards.</p>						<p>Required Work : If water is flowing at the time of operations, install a temporary drainage structure of adequate size to accommodate flow. Prior to the Winter Period, install a drainage facility to ensure drainage continues post abandonment at this location. Do not sidecast any material into or adjacent to the channel below the road. Seed and mulch exposed soils within 30-feet of both sides of the installed structure.</p>	
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion	
				1600	ECP		
08	MR-3690	Seasonal	YES	YES	YES	Prior to the Winter Period (Oct.16) of the year of use.	
<p>Current Condition: This site qualifies as an Imminent Risk of Failure site, but will not be treated until the year of use because it will be abandoned after use. An ephemeral Class III watercourse drains across a native surfaced road with a waterbar providing the only drainage.</p>						<p>Required Work : Use the crossing as it is, and then abandon the road to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP. If water is flowing at the time of operations, install a temporary drainage facility to accommodate flow (pipe minimum 6 inch diameter).</p>	

PART OF PLAN

28

THP - Road Work Order

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MAY 17 2013

GDRCO # : 261204
THP Name : Ward Road 2014
Date Print : 5/17/2013

COAST AREA OFFICE
RESOURCE MANAGEMENT

Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
09	MR-3690	Seasonal	YES	NO	YES	Prior to the Winter Period (Oct.16), unless 'Unseasonably Dry Fall conditions' are in effect (Oct.16 - Nov.15) of the year of use.

Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. Runoff from a soil pipe runs across the surface of a road with no history of recent use. The road is saturated, runoff is transported on the fill slope towards RP 8.

Required Work : If water is flowing at the time of operations, install a temporary drainage structure of adequate size to accommodate flow. Prior to the Winter Period, install a drainage facility to ensure drainage continues post abandonment at this location. Do not sidecast below the road at this location.

Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
10	Skid Trail	Temporary	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.

Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A skid trail crossing used previously in THP 1-01-311H crosses an ephemeral Class III watercourse and is proposed for reuse to access approximately 3/4 of an acre of clearcut. The crossing's current condition is stable and there is no active erosion or diversion at present.

Required Work : Use the skid trail as it is if water is not present during operations. If water is present install a functional drainage structure, either a Spittler or a minimum 6 inch diameter culvert. Abandon the crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP prior to the winter period of the year of use.

Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
11	MR-3690	Seasonal	YES	YES	YES	Prior to the Winter Period (Oct.16) of the year of use.

Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A previously abandoned Class II watercourse crossing was not excavated along the natural channel grade. There is a headcut near the lower end and approximately 15 cubic yards of unexcavated material still left in the channel. This site shares a common channel bottom with the adjacent Class III watercourse at Road Point 12. Temporary access through this site will be necessary for operations in Unit A.

Required Work : Install a temporary crossing to provide truck access for operations. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter). Excavate between the flagged top and bottom and abandon the crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP prior to the winter period of the year of use.

Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
12	MR-3690	Seasonal	YES	YES	YES	Prior to the Winter Period (Oct.16) of the year of use.

Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A previously abandoned Class III watercourse crossing was not excavated along the natural channel grade. There is a headcut near the lower end and approximately 10 cubic yards of unexcavated material still left in the channel. This site shares a common channel bottom with the adjacent Class II watercourse at Road Point 11. Temporary access through this site will be necessary for operations in Unit A.

Required Work : Install a temporary crossing to provide truck access for operations. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter). Excavate between the flagged top and bottom and abandon the crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP prior to the winter period of the year of use.

PART OF PLAN

THP - Road Work Order

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MAY 17 2013

COAST AREA OFFICE
RESOURCE MANAGEMENT

GDRCO # : 261204							PART OF PLAN	
THP Name : Ward Road 2014								
Date Print : 5/17/2013								
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion		
				1600	ECP			
13	261204TA1	Temporary	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.		
Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A temporary road is to be constructed across a Class III watercourse. The north approach to this crossing may be in excess of 20% grade.				Required Work : Install a temporary crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter). Abandon prior to winter period year of use. Install disconnect structures to adequately drain the north approach, maximum spacing of 25-feet. Seed and straw both approaches a minimum of 50-feet.				
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion		
				1600	ECP			
14	261204TA1	Temporary	YES	NO	NO	Prior to the Winter Period (Oct.16) of the year of use.		
Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A proposed seasonal road alignment lies within the EEZ upslope of a Class III watercourse. There is no watercourse crossing at this location.				Required Work : Do not sidecast any material into or adjacent to the channel below the road. Seed and mulch exposed soils within the EEZ.				
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion		
				1600	ECP			
15	261204TA1	Temporary	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.		
Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A temporary road is to be constructed across a Class III watercourse.				Required Work : Install a temporary crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP and abandon prior to the winter period of the year of use. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter).				
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion		
				1600	ECP			
16	261204TA1	Temporary	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.		
Current Condition: This site is an access issue and does not qualify as an Imminent Risk of Failure site. A temporary road is to be constructed across a Class III watercourse.				Required Work : Install a temporary crossing to the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP and abandon prior to the winter period of the year of use. If water is flowing at the time of operations, install a temporary drainage pipe of adequate size to accommodate flow (minimum 6 inch diameter).				
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion		
				1600	ECP			
17	MR-3690	Seasonal	YES	YES	YES	Work will be completed prior to the Winter Period pending THP approval. If the approval date conflicts with seasonal road restrictions work will be completed the following year.		
Current Condition: This site qualifies as an Imminent Risk of Failure site. An ephemeral Class III watercourse drains across the native road surface at an angle with a waterbar providing the only drainage.				Required Work : Excavate between the flagged top and bottom including any buried woody debris. Install a 24 inch CMP that meets the standards of the FPRs and GDRCo AHCP guidelines as described in Section II of this THP.				

THP - Road Work Order

GDRCO # : 261204						
THP Name : Ward Road 2014						
Date Print : 5/17/2013						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
18	MR-3680	Seasonal	YES	NO	NO	Work will be completed prior to the Winter Period pending THP approval. If the approval date conflicts with seasonal road restrictions work will be completed the following year.
Current Condition: This site does not qualify as an "Imminent Risk of Failure" site. A 42" culvert has been partially crushed near the inlet by fill-slope armor reducing capacity by approximately 20%. The culvert is approximately 20% filled with rocks, further reducing the capacity of the pipe. The culvert appears sound otherwise and there are no indications that the capacity of the culvert has been exceeded. The critical dip drains onto the outboard fill face. An inside ditch on the northern approach through the through-cut is downcutting.			Required Work : Install a drainage structure at the top of the through cut at flagged location. Rock the inside ditch through the through cut to the class II channel. Inslope the critical dip over the crossing to minimize the potential for erosion on the outboard fill face. Jack open the dented part of the culvert, if possible, and monitor. Monitoring at this site will continue at least once a year through the life of the THP, then once every three years.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				1600	ECP	
G-1	261204TA1	Temporary	NO	NO	NO	Prior to the Winter Period (Oct.16), unless 'Unseasonably Dry Fall conditions' are in effect (Oct.16 - Nov.15) of the year of use.
Current Condition: Proposed temporary road construction crosses a point of interest of CGS observed on PHI approximately 40-feet in length. It was concluded that this section of constructed road should not be abandoned with any added fill in order to maintain current stability in this location.			Required Work : If fill is required during construction of road at flagged location, it must be removed during abandonment prior to winter period year of use. A marker shall be placed prior to added fill to ensure all placed fill in this location is removed.			

RECEIVED
MAY 17 2013
COAST AREA OFFICE
RESOURCE MANAGEMENT

PART OF PLAN

31

REVISED:5/10/04
GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION
AND STREAM CROSSING INSTALLATION SPECIFICATIONS
(Korbel Operations)

The following road construction specifications were developed for company and contract road construction sides as general guidelines only. When questions arise that are not addressed in these guidelines the RPF should be contacted for clarification prior to continuing the project. The California Forest Practice Rules will be closely adhered to during all phases of the road construction process, and a copy of the Timber Harvest Plan will be on site at all times. A copy of the engineer's report should be used to obtain specific road location, road gradient, and culvert sizing information.

I. RIGHT-OF-WAY AND PIONEERING

1. Clearing limits will normally range from 75' to 100'.
2. All trees over 12 inches within 5 feet of the cut slope upper limit will be cleared.
3. Slash and other debris from road construction will not be incorporated into the road prism, fills or sidecast material. When feasible slash and debris will be placed parallel to the toe of road fill slopes as a filter windrow. Slash will not be bunched against residual trees or placed in locations where it may gain entry into Class I, II, or III watercourses.
4. Large redwood stumps and rocks that will be at least 12 inches below sub-grade can be left in place, but second growth redwood and all fir stumps must be removed to prevent slumps in road when material rots.
5. On slopes greater than 35 percent, the organic layer of the soil shall be substantially removed prior to fill placement.

II. EXCAVATION AND CONSTRUCTION

1. Minimum road width specifications will be:
 - a) Permanent Road - 16' wide running surface plus inside ditch and occasional turnout.
 - b) Seasonal Road (Rocked) - 14' wide running surface plus inside ditch.
 - c) Seasonal Road (Dirt) - 14' wide running surface, outsloped, with rolling dips, occasional turnout.
 - d) Temporary Road - 12' wide running surface. Typically outsloped, rolling dips, not rocked.

See attached typical cross section diagrams

2. Greater road widths will only be allowed to satisfy requirements of alignment, safety and equipment. Curves will be widened to an additional width based on the following table:

100 feet + radius	+ 3 feet
75 – 100 feet radius	+ 5 feet
50 – 74 feet radius	+ 8 feet

3. Final grades shall not exceed 15 percent except where specified or approved by Green Diamond. Breaks in grade are not to exceed 4 percent per 200 feet of road length except where the grade may change from plus to minus or vice-versa; the intent being to create long rolls in the grade.
4. All overhanging cut slopes will be removed.
5. Cut slope ratio will vary based on steepness of sideslope and soil characteristics, see attached cross section diagrams.
6. For areas requiring "end-haul" or some degree of "waste management" (hill slopes greater than 65 percent, locations where sidecast could directly enter stream channels, areas designated in the THP or Engineering Report) excess material shall be deposited in a safe, stable location where downstream beneficial uses of water will not be adversely affected. Waste material will be seeded and mulched prior to the onset of winter.
7. On slopes greater than 50 percent, fills greater than 4 feet in vertical height at the outside shoulder of the road shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade.
8. Adequate compaction will be provided for all fill materials during road construction and all fills are to be constructed in one foot lifts.
9. Fills, including through fills across watercourses, shall be constructed in a manner to minimize erosion using techniques such as insloping, berms, rock armoring of fill slopes or other suitable methods specified in the engineering report.

10. Crowned road prisms with inboard ditch will generally be used on Permanent and Seasonal Roads that are to be rocked. Where these roads cross watercourses, the road prism shall have a gradual transition to an insloped vertical curve as the road approaches and leaves the crossing (Critical Dip). Minimum cross drain frequency will be based on the attached table.
11. If road rocking is designated as part of the project, a minimum compacted depth of 12" (pit run) is specified unless otherwise indicated.
12. An out-sloped road prism will generally be used for dirt Seasonal and Temporary Roads. Rolling dips will be incorporated into the road prism at a frequency based on the above mentioned table. A combination of dips and waterbars may be necessary to meet Forest Practice Rules. When rolling dips or culvert installation is not feasible waterbars will be installed at a spacing that is appropriate to prevent water accumulation and erosion along the road surface.
13. Turnouts will be placed at reasonable intervals along the alignment and will be located where a minimum of excavation will be required to increase the road width. A standard design for a turnout is presented with the typical cross section diagrams.
14. No road construction shall occur under saturated soil conditions, except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs. During any period of intense or prolonged rainfall, road construction earthwork will be halted and erosion control measures installed.

III. DRAINAGE STRUCTURES

1. Locations and size of culverts will be shown on plans or designated by Green Diamond.
2. Permanent watercourse crossings, road approaches and associated fills shall be constructed to prevent the potential diversion of stream overflows down the road and to minimize fill erosion should the drainage structure become obstructed (Critical Dip or other appropriate measures).
3. Necessary erosion protection measures will be installed concurrently with the fill at all culvert watercourse crossings.
4. All watercourse crossings will be aligned with the natural grade and course of the stream. An exception to this would be a crossing requiring a small culvert but with extensive fill. In this case contact the RPF or appropriate GDRCO representative.
5. Culverts will be filled in with soil under haunches with a shovel or other means taking care to leave no voids. Culverts will be compacted as they are backfilled.
6. When designated inlets and outlets of culvert stream crossings will be protected from erosion with rock rip rap or other suitable measures. The erosion protection will extend at least 1 foot above the expected head and tail water elevations at the culvert. All bare soil on fill slopes at the culvert crossing will be seeded and/or mulched to prevent erosion and promote renegotiation.
7. No culvert shall be allowed to discharge on erodible material. When downspouts are used, they will be adequately secured to the culvert and they will be supported at intervals along their entire length.
8. Ditches will be V-shaped, have a minimum grade of 2%, and be approximately 1 foot deep relative to the subgrade. Ditches will be excavated into the road subgrade and not undercut the road cut slope. The ditch alignment should be pulled away from the cut slope to provide storage room for hillslope ravel, slumps and protection of ditch conveyance capability.
9. Ditch relief culverts will be installed at intervals based on the attached spacing chart
10. Ditch drains will normally consist of culverts with a minimum size of 18 inches.
11. For new construction ditch drains will discharge prior to an existing watercourse where needed to prevent sediment input into Class I and II streams and onto stable landforms with adequate energy dissipation and sediment filtering capacity. Outlets onto areas prone to gullyng, slumping or land-sliding will be avoided
12. Ditch drains will have a grade which is at least 2 percent greater than a contributing ditch to prevent ponding and to ensure that they are self cleaning.
13. In general, steeper road grades (>12%) will utilize cross drains, and more moderate grades will utilize rolling dips.

IV. LANDING CONSTRUCTION

Landings will be constructed to the minimum width, size and number consistent with the yarding and landing systems to be used. Landing size and location will be designated by Green Diamond.

1. No landing construction shall occur under saturated soil conditions.
2. No fill or sidecast shall be placed on slopes greater than 65 percent.

3. On slopes greater than 50 percent, fills greater than 4 feet in vertical height at the outside shoulder of the landings shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade.
4. Waste organic material such as uprooted stumps, cull logs, accumulation of limbs and branches, or un-merchantable trees will not be buried in landing fills. Slash and other organic debris may be placed and stabilized at the toe of landing fills to restrain excavated soil from moving downslope.
5. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake shall be seeded, planted, mulched, removed, or treated to adequately reduce soil erosion.
6. Landings shall be sloped (approximately 2%) to prevent water from accumulating on the landings. Concentrated flows should not be channeled over fills and should only be discharged onto stable soil. Discharge points will be located on stable landforms and adequate erosion protection and energy dissipation will be employed.

V. EROSION CONTROL

1. Appropriate erosion control measures will be utilized to minimize erosion and prevent sediments from entering watercourses during all construction activities. Erosion control measures to be utilized will include minimizing disturbed areas, road surfacing, dispersing runoff into vegetated filter areas, armoring with rock rip rap and revegetating disturbed surfaces as soon as practical.
2. Where construction activities are conducted in close proximity of watercourses, additional erosion control protection measures will be utilized to trap sediments and prevent their entry into the watercourse. As required, slash filter windrow, silt fences, mulching and straw bale check dams will be used to control runoff over fill slopes and along concentrated runoff flow paths. Temporary sediment retention ponds may be constructed.

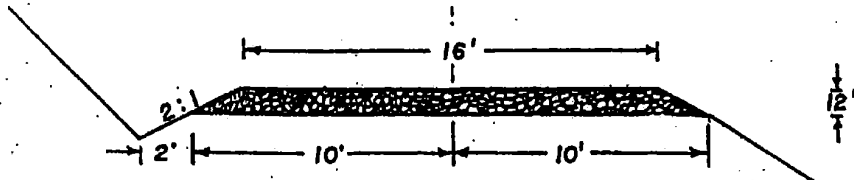
VI. REVEGETATION

Prior to the first winter period following construction, all new cut and fill slopes on road construction within the WLPZ of Class I or II watercourse shall be seeded and mulched.

**GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

PERMANENT ROAD

TYPICAL CROSS SECTION



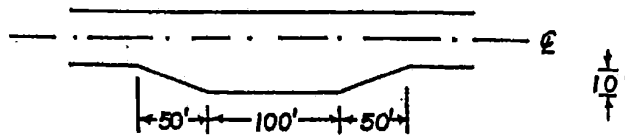
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
 3/4 : 1
 1/2 : 1
 vertical

Side Slope
 10-30%
 30 - 50%
 50 + % (or sand, rock)

Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

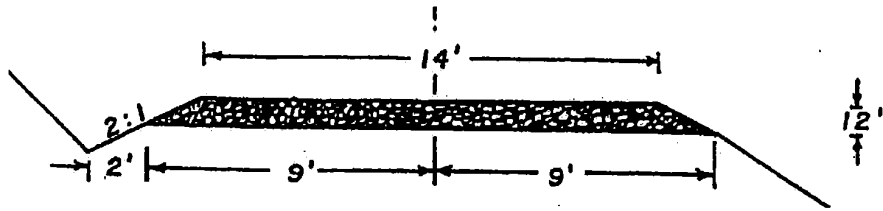
TYPICAL TURNOUT PLAN



**GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

SEASONAL ROAD

TYPICAL CROSS SECTION



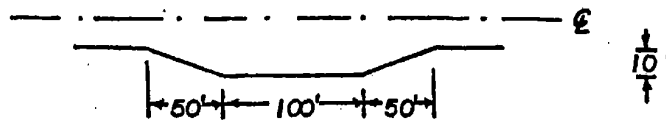
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
¾ : 1
¾ : 1
vertical

Side Slope
10-30%
30 - 50%
50 + % (or sand, rock)

Road in solid
centerline to ditch
load carrying portion (4' outside centerline to ditch)
entire subgrade full bench

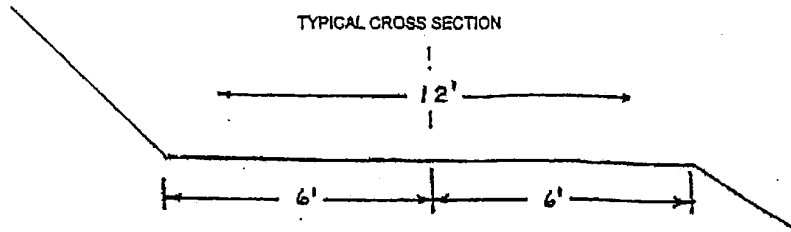
TYPICAL TURNOUT PLAN



**GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

TEMPORARY ROAD

TYPICAL CROSS SECTION



Temporary roads will generally not be rocked. Outsloping of road surfaces may be incorporated where appropriate.

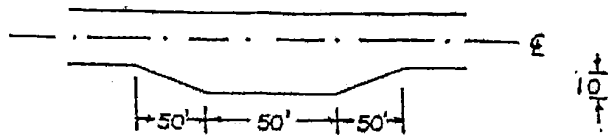
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
 $\frac{3}{4} : 1$
 $\frac{1}{2} : 1$
 vertical

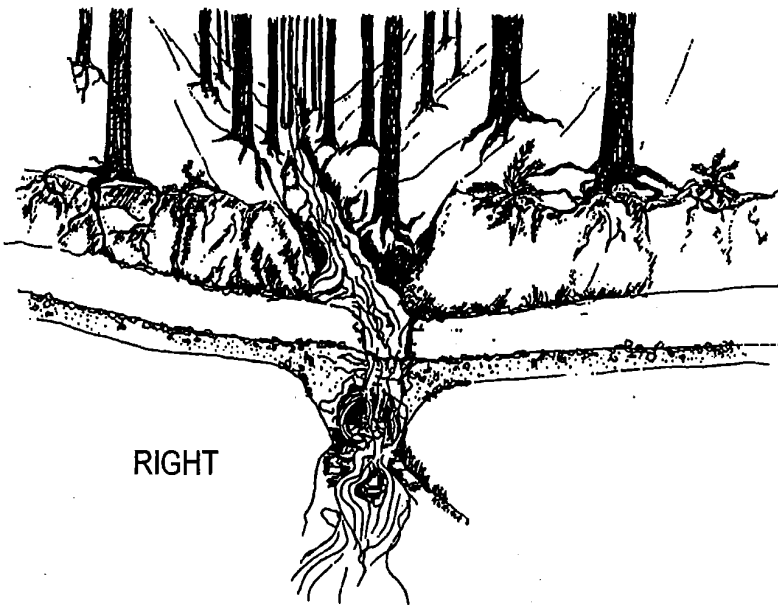
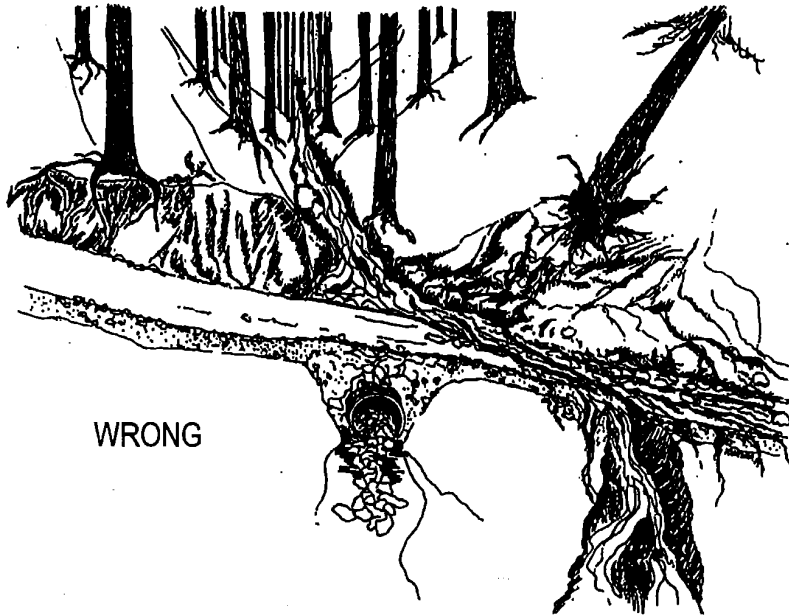
Side Slope
 10 - 30%
 30 - 50%
 50 + % (or sand, rock)

Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

TYPICAL TURNOUT PLAN

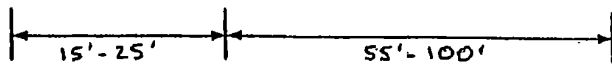
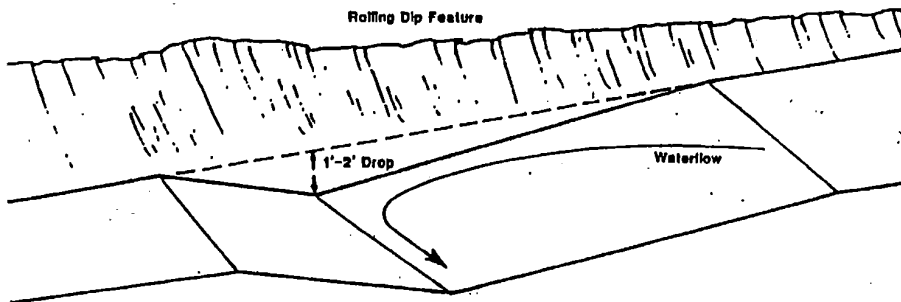
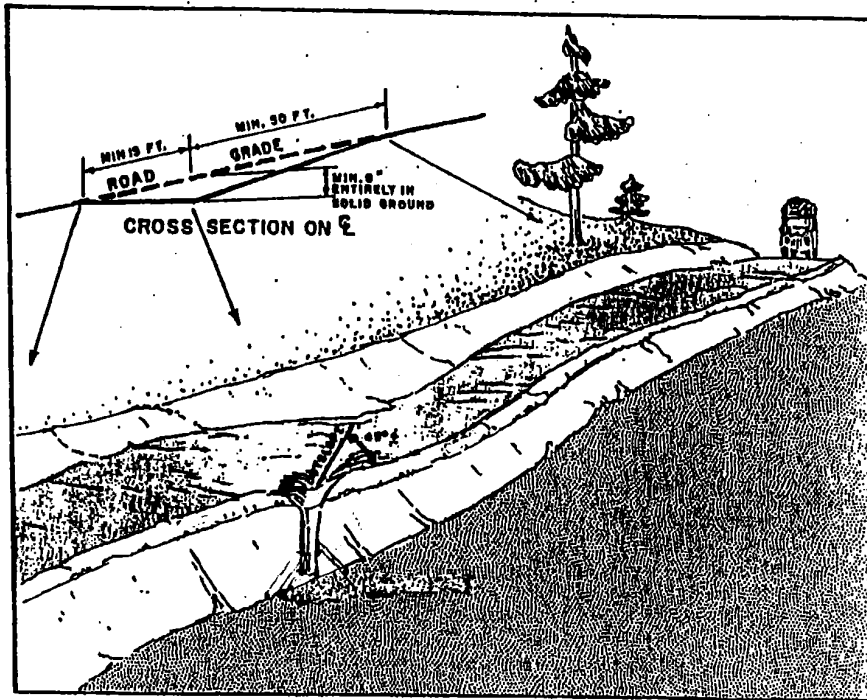


CRITICAL DIP

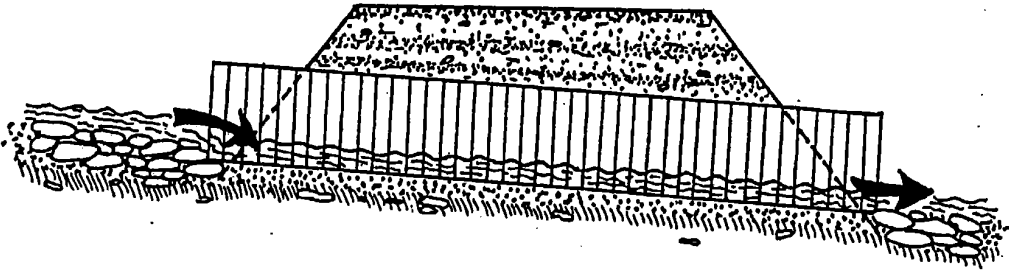


Maximum suggested spacing for ditch relief culverts and/or rolling dip installations (in feet)				
Road grade (%)	Soil erodibility (Erosion Hazard Rating)			
	Extreme	High	Moderate	Low
2	600-800			
4	530	600-800		
6	355	585	600-800	
8	265	425	525	600-800
10	210	340	420	555
12	180	285	350	460
14	155	245	300	365
16	135	215	270	345
18	115	190	240	310

TYPICAL DRAINAGE DIP INSTALLATION

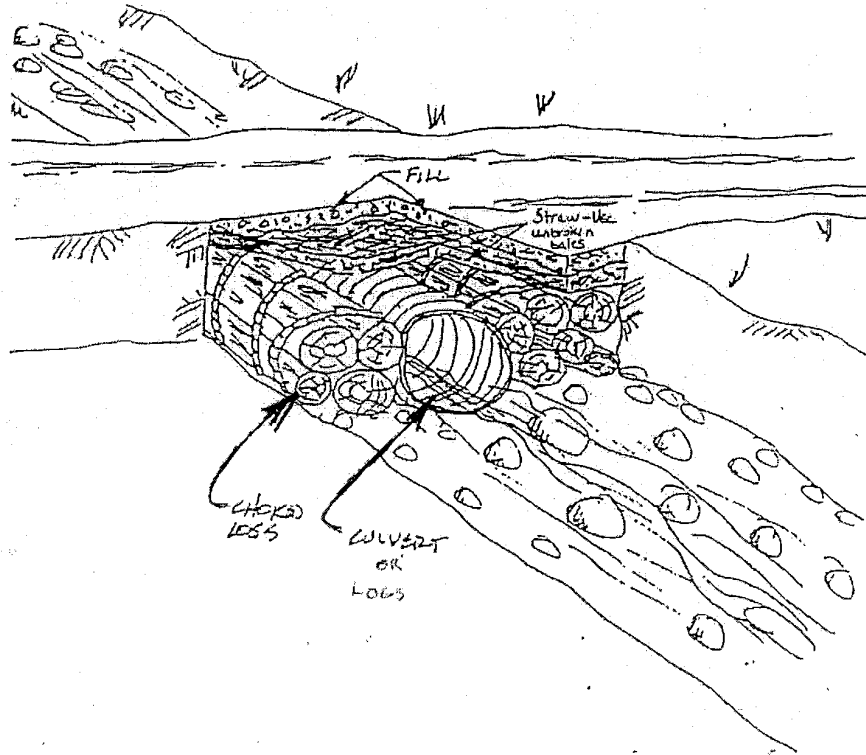


TYPICAL WATERCOURSE CROSSING CULVERT INSTALLATION



The culvert should be aligned with the natural stream channel, and set slightly below the original stream grade. Armoring of inlet and/or outlet will be assessed on an individual basis, (refer to THP and engineer report).

TYPICAL TEMPORARY ROAD CROSSING
(SPITTLER CROSSING)



WATERCOURSE AND LAKE PROTECTION ZONE (WLPZ) AND DOMESTIC WATER SUPPLY PROTECTION MEASURES:

Watercourse and Lake Protection measures for this plan include measures contained in Green Diamond's Aquatic Habitat Conservation Plan (AHCP). For this THP, the term "RMZ" (Riparian Management Zone) is listed along with WLPZ in the plan to show the relationship to Green Diamond's Aquatic Habitat Conservation Plan. RMZs serve the same function as WLPZs, and provide protection that meets or exceeds the standard FPRs for WLPZs in accordance with 14CCR 916.9(y). This practice is not considered to be an in-lieu practice. The classification of waters is based on their beneficial uses as defined by the FPRs.

- 26. a. Yes No Are there any watercourse or lakes which contain Class I through IV waters on or adjacent to the plan area? If yes, list the class, WLPZ or ELZ width, and protective measures determined from Table I and/or 14 CCR 916 (936,956).4 (c) of the WLPZ rules for each watercourse. Specify if Class III or IV watercourses have WLPZ, ELZ or both
- b. Yes No Are there any watercourse crossings that require mapping per 14 CCR 1034 (x)(7)?
- c. Yes No Will tractor road watercourse crossings involve the use of a culvert? If yes state minimum diameter and length for each culvert (may be shown on map). **See RP 10.**
- d. Yes No Is this THP Review Process to be used to meet Department of Fish and Game CEQA review requirements? If yes, attach the 1603 Addendum below or at the end of this Section II; provide the background information and analysis in Section III; list instructions for LTO below for the installation, protection measures, and mitigation measures; as per THP Form Instructions or CDF Mass Mailing, 07/02/1999, "Fish and Game Code 1603 Agreements and THP Documentation".

The property wide Master Agreement for Timber Operations from Department of Fish and Game (MATO No. 1600-2010-0114-R-1) will be used to meet Department of Fish and Game CEQA review requirements. Further discussion on the MATO is located in Section III, Item#25. A copy of the agreement is on file with Cal Fire at the Santa Rosa, and Fortuna offices.

Water Drafting: Water drafting will be conducted under the procedures and standards described in the property wide Master Agreement for Timber Operations from Department of Fish and Game (MATO No. 1600-2010-0114-R-1). Explanation, and further discussion are located in Section III, Item#25. A copy of the agreement is on file with Cal Fire at the Santa Rosa, and Fortuna offices.

Item 26(a):

AHCP Hydrographic Planning Area (HPA) Group: Humboldt Bay Korbel Coastal Klamath Smith River

WLPZ (RMZ) widths are a function of Stream Class based on beneficial uses and associated slope gradient. WLPZ (RMZ) widths will be measured from the watercourse transition line. The average side slope was determined as per 14 CCR 916.5 (a)(3) measured from the watercourse transition line to a point 100 feet upslope.

Riparian Management Measures for (Class I) Watercourses:

- Yes No Does this plan contain Class I watercourses ?
- Yes No Does this plan contain a Class I Channel Migration Zone (CMZ) or Flood plain as defined by Green Diamond's AHCP?
- Yes No Does this plan propose salvage within the Class I WLPZ (RMZ) ?

Riparian Management Measures for (Class II) Watercourses:

Yes No Does this plan contain Class II watercourses?

Class II WLPZ(RMZ) Buffer Widths in accordance with Green Diamond's AHCP

Stream Order*	Description	Total WLPZ (RMZ) Width	Inner Zone Width	Outer Zone Width
II-1	Top 1000' of 1 st order Class II**	75 ft	30 ft	45 ft
II-2	Downstream from top 1000'	100 ft	30 ft	70 ft
II-2	2 nd Order Class II	100 ft	30 ft	70 ft
II-2	Within 200' of a Class I WLPZ (RMZ)	100 ft	30 ft	70 ft

* Class II stream order is based on Green Diamond AHCP guidelines as described in section 6.3.1.2. (Figure 6-2)
 ** First order Class II watercourses with sideslopes >50% with ground based operations, shall have a WLPZ(RMZ) of 100ft.

Class II WLPZ (RMZ) Width

1. Green Diamond will establish an WLPZ (RMZ) of at least 75 or 100 feet on each bank of all Class II watercourses.
2. A 75-foot minimum buffer will be used on the first 1,000 feet of 1st order Class II watercourses (Class II-1 watercourses). Downstream of this first 1000-foot section, the WLPZ (RMZ) will be expanded to at least 100 feet.
3. A 100-foot minimum buffer will be used on all 2nd order or larger Class II watercourses (Class II-2 watercourses).

For this THP the Class II WLPZ(RMZ) width varies from 75 to 100 feet based on stream order. The WLPZ (RMZ) protection measures proposed meet or exceed the minimum width and standard watercourse protection measures for Class II watercourses under 14CCR 916.5.

Inner and Outer Protection Zones:

Inner Zone WLPZ (RMZ) Width

Green Diamond will establish an inner zone within the WLPZ (RMZ), the width of which will be 30 feet measured from the first watercourse transition line. The WLPZ (RMZ) inner zone is not flagged. Canopy closure retention standards in the inner and outer (RMZ) zones will be determined by varying the mark of harvest trees. AHCP 6.2.1.3.1

Outer Zone WLPZ (RMZ) Width

Green Diamond will establish an outer zone of the (RMZ) within the (RMZ), which will extend the remaining 45 feet or 70 feet (depending on whether it is a Class II-1 watercourse or a Class II-2 watercourse, respectively). AHCP 6.2.1.3.2

Conservation Measures within Class II WLPZs (RMZs) AHCP 6.2.1.4

Overstory Canopy Closure

1. Green Diamond will retain at least 85% overstory canopy closure within the inner zone.
2. At least 70% overstory canopy closure will be retained within the outer zone. AHCP 6.2.1.4.1

Tree Falling for Safety Purposes

Trees may be felled within WLPZs (RMZs) to create cable yarding corridors as needed to ensure worker safety, subject to the canopy closure requirements set forth above. Such trees will be part of the harvest unit. AHCP 6.2.1.4.4

Equipment Exclusion Measures

The Class II WLPZ (RMZ) is an EEZ, except for a) existing roads and landings; b) construction of new spur roads to extend operations outside the (RMZ); c) road watercourse crossings; d) skid trail watercourse crossings; and e) designated skid trail intrusions. AHCP 6.2.1.4.5

Yes No Are any of the proposed exceptions listed above, that constitute a FPR in-lieu practice proposed for this plan?

Snag Retention

Green Diamond will retain all safe snags within the WLPZ (RMZ), and will fall unsafe snags and leave them onsite. AHCP 6.2.1.4.7

Yes No Does this plan propose salvage within the WLPZ (RMZ) ?

Yes No Does this plan propose the use of skid trails within the Class II WLPZ (RMZ) ?

Watercourse Protection Measures for Class II Watercourses

- **Surface Cover:** On all Class I, II & Class I restorable watercourses, at least 75% surface cover and undisturbed area shall be retained to act as a filter strip for raindrop energy dissipation and for wildlife habitat in accordance with 14 CCR 916.4 (b)(6).
- **Large Woody Debris Recruitment:** On Class I, II & Class I restorable watercourses at least 2 living conifers per acre at least 16 inches diameter breast high and 50 feet tall within 50 feet of the watercourse will be retained in accordance with 14 CCR 916.3(g).
- **WLPZ (RMZs) Identification:** WLPZs(RMZs) have been clearly identified on the ground by the RPF who prepared the plan, or the supervised designee, in accordance with the 1998 amendment of 14CCR 916.5 "A" and "B". All WLPZs(RMZs) will be flagged prior to the preharvest inspection.
- **Marking within WLPZs(RMZs):** Within Class I, II & Class I restorable WLPZs ((RMZ)s) marking of harvest trees will be done prior to the PreHarvest Inspection. Harvest trees are marked with blue paint. The mark shall include a base mark below the cut line of the harvest trees. 14CCR 916.5 D & E.
- As per 916.5(e)(G)&(I) The residual overstory canopy shall be composed of at least 25% of the existing overstory conifers.

Yes No Does this plan contain Steep Streamside Slopes (SSS) as defined by GDRCo's AHCP ?

For this THP, a Class II-2 associated SSS zone has been identified and flagged in Unit A. This feature does not extend beyond the flagged C11-2 boundary. The standard WLPZ(RMZ) flag line is flagged with Pink and Blue flagging. The outer boundary of the SSS zone is flagged with SSS ZONE printed on white with blue polka-dot flagging tied with Pink flagging. Harvest trees in the SSS zone are marked with blue paint and retention levels within the inner/outer bands are controlled by the marking.

Korbel HPA Steep Streamside Slopes are slopes (>65%) that extend up slope past the Inner zone and extend at least 100 feet along the watercourse.

Initial Default Slope Distance AHCP 6.2.2.1.2

Where steep streamside slopes have been identified within the THP area, Green Diamond will create a Steep Streamside Slope (SSS) zone with the following initial default maximum widths: See tables below.

SSS Outer and Inner Zone Distances AHCP 6.2.2.1.3

1. The SSS zone will be comprised of an inner zone (Riparian Slope Stability Management Zone [RSMZ](WLPZ)) and an outer zone (Slope Stability Management Zone [SMZ]).
2. The width of the RSMZ will be the same as the applicable WLPZ(RMZ) or end at a qualifying break in slope.
3. The width of the SMZ will be either the remainder of the distance to the default maximum SSS distance for that HPA or to a qualifying slope break, whichever is shorter. A qualifying break in slope is defined by the AHCP as a decline in slope gradient (below the specified minimum slope gradient for the given HPA) and of sufficient distance that it may be reasonably expected to impede sediment delivery to watercourses from shallow landslides originated above the slope break.

RSMZ Inner and Outer Zone Distances AHCP 6.2.2.1.4

1. The RSMZs will be comprised of an inner zone and an outer zone.

Default Prescriptions for SMZs AHCP 6.2.2.1.7

1. The silviculture prescription employed within SMZs will be single tree selection.
2. Even spacing of unharvested trees will be provided where the trees are available to allow it, and all hardwoods will be retained. All species and size classes represented in pretreatment stands will be represented post harvest where feasible.
3. If cable corridors through SMZs are necessary to conduct intermediate treatments (e.g., commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the

SMZs will be limited to cable corridors only. Any cable roads established in the SMZ as part of the intermediate treatment will, to the extent feasible, be reused during the even-aged entry in the adjacent stands.

Tree Falling for Safety and Cable Yarding AHCP 6.2.2.1.8

Green Diamond may fall trees within RSMZs and SMZs for worker safety and to create cable yarding corridors of up to 25 feet in width.

*SSS Protection Zone Widths for the Class I Watercourse
Slope Distance from the Watercourse Transition Line*

<i>Total SSS width</i>	<i>RSMZ(WLPZ) width</i>	<i>SMZ width</i>	<i>Inner Zone RSMZ</i>	<i>Outer Zone RSMZ</i>
<i>200ft</i>	<i>150 ft</i>	<i>50 ft</i>	<i>70ft</i>	<i>80ft</i>

Class II 2nd Order SSS Widths

	<i>RSMZ</i>	<i>RSMZ</i>	<i>SMZ</i>
	<i>Inner Zone</i>	<i>Outer Zone</i>	
<i>Class II-2; Korbelt HPA</i>	<i>0-30ft</i>	<i>30-100ft</i>	<i>100-200ft</i>
<i>>65% slope</i>			

Protection Measures:

- *SSS considerations (SSS flagging) may end at a Qualifying Slope Break as per AHCP*
- *Class I and II-2 RSMZ Inner zone- No Harvest*
- *Class I and II-2 RSMZ Outer zone- 85% overstory canopy retention*
- *Class I and II-2 SMZ- Single Tree Selection with even spacing and with all species and size classes represented. Retain all hardwoods.*

Watercourse protection Measures for (Class III) Watercourses:

Yes [] No Does this plan contain Class III watercourses?

Class III Protection Measures AHCP 6.2.1.5

Green Diamond will apply one of five tiers of protection measures within Class III watercourses (Tier A, Tier A (Modified), and Tier B). Protection measures are a function of stream class based on beneficial uses, associated slope percentage, and Hydrographic Planning Area (HPA) Group. The slope gradient was determined by measuring the average slope from the watercourse bank to a point 50 feet upslope. Tier A (Modified) mitigation measures will be applied to known areas of "soft" geology on GDRCo's ownership: 1) Mather tract, 2) McKinleyville tract, 3) McKay tract, 4) Salmon/ SF Elk River tract, 5) Rio Dell tract, and 6) Carlotta tract. These measures will also be applied to other GDRCo AHCP areas that possess highly erodible soils such as Tonnini's or Wildcat derived soils, or soil with similar properties that are derived from uplifted marine sediments, and that are composed primarily of sands or silts.

AHCP Hydrographic Planning Area (HPA) Group [] Humboldt Bay [X] Korbel [] Coastal Klamath [] Smith River

	Tier	Side slopes	EEZ Width	Tree Retention
Class III	Tier A	< 30%	30 ft	No
	Tier A	30%-60%	50 ft	No
	Tier A (Modified)	<30%	30 ft	Yes
	Tier A (Modified)	30%-60%	50 ft	Yes
	Tier B	> 60%	50 ft	Yes

Watercourses have been flagged in the field and AHCP classification is provided on the Topographic Map, THP Section II.

Class III EEZ Protection Measures: AHCP 6.2.1.6&7

Tier A

Equipment Exclusion Zone

Green Diamond will establish a 30-foot EEZ, except for a) existing roads; b) road watercourse crossings; c) skid trails; and d) skid trail watercourse crossings. 6.2.1.6.1 Where sideslopes average between 30% and 60%, the EEZ shall be expanded to 50 feet. Reference 916.4(c)(1).

LWD Retention

Green Diamond will retain all LWD on the ground (not including felled trees) within the EEZ. 6.2.1.6.2

Tier B

Equipment Exclusion Zone

Green Diamond will establish a 50-foot EEZ, except for a) existing roads; b) road watercourse crossings; c) skid trails; and d) skid trail watercourse crossings. 6.2.1.6.1

Hardwood Retention

Green Diamond will retain all hardwoods and nonmerchantable trees within the EEZ except where necessary to create cable corridors or for the safe felling of merchantable trees. AHCP 6.2.1.7.2

Conifer Retention

1. Green Diamond will retain conifers where they contribute to maintaining bank stability or if they are acting as a control point in the channel.
2. A minimum average of one conifer 15 inches dbh or greater per 50 feet of stream length within the EEZ will be retained. AHCP 6.2.1.7.4

LWD Retention

Green Diamond will retain all LWD on the ground (not including felled trees) within the EEZ. AHCP 6.2.1.7.5

Additional Protection Measures for Class III Watercourses:

- As per 14 CCR 914.1.(a): "To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses and lakes."
- If soil and debris are deposited during timber operations in a Class III watercourse, it will be treated in accordance with 14 CCR 916.4 (c)(3):
 "Soil deposited during timber operations in a Class III watercourse other than at a temporary crossing shall be removed and debris deposited during timber operations shall be removed or stabilized before the conclusion of timber operations, or before October 15. Temporary crossings shall be removed before the winter period, or as approved by the Director."

GENERAL WATERCOURSE PROTECTION (all watercourses):

14 CCR 916(b)(1)&(2). LTO protection of beneficial uses of riparian functions:

Protection of the quality and beneficial uses of water during the planning, review, and conduct of timber operations shall comply with all applicable legal requirements including those set forth in any applicable water quality control plan adopted or approved by the State Water Resources Control Board. At a minimum, the LTO shall not do either of the following during timber operations:

- (1) Place, discharge, or dispose of or deposit in such a manner as to permit to pass into the waters of the state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water;
- (2) Remove water, trees or large woody debris from a watercourse or lake, the adjacent riparian area, or the adjacent flood plain in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water.

▪ **Class III Channel Zone Tree Retention:**

Where a Class III watercourse is within 1000 feet of a Class I or Class II watercourse, the following criteria will be followed:

- Channel zone trees will be retained in Class III watercourses within Wildcat Group, Hookton and Falor Formations, Alluvium, Quaternary marine terraces or coastal plain sediments or in areas where the Class III channel exhibits inherent instabilities (e.g. bank sloughing, undercutting, other unstable slide features).
- Channel zone trees will be retained in Class III watercourses where the average channel gradient exceeds 35% and the average channel side slopes exceed 60%, 65% or 70% in the Humboldt Bay, Smith River and Korbek, and Coastal Klamath HPA Groups, respectively (see table below).

<u>HPA Group</u>	<u>HPAs</u>	<u>Side Slope Gradient</u>
Smith River	Smith River	Greater or equal to 65%
Coastal Klamath	Coastal Klamath Blue Creek	Greater or equal to 70%
Korbek	Mad River North Fork Mad River Little River Coastal Lagoons Redwood Creek Interior Klamath	Greater or equal to 65%
Humboldt Bay	Humboldt Bay Eel River	Greater or equal to 60%

Key Clarifications and points associated with channel zone tree retention:

- Channel zone trees to be retained will be non-redwood conifer and hardwoods. Redwood trees have a 90%+ resprout rate making their stump and root strength values approximately equal to a standing tree for purposes of channel and stream bank stability versus other conifers where the roots die after the tree stem is removed.
- For the same reasons that retaining Class III channel zone trees are not directly relevant to stream temperature issues, retention of channel zone trees will not significantly alter the woody debris recruitment to the channel due to the significant contribution of incidental logging slash generated during the timber harvest.
- Retention of Class III channel zone trees should not preclude the use of prescribed burning for purposes of fuels management. Where burning is deemed necessary, it is GDRCo's intent to prescribe low intensity cool burns. No ignition will occur within the Class III channels. An occasional channel zone tree could be damaged or killed during burning operations, but this will not be common practice and these trees will not be harvested.
- For purposes of clarity and common agreement, the following will be defined as a "Channel Zone Tree": A tree with its trunk or roots located within the channel or extending into the channel. Typically these trees serve the function as "control points" (retaining sediment and/or preventing channel head cutting) within the channel. When growing on the bank with roots extending into the channel, trees can also contribute to overall bank stability.

No Channel Zone Trees have been retained within this THP.

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Abandonment of Watercourse Crossings:

Abandonment of roads and watercourse crossings shall be planned and conducted in a manner which provides for permanent maintenance-free drainage, minimizes concentration of runoff, soil erosion and slope instability, prevents unnecessary damage to soil resources, promotes regeneration, and protects the quality and beneficial uses of water. The following measures from 14CCR 923.3(d) will be incorporated in this abandonment plan.

- Fills shall be excavated to form a channel which is as close as "feasible" to the natural watercourse grade and orientation and is wider than the natural channel.
- The excavated material and any resulting cut bank shall be sloped back from the channel and stabilized to prevent slumping and to minimize soil erosion. Stabilization may include straw mulching and grass seeding, or rip rapping with rock or large logs and chunks.
- Exposed soils will be treated for soil stabilization by mulching and grass seeding as stated in Item #18 of the THP.
- Excess soil and debris removed from crossings will be end-hauled to a stable location.
- Temporary watercourse crossings shall be removed by October 15th of the year they are installed.
- See specific instruction for each road point in Item 25 of section II in the THP..

As per 923.3(c): Drainage structures on watercourses that support fish shall allow for the unrestricted passage of all life stages of fish that may be present.

14 CCR 914.8(c), 923.3(c), 923.3(g): No new Class I watercourse crossings are proposed.

27. Are site specific practices proposed in-lieu of the following standard WLPZ practices?

- a. Yes No Prohibition of the construction or reconstruction of roads, construction or use of tractor roads or landings in Class I, II, III, or IV watercourses, WLPZs, marshes, wet meadows, and other wet areas except as follows:
 - (1) At prepared tractor road crossings.
 - (2) Crossings of Class III watercourses which are dry at time of timber operations.
 - (3) At existing road crossings.
 - (4) At new tractor and road crossings approved by Department of Fish and Game.
- b. Yes No Retention of non-commercial vegetation bordering and covering meadows and wet areas?
- c. Yes No Directional felling of trees within the WLPZ away from the watercourse or lake?
- d. Yes No Decrease of width(s) of the WLPZ(s)?
- e. Yes No Protection of watercourses which conduct class IV waters?
- f. Yes No Exclusion of heavy equipment from the WLPZ except as follows:
 - (1) At prepared tractor road crossings.
 - (2) Crossings of Class III watercourses which are dry at time of timber operations.
 - (3) At existing road crossings.
 - (4) At new tractor and road crossings approved by Department of Fish and Game.
- g. Yes No Establishment of ELZ for Class III watercourses unless sideslopes are <30% and EHR is low?
- h. Yes No Retention of at least 50% of the overstory canopy in the WLPZ?
- i. Yes No Retention of at least 50 % of the understory in the WLPZ?
- j. Yes No Are any additional in-lieu or any alternative practices proposed for watercourse or lake protection?

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NOTE: A yes answer to any of items a. through j. constitutes an in-lieu practice. If any item is answered yes, refer to 14 CCR 916 (936, 956).1 and address the following for each item checked yes:

1. The RPF shall state the standard rule,
2. Explain and describe each proposed practice;
3. Explain how the proposed practice differs from the standard practice;
4. The specific location where it shall be applied, see map requirements of 14 CCR 1034(x)(15) and (16);
5. Provide in THP Section III an explanation and justification as to how the protection provided is equal to the standard rule and provides for the protection of the beneficial uses of water per 14 CCR 916 (936, 956).1(a). Reference the in-lieu and location to the specific watercourse to which it will be applied.

PART OF PLAN

- 28. a. Yes No Are there any landowners within 1000 feet downstream of the THP boundary whose ownership adjoins or includes a class I, II, or IV watercourse(s) which receives surface drainage from the proposed timber operations? If yes, the requirements of 14 CCR 1032.10 apply. Proof of notice by letter and newspaper should be included in THP Section V. If No, "28 b." need not be answered.
- b. Yes No Is an exemption requested of the notification requirements of 1032.10? If yes, explanation and justification for the exemption must appear in THP Section III. Specify if requesting an exemption from the letter, the newspaper notice or both.
- c. Yes No Was any information received on domestic water supplies that required additional mitigation beyond that required by standard Watercourse and Lake Protection rules? If yes, list site specific measures to be implemented by the LTO.
- 29. Yes No Is any part of the THP area within a Sensitive Watershed as designated by the Board of Forestry and Fire Protection? If yes, identify the watershed and list any special rules, operating procedures or mitigation that will be used to protect the resources identified at risk? N/A

HAZARD REDUCTION:

- 30. a. Yes No Are there roads or improvements which require slash treatment adjacent to them? If yes, specify the type of improvement, treatment distance, and treatment method.
- b. Yes No Are any alternatives to the rules for slash treatment along roads and within 200 feet of structures requested? If yes, RPF must explain and justify how alternative provides equal fire protection. Include a description of the alternative and where it will be utilized below.
- 31. Yes No Will piling and burning be used for hazard reduction? See 14 CCR 917.1-.11, 937.1-.10, or 957.1-.10, for specific requirements.

Accumulations of slash on appurtenant roads and landings may be piled and burned to reduce fuel load. Piles and concentrations shall be sufficiently free of soil and other noncombustible material for effective burning. LTO is responsible for slash disposal. This responsibility cannot be transferred.

BIOLOGICAL AND CULTURAL RESOURCES

- 32. a. Yes No Are any plant or animal species, including their habitat, which are listed as rare, threatened or endangered under federal or state law, or a sensitive species by the Board, associated with the THP area? If yes, identify the species and the provisions to be taken for the protection of the species.
- b. Yes No Are there any non-listed species which will be significantly impacted by the operation? If yes, identify the species and the provisions to be taken for the protection of the species.

NOTE: See THP Form Instructions or the CDF Mass Mailing, 07/02/1999, section on "CDF Guidelines for Species Surveys and Mitigations" to complete these questions.

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ITEM 32(a) – LISTED SPECIES:

Yes [X] No [] Is this plan in a coho watershed as identified by the California Dept. of Fish and Game? GDRCO has an Aquatic HCP and CCAA from the NMFS and USFWS, and a Consistency Determination from DFG. A copy of these documents is on file at the CAL FIRE Santa Rosa and Fortuna offices.

Note to LTO: A full scoping list of animal and plant species that may have habitat in the plan area is located in Section III. If any of these are discovered stop operations, notify the RPF, and abide by the default mitigations provided here in Section II.

In any year the Pacific Fisher is a candidate or listed species pursuant to CESA, the following apply:

Definitions

A potential den structure for the Coast Forest District is any hardwood with visible indicators of cavity formation (dead or alive) ≥ 18 inches DBH, a conifer snag ≥ 30 inches DBH, or a live green cull or green wildlife conifer ≥ 30 inches DBH. A live green cull is a conifer tree with less than 25% merchantable wood by volume. A green wildlife conifer is considered a potential den structure when it has mistletoe brooms, large rest branches, and visible signs of fungus or other indications of cavity formation or visible cavity openings.

During the Natal den period of March 1 to May 15

- Potential den trees will not be felled

During the Maternal den period of May 16 to July 31

Potential den trees to be felled for safety reasons will not be cut until the day after all other trees intended to be felled within a ten acre area (a 375' radius) have been felled. If a fisher has kits in a den tree within the area, this will allow her additional time to remove her young from the area.

Fisher sighting

If a fisher is sighted in a harvest unit during timber operations, all vegetation disturbing activities will be suspended within that unit and company biologists will be notified. If a den or habitation of a fisher is discovered, all operations (per PRC Section 4527) will additionally be suspended within a 375-foot radius buffer around the den or habitation. The Department of Fish and Wildlife (CDFW) and Department of Forestry and Fire Protection will then be immediately notified.

DFW consultation

- Contact CDFW if site-specific avoidance measures are needed that differ from above.
- After consultation with CDFW, a minor amendment to the THP reflecting the protection agreed between the plan submitter and the Department of Fish and Wildlife shall be filed with Director of the Department of Forestry and Fire Protection; Any additional site specific avoidance measures developed through consultation with CDFW will provide greater or equal protection to those stated here.

GDRCo shall not fall trees that meet the characteristics of potential den structures unless the tree is a safety hazard; GDRCo's snag retention policies provide additional year round protection to most snags unless they are a safety hazard. In the few cases where silvicultural objectives, overall density or hardwood markets dictate the need, trees with potential natal den structures will only be felled outside the period March 1 to May 15 and comply with the additional day provision until July 31. After this period and through July 31 of any such year, falling and harvest operations will commence progressively through harvest areas in such a fashion that allows a potential fisher denning in a proposed harvest area to move their young ahead of and away from those operations. These measures should avoid impacts to the already minimal risk of a direct take of fishers.

All trees to be retained for fisher take avoidance mitigation purposes will be marked by the RPF (or if the RPF lacks expertise, by a qualified biologist) and CDFW and CAL FIRE will be notified prior to the onset of timber operations to allow for inspection of the marked retention trees.

The methods for determining the presence of federal and state endangered or threatened species, Board of Forestry sensitive species, DFG species of special concern or sensitive plant species within or immediately adjacent to this Timber Harvest Plan (THP) are provided in Section III, Item 32 along with the project scoping list. Only those species present in or immediately adjacent to the THP are addressed in this section.

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51

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WILDLIFE RESOURCES:

The following listed species are known to occur in or immediately adjacent to the THP:

Northern Spotted Owl

Provisions for protection of those species:

Northern spotted owl: This plan is being submitted under 14 CCR 919.9 (d). A copy of Green Diamond's Habitat Conservation Plan (HCP) and the Section 10(a) permit issued by the U.S. Fish and Wildlife Service have been provided and are on file at the CALFIRE Santa Rosa and Fortuna offices.

On Green Diamond's timberlands, many forest types and stages of forest development exist, providing a wide variety of habitats for many species. This project will markedly change the habitat of the THP area, which will affect wildlife in different ways. Many species will benefit from the removal of closed forest canopy due to the rapid revegetation that is typical on such sites, with grass and brush species quickly invading and planted conifers gradually re-establishing forest conditions. This regrowth provides increased browse for creatures as large as deer and black bear, and dense cover for rodents and other small mammals that in turn will attract carnivores and raptors. Timber harvesting is also likely to increase downed large woody debris, which can be beneficial to many forms of wildlife. Although this project may adversely impact some individuals of selected species that currently use this site, the operations proposed in this THP should not have a significant adverse impact on any wildlife species.

AQUATIC RESOURCES:

The following species are known to occur in or immediately adjacent to the THP:

There is no Class I habitat and therefore no fish species present in or immediately adjacent to this THP. Class II habitats are present in and immediately adjacent to this THP therefore tailed frogs and southern torrent salamanders may be present in these habitats.

Provisions for protection of those species:

This plan is being submitted under 14 CCR 916.2 (a). A copy of Green Diamonds Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances (AHCP) will minimize and mitigate the potential adverse effects to any species covered by the AHCP that may occur incidental to Green Diamond's activities. The protection measures provided throughout this plan to maintain cool water temperatures, minimize and mitigate human caused sediment inputs, and provide for large wood recruitment will ensure that any authorized take and its probable impacts will not appreciably reduce the likelihood of survival and recovery to the species covered by the AHCP. In addition, the implementation of the 1973 Z'berg-Njedly Forest Practice Act, and the Forest Practice Rules authorized by the Act, have greatly changed the manner in which timber harvest operations are conducted. One of the primary goals of the Rules is to protect the water quality and biological characteristics of California's watercourses and lakes. Specific measures that have been included in this THP to insure watershed integrity and minimize impacts to watercourses within this plan and the assessment area include:

- Enhanced WLPZ(RMZ) shade canopy on Class II watercourses.
- Limited harvest operations within Class II WLPZs (RMZs).
- Restricted winter operations.
- Road maintenance program.
- No removal of large organic debris from Class II WLPZs (RMZs).
- SSS protection measures on Class II watercourses.

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This THP complies with the Coho Considerations rule package which became effective in January 2001. 14CCR 916.4 (a) (2).

Protection measures for all watercourses are contained in Section II Items 26 & 27. A description of stream habitat conditions is included in Section IV, subsection A3.

Compliance with the requirements of this THP, applicable FPRs, and Green Diamond's Aquatic HCP and NSO HCP will provide adequate protection for the aquatic resources.

PART OF PLAN

BOTANICAL RESOURCES:**1. Botanical Scoping Results:**

Scoping methods are provided in the "November 2008 Sensitive Plant Conservation Plan (SPCP)" in Section III, Item 32 along with the project scoping list. Only those species present in the project area will be addressed in this section.

2. Botanical Surveys:

Surveys will be conducted for all sensitive plant species potentially present during the appropriate time period and prior to beginning operations if;

- a) habitat for one or more sensitive plant species exists in the planned operational area
- b) the project area is within the geographic range of one or more of these species
- c) the project area is not exempted from a survey under a DFG approved Botanical Management Plan (BMP)

For THPs within a Botanical Management Area (BMA) with a DFG approved Botanical Management Plan (BMP), GDRCo shall provide a statement disclosing survey status from one of the following three choices:

1. GDRCo shall conduct a floristic survey
2. A floristic survey will not be conducted, or
3. It is unknown at this time if GDRCo will conduct a floristic survey

The statement shall be included in THP Section II, Item 32 at filing and will reference the appropriate BMP on file with CALFIRE at Santa Rosa and Fortuna. If the BMP requires the RPF to conduct a focused survey of habitat and/or species, the results of this focused survey shall be included in the THP.

GDRCo shall conduct a floristic survey for this THP.

3. Botanical Survey Results:

If a floristic survey has occurred prior to filing the "Botanical Project Survey Report" is provided in Section V. If a floristic survey occurs after the plan has been filed, the results will be amended into the THP.

A survey will be conducted in advance of operations, and if sensitive species are encountered the specific protection measures will be amended into the THP. If no sensitive species are found a letter to the file stating when the survey occurred will be sent to CAL FIRE and DFG and the Botanical Project Survey Report will remain on file at GDRCo.

One population of Running Pine was located in Unit A.

4. Plant Protection Measures:

DFG and GDRCo will continue working together to develop property wide consultation and mitigation measures for sensitive species that regularly occur within project areas. These PPMs will reduce impacts to sensitive plant taxa to less than significant levels while also providing operational flexibility. Where consultations with DFG have provided specific PPMs, they may be applied appropriately, as in the case of Indian pipe (*Monotropa uniflora*) and Howell's montia (*Montia howellii*).

If neither a property wide consultation nor a conservation plan has been adopted for a sensitive species encountered during a floristic survey or after operations commence, a default mitigation measure of avoidance will be implemented by placing a 50-foot no-harvest EEZ around the outer perimeter of the sensitive plant occurrence¹ until specific mitigation measures can be developed for that species at that site. Following consultation with DFG the alternative mitigation may be more or less restrictive than the default 50-foot (15.2-meter) buffer.

33. Yes No Are there any snags which must be felled for fire protection or safety reasons? If yes, describe which snags are going to be felled and why.

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RESOURCE MANAGEMENT

¹ No timber harvesting or road construction shall occur within 50 feet (15.2 meters) of any location supporting sensitive plants unless alternative mitigation measures developed through consultation with DFG are applied. The size and shape of the protection area will vary based upon the size and extent of the sensitive plant occurrence. The 50-foot measurement should begin at the outermost location of the subject sensitive plant.

Snags will be felled or retained as per 14 CCR 919.1(a), (b), (c), (d), (e), and (f). Snags within the plan area will be retained to the extent that their presence does not compromise the safety of personnel working on timber harvesting operations or those traveling on roads appurtenant to the THP. If snags are extremely soft, decayed, or are determined to present a safety hazard due to their proximity to landings, roads, people, or equipment, they will be felled. The trees that will be left in the WLPZs will also provide for snag recruitment and increase the probability that timber operations will not result in a net loss of snags over the long term (see Section IV – Biological Information - Guidelines for Green Tree Retention, and Section V - Terrestrial Dead Wood Management Plan). The trees retained within this plan will help achieve Green Diamond's Habitat Conservation goals of retaining vertical structure for wildlife purposes across the ownership. Green Diamond will retain all safe snags within the WLPZ(RMZ), and fall and leave unsafe snags on site. AHCP 6.2.1.2.8 & 6.2.1.4.7.

34. Yes No Are any Late Succession Forest Stands proposed for harvest? If yes, describe the measures to be implemented by the LTO that avoid long-term significant adverse effects on fish, wildlife and listed species known to be primarily associated with late succession forests. N/A

35. Yes No Are any other provisions for wildlife protection required by the rules? If yes, describe.

If a species listed as Rare, Threatened or Endangered is discovered during the timber operations, the LTO shall stop operations and notify Green Diamond's Wildlife Department personnel and the RPF who prepared the THP. Appropriate steps shall then be taken to comply with the laws under which activities effecting that species are regulated. This also pertains to raptor species as stated in Fish & Game Code 3503.5. See Section III, Item 32 regarding non-listed raptor species.

36. a. Yes No Has an archaeological survey been made of the THP area?

b. Yes No Has an archaeological records check been conducted for the THP area?

c. Yes No Are there any archaeological or historical sites located in the THP area? Specific site locations and protection measures are contained in the Confidential Archaeological Addendum in Section VI of the THP, which is not available for general public review.

37. Yes No Has any inventory or growth and yield information designated "trade secret" been submitted in a separate confidential envelope in Section VI of this THP?

38. Describe any special instructions or constraints which are not listed elsewhere in Section II.

Yes No Does this plan propose any exceptions to the AHCP?

<i>Exception: Skid trail watercourse crossing on a Tier A Class III. Pg 6-14 (6.2.1.6.1 #3)</i>	
Unit:	A
Description:	Within Unit A a previously used designated skid trail crossing across a Class III watercourse is proposed. This site was previously utilized during operation of THP 1-01-311HUM. This site is Road Point 10 within this THP.
Justification:	Approximatley a half-acre of clearcut is inacceble due to Class III Tier A EEZ as well as slope. As proposed a shovel may yard this volume across the CIII and down the previolsy used skid trail to the seasonal road.
Mitigation:	This site will be used as is during the dry period. If water is present during operations a spittler or a culvert of appropriate size shall be installed (min. 6-inches). After completion of operations at this location and prior to the winter period year of use, a dip shall be reconstructed to capture all waters from the CIII watercourse. In addition, both approaches shall be straw seed and mulched to the EEZ, 30-feet.

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Waste Discharge Enforcement: Conditions stated in Section V of the THP which pertain to NCRWQCB General Waste Discharge requirements will not be enforced by the Department unless those same conditions are subject to the Forest Practice Act/Rules and included as enforceable provisions in Section II of the THP.

Start-up Notification:

The person responsible for notifying the department of commencement of operations will be the Plan Submitter or its representative. The person notified will be the Cal Fire Office Technician at the Fortuna office 707-726-1253.

GDRCo Southern Operations Flagging Code

THP / BOUNDARY	RED / WHITE
WLPZ (RMZ)/RSMZ	BLUE / GLO PINK
SSS	PINK/WHITE w/ BLUE DOTS (SSS imprinted)
YARDING TYPES	RED
SILVICULTURE BREAK	RED / LIME GREEN
HRA	BLUE&WHITE STRIPE / LIME GREEN/ Pink
WILDLIFE TREES	YELLOW TAG AND PINK FLAGGING
PROPERTY LINE	BLUE / YELLOW
EEZ	GLO PINK (Tier A or Tier B imprinted in black)
RECON / PROFILES	RED&WHITE STRIPE
ROAD CENTER LINE	ORANGE
SENSITIVE PLANT LOCATION (mitigated)	BLACK&WHITE STRIPE / GLO PINK
CMZ (Channel Migration Zone)	YELLOW (CMZ imprinted in black)
FLOOD PLAIN	WHITE (Flood Plain imprinted in black)
SKID ROAD	YELLOW (with skid road imprinted)
GEOLOGY PROTECTION AREAS	WHITE (with GEOLOGY imprinted) along with PINK

DIRECTOR OF FORESTRY AND FIRE PROTECTION

This Timber Harvesting Plan conforms to the rules and regulations of the Board of Forestry and Fire Protection and the Forest Practice Act:

By: [Signature] June 25, 2013
(Signature) (Date)

Original Signature on file

(Printed Name)

Resource Manager

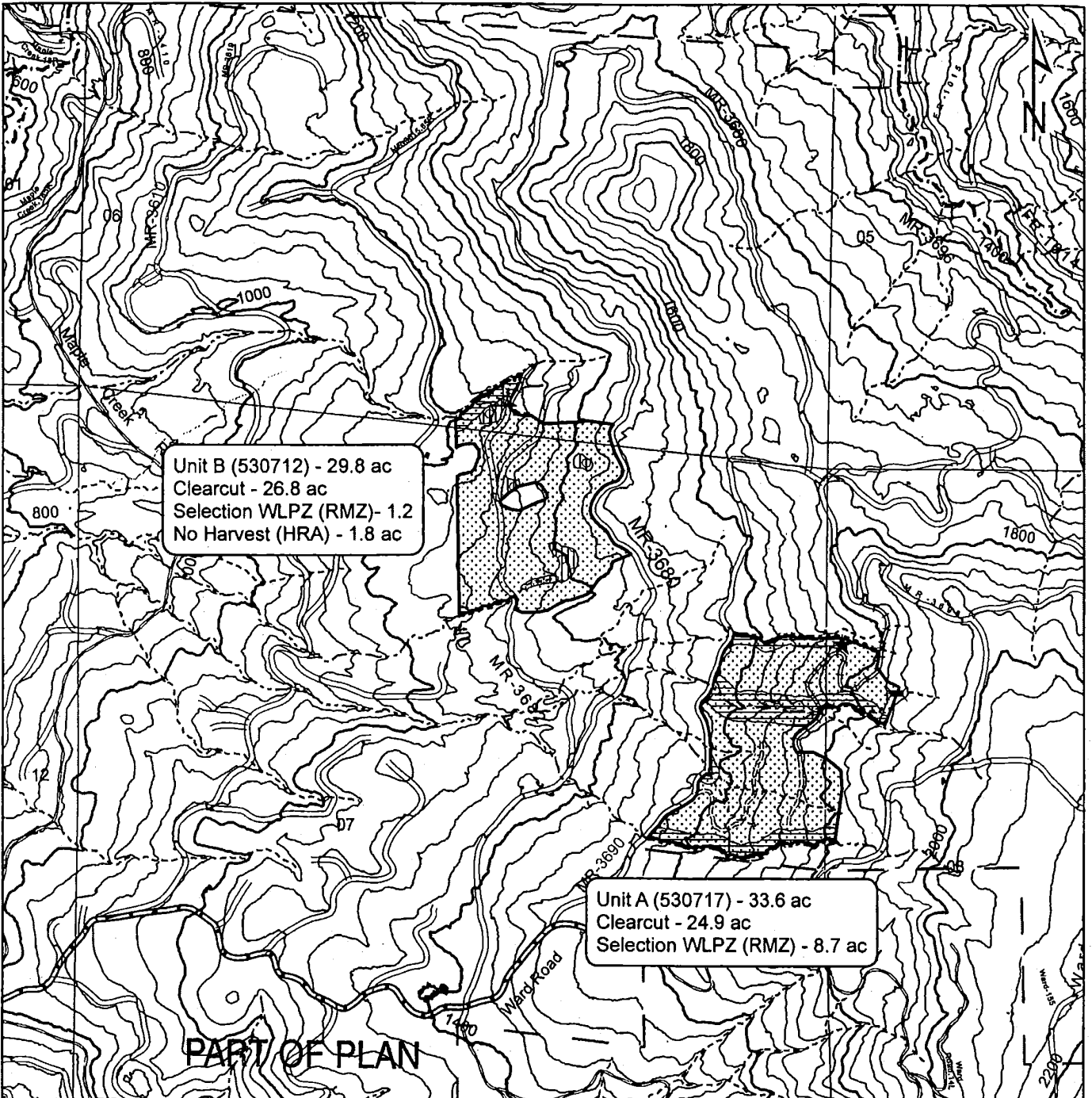


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PART OF PLAN



PART OF PLAN

GREEN DIAMOND
RESOURCE COMPANY

THP Map

Ward Road 2014

GDRCo 26-1204

T05N, R03E Section 6, 7, 8 HBM

Contour interval = 40 ft.

Scale:

1:12,000

1 inch = 1,000 feet

Ground Based Yarding / Cable Option

- Clearcutting
- Mod EHR
- Site Class II



Ground Based Yarding / Cable Option (HRA)

- No Harvest
- Low EHR
- Site Class II



Ground Based Yarding / Cable Option (WLPZ/RMZ)

- Selection
- Low EHR
- Site Class II



Ground Based Yarding / Cable Option (WLPZ/RSMZ)

- No Harvest
- Low EHR
- Site Class II



GDRCo Ownership



Class III Wet Area



Designated Skid Trail Crossing



Running Pine



Roads

- Public/Other Private road
- Existing permanent road
- Existing Seasonal road
- Proposed Temporary road (to be abandoned)
- Existing Seasonal Road (to be abandoned)

Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

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RESOURCE MANAGEMENT

INTERNAL USE ONLY

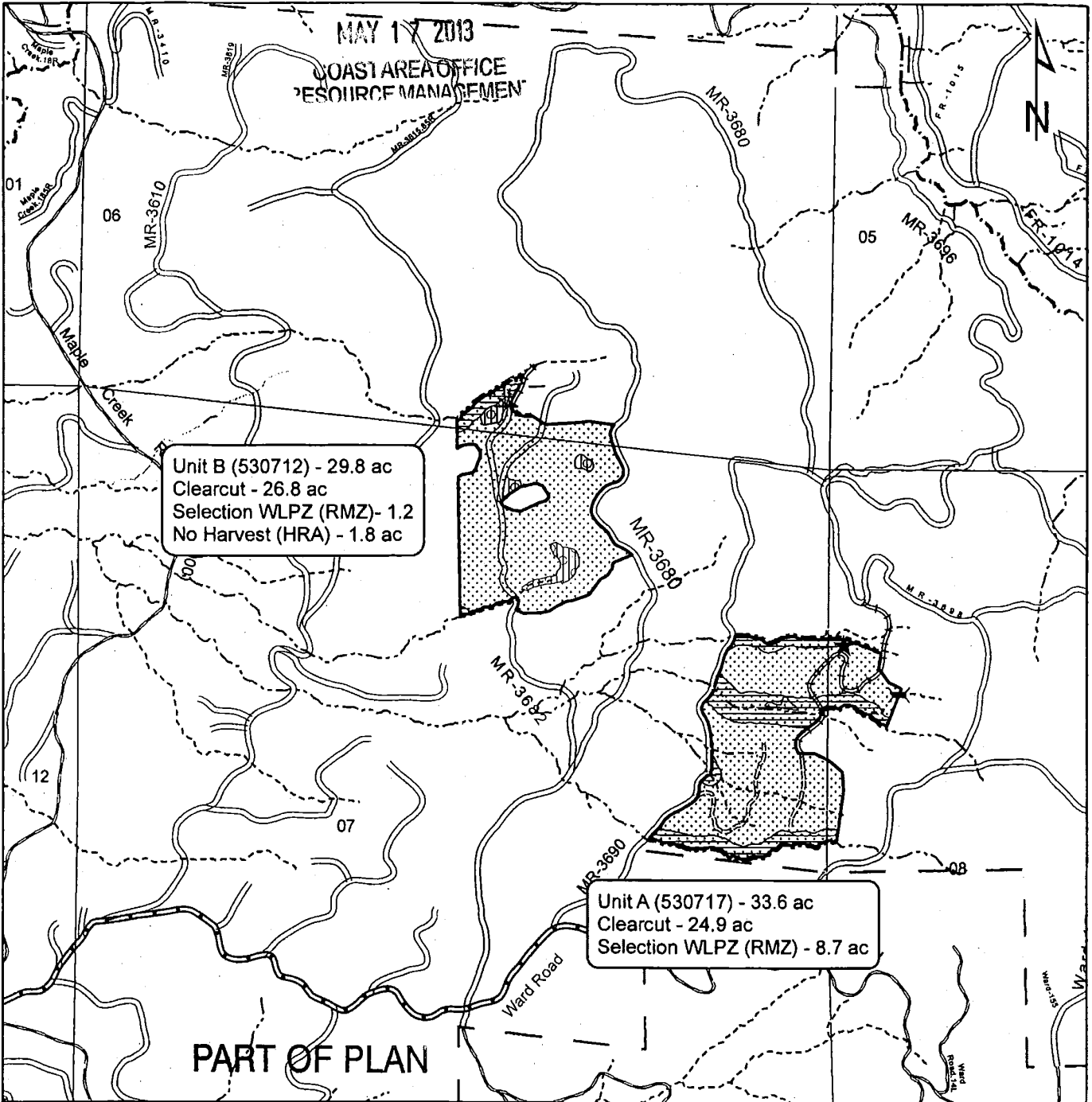
Unit A: 530717
Unit B: 530712

56

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RESOURCE MANAGEMENT



PART OF PLAN

GREEN DIAMOND
RESOURCE COMPANY

THP Map

Ward Road 2014
GDRCo 26-1204

T05N, R03E Section 6, 7, 8 HBM
Contour interval = 40 ft.

Scale:
1:12,000
1 inch = 1,000 feet

Ground Based Yarding / Cable Option
- Clearcutting
- Mod EHR
- Site Class II



Ground Based Yarding / Cable Option (HRA)
- No Harvest
- Low EHR
- Site Class II



Ground Based Yarding / Cable Option (WLPZ/RMZ)
- Selection
- Low EHR
- Site Class II



Ground Based Yarding / Cable Option (WLPZ/RMZ)
- No Harvest
- Low EHR
- Site Class II



GDRCo Ownership



Class III Wet Area



Designated Skid Trail Crossing



Running Pine



Roads

Public/Other Private road

Existing permanent road

Existing Seasonal road

Proposed Temporary road (to be abandoned)

Existing Seasonal Road (to be abandoned)

Watercourse

Class I

Class II (II-1, II-2)

Class III (IIIA, IIIB)

INTERNAL USE ONLY

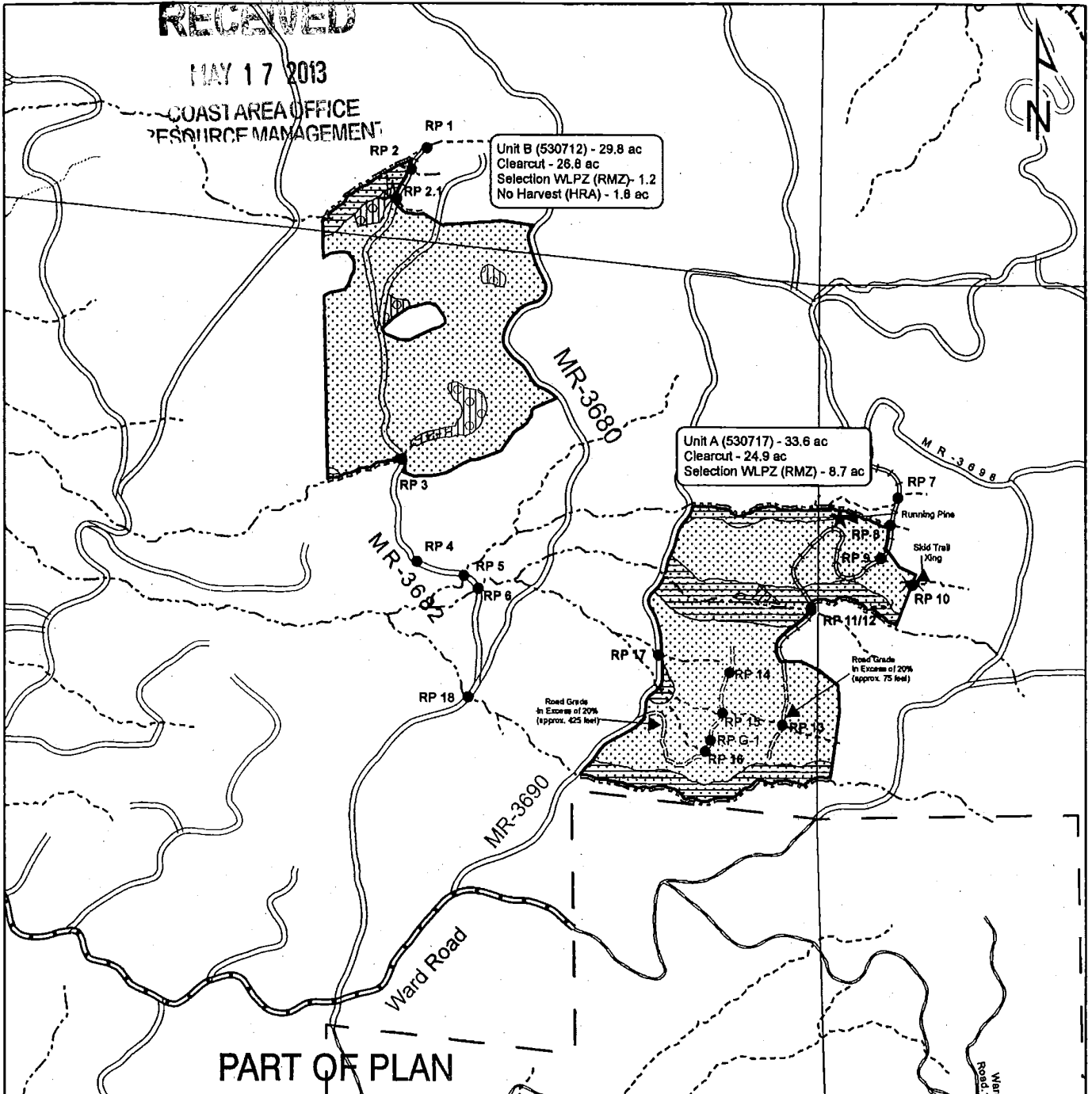
Unit A: 530717
Unit B: 530712

57

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MAY 17 2013

COAST AREA OFFICE
RESOURCE MANAGEMENT



Unit B (530712) - 29.8 ac
Clearcut - 26.8 ac
Selection WLPZ (RMZ) - 1.2
No Harvest (HRA) - 1.8 ac

Unit A (530717) - 33.6 ac
Clearcut - 24.9 ac
Selection WLPZ (RMZ) - 8.7 ac

Road Grade
in Excess of 20%
(approx. 425 feet)

Road Grade
in Excess of 20%
(approx. 75 feet)

PART OF PLAN

GREEN DIAMOND
RESOURCE COMPANY

Road Work Map

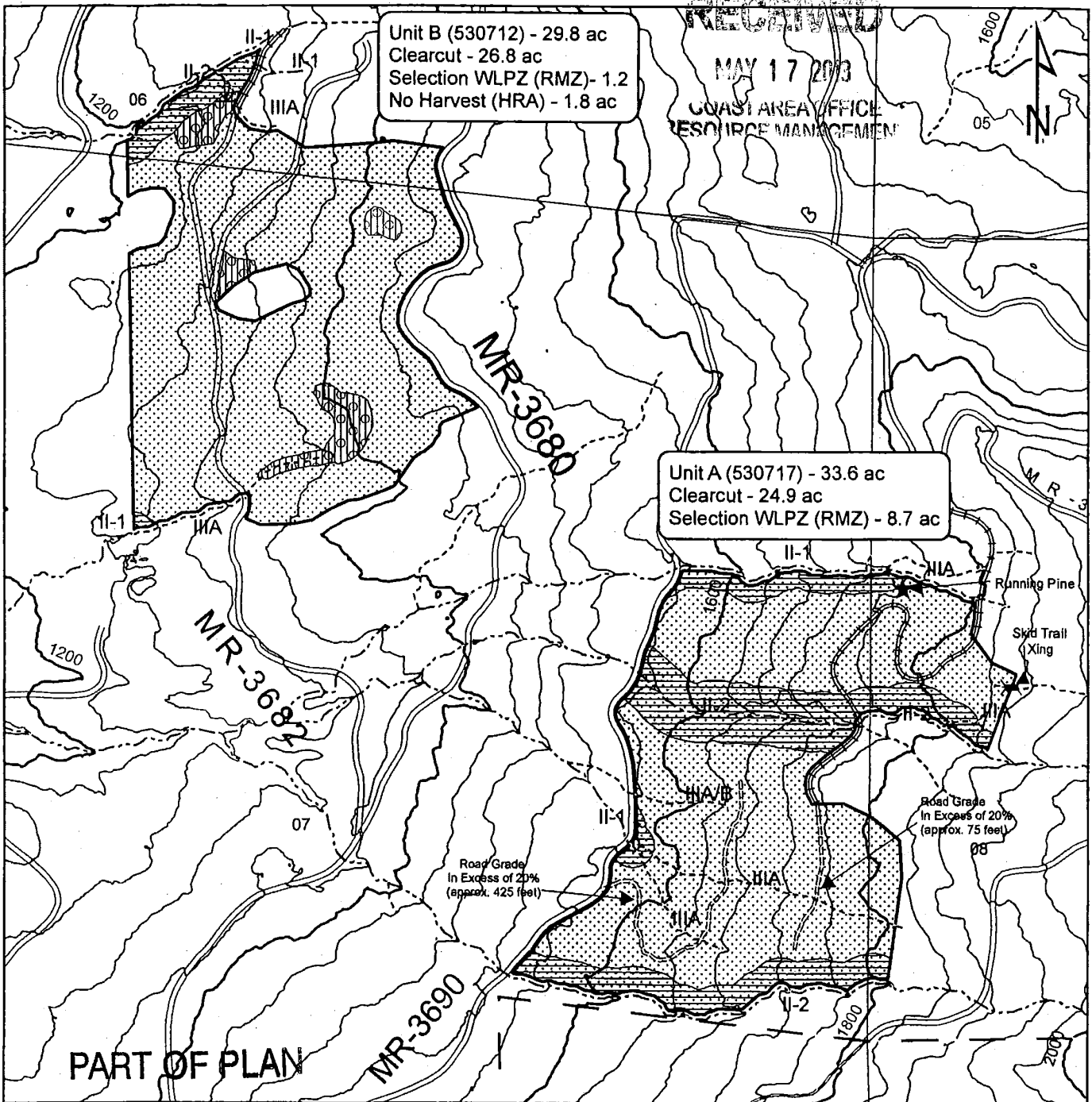
Ward Road 2014
GDRCo 26-1204

T05N, R03E Section 6, 7, 8 HBM
Contour interval = 40 ft

Scale:
1:9,000
1 inch = 750 feet

<p>Ground Based Yarding / Cable Option</p> <ul style="list-style-type: none"> - Clearcutting - Mod EHR - Site Class II 	<p>Ground Based Yarding / Cable Option (WLPZ/RSMZ)</p> <ul style="list-style-type: none"> - NH - Low EHR - Site Class II 	<p>Road Points</p> <ul style="list-style-type: none"> ● RP #
<p>Ground Based Yarding / Cable Option (HRA)</p> <ul style="list-style-type: none"> - NH - Low EHR - Site Class II 	<p>GDRCo Ownership</p>	<p>Designated Skid Trail Crossing</p>
<p>Ground Based Yarding / Cable Option (WLPZ/RMZ)</p> <ul style="list-style-type: none"> - Sel. - Low EHR - Site Class II 	<p>Roads</p> <ul style="list-style-type: none"> — Other Private road — Existing permanent road — Existing Seasonal road - - - Proposed Temporary road (to be abandoned) — Existing Seasonal Road (to be abandoned) 	<p>Running Pine</p> <ul style="list-style-type: none"> ★
		<p>Class III Wet Area</p>
		<p>Watercourse</p> <ul style="list-style-type: none"> - - - Class I - - - Class II (II-1, II-2) - - - Class III (IIIA, IIIB)
		<p>INTERNAL USE ONLY</p> <p>Unit A: 530717 Unit B: 530712</p>

58



Unit B (530712) - 29.8 ac
 Clearcut - 26.8 ac
 Selection WLPZ (RMZ) - 1.2
 No Harvest (HRA) - 1.8 ac

Unit A (530717) - 33.6 ac
 Clearcut - 24.9 ac
 Selection WLPZ (RMZ) - 8.7 ac

PART OF PLAN

GREEN DIAMOND
 RESOURCE COMPANY

THP Map

Ward Road 2014
 GDRCo 26-1204

T05N, R03E Section 6, 7, 8 HBM
 Contour interval = 40 ft

Scale:
 1:6,000
 1 inch = 500 feet

Ground Based Yarding / Cable Option - Clearcutting - Mod EHR - Site Class II 	Ground Based Yarding / Cable Option (WLPZ/RSMZ) - No Harvest - Low EHR - Site Class II 	Roads Public/Other Private road Existing permanent road Existing Seasonal road Proposed Temporary road (to be abandoned) Existing Seasonal Road (to be abandoned)
Ground Based Yarding / Cable Option (HRA) - No Harvest - Low EHR - Site Class II 	GDRCo Ownership 	Watercourse Class I Class II (II-1, II-2) Class III (IIIA, IIIB)
Ground Based Yarding / Cable Option (WLPZ/RMZ) - Selection - Low EHR - Site Class II 	Class III Wet Area 	INTERNAL USE ONLY Unit A: 530717 Unit B: 530712
Designated Skid Trail Crossing 	Running Pine 	

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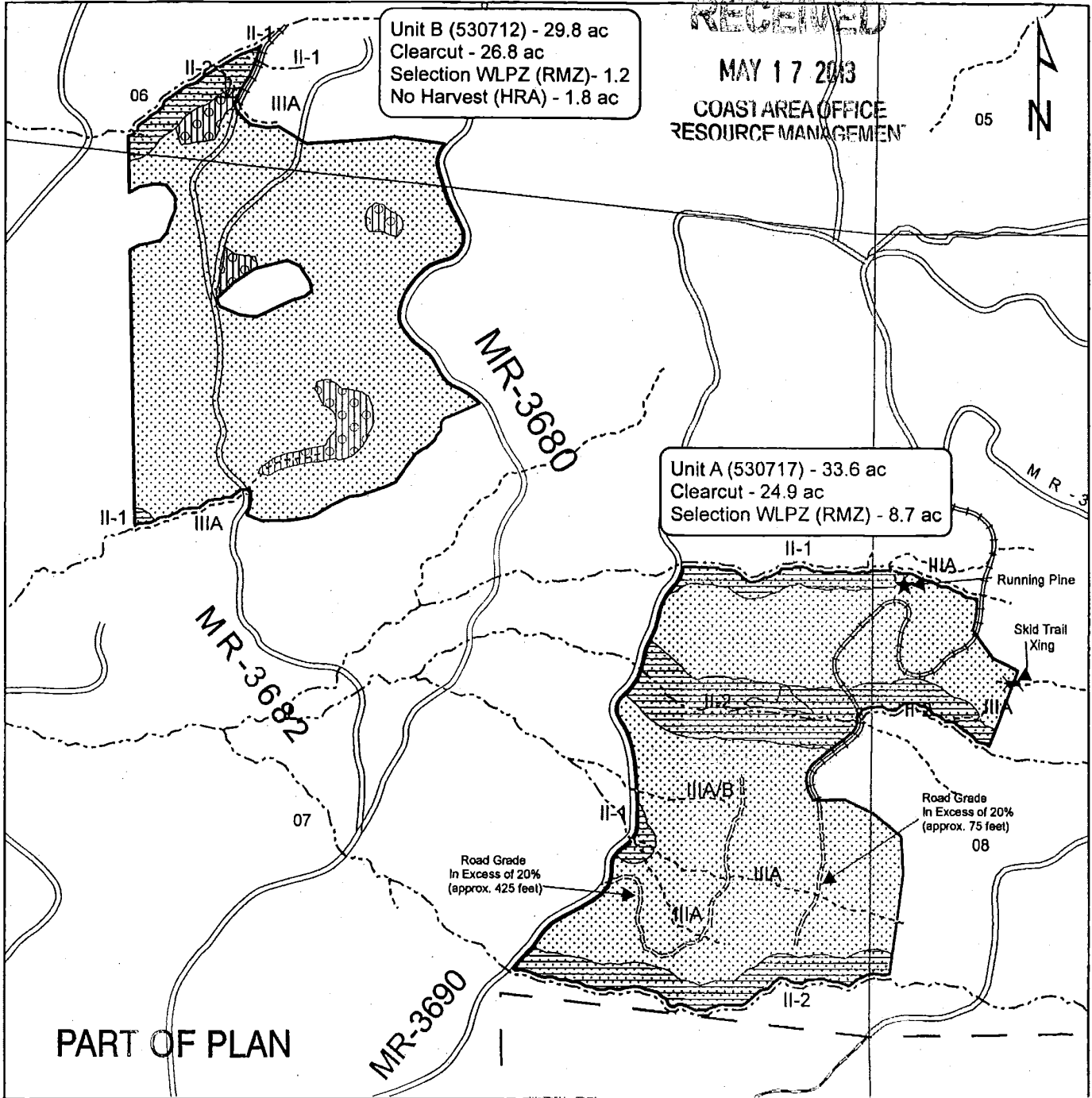
COAST AREA OFFICE
RESOURCE MANAGEMENT

05



Unit B (530712) - 29.8 ac
Clearcut - 26.8 ac
Selection WLPZ (RMZ) - 1.2
No Harvest (HRA) - 1.8 ac

Unit A (530717) - 33.6 ac
Clearcut - 24.9 ac
Selection WLPZ (RMZ) - 8.7 ac



PART OF PLAN

GREEN DIAMOND
RESOURCE COMPANY

THP Map

Ward Road 2014
GDRCo 26-1204

T05N, R03E Section 6, 7, 8 HBM

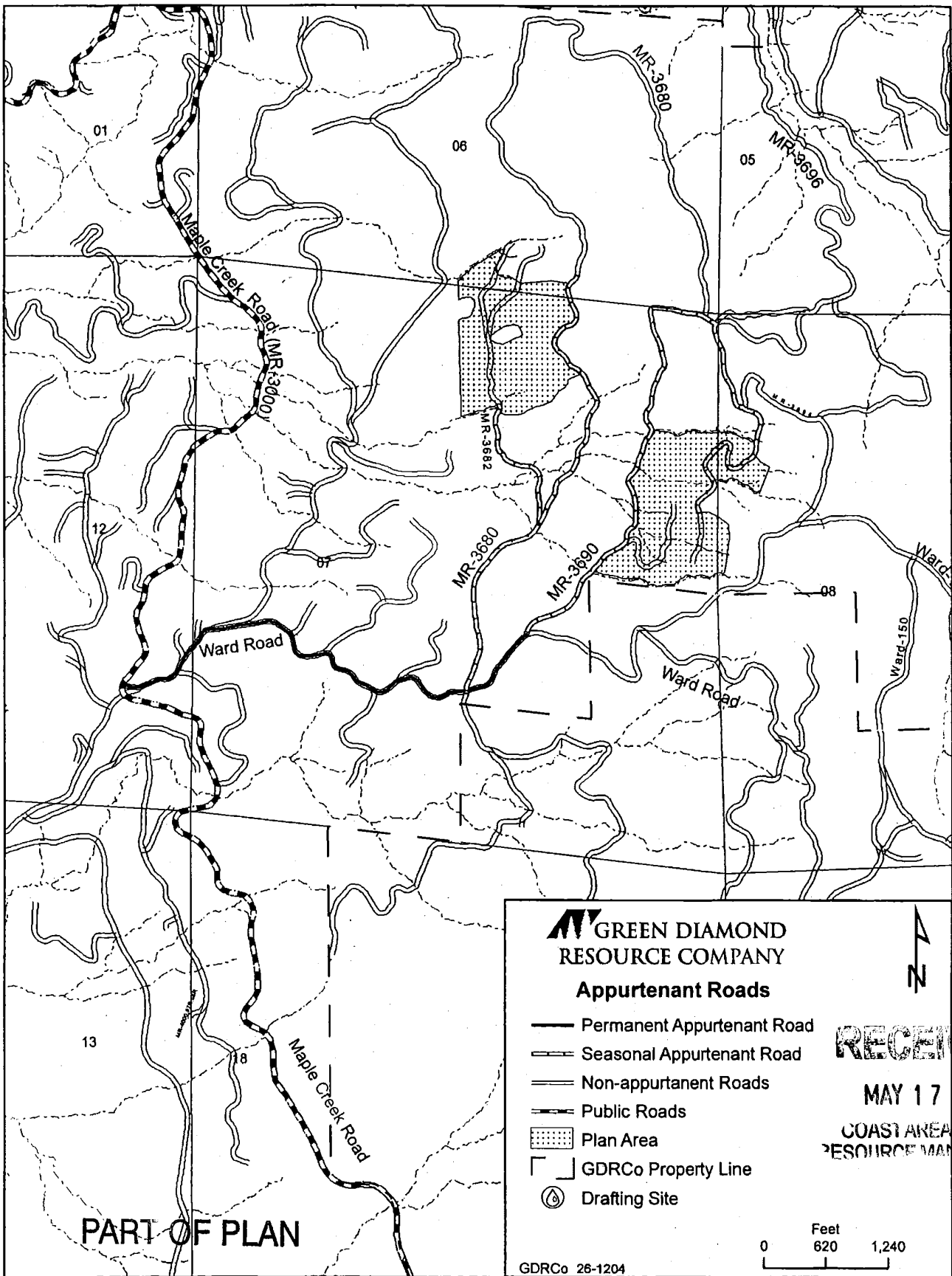
Scale:
1:6,000

Contour interval = 40 ft.

1 inch = 500 feet

<p>Ground Based Yarding / Cable Option</p> <ul style="list-style-type: none"> - Clearcutting - Mod EHR - Site Class II 	<p>Ground Based Yarding / Cable Option (WLPZ/RSMZ)</p> <ul style="list-style-type: none"> - No Harvest - Low EHR - Site Class II 	<p>Roads</p> <ul style="list-style-type: none"> Public/Other Private road Existing permanent road Existing Seasonal road Proposed Temporary road (to be abandoned) Existing Seasonal Road (to be abandoned)
<p>Ground Based Yarding / Cable Option (HRA)</p> <ul style="list-style-type: none"> - No Harvest - Low EHR - Site Class II 	<p>GDRCo Ownership</p>	<p>Watercourse</p> <ul style="list-style-type: none"> Class I Class II (II-1, II-2) Class III (IIIA, IIIB)
<p>Ground Based Yarding / Cable Option (WLPZ/RMZ)</p> <ul style="list-style-type: none"> - Selection - Low EHR - Site Class II 	<p>Class III Wet Area</p>	<p>INTERNAL USE ONLY</p> <p>Unit A: 530717 Unit B: 530712</p>
<p>Designated Skid Trail Crossing</p>	<p>Running Pine</p>	

LO



61

TIMBER HARVESTING PLAN

- FOR ADMIN. USE ONLY
1. _____ 8. _____
2. _____ 9. _____
3. _____ 10. _____
4. _____ 11. _____
5. _____ 12. _____
6. _____ 13. _____
7. _____ 14. _____

STATE OF CALIFORNIA
DEPARTMENT OF FORESTRY
AND FIRE PROTECTION
RM-63 (06-2018)

FOR ADMIN. USE ONLY
THP No. 1-20-00019-HUM
Date Rec'd: JAN 31 2020
Date Filed: FEB 06 2020
Date Approved: APR 3, 2020
Date Expires: APR 2, 2025

THP Name: Ward Road Combo

- If this is a MODIFIED THP []
• Is this a MODIFIED THP for FUEL HAZARD REDUCTION [] Extension: [] Am # _____
If THP is any one of the modified types above complete appropriate modified checklists at end of general section

GDRCo #24-1901

HUID(s): A: 530609; B: 530715; C: 530718; D: 530711; E: 530705; F: 530722

Korbel HPA

This Timber Harvesting Plan (THP) form, when properly completed, is designed to comply with the Forest Practice Act (FPA) and Board of Forestry and Fire Protection rules. All rule references are from Title 14 CCR; when cited, the form text will only make reference to the rule number itself. The THP is divided into six sections. See separate instructions for information on completing this form. NOTE: The form must be printed legibly in ink or typewritten, an online version is available at the CalFire website. Additional space may be inserted, as needed, to provide required information. Please distinguish answers from questions by font change, bold or underline.

Note to THP reviewer: This THP is prepared to include selected operational measures in accordance with Green Diamond Resource Company's Aquatic Habitat Conservation Plan (AHCP). Under the AHCP, Green Diamond has agreed to implement additional measures to protect certain aquatic species and their habitats in exchange for issuance of incidental take authorization under the federal Endangered Species Act. Except where expressly stated otherwise, the AHCP is not incorporated by reference to be part of this THP. Rather, the substantive requirements of the AHCP are restated in the THP, and certain sections of the AHCP are referenced only for ease of implementation. References pertaining to the AHCP are shown in italicized font. The AHCP can be viewed at: https://greendiamond.com/responsible-forestry/certification/FSC/

The protection measures proposed in this plan will provide protection that meets or exceeds the standard forest practice rules. This plan is prepared in accordance with 14CCR 916.9(w)(2) and 923(f)(2) which state that: The provisions of 14 CCR 916.9, 923(e), 923.1(g) (h) and (i), 923.4(r) and (s), 923.5(q), 923.6(h), 923.7(j) (l), 923.9(d) (s) and (t)(4) shall not apply to a plan that is subject to a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Wildlife Code.

SECTION I - GENERAL INFORMATION

This THP conforms to my/our plan and upon approval, I/we agree to conduct harvesting in accordance therewith. Consent is hereby given to the Director of Forestry and Fire Protection, and his or her agents and employees, to enter the premises to inspect timber operations for compliance with the Forest Practice Act and Forest Practice Rules.

1. REGISTERED PROFESSIONAL FORESTER:

RPF Signature: (Refer to signature page 1.1) Li c. No. 2871 Date

RPF Printed Name: Zachariah David Mohrmann Phone 707-668-4400

Address: P.O. Box 68 City: Korbel State CA Zip 95550

Email:

2. LICENSED TIMBER OPERATOR(S): Name Green Diamond Resource Co. Korbel Division Lic. No. A-6968 (If unknown, so state. You must notify CAL FIRE, by amendment, of LTO prior to start of operations)

Address P.O. Box 68

City Korbel State CA Zip 95550 Phone 707-668-4400

Email:

Signature: (Refer to signature page 1.1)

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JAN 31 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT

3. TIMBERLAND OWNER(S) OF RECORD: Name Green Diamond Resource Company

Address P.O. Box 68

City Korbel State CA Zip 95550 Phone 707-668-4400

Email: _____

Signature: (Refer to signature page 1.1)

4. TIMBER OWNER(S) OF RECORD: Name Green Diamond Resource Company

Address P.O. Box 68

City Korbel State CA Zip 95550 Phone 707-668-4400

Email: _____

Signature: (Refer to signature page 1.1)

NOTE: The Timber Owner is responsible for payment of a yield tax. Per State of California Revenue and Taxation Code sections 38104 and 38115. Timber Yield Tax information may be obtained at: Timber Tax Section, MIC: 60, California Department of Tax and Fee Administration, P.O. Box 942879, Sacramento, California 94279-0060. Phone 1-800-400-7115 OR 1-916-274-3330. For Timber Tax information, please see our website at: www.boe.ca.gov/proptaxes/timbertax.htm.

5. PLAN SUBMITTER(S): Name Green Diamond Resource Company

The submitter is the person who owns, leases, contracts, or operates on timberland. If the submitter is not identified in (2), (3), or (4), above, an explanation of his/her authority to submit the plan should be provided in Section III. [1032.7(a) and 1034(e)].

Address P.O. Box 68

City Korbel State CA Zip 95550 Phone 707-668-4400

Email: _____

Signature: (Refer to signature page 1.1)

6. ON-SITE CONTACT: Name The responsible RPF, Zachariah D. Mohrmann or Mike Carroll (LTO)

List person to contact on-site who is responsible for the conduct of the operations. If unknown, so state; name must be provided for inclusion in the THP prior to start of timber operations.

Address P.O. Box 68

City Korbel State CA Zip 95550 Phone 707-668-4400

Email: _____

ITEM #7 LOCATION OF TIMBER OPERATIONS

a. Legal Description						
Meridian	Township	Range	Section	Acreage	Assessor's Parcel Number*	County
HBM	T5N	R2E	12, 13	95		Humboldt
	T5N	R3E	06, 07,	260.5		
			TOTAL AC	355.5		

*Optional

NOTE: Total Acreage only includes the logging area

FOREST DISTRICT

b. Forest District			
<input checked="" type="checkbox"/>	COAST FOREST DISTRICT	<input type="checkbox"/>	Tahoe Regional Planning Authority Jurisdiction
<input type="checkbox"/>	Southern Sub District of the Coast Forest District	<input type="checkbox"/>	A County with Special Regulations
<input type="checkbox"/>	SOUTHERN FOREST DISTRICT	<input type="checkbox"/>	Coastal Zone, no Special Treatment Area (STA)
<input type="checkbox"/>	High use Sub District of the Southern Forest District	<input type="checkbox"/>	STA(s): Type: Identify:
<input type="checkbox"/>	NORTHERN FOREST DISTRICT	<input type="checkbox"/>	Other:

c. CALWATER PLANNING WATERSHED		
Name	Watershed identification Number	CALWATER Version
Lower Canon Creek	1109.300602	V2.2
(portion of) Dry Creek	1109.300601	V2.2

d. WATERSHED (ASP, 303D)			
<input type="checkbox"/>	ASP Watersheds	<input type="checkbox"/>	Non ASP Watersheds
<input type="checkbox"/>	Upstream of ASP Watersheds	<input checked="" type="checkbox"/>	303d Watersheds
<input checked="" type="checkbox"/>	Exempt from ASP Watershed Rules <ul style="list-style-type: none"> Reason Exempt: This plan is prepared in accordance with 923(f)(2) which states that: The provisions of 14 CCR 923(e), 923.1(g) (h) and (i), 923.4(r) and (s), 923.5(q), 923.6(h), 923.7(j) (l), 923.9(d) (s) and (t)(4) shall not apply to a plan that is subject to a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Wildlife Code. 		<ul style="list-style-type: none"> Reason listed: Sediment, temperature and turbidity.

e. USGS QUADRANGLE	
Name	Date
Korbel	1979

ITEM #8

MODIFIED THP REQUIRED CONDITIONS AND MITIGATIONS

a. Modified THP	
1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this THP submitted as a modified THP per 14 CCR § 1051
2. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this THP submitted as a modified THP for Fuel Hazard reduction per 14 CCR § 1051.3

b. Timberland Conversion	
1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Has a Timberland Conversion been submitted?
	<ul style="list-style-type: none"> • Permit Number: _____ (if known) or • Expected approval date:
2. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Has a Timberland Conversion been approved?
	<ul style="list-style-type: none"> • Permit Number: • Approval date: • Expiration date:

c. Demonstration of Maximum Sustained Production (MSP) per 14 CCR § 913.11 (93.11, 953.11).	
MSP OPTION	
<input checked="" type="checkbox"/> (a)	THP Number Option (a) is approved under: 1-09-077 HUM (GDRCo 51-0803)
	Date Approved: Nov 18, 2009
<input type="checkbox"/> (b)	Has a Sustained Yield Plan been approved?
	<ul style="list-style-type: none"> • SYP number: • Date Approved:
	Has a Sustained Yield Plan been submitted but not approved?
	<ul style="list-style-type: none"> • SYP number: • Date Submitted:
<input type="checkbox"/> (c)	

d. Conservation Easements / Landowner Assistant programs	
1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is there a conservation easement existing for any of the plan area?
	If "YES" provide <ul style="list-style-type: none"> • Conservation Easement Name: _____ • Who is the easement grantee: (Who holds the easement) _____
2. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is a Conservation Easement proposed or waiting approval for any portion of the plan area?
3. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are there any land owner assistance programs associated for any portion of the propose plan area? If "YES" indicate what land assistance program it is and associated identifying document number and/or name of project.

e. Habitat Conservation Plans (HCP) / Natural Communities Conservation Plans (NCCP)	
1. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is any portion of the ownership covered by a Habitat Conservation Plan?
<input checked="" type="checkbox"/>	Aquatic
<input checked="" type="checkbox"/>	Terrestrial

ITEM #9	Prescribed Maintenance Period
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will the Licensed Timber Operator be employed for the construction and maintenance of roads and landings during the conduct of timber operations?</p> <p>If "NO" identify who will be responsible and provide a contact phone number.</p> <p>Contact name: _____</p> <p>Phone number: _____</p>
b. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will the Licensed Timber Operator be responsible for erosion control maintenance after timber operations have ceased and until a work completion report has been certified by the department?</p> <p>If "NO" include a written agreement per 14 CCR 1050(c). Timberland Owner acknowledgement form contains the necessary information and can be included as the written agreement</p> <p>NOTE: Prescribed maintenance periods:</p> <ul style="list-style-type: none"> • Outside ASP watersheds maintenance period is one year but can be extended 3 years at the Departments discretion. • ASP watersheds the maintenance period is three years <p>Other activities such as stocking, that require the use of roads, crossings, or other features requiring erosion control shall be maintained during that activity even after the prescribed maintenance period has ended.</p> <p>Green Diamond Resource Company, Lic. No. A-6968. This THP is submitted in accordance with an HCP that addresses listed salmonids; therefore, 14 CR 923.7(i) is applicable which states: <i>The prescribed maintenance period for erosion controls on logging roads and associated landings and drainage structures, including appurtenant, abandoned, and deactivated logging roads and landings, shall be at least one year. The Director may prescribe a maintenance period extending up to three years in accordance with 14 CCR § 1050.</i></p>
c. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Is it anticipated timber operations will commence on the date of THP conformance as approved by the Department? If "NO" provide an expected date of commencement of timber operations: DATE _____</p>
d. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Is it anticipated timber operations will be completed within 5 years from the date of THP conformance? If "NO" provide the expected date timber operations will be completed: DATE _____</p> <p>This THP has been prepared to be completed with the definition of "feasible" under 895.1. If after the THP has been approved circumstances arise that require an extension, an extension will be applied for consistent with the requirements of PRC Section 4590.</p>

ITEM #10	Stocking Adjacent Plans
a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Is there a THP on file with CAL FIRE for any portion of the plan area for which a Report of Satisfactory Stocking has not been issued by CAL FIRE?</p> <p>If "YES" provide THP Number: _____</p>

b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Is there a contiguous even aged unit with regeneration less than five years old or less than five feet tall?</p> <p>If “YES” provide explanation per 14 CCR 913.1 (933.1, 953.1)(a)(4)</p>
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ITEM #11	Responsibilities / Notifications
a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>RPF has notified the Plan Submitter, in writing, of their responsibilities pursuant to 14 CCR 1035 of the Forest Practice Act and Rules.</p> <p>Plan submitter acknowledgement form is attached at the end of this section.</p>
b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>RPF has notified the timber owner and the timberland owner of their responsibilities for compliance with the Forest Practice Act and Rules and the prescribed maintenance periods and maintenance of erosion control structures.</p> <p>Timberland owner and Timber owner acknowledgment forms are attached at the end of this section.</p>
c. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>RPF will provide the timber operator with a copy of the portions of the approved THP as listed in 14 CCR 1035(f).</p> <p>If “NO” who is responsible to provide the LTO a copy of the approved THP?</p>
	<p>Who will meet with the LTO prior to commencement of operations to advise of sensitive conditions and provisions of the THP per 14 CCR 1035.2.</p> <p><input checked="" type="checkbox"/> RPF <input checked="" type="checkbox"/> Supervised Designee <input type="checkbox"/> Both <input type="checkbox"/> Other</p> <p>Additional information: I or my supervised designee will meet with the LTO prior to commencement of operations to advise of sensitive conditions and provisions of the plan pursuant to Title 14 CCR 1035.2. Green Diamond Resource Company has been an industrial timber and timberland owner for many years and is aware of their responsibilities under the FPR's. The RPF is an employee of Green Diamond Resource Company.</p>
d. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Are Archaeological or historical sites within or near the plan area that require protection?</p> <p>NOTE: Archaeological information is Confidential</p>
e. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>RPF has the following authority and responsibilities for the preparation and administration for the THP and timber operations. (Including both work completed and work remaining to be done.)</p> <p>Additional information: In addition to the preparation of this THP, I will perform additional work that the Forest Practice Rules (FPR) specifically require be performed by the RPF who prepared the plan. As part of the THP preparation I am responsible for flagging and tree marking that is required to be done prior to the PHI. I do not assume responsibility for additional work requiring an RPF, unless said work is performed by myself or under my direction. As an RPF employed by Green Diamond Resource Company, I will be available to provide advice and guidance regarding the conduct of timber operations pursuant to this THP. I or my supervised designee shall be present on the logging area at a sufficient frequency to know the progress of operations and to advise the LTO and timberland owner. I shall also inform the LTO during operations of any mitigation measures incorporated into the plan that are intended to address operations that have a high likelihood of resulting in immediate, significant and long term harm to the natural resources of the State.</p>

<p>f. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>RPF has been retained by the plan Submitter to provide professional advice to the LTO and timberland owner upon request throughout the active timber operations regarding the THP, the Forest Practice Rules, and other associated regulations pertaining to timber operations per 14 CCR 1035(d)(1)</p> <p>RPF acknowledgment form is attached at the end of this section.</p>
	<p>Describe additional required work requiring an RPF, which the RPF submitting this proposed THP does not have the authority or responsibility to perform.</p> <p>None. The plan submitter (GDRCo) may designate any staff RPF to be responsible for other aspects of this THP which require an RPF.</p>

<p>ITEM #12 Notice of Intent (NOI)</p>	
<p>Per 14 CCR 1032.7(c)(1-5) The RPF preparing the THP shall submit to the Director, with the THP, a Notice of Intent (NOI) to harvest timber if:</p> <ol style="list-style-type: none"> (1) Any proposed boundary lies within 300 feet of any property not owned by the timberland owner, or (2) Plan amendments that change plan boundary so that new boundaries are within 300 feet of property not owned by the timberland owner. (3) Plan amendments change the silvicultural method if a notice was required for the Plan by condition (1) or (2) above. (4) Any overhead electrical power line, except a line from a transformer to a service panel, is present within the plan area or within 200 feet outside the Plan boundary, or (5) Plan amendments change a plan boundary so that the overhead electrical power line, except a line from a transformer to a service panel, is within the new boundary area or within 200 feet outside the Plan Boundary. 	
<p>a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Is a Notice of Intent necessary for this THP?</p> <p>If "YES" include the NOI with the THP as a separate form with the THP</p>
<p>b. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>I understand that a copy of the NOI including a map is to be posted by the person submitting the plan at a conspicuous location on the public road nearest the plan prior to submitting the THP and that the NOI shall be on colored paper or identified with colored flagging so as to be easily visible to the public.</p>

<p>ITEM #13 Statement of Environmental Impact</p>	
<p>After considering the rules of the Board of Forestry and Fire Protection and the mitigation measures incorporated in this THP, I the Registered Professional Forester, have determined that the timber operations (mark all that apply)</p>	
<p>a. <input type="checkbox"/></p>	<p>WILL HAVE A SIGNIFICANT adverse effect on the environment. Provide a statement of reasons for overriding considerations in SECTION III.</p>
<p>b. <input checked="" type="checkbox"/></p>	<p>WILL NOT HAVE A SIGNIFICANT adverse impact on the environment.</p>
<p><input checked="" type="checkbox"/></p>	<p>I certify that I, or my supervised designee, personally inspected the THP area, and this plan complies with the Forest Practice Act, the Forest Practice Rules and the Professional Foresters Law.</p>

<p>Modified THP</p>	
<p><input type="checkbox"/></p>	<p>I certify that this Modified THP meets:</p> <ol style="list-style-type: none"> 1. The conditions or facts stated in 14 CCR 1051(a)(1)-(16) exist on the MTHP area at the time of submission, preparation, mitigation, and analysis of the MTHP and no identified potential significant effects remain undisclosed. 2. I, or my supervised designee, will meet with the LTO on the MTHP site, before timber operations commence, to review and discuss the contents and implementations of the Modified THP

State of California
Department of Forestry and Fire Protection

(Administrative Use Only-Area _____)
(Plan No. _____)
(Date Received _____)
(Amendment Number _____)

LICENSED TIMBER OPERATOR RESPONSIBILITY ACKNOWLEDGEMENT

(As per 14 CCR §§ 1035.3(a)(1)-(2), 1092.14(a)(1)-(2).)

Harvesting Plan Number: _____ GDRCo #24-1901

Licensed Timber Operator Information

Name: _____ Green Diamond Resource Company

Street Address/PO Box: _____ P.O. Box 68 _____ City: _____ Korbelt _____ Zip Code: _____ 95550

Telephone Number: _____ 707-668-4400 _____ LTO Number: _____ A-6968

I hereby agree to abide by the terms and specifications of the plan. I have read and understand my responsibility as LTO, as described under 14 CCR §§ 1022.4, 1090.12 and 1092.14. I agree to fulfill my responsibilities as an LTO as they pertain to this plan.

LTO Signature: _____ Signatures are on Page 1.1 _____ Title: _____ Operations Manager - Korbelt California Timberlands

Responsible On-Site Contact (if different)

Name: _____ Jim Hawkins

Printed Name: _____ Jim Hawkins _____ Date: _____

Street Address/PO Box: _____ P.O. Box 68 _____ City: _____ Korbelt _____ Zip: _____ 95550

Telephone Number: _____ 707-668-4400

REGISTERED PROFESSIONAL FORESTER (RPF) RESPONSIBILITY ACKNOWLEDGEMENT

(As per 14 CCR § 1035.1)

RPF Certified to Provide Professional Advice:

Name: _____ Zachariah D. Mohrmann

Street Address/PO Box: _____ P.O. Box 68 _____ City: _____ Korbelt _____ Zip Code: _____ 95550

Telephone Number: _____ 707-668-4484 _____ RPF Number: _____ 2871

I have read and understand my responsibility as RPF, as described under 14 CCR § 1035.1(a)-(g). I agree to fulfill my responsibilities as an RPF as they pertain to this plan.

[X] Yes [] No I have been retained as the RPF available to provide professional advice to the licensed timber operator and timberland owner upon request throughout the active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

RPF Signature: _____ Signatures are on Page 1.1 _____

PLAN SUBMITTER RESPONSIBILITY ACKNOWLEDGEMENT

(As per 14 CCR § 1035)

Plan Submitter

Name: Green Diamond Resource Company

Street Address/PO Box: P.O. Box 68 City: Korbel Zip Code: 95550

Telephone Number: 707-668-4400

I have read and understand my responsibilities as Plan Submitter as described under 14 CCR § 1035. I certify that I have fulfilled my legal obligation as stated in the forest practice rules and agree to fulfill my responsibility as the plan submitter as it pertains to this plan.

Yes No I have retained the services of an RPF to provide professional advice to the LTO and timberland owner upon request throughout active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

Yes No I have authorized the timberland owner to perform the services of a professional forester, understanding that the services will be provided personally on lands owned by the timberland owner.

Plan Submitter Signature: Signatures are on Page 1.1

ITEM #14 – SILVICULTURE

- Check the Silvicultural methods or treatments allowed by the Forest Practice Rules to be applied under this THP.
- If more than one method or treatment will be used identify the boundaries on a map per 14 CCR § 1034(x)(2)
- List the approximate acreage for each method identified.

a.	Evenaged	ACRES	
<input checked="" type="checkbox"/>	Clearcutting	89.4	EVENAGED REGENERATION METHODS (14 CCR § 913.1 [933.1, 953.1]) (All Districts) NOTE: variation by District in (a)(4)(A) and (d)(3) Shelterwood Removal Step
<input type="checkbox"/>	Seed Tree Seed Step		
<input type="checkbox"/>	Seed Tree Removal Step		
<input type="checkbox"/>	Shelterwood Preparatory Step		
<input type="checkbox"/>	Shelterwood Seed Step		
<input type="checkbox"/>	Shelterwood Removal Step		
	Un-evenaged		
<input checked="" type="checkbox"/>	Selection	21	
<input type="checkbox"/>	Group Selection		
<input type="checkbox"/>	Transition		
	Intermediate Treatments		INTERMEDIATE TREATMENTS (14 CCR § 913.3 [933.3, 953.3])
<input checked="" type="checkbox"/>	Commercial Thinning	197.5	
<input type="checkbox"/>	Sanitation Salvage		
	Alternative		ALTERNATIVE PRESCRIPTIONS (ALL DISTRICTS) (14 CCR § 913.6 [933.6, 953.6])
<input type="checkbox"/>	Alternative Prescription		
	Special Prescriptions		SPECIAL PRESCRIPTIONS (14 CCR § 913.4 [933.4, 953.4]) RPF is required to include specific information when Restoration or Oak woodland management is selected. The FPR element forms are provided at the end. Indicate the specific acreage for each type of restoration or oak area on these forms.
<input type="checkbox"/>	Special Treatment Area Prescription		
<input type="checkbox"/>	Rehabilitation of Understocked Area Prescription		
<input type="checkbox"/>	Fuel Break / Defensible Space		
<input type="checkbox"/>	Variable Retention		
<input type="checkbox"/>	Restoration – Aspen, Meadow, & Wet Area		
<input type="checkbox"/>	Ca. Black and Oregon White Oak Woodland Management		
	Non-regeneration		NON REGENERATION HARVESTING
<input type="checkbox"/>	Conversion		
<input type="checkbox"/>	Road Right-of-way		
<input checked="" type="checkbox"/>	No Harvest	47.6	

TOTAL ACREAGE:	355.5	If acreage is different than acreage listed in the legal description provide explanation:

If Selection, Group Selection, Commercial Thinning, Sanitation Salvage or Alternative methods are selected the post-harvest stocking levels must be stated. If Site class varies, then state the post-harvest stocking standard to be meet by each applicable Site Class.

NOTE: Location of boundaries of timber-site classes needed for the determination of stocking standards to be applied, down to 20-acres minimum or as specified in district rules shall be mapped per 14 CCR § 1034(x)(12)

b. POST-HARVEST STOCKING TO BE MET AT THE COMPLETION OF OPERATIONS		
Silvicultural Prescription	Site Class (I, II, III, IV, V)	Post-harvest stocking standard
Selection (WLPZ, HRA’s, Tree Clump)	II/III	Minimum post-harvest stocking level required by the rules for the Selection method is 75 sq.ft. BA/ac.
Commercial Thinning	II/III	Minimum post-harvest stocking level required by the rules for the Commercial Thinning method is 100 sq.ft. BA/ac.

c. EVENAGED REGENERATION SIZE	
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If YES is the RPF proposing:</p> <p><input type="checkbox"/> An increase to evenaged TRACTOR Units to 30 acres because Erosion Hazards Rating is Low and the slopes are less than 30%</p> <p><input type="checkbox"/> An increase to any evenaged harvest unit up to 40 acres</p> <p>If YES provide substantial evidence that the THP contains measures to accomplish any one of the subsections per 14 CCR § 913.1 [933.1, 953.1](a)(2)(A) – (E) In SECTION III</p> <p>Operational Instruction to the LTO, needed to meet subsections (A) – (E) above shall be included in SECTION II.</p>	<p>Will evenaged regeneration step Units be larger than those specified in the rules?</p> <p><input checked="" type="checkbox"/> 20 acres TRACTOR</p> <p><input type="checkbox"/> 30 acres AERIAL or CABLE</p>

Operational instructions to the LTO: Ground based yarding units shall be shovel yarded. See Item 14(c) in Section III for explanation and justification.

d. TIMBER MARKING				
In the table below indicate the area requiring tree marking, the method of marking, who completed the marking and if it was an entire or sample area mark.				
Marking completed in (specify Location(s))	Trees Marked (Harvest / Retained)	Completed By (RPF / Designee)	Area Marked (Entire / Sample area)	RPF Explanation if needed (Optional)
Selection: WLPZ(RMZ), HRA’s & Tree Clumps	Harvest trees marked with blue paint	RPF or designee	Entire area	
Commercial Thinning	Retention (crop) trees marked with pink paint	RPF or designee	Sample Mark	See waiver of marking request below.

<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the RPF requesting a waiver of required marking?
	<p><u>If YES, provide directions explaining how the LTO will determine what trees shall be harvested or retained:</u></p> <p><u>Waiver of Marking:</u> A waiver of marking is proposed for the commercial thinning harvest areas. A sample area will be marked prior to the preharvest inspection. The sample area shall include at least 10% of the thinning area up to a maximum of 20 acres per stand type which is representative of the range of conditions present in the area. As allowed for under 913.3(a)(3), the RPF is requesting that the Director waive the marking requirements for the remainder of the THP area as explained and justified in the THP. The explanation and justification for this proposed waiver of marking is included in THP Section III, Item 14(d). Direction to the LTO is provided below.</p> <p>The following stocking standards, objectives and guidelines were used by the RPF to mark the sample areas, and shall be used by the LTO to distinguish the trees to be harvested from the trees to be retained in areas outside the sample mark areas. The LTO may request that the RPF provide additional sample marking to clarify trees to be harvested or retained.</p> <p><u>Post-harvest stocking:</u> Approximately 30% to 50% of the stand basal area will be harvested with the objective of achieving a post-harvest stocking of approximately 180 sq. ft. of basal area per acre. The minimum post-harvest conifer stocking will be 100 sq. ft. of basal area per acre as required by the rules. The stand will meet stocking upon completion and site preparation for regeneration purposes will not be required. (As guidance, an even distribution of leave trees with an average diameter of 14 inches dbh spaced 20 feet apart would exceed the minimum 100 sq. ft. of basal acre per acre standard.)</p> <p><u>Commercial thinning objective:</u> The objective of this silvicultural treatment is to retain high quality crop trees, and harvest the trees that are impeding the growth of these retained crop trees. This prescription will reduce stand density by harvesting trees from all sizes and all canopy positions and promote the growth of trees in the post-harvest stand. The proposed treatment will maintain or increase average stand diameter of the residual crop trees, promote timber growth and improve forest health. The post-harvest stand shall consist primarily of healthy and vigorous dominant and codominant crop trees from the preharvest stand. The primary characteristics of a desired crop tree are to have a good form, to be free of significant defect and to have a dominant or codominant crown position.</p> <p><u>Leave tree guidelines:</u></p> <ul style="list-style-type: none"> • Within each redwood clump, leave approximately 50% of the dominant or codominate trees; the larger, most vigorous trees shall be retained. Approximately 2 or 3 dominant or codominant trees per clump should be retained. • Retain single dominant conifer crop trees at a spacing of approximately 20-25 feet off of other retained dominate crop trees or redwood clumps, except where they inhibit logging operations. • Trees marked with a painted pink “L” or “W” shall be retained. • Do not target evergreen hardwoods for removal, except as needed to facilitate conifer harvest. • Retain unique high wildlife value trees with combined traits of low commercial value, high defect, deformities, cavities or basal hollows, indicators of internal rot, etc. • No Harvest in WLPZ’s/RMZ’s. <p><u>Harvest tree guidelines:</u></p> <ul style="list-style-type: none"> • Within each redwood clump, harvest merchantable trees other than retained crop trees. • Harvest single trees to achieve an average spacing of approximately 20-25 feet off of retained trees and redwood clumps and that would inhibit logging operations. • Merchantable trees that exhibit moderate to high defect from bear damage will be harvested to the extent feasible. • The LTO shall take care to protect leave trees from mechanical damage due to falling and skidding to the extent feasible. Trees that are damaged during operations may be harvested to maintain the overall heath and vigor of the post-harvest stand.

	<p>RPF responsibilities: The RPF will provide a sample mark prior to the PHI as described above. The RPF will have an on-site meeting with the LTO prior to the commencement of operations to review the sample mark areas with the LTO and to ensure that the stocking standards, objectives and guidelines as described above are fully understood by the LTO. The RPF or his designee will be present during harvesting operations at a sufficient frequency to ensure that the harvesting is conducted in compliance with the plan requirements and marking guidelines as provided above. The RPF may mark additional sample areas, harvest trees or leave trees as necessary or when requested by the LTO to ensure that the plan requirements are met.</p>
	<p><u>If more than one silvicultural method or group selection is used, provide instructions to the LTO identifying how boundaries of the different methods or groups have been identified:</u></p> <p>Harvest unit boundaries are delineated by PINK (THP Boundary imprinted in black) flagging, or by previous clearcut lines. Boundaries between dominate silviculture methods and mitigated silviculture methods are as follow:</p> <ul style="list-style-type: none"> • WLPZs(RMZs): are delineated by pink and blue flagging. • Steep Slope Stability (SSS(RSMZ)): are delineated by white SSS flagging with blue dots along with pink flagging. • Unstable Areas: ORANGE & WHITE STRIPE (Special Treatment Area imprinted in black) with WHITE (GEOLOGY imprinted in blue) • Commercial thinning boundaries are delineated from even aged silviculture by green flagging (<i>Silviculture</i> imprinted in black). <p>Within the clearcut portions of the plan all merchantable trees may be harvested with the following exceptions:</p> <ul style="list-style-type: none"> • Marked retention trees: Retention trees marked with a pink painted “W” or “L” shall not be cut unless a safety hazard exists. If marked retention trees are cut for safety, replacement trees will be selected by the RPF or designee where feasible. • Merchantable conifers and hardwoods retained in Modified Tier A and Tier B Class III EEZ’s painted with a pink “L”.

e. FOREST PRODUCTS TO BE HARVESTED: (Any of the following products may be harvested as markets allow).					
<input checked="" type="checkbox"/>	Saw Logs	<input checked="" type="checkbox"/>	Poles	<input checked="" type="checkbox"/>	Clean Chips
<input checked="" type="checkbox"/>	Peeler Logs	<input checked="" type="checkbox"/>	Split Wood Products	<input checked="" type="checkbox"/>	Firewood
<input checked="" type="checkbox"/>	Fuel Wood	<input checked="" type="checkbox"/>	Fuel chips	<input checked="" type="checkbox"/>	Other: Hog fuel/biomass/chip logs
<input checked="" type="checkbox"/>	Burl Wood				

f. GROUP B SPECIES MANAGEMENT	
1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are group B species proposed for management?
2. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are group B or non-indigenous A species to be used to meet stocking standards?
3. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will group B species need to be reduced to maintain relative site occupancy of group A species?
<p>If any answer is YES, list the species, describe treatment, and provide LTO felling and slash treatment guidance. See table below.</p> <p>The stocking standards for harvest areas will be met with Group A species only. Group B species may be harvested where they are present and it is economically feasible to do so. However, no exceptions to the standard stocking standards are proposed, therefore the requirements of 14 CCR 912.7(d) are not applicable.</p>	

TABLE FOR LTO TREATMENT GROUP B SPECIES MANAGEMENT			
Species	Treatment Method	Felling Instruction	Slash Treatment Instructions

1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are follow-up treatments expected to maintain relative site occupancy of group A species? <input type="checkbox"/> Manual Treatments - Describe: <input type="checkbox"/> Herbicide Treatments - Describe: <input type="checkbox"/> Both
	If YES who will be responsible?
2. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will a Licensed Pest Control Advisor be involved in the process? If YES explain when an advisor will be needed:

g. LTO FELLING INSTRUCTIONS PLAN AREA	
	<ul style="list-style-type: none"> • Retention (crop) trees in commercial thinning (sample mark) areas are marked with pink paint as stated above in Item 14d (Timber Marking). • An LTO meeting with the RPF is required prior to felling the commercial thinning areas. <ul style="list-style-type: none"> • Retention (crop) trees in the sample mark of the commercial thinning are marked with pink paint. • Skid trails are exempt from pre-harvest marking. • The majority of the harvested trees within the commercial thinning shall be designated by the LTO. • See instructions in 14d for harvest guidelines • Harvest trees in Selection (WLPZ(RMZ/RSMZ) & HRA's) are marked with blue paint. • Single tree retention trees are marked with pink paint ("L" or "W"). • To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses. • See the flagging code at the end of Section II for a description of these designations and associated mitigation measures

h. REGENERATION	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will artificial regeneration be required to meet stocking standards? Describe: Artificial regeneration may be used to meet stocking standards in the clearcut areas. Selection and commercial thinning areas will meet stocking upon completion of operations.

i. SITE PREPARATION	
Definition of site preparation per 14 CCR § 895.1: Site preparation means “any activity” involving mechanical disturbance of soils or burning of vegetation which is performed during or after completion of timber harvesting and is associated with preparation of any portion of a logging area for artificial or natural regeneration.	
1 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will site preparation be used within the logging area? If YES, provide site preparation plan per 14 CCR § 915.4 [935.4, 955.4]</p> <p>The Site Preparation Addendum is written in compliance with 14CCR 915.4, with references to GDRCo’s AHCP. Site preparation activities shall be designed to prevent soil disturbance and minimize soil movement into watercourses. Site specific measures and burning restrictions intended to accomplish this goal are stated below within sections of the site preparation addendum.</p>
2 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will site preparation be required to meet stocking?</p> <p>The evenage harvest areas will be assessed following completion of harvest operations to determine the extent that site preparation may be needed to meet stocking.</p> <ul style="list-style-type: none"> • General method(s) of site preparation: <p>If necessary, site preparation treatments may include one or more of the following methods:</p> <ul style="list-style-type: none"> • Broadcast burning or pile burning • Mechanical piling of slash and brush with a shovel loader or similar type equipment in areas designated for ground based yarding. • Yarding non-merchantable material and or chipping on site. • Hand slashing of residual hardwoods and brush. <ul style="list-style-type: none"> • Type of equipment to be used for mechanical site preparation and/or firebreak construction: <p><u>In accordance with AHCP 6.2.4.2.3: (1), Green Diamond will minimize the use of machine piling with tractor-and-brushrake; other mechanized methods or equipment will be used preferentially. Heel boom track loaders or excavators may be used for piling within ground based operations areas.</u></p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is fire trail construction proposed?</p> <p>Where fire trails are constructed, the following standards shall apply:</p> <p>6.2.4.2.6 Fireline Drainage <i>All firelines that are not in an RMZ or EEZ will have drainage facilities adequate to prevent the delivery of sediment to RMZs or EEZs.</i></p> <p>6.2.4.2.7 Fireline Construction with Tractors</p> <ol style="list-style-type: none"> 1. <i>Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th.</i> 2. <i>If the proposed fireline location may cause hillslope sediment delivery to a RMZ or EEZ adjacent to a Class I, II, or III watercourse, then equipment use will be limited to slopes less than 45%.</i> 3. <i>If the proposed fireline location is not likely to cause sediment delivery to a RMZ, and if slopes are greater than 50%, then tractors will operate only on fireline segments less than 100’.</i> <p>6.2.4.2.8 Fireline Construction, Reconstruction, and use within RMZs and EEZs <i>Green Diamond will limit fireline construction, reconstruction, and use within RMZs and EEZs as follows:</i></p> <ol style="list-style-type: none"> 1. <i>Firelines will only be constructed or reconstructed with handtools.</i> 2. <i>Existing skid roads or firelines within RMZs or EEZs will be constructed for fireline usage only if they are located advantageously for fire containment. Reconstruction will only be done with handtools, and only to the minimum width required for fire containment. All prior drainage failures on the existing skid roads or firelines will be remedied during construction.</i> 3. <i>All constructed or reconstructed firelines within RMZs or EEZs will have drainage structures that will minimize the movement of sediments from the exposed fireline surface but are not subject to the 100 square foot ground disturbance standard for seeding and mulching as described in Section 6.2.1.</i>

- Methods to protect desirable residual trees per 14 CCR § 917.7 [937.7, 957.7]:

If burning is deemed necessary, burning operations will be conducted according to the provisions of a project type burn permit issued by the California Department of Forestry and Fire Protection. Burning can occur after merchantable logs have been harvested, and up until stocking has been met. The following burning restrictions will apply:

- Burning will be conducted under fuel moisture conditions that will minimize encroachment of high intensity burning into WLPZs (RMZs), and prevent large fuels from being completely consumed.
- Residual trees, LWD, vegetation and duff within the WLPZs (RMZs), ELZs and EEZs shall be protected from site preparation burning by not lighting directly within the WLPZs (RMZs), ELZs or EEZs established for watercourse protection.
- Residual trees and snags within the harvest unit shall not have slash concentrations piled against them.
- Soil stabilization, as described under item 18, shall be applied in WLPZs (RMZs) following broadcast burning if encroachment of ground fires has resulted in exposure of bare mineral soil areas greater than 100 square feet or which is likely to result in the transport of sediment to Class I or II waters.

BURN PRESCRIPTION

Broadcast burning may occur on this THP for site prep. Superior site productivity on these specific harvest units is the goal of burning for site prep. Burning for site prep will also contribute to overall fuel load reduction across the landscape. Fuel load reduction is a long-term goal of the landowner that requires continued perseverance to achieve. Reducing fuel loads will protect the timber productivity of the entire assessment area as well as public safety and the quality of the water, wildlife habitat and other public trust resources present on TPZ lands.

Proper fuel moisture and weather conditions are key elements to success. Broadcast burning shall occur under fuel moisture conditions that will minimize encroachment of high intensity burning into WLPZs (RMZs). Broadcast burning shall not be initiated within (RMZs), WLPZs, EEZs or ELZs established for watercourse protection. Encroachment of ground fire and some scorching of trees on the boundary of WLPZs (RMZs) is expected. This will be minimally impactful to desirable WLPZ (RMZ) conditions such as filtration capacity and temperature moderation. In that it will simulate natural fire effects in the forest environment, it will create more desirable habitat characteristics over time, such as decadent trees and higher incidence of snags and LWD.

The burning shall occur after sufficient rain has fallen to raise the fuel moisture within WLPZs (RMZs). Clearcut areas will be burned as separate units on opposite sides of WLPZs (RMZs). The fuel load in the first unit shall be substantially consumed before ignition of the second unit; or sufficient time shall elapse between ignition of the units that the convection column of the area ignited first, has had time to subside and is not likely to significantly damage the retained stand in the WLPZ (RMZ).

<p>3. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<ul style="list-style-type: none"> • Are there any exceptions or alternatives proposed to the standard rules for site preparation? If YES, provide an explanation and justification for the proposed exceptions:
	<ul style="list-style-type: none"> • Provide a map identifying the boundaries of site preparation areas, if different from the logging area boundaries, and distinguish areas by type of site preparation activity. <p>The boundaries for site preparation are the same as those shown on the THP Silviculture Maps for clearcutting areas.</p>
	<ul style="list-style-type: none"> • Prior to conducting site preparation activities provide the name of the person responsible for site preparation:
	<ul style="list-style-type: none"> - Name: Mr. Mitch Hunt
	<ul style="list-style-type: none"> - Address: Green Diamond Resource Company, PO Box 68, Korbelt CA 95550
	<ul style="list-style-type: none"> - Phone #: 707-668-4460

• Estimated timing of site preparation activities:
Yarding of slash concentrations, if required, may take place during timber operations.

Per AHCP 6.2.4.2.3 (3), Mechanized slash piling with shovel logging equipment (on slopes averaging less than 30% and if operating on slash) may be conducted concurrent with shovel harvesting operations during the winter period subject to limitations under AHCP 6.2.4.7. Besides this exception, use of mechanical site preparation methods will be limited to the period beginning May 15th and ending October 15th. AHCP 6.2.4.2.3 (2): Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th. ACHP 6.2.4.2.7 (1).

REGENERATION PLAN (rehabilitation of understocked areas or variable retention)	
j. retention) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is a regeneration plan needed per 14 CCR § 913.4 [933.4, 953.4](b) or (d)? If YES, please provide a detailed description for Review Team to evaluate how the proposed management prescription will aid in restoring and enhancing the productivity of commercial timberland. The regeneration plan shall include but not be limited to: <ul style="list-style-type: none"> - <u>Rehabilitation of understocked areas</u>: site preparation, method of regeneration and other information needed to evaluate the proposal by the Review team: - <u>Variable Retention</u>: Trees and elements retained, objectives intended to be achieved by retention, distribution and quantity of retained tress, intended time period of retention, and potential future conditions or events the RPF believes would allow harvest of retained trees.
Regeneration plan:	

ITEM #15 – PESTS

PESTS / FOREST DISEASES	
Timber operations shall be conducted so as to minimize the build-up of destructive insect populations or the spread of forest Diseases. 14 CCR 917.9 [937.9, 957.9](a) – (c) (All Districts)	
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this THP within an area that the Board of Forestry and Fire Protection has declared a Zone of: 1. <input checked="" type="checkbox"/> Infestation 2. <input type="checkbox"/> Infection pursuant to PRC §§ 4712 - 4718? If YES, identify feasible measures being taken to mitigate adverse infestation or infection impacts from the timber operation. 917.9 (937.9, 957.9)(a) Reference Board of Forestry Technical Rule Addendum Number 3 for RPF considerations.
Measures to mitigate adverse infestations or infections: This THP is located within Humboldt County, CA which was declared a Zone of Infestation for Sudden Oak Death disease (SOD) by the Board of Forestry on July 9, 2002. SOD is not known to occur within the plan boundaries. Sudden Oak Death (SOD) Protection Measures: a) The California counties regulated for SOD at this time are: Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma and Trinity as well as Curry County in southern Oregon. b) Known host species at this time are: Bigleaf maple, California bay laurel/pepperwood, California black oak, California buckeye, California coffeeberry, California honeysuckle, California maidenhair fern, Canyon live oak, Cascara, Coast live oak, Evergreen huckleberry, False Soloman’s seal, Madrone, Manzanita, Rhododendron (including Azalea), Shreve’s oak, Tanoak, Toyon, Western starflower, Wood rose, basal trunk/burl sprouts, small branches (less than one inch in diameter), and leaves of coast redwood, and small branches (less than one inch in diameter), and leaves of Douglas-fir. c) Host material may be removed from this THP area in the form of forest products as described in THP Section II, Item 14e. d) Host material shall not be moved outside of the regulated area without amendment of appropriate state and federal permits to this THP. e) This THP shall serve as a compliance agreement for movement of host material within the regulated area. (1) The potential destinations of regulated host materials are: (a) North Fork Lumber Company, Korbelt (b) Trinity River Lumber, Weaverville (c) Schmidbauer Lumber, Eureka (d) Resale Lumber Products, Arcata (e) CRC Chip Dock, Samoa (f) Humboldt Redwood Company, Scotia, Ukiah (g) Fairhaven Power Plant, Fairhaven (h) Blue Lake Power, Blue Lake (i) Arcata Forest Products, Arcata (j) Mad River Lumber, Arcata (k) CW Wood Products, Fortuna (l) Schneider Dock, Eureka (m) Fence Specialties, Redcrest (n) South Coast Lumber, Brookings, OR (o) Pacific Redwood Lumber, Eureka Firewood in the form of cut rounds or split bolts shall not be transported out of the regulated area.	

(2) Although the destination is known and stated above, other destinations for log shipment may be amended to the THP.

(3) Material smaller than 4” in diameter must be moved in a closed container except split firewood bolts.

(4) Movement of material greater than 4” in diameter does not require a closed container.

(5) The LTO shall inspect all log trucks before they leave the harvest area and remove all tops less than 4” in diameter and debris of host plant species including limbs, twigs, and leaves.

f) This THP will serve as a SOD compliance agreement with Humboldt County Department of Agriculture for the movement of host material within the regulated area. If SOD conditions change, the THP shall be amended to reflect those changes.

g) The RPF responsible for the THP shall be responsible for amending or extending the above restrictions and for informing the LTO of the operational requirements.

b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are there any other significant insect or forest disease problems within the THP area if outside a declared zone? 1. <input type="checkbox"/> Insect(s) 2. <input type="checkbox"/> Disease(s) 3. <input type="checkbox"/> Pest problems 4. <input type="checkbox"/> Other (provide description of the forest problem) If YES, describe proposed measures to improve the health, vigor, and productivity of the stand(s).
Proposed measures:	

ITEM #16 – HARVESTING PRACTICES

YARDING SYSTEM AND EQUIPMENT TO BE USED					
	GROUND BASED** (Tractor, skidder, Forwarder)		CABLE		OTHER (Special)
<input checked="" type="checkbox"/>	**Tractor, including end/long lining	<input type="checkbox"/>	Cable, ground lead	<input type="checkbox"/>	Helicopter
<input checked="" type="checkbox"/>	**Rubber tire skidder, forwarder	<input type="checkbox"/>	Cable, High lead	<input type="checkbox"/>	Animal
<input checked="" type="checkbox"/>	Feller buncher	<input checked="" type="checkbox"/>	Cable, skyline	<input checked="" type="checkbox"/>	Other: Yoder
<input checked="" type="checkbox"/>	Shovel yarding				

** All Tractor operations restrictions apply to ground based equipment Reference 14 CCR 914.2 [934.2, 954.2] (All Districts)

ITEM #17 – EROSION HAZARD RATING

EROSION HAZARD RATING (EHR)					
Per 14 CCR 914.6 [934.6, 954.6](c) Waterbreaks					
Road and/or Trail Gradients Waterbreak Spacing by trail/road gradient					
		10 or less	11-25	26-50	>50
<input checked="" type="checkbox"/>	LOW	300	200	150	100
<input checked="" type="checkbox"/>	MODERATE	200	150	100	75
<input type="checkbox"/>	HIGH	150	100	75	50
<input type="checkbox"/>	EXTREME	100	75	50	50

NOTE:

- If more than one rating is checked, areas must be identified on a THP map down to 20 acres in size.
- COASTAL DISTRICT with a High or extreme EHR(s) must be mapped to 10 acres.

Refer to EHR worksheet in Section V and the Detailed THP maps in Section II.

- If ratings checked do not match the EHR Worksheet clarify the discrepancy:

EHR rating discrepancy:

ITEM #18 – SOIL STABILIZATION

NOTE: Road related activities in this THP will comply with the requirements of the California Water Quality Control Board (CWQCB) Order R1-2010-0044 (*Waste Discharge Requirements for Discharges Related to Road Management and Maintenance Activities conducted pursuant to GDRCo's AHCP*). Forest management related activities in this THP will comply with the requirements of the CWQCB Order R1-2012-0087 (*Waste Discharge Requirements for Discharges Related to GDRCO's Forest Management Activities Conducted within the Area Covered by its AHCP*). A discussion of the orders is located in Section III, Item #25 of the THP, and a copy of the orders are on file at the Cal Fire Santa Rosa and Fortuna offices. Watercourse crossing related activities will be conducted under the procedures and standards described in the property wide Master Agreement for Timber Operations from Department of Fish and Wildlife (MATO No. 1600-2010-0114-R-1). A discussion of the agreement is located in Section III, Item #25 of the THP, and a copy of the agreement is on file with Cal Fire at the Santa Rosa and Fortuna offices.

ITEM #18	SOIL STABILIZATION / EROSION CONTROL
	<p>Per 14 CCR 914, 934, 954 – Harvesting practice and erosion control [All Districts] – Timber operations shall be conducted to: Meet the goal... to prevent degradation of the quality and beneficial uses of water and maintain site productivity by minimizing soil loss</p> <p>Guidance on methods for hydrologic disconnection may be found in “Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings” (1st Edition, revised 10/27/14)</p> <p>14 CCR 914.6, 934.6, 954.6(a) (1-2), (b), (c), (d), (e), (f), (g), additional Coast areas (h), (i) contain standard Forest Practice Operational rules pertaining to the timing and specifics for the installation of erosion control structures for harvesting practices, tractor and cable operations.</p> <p>Per 14 CCR 923.5, 943.5, 963.5 – Erosion Control for Logging Roads and Landings [All Districts] – 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.</p> <p>14 CCR 923.5, 943.5, 963.5(b), (c), (d), (e), (f), (g), (h), (j), (k), (p) contain standard Forest Practice Operational rules pertaining to the timing and specifics for the installation of erosion control structures for Roads and Landings.</p> <p style="text-align: center;">THE LTO SHALL BE FAMILIAR WITH THESE STANDARD OPERATIONAL REQUIREMENTS, PRIOR TO OPERATIONS.</p>
<p>a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any exceptions proposed to the above listed standard operational requirements (14 CCR 923.5)? If YES, please provide the specific operational instruction to the LTO.</p> <p>Methods of stabilization to be used: (check all that apply): <u>The following methods may be used where needed for soil stabilization:</u></p> <p><input checked="" type="checkbox"/> STRAW Mulch Depth (inches): <u>2 inch depth at time of application</u> Percent coverage: <u>90% at time of application</u></p> <p><input checked="" type="checkbox"/> SLASH Mulch <input checked="" type="checkbox"/> Scattered Depth (inches): <u>Approx 2 inch depth at time of application</u> Percent coverage: <u>90% at time of application</u> <input checked="" type="checkbox"/> Packed Depth (inches) <u>Approx 2 inch depth at time of application</u> Percent coverage: <u>90% at time of application</u></p> <p><input checked="" type="checkbox"/> Grass Seeding LTO Instructions: <u>30 pounds per acre</u></p> <p><input checked="" type="checkbox"/> Rock Armoring Size: <u>Variable</u> Installation instructions: <u>Rock used for soil stabilization shall be adequately sized to resist mobilization with rock size typically ranging from 4 inches to 4 feet as determined by site specific conditions.</u></p>

[X]	Replanting LTO instructions if needed
[X]	Installation of commercial erosion devices Describe commercial devise and provide instructions to the LTO: <u>If any commercial erosion control devices or chemical stabilizers are used, they will be installed or used to manufacturer’s specifications.</u>
[X]	Other Describe method and provide LTO instructions: <u>Unstable soils may be removed to a stable location.</u>

Per 14 CCR 914.9[934.9, 954.9] the RPF may develop on a site-specific basis alternative practices that will achieve environmental protection at least equal to the standards set forth in 914.1-914.8 [934.1-934.8, 954.1-954.8]	
b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are there any alternative practices to the standard harvesting or erosion control rules proposed? If YES, the information as required per 914.9 [934.9, 954.9] shall be provided in SECTION III. Provide instructions to the LTO in SECTION II.

All WATERSHEDS Logging roads / Landings	N/A	Description of Treatments	Protection Measures	Timing
<p>c. 923.5[943.5, 963.5](t): treatments to prevent significant discharge where features cannot be hydrologically disconnected.</p>	N/A			
<p>d. 923.5[943.5, 963.5](l) & (m): treatments for sidecast or fill; cuts and fills associated w/ approaches to watercourse crossings; bare areas w/in WLPZ.</p>		<p>In compliance with 14 CCR 923.5(m) Soil stabilization, as required by 14 CCR 916.7, 923.5(l), 923.8(b) and 923.9 (p)(2) and (t)(2) will be accomplished by seeding, mulching, armoring with rip-rap, removal, slash packing, installing commercial erosion control devices, or chemical stabilizers.</p>	<p>923.5 (l) Bare soil on logging road or landing cuts, fills, transported spoils, or sidecast that is created or exposed by timber operations shall be stabilized to the extent necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. Sites to be stabilized include, but are not limited to:</p> <ul style="list-style-type: none"> (1) Sidecast or fill exceeding 20 feet in slope distance from the outside edge of a logging road or a landing that has access to a watercourse or lake. (2) Cut and fills associated with approaches to logging road watercourse crossings of Class I or II waters or Class III waters where an ELZ, EEZ, or a WLPZ/RMZ is required. (3) Bare areas exceeding 100 continuous square feet within a WLPZ/RMZ 	<p>Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period (October 15), whichever comes first. An exception is that bare areas created during the extended wet weather period (October 15 to May 1) shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.</p>
<p>e. 923.5[943.5, 963.5](n): When the natural ability of ground cover in WLPZ is inadequate to filter sediment.</p>	N/A			
<p>f. 923.5[943.5, 963.5](o): Exceptions to soil stabilization treatment timing.</p>			<p>Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period (October 15), whichever comes first. An exception is that bare areas created during the extended wet weather period (October 15 to May 1) shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.</p>	

<p>Watercourse crossings on logging roads</p>		<p>The following stabilization standards shall apply to logging road watercourse crossings:</p> <p>(1) Soil stabilization measures may include, but are not limited to, removal, armoring with rip-rap, replanting, mulching, seeding, installing commercial erosion control devices to manufacturer's specifications, or chemical stabilizers.</p>	<p>(2) Bare soil on fills or sidecast associated with logging road watercourse crossings that are created or exposed by timber operations shall be stabilized to the extent necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. Erosion control measures for the traveled surface of roads and landing surfaces are specified in 14 CCR 923.5. Sites to be stabilized include, but are not limited to, sidecast or fill exceeding 20 feet in slope distance from the outside edge of the road surface at the logging road watercourse crossing.</p>	<p>(3) Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period (October 15), whichever comes first. An exception is that bare areas created during the extended wet weather period (October 15 to May 1) shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.</p>
<p>g. 923.9[943.9,963.9] (t)(1)-(3): Bare soil on fills, sidecast, timing of treatment.</p>				

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed THP addressing EEZs within a Non ASP and exempt ASP watersheds. Please address the following table and the specific rule. If not applicable, so state.		WLPZ & Protected ELZ &	
Non ASP & Exempt ASP watersheds WLPZ & Protected ELZ & EEZ	N/A	Description of Treatments	Protection Measures
h. 916.7[936.7,956.7] Stabilization measures for WLPZ of CI & C II.	Stabilization measures shall be selected that will prevent significant movement of soil into Class I and II waters and may include, but need not be limited to, removal, armoring with rip-rap, replanting, mulching, seeding, installing commercial erosion control devices to manufacturer's specifications, or chemical stabilizers.	<p>Within WLPZs(RMZs) adjacent to Class I and II watercourses, and EEZs adjacent to class III watercourses, areas where bare mineral soil exceeding (100) continuous square feet in size, exposed by timber operations, shall be treated for reduction of soil loss.</p> <p>a. This section does not apply to the traveled surface of logging roads. Erosion control measures on road surfaces are specified in 14CCR 923.</p> <p>b. Where mineral soil has been exposed by timber operations on approaches to watercourse crossings of Class I or II waters, or Class III waters if an ELZ or WLPZ(RMZ) is required, the disturbed area shall be stabilized to the extent necessary to prevent the discharge of soil into watercourses or lakes in amounts deleterious to the quality and beneficial uses of water.</p> <p>c. Where necessary to protect beneficial uses of water from timber operations, protection measures, such as seeding, mulching, or replanting, shall be specified to retain and improve the natural ability of the ground cover within the standard width of the WLPZ (RMZ) to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.</p>	Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period (October 15), whichever comes first. An exception is that bare areas created during the extended wet weather period (October 15 to May 1) shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner.

Forest Practice Rules (FPR) require Specific Erosion Control / Soil Stabilization measures to be addressed within the proposed THP addressing WLPZ & Protected ELZ & EEZ, Roads and Landings and Watercourse Crossings, within an ASP Watershed or Immediately upstream of an ASP Watershed. Please address the following table and the specific rule. If not applicable, so state.			
ASP WATERSHEDS Logging roads / Landings	N/A	Description of Treatments	Protection Measures
i. 916.9[936.9,956.9](n)(1)-(7): WLPZ, & protected ELZ & EEZs.	N/A		
j. 923.5[943.5,963.5](q)(3): as it pertains to roads, landings, etc.	N/A		
k. 923.9[943.9,963.9](t)(4): as it pertains to watercourse crossings.	N/A		

ITEM #18 – SOIL STABILIZATION (Cont.):**923.5 Erosion Control for Logging Roads and Landings**

- (a) 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. *Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 04/21/15), hereby incorporated by reference.*
- (b) Drainage facilities and structures shall be installed along all logging roads and all landings that are used for timber operations in sufficient number to minimize soil erosion and sediment transport and to prevent significant sediment discharge.
- (g) Where out sloping and rolling dips are used to control surface runoff, the dip in the logging road grade shall be sufficient to capture runoff from the logging road surface. The steepness of cross-slope gradient in conjunction with the logging road or landing gradient and the estimated soil erosion hazard rating shall be used to determine the rolling dip spacing in order to minimize soil erosion and sediment transport and to prevent significant sediment discharge. *Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 04/21/15), hereby incorporated by reference.*
- (h) Drainage facilities and structures shall discharge into vegetation, woody debris, or rock wherever possible. Where erosion-resistant material is not present, slash, rock, or other energy dissipating material shall be installed below the drainage facility or drainage structure outlet as necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. *Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 04/21/15), hereby incorporated by reference.*
- (j) All logging roads and landings used for timber operations shall have adequate drainage upon completion of use for the year or by October 15, whichever is earlier. An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow.

Additional AHCP Erosion Control measures:**AHCP 6.2.4.8.1**

Cable Logging Suspension: Green Diamond will fully suspend logs above the ground when cable yarding across Class I and II RMZs, and to the extent practicable when cable yarding across Class III EEZs. Partial log suspension through RMZs may occur when the following conditions are met:

- a. *Alternatives to partial suspension (such as utilizing alternative logging equipment or logging methods, road construction, or temporary crossings) have been evaluated. The intent is to use the most feasible alternative that will have the least amount of impact to the aquatic resource.*
- b. *The partial suspension of logs through the RMZ will not create furrowing that can cause sediment delivery to a watercourse.*
- c. *Exposed soils greater than 100 square feet within the RMZ and furrowing caused by the partial log suspension within the RMZ will be treated according to the specifications in Section 6.2.4.8.2.*

AHCP 6.2.4.8.2

Where sections of skyline road upslope of WLPZs (RMZs) or EEZs have created furrowing of the ground which can channelize surface flow and result in gulying and possible delivery of sediments into or through the WLPZ (RMZ) or EEZ, those affected areas will be treated with the installation of one hand-built waterbar per 50 lineal feet of affected skyline road, except in areas of known erodible soil types and on formations or slopes greater than 65%, where waterbars will be placed after a linear disturbance distance of 30 feet and the spacing between waterbars thereafter will be 20 feet.

AHCP 6.2.3.7.6 Sidecast Treatment

On side slopes greater than 50%, Green Diamond will seed, plant, mulch, remove or treat sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake to minimize soil erosion.

AHCP 6.2.3.8.4 Seeding and Mulching (Road Construction)

Prior to the beginning of the first winter period following construction, Green Diamond will seed all new cut and fill slopes on roads constructed within a WLPZ (RMZ) or EEZ of Class I, II, or III watercourses at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage.

GDRCo and CDFW have developed procedures and mitigations designed to further reduce the potential for ground based or cable yarding operations conducted between Oct. 15th and June 1st of any year to cause a significant adverse impact to aquatic habitats that support anadromous salmonid populations. Refer to item #23 for all procedures addressed. The procedures listed below apply directly to soil stabilization measures within WLPZs. These procedures are intended to augment, not replace, the rules and mitigation provided above.

- From October 15 to June 1 Green Diamond shall treat with seed, mulch, or slash, all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within all Class I and Class II WLPZs(RMZs), and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ), by the end of the working day. Application of erosion control materials beyond Class I or Class II WLPZ/(RMZ) widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery.
- From October 15 to June 1, prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or State seed mix), and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"- 4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 30 pounds per acre equivalent State seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"-4" straw mulch.

** If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

Additional AHCP required seasonal dirt road watercourse crossing treatments:

Yes No Within the THP area are there seasonal dirt road watercourse crossings that are within:

- 1) 1000' of a Class I watercourse where coho are present? or
- 2) the Mather, McKinleyville, McKay, Salmon/SF Elk River, Rio Dell, or Carlotta tract? or
- 3) a coho planning watershed that has been identified as containing "highly erodible soils" at the crossing?

If yes, then describe mitigation measures to be used at the approach to watercourse crossings to create and maintain a stable operating surface and minimize the generation of fine sediment.

Yes No Are Tractor, Skidder or Forwarder operations proposed?

Tractors and Rubber tired skidders and/or forwarders may be used for selection associated with commercial thinning (unit F) as well as clearing and skidding of felled timber associated with new road construction and seasonal road reconstruction.

Tractor, Skidder, and Forwarder Operations (AHCP 6.2.4.5)

Time of Year Restrictions (AHCP 6.2.4.5.1)

1. Green Diamond will limit the construction and reconstruction of skid trails to the period beginning May 15th and ending October 15th.
2. Ground-based yarding with tractors, skidders, and forwarders may occur from May 15th through October 15th on existing skid trails. This period for skid trail use (which excludes construction and reconstruction of skid trails) may be extended to include the periods May 1st to May 15th or October 16th to November 15th when the following procedures are followed:
 - a. Skid trail use during this period will not result in visibly turbid water that flows into hydrologically connected drainage facilities, or discharges directly into watercourses, seeps, or springs.

1) If an increase in turbidity does occur as the result of such operations, interim erosion control measures will be installed and the operations causing the increase will be immediately ceased.

2) Use of skid trails by ground-based logging equipment will not occur when soil moisture conditions would result in (a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance;

(b) inadequate traction without blading wet soil, or (c) soil displacement in amounts that cause movement of waterborne sediments off of a skid trail surface.

3) If any of the foregoing conditions is caused during skid trail use, interim erosion control measures will be installed and the operation causing the condition will be immediately ceased.

b. Ground-based yarding operations will use minimal ground disturbing equipment without bladed skid trail construction or reconstruction where feasible. Where this is not feasible, yarding operations during this period will be limited to existing skid trails for ground-based equipment that are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II, or III watercourses.

c. Use of skid trails during the period will not occur within at least 100 feet, slope distance, of the upper extent of any designated Class II watercourse, and on slopes greater than 30% within at least 100 feet of Class III watercourses. Long-line yarding or lifting logs with a shovel from outside these zones may occur as long as the skid trails are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II or III watercourses.

d. During the period, all bare mineral soils greater than 100 square feet created by ground-based yarding that are within an RMZ or EEZ will be treated with seed, mulch or slash by the end of the working day. Such treatment outside the zones will be performed at the discretion of the RPF or Green Diamond's supervisor based on an evaluation of the potential of the site to deliver sediment to a watercourse or hydrologically connected facility, taking into consideration the potential for large storm events to cause sediment delivery.

e. During the period, prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, seed (barley seed and/or the Green Diamond's seed mix), and application equipment will be retained on-site or otherwise accessible (so as to be able to procure and apply that working day) in amounts sufficient to provide at least two inches depth of straw with minimum 90% coverage, and 30 pounds per acre of Green Diamond's seed mix. In lieu of the above listed materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least two inches straw mulch.

f. If operations expose an area of bare mineral soil late in the day and it is not feasible to completely finish erosion control treatment that day, the erosion control treatment may be completed the following morning prior to start of yarding operations provided there is no greater than a 30% chance of rain forecasted by the National Weather Service within the next 24 hours.

3. Ground-based forwarders that transport logs fully suspended in bunks and that do not require the use of constructed skid trails may occur during the winter period when the following procedures are followed:

- a. Forwarders will only operate on slopes \leq 45%.*
- b. Forwarder operations will be limited to areas with either low or moderate erosion hazard ratings.*
- c. No skid trails will be constructed for forwarding operations (existing stable skid trails may be utilized).*
- d. Equipment access trails for forwarders will be slash packed during and after operations to avoid bare mineral soil, minimize surface erosion and facilitate the management of logging slash.*
- e. Forwarding operations will cease during storm events where operations, combined with significant rainfall, are likely to cause delivery of sediment to Class I, II, or III watercourses.*

In addition to Forest Practice Rules related to soil stabilization and erosion control, Green Diamond's road maintenance and inspection program, discussed in Section V of the THP, will be implemented on this THP area and on Green Diamond's property within the watershed assessment area.

Geology and Unstable Areas:

The GDRCo’s AHCP mandates that RPFs undergo geologic training by a professional geologist in order to help them identify historically active unstable areas. Using in house unpublished geomorphic mapping of the area as well as field observations, the RPF located unstable features in Units B and F. Both features were identified in 2012 by GDRCo geology staff. They currently appear to be in the same condition as when originally identified. See THP section II Maps for locations as well as descriptions and proposed mitigations below.

UNSTABLE AREAS:

There are two unstable areas located in the project area, one in Unit B and one in Unit F. Both features are small (less than 100 ft²). These unstable areas have been identified as a shallow rapid landslide as defined under Green Diamond’s AHCP. The prescription in this area conforms to the default prescription for Shallow rapid landslides under Green Diamond’s AHCP; this includes a no harvest zone within the landslide boundaries, and a selection buffer that will maintain a minimum of 70% overstory canopy within 50 feet above the slide and 25 feet along the sides of the slide. Mitigation measures shall be controlled by mark. Harvest trees within this area are marked with blue paint.

ITEM #19 – 22: GROUND BASED EQUIPMENT

GROUND BASED EQUIPMENT	
a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Per 14 CCR 895.1 a layout is a prepared bed in which a tree is felled, generally constructed by a tractor or other ground based equipment. Are tractor or skidder constructed layouts to be constructed? If YES, specify the location (consider mapping) and the extent of use. NOTE: winter operations and soil stabilization measures apply to tractor or skidder constructed layouts.
Per 14 CCR 914.3 [943.3, 954.3](e) Tractors shall not be used in areas designated for cable yarding except: <ul style="list-style-type: none"> • To pull trees away from streams • To yard logs in areas where deflection is low • Where swing yarding is advantageous • To construct firebreaks and/or layouts • To provide tail-holds Such exception(s) shall be explained and justified in the THP, and require Director's approved	
b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will ground based equipment be used within area(s) designated for cable yarding: (CHECK all that apply)
<input type="checkbox"/>	Pulling trees away from watercourses
<input type="checkbox"/>	Yarding logs from areas with low deflection
<input type="checkbox"/>	Swing yarding
<input type="checkbox"/>	Construct fire breaks
<input type="checkbox"/>	Construct layouts
<input type="checkbox"/>	Providing tail-holds
<input type="checkbox"/>	Other Describe:
If YES, specify the location (consider mapping) and provide LTO instructions	
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are any exceptions proposed for ground based operations within cable areas outside of the exceptions listed above? If YES, provide the required explanation and justification in SECTION III of the THP and provide operations instructions for the LTO in SECTION II below.

Per 14 CCR § 914.9 [934.9, 954.9](a) Alternatives to Standard Rules:

- (a) Alternative practices may be developed by the RPF on a site-specific basis provided the following conditions are complied with and the alternative practices will achieve environmental protection at least equal to that which would result from using measures stated in 14 CCR §§ 914.1-914.8 ,934.1-934.8, 954.1-954.8.
 - (1) Environmental impacts with potential for significant adverse effects on the beneficial uses of water, on the residual timber, and on the soil productivity are identified and measures proposed to mitigate such impacts are included in an approved THP. The THP shall also contain a clear statement as to why alternative harvesting and erosion control measures are needed.
 - (2) The alternative practice(s) must be explained in sufficient detail and standards provided in the THP so that they can be adequately evaluated and enforced by the Director and implemented by the licensed timber operator.
 - (3) On a THP in which alternatives covering harvesting and erosion control measures have been incorporated, the timber operator shall agree to the alternative specifications by signing and filing with the Director a copy of the plan, the amended plan or a facsimile thereof, prior to beginning or continuing operations on the portion of the plan to which the alternatives apply.
- (b) The Director shall not accept for inclusion in a THP alternative harvesting and erosion control measures proposed under this section which do not meet the standard of subsection (a) of this section. In the event that there is more than one written negative position showing that the alternative practice(s) does (do) not meet the standard of subsection (a) received from among the agencies listed in 14 CCR 1037.3 and the Department which participated in the review of the plan including on-the-ground inspection, the Director shall reject the proposed alternative.
- (c) Alternative practices stated in an approved THP shall have the same force and authority as those practices required by the standard rule.

d. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is the RPF proposing any Alternative Practices to the standard rule on a site-specific basis? If “YES” provide clear instruction to the LTO in Section II advising LTO how the Alternative is to be implemented to maintain equal protection of the standard rule. In Section III explain how the alternative practice proposed achieves environmental protection at least equal to that what which would result from using measures stated in 14 CCR §§ 914.1-914.8 ,934.1-934.8, 954.1-954.8.
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LTO Instructions:

- 14 CCR 914.2 [934.2, 954.2](a-k) Identifies the Forest Practice Rule requirements for the use of ground based equipment within the harvesting area.
- (b) Tractor, or other 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.
 - (c) Tractor roads SHALL be limited in number and width to the minimum necessary for removal of logs.
 - When less damage to the resources specified in 14 CCR 914[934, 945] will result, existing tractor roads shall be used instead of constructing new tractor roads.
 - [NORTHERN only] RPF may propose exceptions for silvicultural reasons when explained and justified within the plan.
 - (e) 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.
 - (g) where tractor roads are constructed only those roads shall be used for the skidding of logs to landings
 - (h) Desirable residual trees and seedlings will not be damaged or destroyed by tractor operations.
 - (i) where water breaks cannot effectively disperse surface runoff, other erosion controls shall be installed as needed.
 - Slope restriction are identified in subsection (d), (f) [Coastal, Northern], (j) [Southern]
- The LTO shall be aware of these rule requirements prior to operations**

e. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will new tractor roads be constructed?
f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will tractor road use be limited to existing tractor roads?

This THP proposes the use of shovel loaders in ground based option clearcut areas for yarding and may use feller bunchers in ground based option clearcut areas for falling. Tractors will not be used for ground based yarding in clearcut areas. The equipment used in these operations is based on hydraulic excavators. These machines have wide track undercarriages with sufficient surface area to limit ground pressure to the point that there is little potential for soil compaction and disturbance. They may operate on existing skid trails where that is the least impactful option, however they will not be limited to operating on existing skid trails. In some very limited circumstances, repeated passes by a shovel loader may create an established path that meets the definition of a “new” skid trail. Other constraints inherent in the design and operation of this machinery are:

- They do not require constructed skid trails and they are not equipped with a blade.
- They operate on top of slash and debris, not in prepared bare soil skid trails.
- Their design limits operation to mild or moderate slopes.

Forwarders may be used for yarding operations in ground based commercial thinning areas. These are low ground pressure machines that have very low potential for soil compaction and ground disturbance. They may operate on existing skid trails where that is the least impactful option, however they will not be limited to operating on existing skid trails. In some circumstances, repeated passes by a forwarder may create an established path that meets the definition of a “new” skid trail. Other constraints inherent in the design and operation of this machinery are:

- They do not require constructed skid trails and they are not equipped with a blade.
- They operate on top of slash and debris, not in prepared bare soil skid trails.
- Their design limits operation to mild or moderate slopes.

Tractors or skidders may be used for yarding operations in ground based commercial thinning areas. This equipment may operate on existing skid trails where that is the least impactful option, however they will not be limited to operating on existing skid trails.

Ground based equipment operations shall be subject to the limitations set forth for tractors in 14 CCR 914.2(f).

Will ground based equipment be used on:

g. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Unstable areas? (only allowed if unavoidable) If YES, the RPF SHALL develop specific measures to minimize the effect of operations on slope stability. Provide the required justification and explanation in SECTION III and operational instructions to the LTO in SECTION II.
h. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Slopes steeper than 65% if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.
i. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Slopes steeper than 50% where the erosion hazard rating (EHR) is HIGH or EXTREME. if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.
j. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Slopes between 50% and 65% with a MODERATE EHR at: (percentage based on average slope on sample areas of 20 acres) <input type="checkbox"/> Existing tractor roads that do not require reconstruction. <input type="checkbox"/> [NORTHERN and SOUTHERN only] New tractor roads that have been flagged by an RPF or supervised designee prior to use. <input type="checkbox"/> [COASTAL only] New tractor roads at a location that has been shown on the THP map, flagged by an RPF or supervised designee prior to the pre-harvest inspection, or prior to the start of timber operations if a PHI was not required. if YES, provide site specific instructions to the LTO in SECTION II.
k. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Slopes over 50% which lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake? if YES, provide site specific instructions to the LTO in SECTION II and provide the required explanation and justification in SECTION III.

NOTE:

- Per 14 CCR 1034(x)(15) all exceptions must be located on a map.
- If any question above is answered YES then tractor road locations must be flagged on the ground prior to the PHI or the start of timber operations if a PHI is not required.

Ground Based Equipment Operations:

Yes No **Will tractors, skidders, or forwarders be used for yarding operations.**

Tractors, Skidders, or Forwarders - Use on Steep Slopes (AHCP 6.2.4.5.2)

1. *Green Diamond will not use ground-based yarding systems that require constructed skid trails on slopes over 45% unless greater soil or riparian zone disturbance would be expected from cable yarding due to unfavorable terrain that reduces skyline deflection and payload capability, or additional haul road construction would be required to accommodate the use of cable logging systems.*
2. *When conducting commercial thinning harvests, use of existing skid trails is allowed on slopes over 45% when the following conditions are met:*
 - a. *The existing skid trails are located on stable slopes as demonstrated by lack of features that may indicate instability such as leaning, or pistol-butted trees, hummocky ground and as confirmed through geologic field review,*
 - b. *Existing skid trail use is limited to slopes less than or equal to 50% where the erosion hazard rating is high or extreme,*
 - c. *Existing skid trail use is limited to slopes less than or equal to 65% where the erosion hazard rating is moderate or low,*
 - d. *The use of existing skid trails on slopes over 45% is limited to isolated areas less than or equal to 5 acres,*
 - e. *The existing skid trail has adequate drainage to prevent erosion such as rilling or gullyng during or after use that may cause delivery to adjacent watercourses,*
 - f. *Skid trails used on slopes over 45% for operations will be mulched or slash packed upon completion of operations in amounts sufficient to provide at least two inches depth with minimum 90% coverage,*
 - g. *Use of skid trails by ground-based logging equipment will not result in (a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance; (b) inadequate traction without blading wet soil, or (c) soil displacement in amounts that cause movement of waterborne sediments off of a skid trail surface,*
 - h. *Alternatives to using existing skid trails on slopes over 45% have been evaluated.*

Yes No **Will shovel loaders and/or feller bunchers be used for falling or yarding operations.**

Shovel and Feller Buncher Operations: See GDRCo guidelines for Shovel Logging and Feller Bunchers in Section III. These general guidelines are not considered operational limitations so they are included in Section III of the plan.

Feller-Buncher and Shovel Logging Operations (AHCP 6.2.4.7 #4)

- #4. *When shovel logging, use of existing skid trails is allowed on slopes over 45% when the following conditions are met:*
 - a. *The existing skid trails are located on stable slopes as demonstrated by lack of features that may indicate instability such as leaning, or pistol-butted trees, hummocky ground and as confirmed through geologic field review,*
 - b. *Existing skid trail use is limited to slopes less than or equal to 50% where the erosion hazard rating is high or extreme,*
 - c. *Existing skid trail use is limited to slopes less than or equal to 65% where the erosion hazard rating is moderate or low,*
 - d. *The use of existing skid trails on slopes over 45% is limited to isolated areas less than or equal to 5 acres,*
 - e. *The existing skid trail has adequate drainage to prevent erosion such as rilling or gullyng during or after use that may cause delivery to adjacent watercourses,*
 - f. *No blading of existing skid trails to allow for their use.*
 - g. *Skid trails used on slopes over 45% for operations will be mulched or slash packed upon completion of operations in amounts sufficient to provide at least two inches depth with minimum 90% coverage,*
 - h. *Use of skid trails by shovel logging equipment will not result in (a) reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performance; (b) inadequate traction without blading wet soil, or (c) soil displacement in amounts that cause movement of waterborne sediments off of a skid trail surface,*
 - i. *Alternatives to using existing skid trails on slopes over 45% have been evaluated.*

ITEM # 23 – WINTER OPERATIONS

Per 14 CCR 895.1:

- “**Winter period**” means the period between November 15 and April 1.
- “**Extended wet weather period**” means the period from October 15 to May 1.

An extended “winter period” definition is provided below as part of the Winter Period Operating Plan to comply with GDRCo’s AHCP.

- **Tractor roads (except as otherwise provided in the rules):**
 - All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations.
 - Installation of drainage facilities and structures is required from October 15 to November 15 and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a “chance” (30% or more) of rain within the next 24 hours per 14 CCR 914.6[934.6, 954.6](a).
- **Logging roads and landings used for timber operations shall have adequate drainage:**
 - Upon completion of use for the year or by October 15, whichever is earlier.
 - An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow. 923.5[943.5, 963.5](j).
- When the term “**WPOP**” (Winter Period Operating Plan) is used below, all the requirements per 14 CCR 914.7[934.7, 954.7] (b) must be addressed.

ITEM #23 WINTER OPERATIONS	
If timber operations are proposed within the winter period the RPF may propose to operate under a:	
<ul style="list-style-type: none"> • Winter Period Operating Plan (WPOP) per 14 CCR 914.7, 934.7, 954.7(b) • In-lieu winter operating plan per 14 CCR 914.7 [934.7, 954.7](c) 	
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will timber operations occur during the winter period?
WINTER PERIOD OPERATING PLAN (WPOP)	
A Winter Period Operating Plan (WPOP) is required when winter operations will occur under the following conditions:	
<ul style="list-style-type: none"> • Site preparation • Road and landing construction • Temporary logging road watercourse crossings will not be removed • At tractor watercourse crossings • Temporary logging roads or landings • Roads to be abandoned or deactivated • Operations are proposed in an ASP watershed or immediately upstream 	
b. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will mechanical site preparation be conducted during the winter period? If YES, then a WPOP is required per 14 CCR 914.7 [934.7, 954.7](b)
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will roads be constructed during the winter period? If YES, a WPOP is required per 14 CCR 914.7 [934.7, 954.7] addressing logging road and landing construction and reconstruction per 14 CCR 923.4 [943.4, 963.4](l). Provide operational instructions to the LTO in SECTION II
d. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will landings be constructed during the winter period? If YES, a WPOP is required per 14 CCR 914.7 [934.7, 954.7] addressing logging road and landing construction and reconstruction per 14 CCR 923.4 [943.4, 963.4](l). Provide operational instructions to the LTO in SECTION II
e. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will temporary logging road watercourse crossings be left in place during the winter period? If YES, a WPOP is required per 14 CCR 923.9 [943.9, 963.9](r). Provide specific measures to be taken during operations by the LTO in SECTION II

f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will tractor watercourse crossings be used during the winter period? If YES, a WPOP is required per 14 CCR 914.8 [934.8, 954.8](d). Provide operational instructions and stabilization measures in SECTION II. If an exception is proposed provide an explanation and justification in SECTION III.
g. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will temporary logging roads be used during the winter period? If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II. Refer to Item 12 in the WPOP for road use during the winter period.
h. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will temporary landings be used during the winter period? If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II. Refer to Item 12 in the WPOP for road and landing use during the winter period
i. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will logging roads to be abandoned or deactivated, be open (not blocked) during the winter period? If YES, a WPOP is required per 14 CCR 923.6 [943.6, 963.6](f) and 923.8 [943.8, 963.8](d). Provide specific measures to be taken during operations for the LTO in SECTION II. Refer to Item 12 in the WPOP for road use during the winter period. Roads to be abandoned or deactivated will be blocked prior to completion of operations. Refer to THP Item 25 for road abandonment or deactivation specifications and THP Item 24(f) for road blockage specifications.
ASP WATERSHEDS OR IMMEDIATELY UPSTREAM	
Extended Wet Weather Period:	
j. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Are timber operations proposed during the extended wet weather period – October to May 1? If YES, then a WPOP is required per 14 CCR 916.9 [936.9, 963.9](l) and (l)(1)
k. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will <u>logging roads construction or reconstruction</u> occur within the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II
l. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will <u>logging road use</u> occur within the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II
m. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will <u>landing construction or reconstruction</u> occur within the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II
n. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will <u>landing use</u> occur within the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.6 [943.6, 963.6] (h)(6) and 923.4 [943.4, 963.4](s)(2) In SECTION II
o. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will any watercourse crossing drainage structures be <u>CONSTRUCTED</u> during the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.9 [943.9, 963.9](s) In SECTION II
p. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will any watercourse crossing drainage structures be <u>RECONSTRUCTED</u> during the extended wet weather period? If YES, provide specific measures to be taken during operations per 14 CCR 923.9 [943.9, 963.9](s) In SECTION II
q. <input checked="" type="checkbox"/>	If any of the questions above are answered YES then WPOP is required: RPF chooses to prepare a WPOP per 14 CCR 914.7 [934.7, 954.7](b)(1-12)

ITEM FF

WINTER PERIOD OPERATING PLAN (WPOP)	
<p>Per 14 CCR 914.7 [934.7, 954.7](b) the WPOP shall include the specific measures to be taken during the winter period to avoid or substantially lessen erosion, soil movement into watercourses and soil compaction from timber operations. The winter period operating plan shall address the following subjects:</p> <p><i>In compliance with Green Diamond’s AHCP, the “winter period” for this plan is defined as the period from October 16th through May 14th. This is a longer time period than the winter period defined in 14CCR 895.1 which goes from November 15th to April 1. References to the “Winter Period” in this WPOP refer to the longer period as defined in the AHCP.</i></p>	
<p>1) Erosion Hazard Rating:</p>	<p>EHR is discussed in Section II, Item #17 and shown on the THP Silviculture Map in Section II. Erosion hazard ratings for this plan include Low and Moderate ratings.</p>
<p>2) Mechanical Site preparation methods:</p>	<p><i>Use of mechanized site preparation methods will be limited to the period beginning May 15th and ending October 15th, with the following exception:</i> <i>Mechanized slash piling with shovel logging (Helms, 1998) equipment may be conducted concurrent with shovel harvesting operations during the winter period, subject to all limitations under Section 6.2.4.7 and items (a) and (b) below.</i></p> <p style="margin-left: 40px;">(a) <i>Site preparation operations with shovel logging equipment are limited to slopes averaging less than 30% gradient.</i></p> <p style="margin-left: 40px;">(b) <i>Shovel logging equipment will operate on a slash surface during site preparation operations.</i></p> <p><i>AHCP 6.2.4.2.3 (2): Green Diamond will limit fireline construction with tractors to the period beginning May 15th and ending October 15th. ACHP 6.2.4.2.7 (1)</i></p> <p>As per 14 CCR 915.1 (b) Heavy equipment shall not be used for site preparation under saturated soil conditions that may produce significant sediment discharge.</p>
<p>3) Yarding systems: (Constructed skid trails and tractor road watercourse crossings)</p>	<p>The following types of equipment may be used with their associated limitations:</p> <p><u>Tractor, Skidder, and Forwarder Operations</u> (AHCP 6.2.4.5)</p> <p><u>Time of Year Restrictions</u> (AHCP 6.2.4.5.1)</p> <p>1. <i>Green Diamond will limit the construction and reconstruction of skid trails to the period beginning May 15th and ending October 15th.</i></p> <p>2. <i>Ground-based yarding with tractors, skidders, and forwarders (that fully suspend or drag logs) may occur from May 15th through October 15th on existing skid trails. This period for skid trail use (which excludes construction and reconstruction of skid trails) may be extended to include the periods May 1st to May 15th or October 16th to November 15th when the procedures detailed in THP item 18 are followed.</i></p> <p>3. <i>Ground-based forwarders that transport logs fully suspended in bunks and that do not require the use of constructed skid trails may occur during the winter period when the following procedures are followed:</i></p> <ul style="list-style-type: none"> a. <i>Forwarders will only operate on slopes ≤ 45%.</i> b. <i>Forwarder operations will be limited to areas with either low or moderate erosion hazard ratings.</i> c. <i>No skid trails will be constructed for forwarding operations (existing stable skid trails may be utilized).</i> d. <i>Equipment access trails for forwarders will be slash packed during and after operations to avoid bare mineral soil, minimize surface erosion and facilitate the management of logging slash.</i> e. <i>Forwarding operations will cease during storm events where operations, combined with significant rainfall, are likely to cause delivery of sediment to Class I, II, or III watercourses.</i>

Feller-buncher and Shovel Loader yarding: (no winter period skid trail construction) – These operations may occur throughout the winter period on the areas designated for ground-based operations. Winter period shovel yarding and feller buncher operations may occur on units that are adjacent to rocked roads, except during “unseasonably dry fall” periods and “early spring drying” periods when shovel yarding and feller-buncher operations may occur on units adjacent to seasonal roads. The equipment used in these operations is based on hydraulic excavators. These machines have wide track undercarriages with sufficient surface area to limit ground pressure to the point that there is little potential for soil compaction and disturbance. Other constraints inherent in the design and operation of this machinery are:

- They do not require constructed skid trails and they are not equipped with a blade.
- They operate on top of slash and debris, not in prepared bare soil skid trails.
- Their design limits operation to mild or moderate slopes.

All winter period feller-buncher and shovel yarding operations shall be subject to the following constraints:

- Haul roads used to access such operations must be surfaced for all weather conditions, with appropriate drainage facilities installed, except during “unseasonably dry fall” periods and “early spring drying” periods.
- Entrances and exits to the operating unit that are used by equipment for daily refueling shall be rocked or treated with slash to prevent rutting and to avoid generating sediment that might be transported to a ditch during rainfall. If a road drainage ditch must be crossed to access the operating area, a minimum 12 inch diameter culvert shall be installed, if necessary to protect the integrity of the ditch and ensure that any potential impact from the operation is disconnected from ditches and watercourses.
- Operations will be limited to areas with slopes that average less than 35%.
- *Feller-buncher and shovel logging operations will cease during storm events where logging operations, combined with significant rainfall, are likely to cause delivery of sediments into Class I, II or III watercourses. AHCP 6.2.4.7* In addition, prior to operations resuming after a storm, a Green Diamond supervisor shall assess soil moisture conditions on the site and determine that it is appropriate to resume operations.
- Only wide track (low ground pressure) equipment will be used and this equipment will operate only on slash and duff (operating on bare soil during the winter period is prohibited).
- As per 14 CCR 914.8(d), temporary equipment watercourse crossing facilities shall be removed and stabilized prior to the beginning of the winter period to the standards of 14CCR 923.9 subsections (p)(1)-(4).

Green Diamond has demonstrated that, with strict adherence to the above constraints, this type of operation can be conducted during the winter period while protecting water quality, soil stability, and road integrity.

Cable yarding: In accordance with the restrictions contained in items 7, 10 and 12 of this winter period plan, cable yarding may occur at any time during the winter period on this plan.

Note: The following DF&G Agreement for winter operations will be included in the THP until further notice. The concerns represented by this agreement are also addressed by the AHCP. The only difference being that the DF&G agreement extends the time period to June 1 whereas the AHCP goes to May 14th.

The following procedures and mitigations were developed and designed to further reduce the potential for ground based and cable yarding operations (during the period from Oct. 15th to June 1st of any year) to cause a significant adverse impact to aquatic habitats that support anadromous salmonid populations. These procedures are intended to augment the Forest Practice Rules and not replace any current regulations. It is to be understood that the following collaborative operating procedures developed by GDRCo and the California Department of Fish and Wildlife covers a time period exceeding the defined FPR Winter Operating Period (895.1) for cable and ground based yarding operations.

GDRCo and CDFW Procedures for Ground Based and Cable Yarding Operations between October 15 and June 1:

- 1) Yarding operations or runoff from yarding operations during the period October 15 to June 1 shall not result in a visible increase in turbidity in watercourses or hydrologically connected facilities (e.g. ditches, landings, roads) which discharge into watercourses.
- 2) Cable yarding which achieves the least amount of ground disturbance shall be used to the maximum extent feasible. Ground based yarding operations shall use minimal ground disturbing equipment (e.g. tracked shovel loaders) without bladed skid trail construction or reconstruction to the maximum extent feasible. Where this is not feasible, yarding operations from October 15 to June 1 shall be limited to skid trails for ground-based equipment or cable yarding roads (cable corridors) which are hydrologically disconnected from Class I, II, or III watercourses or drainage facilities that discharge into Class I, II, or III watercourses. The intent is to have no or minimal skid trail construction or reconstruction near any watercourse, and no channelized flow resulting from timber operations or facilities reaching Class I, II, or III watercourses or hydrologically connected ditches. *AHCP addresses in 6.2.4.5 but not out to June 1st.*
- 3) Construction and use of skid trails from October 15 to June 1 shall not occur within at least 100 feet, slope distance, of the upper extent (e.g. top or head) of any designated Class II watercourse, and on slopes greater than 30% within at least 100 feet of Class III watercourses. (Note: Long-line yarding or lifting logs with a shovel loader from outside this zone is permitted as long as the skid trails are hydrologically disconnected, as in Procedure 2). The intent is to minimize the amount of ground disturbance created by tractor operations near watercourses between October 15 and June 1. (Note: no construction or use of skid trails is proposed in this plan during the winter period.) AHCP addresses in 6.2.4.5 Tractor, Skidder, Forwarder Operations
- 4) From October 15 to June 1 Green Diamond shall treat with seed, mulch, or slash (per Procedure 5), all areas of bare mineral soils greater than 100 square feet created by yarding (ground-based long lining, use of approved watercourse crossings, or cable yarding roads) within at least the first (nearest) 100 feet slope distance (above the watercourse) of all Class I Watercourses, within Class II WLPZs(RMZs), and within any Equipment Limitation Zone (ELZ), or Equipment Exclusion Zone (EEZ) by the end of the working day. Application of erosion control materials beyond 100 feet slope distance of Class I watercourses, Class II WLPZ(RMZ), widths, or beyond ELZs or EEZs will be discretionary, based on the potential of the site to deliver sediment to a watercourse or hydrologically connected facility. This will be subject to the Registered Professional Forester's (or designated Company Supervisor's) evaluation of the site, taking into consideration the potential for large storm events to cause sediment delivery. (Note: This procedure is not intended to be implemented within the 25-50 foot wide special operating zone bordering Class I WLPZs(RMZs) associated with even aged management prescriptions). *AHCP partially addresses in 6.2.1 for Class I and II (RMZs). Also discussed on 6.2.4.4 which includes EEZ's, in 6.2.4.5 for tractor skid roads and in 6.2.4.8.2 for cable roads. AHCP does not require discretionary erosion control for deliverable sites out to 100 feet above Class II's and III's, only in (RMZs) and EEZ's.*
- 5) From October 15 to June 1 prior to commencement of yarding operations, sufficient erosion control materials, including but not limited to straw, grass seed, and application equipment shall be retained on-site or otherwise accessible (so as to be able to procure and apply that working day**) in amounts sufficient to provide at least 2"- 4" depth of straw with minimum 90% coverage, and 100 pounds per acre equivalent barley or 30 pounds per acre equivalent State seed mix. In lieu of the above listed erosion control materials, native slash may be substituted and applied if depth, texture, and ground contact are equivalent to at least 2"-4" straw mulch. *AHCP cites 2" mulch and 30 pounds per acre grass seed.*
**** Note.** If an area of exposed bare mineral soil is caused by operations late in the day and it is not feasible to completely finish erosion control treatment, the erosion control treatment may be completed the following morning prior to start of yarding operations.

<p>4) Operating Period:</p>	<p>Operations may occur at any time of the year for this THP within the limitations set forth in the WPOP and the THP. This THP allows for shovel yarding and cable yarding in units next to rocked roads during the winter period as described above in Item (3). The timing of winter period operations is further discussed in Items (3), (10) and (12). <i>See Table I that summarizes the timing of various operations during the winter and non-winter periods.</i></p>
<p>5) Erosion Control facilities timing:</p>	<p><u>Timing of Waterbreaks on Roads, Landings and Skid Trails:</u> As per 914.6 the following standards are applicable to the construction of waterbreaks:</p> <ul style="list-style-type: none"> (a) Except as otherwise provided for in the rules: <ul style="list-style-type: none"> (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operation. <i>This measure will apply to GDRCo’s AHCP winter period from October 16th to May 14th. An exception to this rule applies to roads and landings in use during an “unseasonably dry fall” October 16th through November 15th or “early spring drying” May 1st through May 14th, as defined by the AHCP. Installation of drainage structures during these exception periods will follow the measures stated below in 14CCR 923.5(j).</i> (2) Installations of drainage facilities and structures is required from October 15th to November 15th and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a “chance” (30% or more) of rain within the next 24 hours. (b) Waterbreaks shall be constructed concurrently with the construction of firebreaks and immediately upon conclusion of use of tractor roads, roads, layouts, and landings which do not have permanent and adequate drainage facilities, or drainage structures. <p>923.5(j) All logging roads and landings used for timber operations shall have adequate drainage upon completion of use for the year or by October 15, whichever is earlier. An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow.</p> <p>923.5(k) Where logging road or landing construction or reconstruction takes place during the extended wet weather period, drainage facilities and drainage structures shall be installed concurrent with construction or reconstruction operations.</p> <p>923.9(r) Temporary logging road watercourse crossings shall be removed and stabilized <u>prior to the winter period.</u></p> <p>914.8(d) Tractor road watercourse crossing facilities shall be removed and stabilized prior to the beginning of the winter period to the standards of 14CCR 923.9 subsections (p)(1)-(4).</p> <p><u>AHCP Erosion Control Timing for Felling, Yarding and Loading Operations and Road Construction:</u></p> <p><u>Measures Common to All Felling, Yarding, and Loading Operations</u> <i>Any bare mineral soil exposure, greater than 100 square feet in WLPZs(RMZs) or EEZs that is caused by logging activities, will be mulched and seeded or treated by other means prior the end of logging operations or prior to October 15, whichever comes first. Seeding will be at a rate of at least 30 pounds per acre and mulching to a depth of at least 2 inches (before settling) with 90% surface coverage. AHCP 6.2.4.4</i></p>

	<p><u>Construction of Features (New Road and Landing Construction)</u></p> <ol style="list-style-type: none"> 1. All watercourse crossings and cross drains will be installed and functional prior to October 15th. 2. By October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse AHCP 6.2.3.8.3. <p><u>Seeding and Mulching (New Road and Landing Construction)</u></p> <p>Prior to the beginning of the first winter period following construction, Green Diamond will seed all new cut and fill slopes on roads constructed within an (RMZ) or EEZ of a Class I, II, or III watercourse at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage. AHCP 6.2.3.8.4</p> <p>Refer to the erosion control measures for road and landing construction in Item #24. Erosion control timing is also discussed in Section II Item #18.</p>
<p>6) Consideration of form of precipitation: (rain or snow)</p>	<p>The predominant form of precipitation within this plan is rain. Minor amounts of contributing precipitation are also found in fog drip, and occasional frozen forms including sleet, hail, and snow.</p>
<p>7) Ground conditions: (soil moisture conditions, frozen)</p>	<p>AHCP 6.2.4.7: <i>Feller-buncher and shovel logging operations will cease during storm events where logging operations, combined with significant rainfall, are likely to cause delivery of sediments into Class I, II or III watercourses.</i></p> <p>In addition, prior to operations resuming after a storm, a Green Diamond supervisor shall assess soil moisture conditions on the site and determine that it is appropriate to resume operations.</p> <p><u>Saturated soil conditions, as defined in 14 CCR 895.1 means:</u> That soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.</p> <p><u>Stable Operating Surface as defined in 14 CCR 895.1 means:</u> A road or landing surface that can support vehicular traffic and has a structurally sound road base appropriate for the type, intensity and timing of intended use.</p> <p><u>In Watersheds with Coho Salmon, the following definition applies:</u> <i>Stable Operating Surface</i> means a road or landing surface that can support vehicular traffic and that routes water off of the road surface or into drainage facilities without concentrating flow in ruts (tire tracks), pumping of the road bed, or ponding flow in depressions. A stable operating surface shall include a structurally sound road base appropriate for the intended use. The number, placement, and design of drainage facilities or drainage structures on a stable operating surface prevents the transport of fine-grained materials from the road or landing surface into watercourses in quantities deleterious to the beneficial uses of water.</p>
<p>8) Silvicultural system ground cover:</p>	<p>Silvicultural systems are discussed in Item #14 Sections II & III and shown on the THP maps. This plan includes the clearcut, commercial thinning and selection silvicultural methods. Ground cover in the form of slash, associated logging debris, and residual overstory and understory vegetation are expected to remain in the harvested areas. The anticipated ground cover remaining after operations is expected to generally range from 20% to 60% in the clearcut designated areas and 80 to 100% in the commercial thinning and selection designated areas. See THP item 18 for soil stabilization measures.</p>

<p>9) Operations within the WLPZ(RMZ):</p>	<p>Management-related Ground Disturbance Treatment</p> <ol style="list-style-type: none"> 1. Any ground disturbance caused by management activities that is larger than 100 square feet within a WLPZ (RMZ) will be mulched and seeded or otherwise treated to reduce the potential for sediment delivery from sheet and gully erosion. 2. Minimum standards for seeding and mulching operations are 30 pounds per acre of seed and a minimum mulching depth of two inches, covering at least 90% of the surface area. AHCP 6.2.1.2.7 3. Hand-constructed firelines (established by removing the duff and litter layers to expose, but not disturb, the mineral soil) will not be subject to the 100-square foot ground disturbance standard, but other measures will be applied as necessary to ensure that hand-constructed firelines within a Class I WLPZ (RMZ) do not deliver sediment to Class I watercourses. <p>Landings on Roads within WLPZs (RMZs)</p> <ol style="list-style-type: none"> 1. Green Diamond will not use landings on roads (including roadside decking) within WLPZs (RMZs) from October 16th through May 14th. 2. Ditchlines and drainage facilities associated with existing roads within WLPZs (RMZs) that are used for landings or roadside decking during the summer period will be repaired immediately following completion of operations and prior to October 16th. AHCP 6.2.3.10.5. <p>The following site specific mitigation measures already incorporated in the plan for timber operations associated with WLPZs(RMZs)are designed to protect the downstream beneficial uses of water and include:</p> <ul style="list-style-type: none"> • Limited or no timber harvesting within Class II WLPZs(RMZs) • Enhanced canopy retention on Class II WLPZs(RMZs) • Road maintenance and inspection program. • No heavy equipment for harvesting operations within WLPZs(RMZs). • Winter period equipment restrictions discussed in (3), (7), (10) & (12). • Where there is reasonable expectation that slash, debris, soil or other material resulting from operations, falling or associated activities, will be deposited on Class I and II waters below the watercourse transition line, those activities shall be deferred until equipment is available for its removal or another procedure and schedule for completion of corrective work is approved by the director. • Accidental depositions of soil or other debris in lakes or below the watercourse transition line in waters classed as I, II or IV shall be removed immediately after the deposition or as approved by the director.
<p>10) Equipment limitations:</p>	<p>Winter period equipment restrictions are provided in item (3) and (7) and road use restriction are provided in item (12).</p> <p>Also refer to the operational restrictions in Table 1.</p>
<p>11) Known Unstable Areas:</p>	<p>Operations, other than timber falling and forwarding, will not be conducted on or adjacent to unstable areas during the winter period. Forwarding will not be conducted at any time when saturated soil conditions exist.</p>
<p>12) Logging roads and landings:</p>	<p><u>Winter Period AHCP Road Use Restrictions</u></p> <p><u>6.2.3.4.1 Time of Year Restrictions</u> Green Diamond will not conduct road upgrading during the winter operating period except as stated in 6.2.3.4.2 (Dry Fall) or 6.2.3.4.3 (Early Spring Drying)</p> <p><u>6.2.3.5 New Road Construction Standards</u></p> <p><u>6.2.3.5.2 Seasonal Restrictions</u> Green Diamond will not construct or rock new roads during the winter period (October 16th through May 14th).</p>

6.2.3.5.10 Surfacing for Roads and Landings

1. *Green Diamond will not use roads during the winter period for hauling (logs and rock) unless they have surfacing specifications of a minimum compacted depth of 12 inches of rock.*
2. *Only rock that is durable and does not break down with vehicle or heavy equipment use will be applied to road surfaces.*
3. *During the winter period, Green Diamond will not use vehicles on roads for administrative purposes unless the roads have rock applied as needed or contain sufficient native surface rock to prevent runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface which drains into a Class I, II, or III watercourse.*

6.2.3.9 Routine Road Maintenance

6.2.3.9.2 Road Maintenance

1. *Green Diamond may carry out patch (spot) rocking, brushing, cleaning inlets and outlets of culverts, cleaning ditches where poor drainage is occurring, repairing or maintaining existing waterbars, replacement of a failed or imminently failing culvert along a needed access road, and site specific road surface grading for maintaining the integrity of the road surface year-round, including during the winter period.*
2. *Grading will not be used to blade off wet soil to provide conditions for extended periods of operation on a deteriorated road surface.*
3. *The installation of waterbars, rolling dips and critical dips, general project grading for shaping the road surface, road outsloping, road rocking, resurface rocking, cleaning ditch lines, and general culvert replacements may only occur during the period when road upgrading may occur (see 6.2.3.4.1, 6.2.3.4.2, 6.2.3.4.3)*

6.2.3.10 Road and Landing Use Limitations

6.2.3.10.1. Turbidity Restrictions

1. *Green Diamond will cease log hauling, road decommissioning, road upgrading, road construction, and use of landings when the use of any portion of a road or landing results in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse.*
2. *Use of roads for log hauling, road decommissioning, road upgrading, road construction, and use of landings, will not resume until the road surface has dried sufficiently to allow use without resulting in runoff of waterborne sediment in amounts sufficient to cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II or III watercourse. This criterion will apply any time of year (including during summer storms)*

6.2.3.10.2 Seasonal Restrictions

1. *Green Diamond will carry out hauling or loading during the winter period only on rocked surfaces.*
2. *Hauling and loading will be allowed on unsurfaced roads from May 1st through May 14th if “early spring drying” occurs or from October 16th through November 15th if an “extended dry fall” occurs. If the criteria for “early spring drying” have been met but a future weather pattern with forecasted rain forms or moves within the “early spring drying” period, road use activities that are permitted within the early spring drying period may commence provided all drainage facilities are installed and functioning by the end of the day prior to the forecasted rain event occurring.*

6.2.3.10.4 ATVs and Vehicular Use of Seasonal Roads

1. *Green Diamond will use only ATVs on unsurfaced seasonal roads during the winter period except as provided in items #4 and #5 below and in Section 6.2.3.5.10.*
2. *Other vehicular use of seasonal roads will be allowed from May 1st through May 14th if “early spring drying” occurs, or from October 16th through November 15th if an “extended dry fall” occurs.*
3. *Any damage caused to drainage or erosion control structures by using ATVs on any road will be repaired immediately following damage.*
4. *Exceptions for seasonal road use during the winter period for management include fire control vehicles for site preparation burning, pickup access for transportation of monitoring supplies and equipment, pickup access for emergency and security issues, and pickup trucks and vans for transportation of seedlings and reforestation crews. Upon completion of each specified activity all drainage facilities will be returned to the condition prior to road use or brought up to a condition where they are functioning properly.*
5. *Additional exceptions for seasonal road use during the winter period for administrative use may occur when the following restrictions are followed:*
 - a) *No measurable rainfall occurred within the last 14 days and no rain is forecasted by the National Weather Service on the day of use and no more than 30% chance of rain for the next 2 days.*
 - b) *Use of the seasonal road will not cause deformation of the road surface or drainage structures. If damage does occur to drainage facilities road use will cease and the drainage facilities will be repaired prior to rainfall to a condition where they will function properly.*

6.2.3.10.5 Landings on Roads within WLPZs (RMZs)

1. *Green Diamond will not use landings on roads (including roadside decking) within WLPZs (RMZs) from October 16th through May 14th.*

6.2.3.11 Emergency Road Repair

If there is an imminent threat to life, property, or public safety, or a potential for a massive sediment input with catastrophic environmental consequences, and the appropriate emergency response action is otherwise prohibited by this Section of this Plan, Green Diamond will notify the Services' designated contacts, but a formal notification will not be required prior to response actions being taken.

During winter road inspections, GDRCo may discover a condition on a seasonal road that is causing or may cause environmental impacts, in the form of sediment delivery to Class I, II, or III watercourses. GDRCo will apply all the guidelines listed below to determine if the maintenance problem can be remedied during the winter period.

- *The environmental impact of accessing the site with appropriate equipment and conducting the repairs during the winter period is less than the potential environmental impact of delaying the repair until the summer period.*
- *Repairs, including installation of erosion control devices, can be accomplished in one day.*
- *The equipment used to repair the site will not cause deformation that causes rutting and loss of integrity of the road surface at the repair site and along the road accessing the repair site.*
- *All needed erosion control devices are in place and functional upon completion of maintenance repairs at the repair site itself, and along the seasonal road used to access the repair site. This includes pre-existing devices on the seasonal access road and devices installed as part of the repair. At least once during the remainder of the winter period, GDRCo will assess the installed erosion control devices for effectiveness and repair/replace materials as necessary and feasible. The smallest equipment necessary to complete the job will be used (e.g. mini excavator, small backhoe, grader, etc.).*
- *No rain forecasted for the next 24 hours.*

923.5 Erosion Control for Logging Roads and Landings

(a) 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. *Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 04/21/15), hereby incorporated by reference.*

(b) Drainage facilities and structures shall be installed along all logging roads and all landings that are used for timber operations in sufficient number to minimize soil erosion and sediment transport and to prevent significant sediment discharge.

(j) All logging roads and landings used for timber operations shall have adequate drainage upon completion of use for the year or by October 15, whichever is earlier. An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow.

923.6 Use of Logging Roads and Landings

(a) Logging roads and landings shall be used in a manner that is consistent with their design and construction specifications.

(b) Logging roads and landings shall not be used during any time of the year when operations may result in significant sediment discharge to watercourse or lakes, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs.

(c) During the extended wet weather period, log hauling or other heavy equipment uses shall be limited to logging roads and landings that exhibit a stable operating surface in conformance with (b) above. Routine use of logging roads and landings shall not occur when equipment cannot operate under its own power.

(e) Roadside berms that impede logging road drainage, concentrate logging road surface flow, or lead to hydrologic connection shall be removed or breached before the beginning of the winter period, with the exception of berms needed for erosion control.

(g) Logging roads and landings used for log hauling or other heavy equipment uses during the winter period shall occur on a stable operating surface and, where necessary, be surfaced with rock to a depth and quantity sufficient to maintain such a surface. Use is prohibited on roads that are not hydrologically disconnected and exhibit saturated soil conditions. Exceptions may be proposed by the RPF when locations are disclosed and justified in the THP, consistent with 14 CCR § 923(c). Exceptions must be approved by the Director.

923.7 Maintenance and Monitoring of Logging Roads and Landings

(a) Logging road and landing surfaces shall be monitored and maintained during timber operations and throughout the prescribed maintenance period to ensure hydrologic disconnection from watercourses and lakes to the extent feasible, minimize soil erosion and sediment transport, and to prevent significant sediment discharge.

(c) During timber operations, road running surfaces in the logging area shall be treated as necessary to prevent excessive loss of road surface materials by methods including, but not limited to, rocking, watering, paving, chemically treating, or installing commercial erosion control devices to manufacturer's specifications.

(d) Grading of logging roads or landings to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited.

(e) Drainage facilities and drainage structures, including associated necessary protective structures, shall be maintained to allow free flow of water, and minimize soil erosion and slope instability. Drainage facilities and structures shall be repaired, replaced, or installed as needed to protect the quality and beneficial uses of water.

(f) Soil stabilization treatments on logging road or landing cuts, fills, and sidecast shall be maintained as needed to reduce the potential for slope instability, minimize soil erosion and sediment transport, and to prevent significant sediment discharge.

(g) Heavy equipment shall not be used in a WLPZ for maintenance during wet weather, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs.

	<p>(h) Where there is evidence of significant sediment discharge along a logging road or landing used for timber operations, additional measures shall be implemented to minimize soil erosion and sediment transport, and to prevent significant sediment discharge.</p> <p>Specific to this THP and as provided for in:</p> <ul style="list-style-type: none"> • 14 CCR 923.6(f), Temporary roads shall be blocked or otherwise closed to standard production four-wheel drive highway vehicles upon completion of use. • 923.8 All temporary logging roads and landings that are to remain a part of the permanent road network shall be deactivated upon completion of timber operations. • 923.8(d) Logging roads to be abandoned or deactivated <u>shall be blocked upon completion of timber operations</u> so that standard production four-wheel drive highway vehicles cannot pass the point of closure at the time of abandonment or deactivation. If the logging road is to be abandoned, then the blockage design shall be described in the plan. <p>Refer to THP item 18 for waterbar requirements, THP Item 25 for road abandonment or deactivation specifications and THP Item 24(f) for road blockage specifications. “Deactivation” means implementing measures necessary to prevent the active use of an existing logging road, landing, or logging road watercourse crossing by logging trucks and standard production four-wheel drive highway vehicles. “Abandonment” means implementing measures to effectively remove an existing logging road, landing or logging road watercourse crossing from the permanent road network.</p>
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IN-LIEU WINTER PERIOD OPERATION PLAN	
r. <input type="checkbox"/>	<p>RPF chooses the in-lieu winter operating plan option as allowed per 14 CCR 914.7 [934.7, 954.7](c)(1-3)</p> <p>Specify the procedures listed in subsections (1) and (2), and list the site specific measures for operations in the WLPZ and unstable areas as required by subsection (3).</p>
s. <input type="checkbox"/> Yes <input type="checkbox"/> No <u>Not Applicable</u>	<p>Will the in-lieu winter operating plan include operations within WLPZ(s) or unstable area(s) during the winter period? If YES, provide site specific measures per 14 CCR 914 [934, 954] to protect the beneficial uses of water in SECTION II as instructions to the LTO.</p> <p style="text-align: center;">Hauling and heavy equipment use roads and landings</p>
t. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will <u>ROADS</u> be used for log hauling and heavy equipment use during the winter period where there will not be a stable operating surface or surfaced with rock to a depth and quantity sufficient to maintain a stable operating surface? If YES, the required explanation and justification should be provided in SECTION III per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].</p>
u. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will <u>LANDINGS</u> be used for log hauling and heavy equipment use during the winter period where there will not be a stable operating surface or surfaced with rock to a depth and quantity sufficient to maintain a stable operating surface? If YES, the required explanation and justification should be provided in SECTION III per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].</p> <p style="text-align: center;">Hauling and heavy equipment use on hydrologically disconnected or saturated soils.</p>
v. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will <u>ROADS</u> be used for log hauling and heavy equipment use during the winter period on roads that are NOT hydrologically disconnected and exhibit saturated soil conditions? If YES, provide a required explanation and justification in SECTION III. per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].</p>
w. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will <u>LANDINGS</u> be used for log hauling and heavy equipment use during the winter period on roads that are NOT hydrologically disconnected and exhibit saturated soil conditions? If YES, provide a required explanation and justification in SECTION III. per 14 CCR 923.6 [943.6, 963.6](g) and 914.7[934.7,954.7].</p>

Watercourse crossing removal	
<p>x. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will any logging road watercourse crossing proposed for removal and/or stabilization be left in place during the winter period?</p> <p>If YES, provide operational instructions to the LTO addressing the specifics of the applicable CDFW 1600 agreement, Lake and Streambed alteration agreement or otherwise specify in the plan. Per 14 CCR 923.9[943.9, 963.9](p)(4) In SECTION II</p> <p>Refer to THP Section II Item 24 for specific timing of road watercourse crossing removals that apply to this THP. All road watercourse crossing removals are subject to GDRCo's MATO as discussed in item 24.</p>

**TABLE 1
TIMING AND LIMITATIONS FOR VARIOUS THP RELATED ACTIVITIES***

* Time Schedules and Limitations in this table are derived from Green Diamond’s Aquatic Habitat Conservation Plan (AHCP). Additional limitations may also apply as noted throughout Section II of the plan.

ACTIVITY	Winter Period Oct 16 – May 14			
	Summer Period	Winter Period with Unseasonably Dry Fall	Core Winter Period	Winter Period with Early Spring Drying
	May 15 – Oct 15	Oct 16 – Nov 15	Nov 16 – April 30	May 1 – May 14
YARDING				
Cable and Helicopter	Yes	Yes	Yes	Yes
Ground Base Feller Buncher and Shovel:	Yes	Yes	Yes ⁽⁴⁾	Yes
Ground Base: Tractor, Skidder, Forwarder	Yes	Yes ⁽⁴⁾	None	Yes ⁽⁴⁾
ROADS				
Road & Landing Construction	Yes	None	None	None
Road Decommissioning	Yes	Yes ^(1,3)	None	None
Road Upgrading	Yes	Yes ^(1,3)	None	Yes ⁽²⁾
Hauling and Loading	Yes	Yes	Yes	Yes
On Permanent Rocked Roads	Yes	Yes	Yes	Yes
On Unsurfaced Roads	Yes	Yes ⁽¹⁾	None	Yes ⁽²⁾
Use of Helicopter Landings	Yes	Yes	Yes	Yes
Use of Landings and Roadside Decking in RMZs	Yes ⁽⁵⁾	None	None	None
Mechanized Site Preparation	Yes	Yes If ⁽⁶⁾	Yes If ⁽⁶⁾	None ⁽⁶⁾
Skid Trail Construction & Reconstruction	Yes	None	None	None
Vehicle Use of Unsurfaced Roads	Yes	Yes ⁽¹⁾	Yes If ⁽⁷⁾	Yes ⁽²⁾

- Notes:
1. “Unseasonably Dry Fall” Period from Oct 16th to Nov 15th when less than 4” of cumulative rainfall occurs from Sept 1 through Oct 15”. Activity will cease when cumulative rainfall reaches 4” between Oct 16th and Nov 15th.***
 2. “Early Spring Drying” defined as no measurable rainfall has occurred within the last 5 days and no rainfall is forecast by the Natl. Weather Service for the next 5 days.*** No installation or replacement of Class I watercourse crossings, or watercourse crossings where significant flows prevent effective diversion around the work site. Erosion control supplies on site and installed by the end of each operational day.
 3. Each project site can be completed that operational day with erosion control structures installed, or if site requires multiple days for completion, a long range Natl. Weather Service forecast of no rain for the next 5 days has been issued.
 4. Activity is conditioned on the use of procedures and limitations specified in the Section II for tractor operations, if applicable.
 5. Ditch lines and drainage facilities associated with existing roads within RMZs that are used for landings or roadside decking during the summer period will be repaired immediately following completion of operations and prior to October 16. Any proposed use of existing landings and roads within an RMZ will be discussed and mapped in THPs.
 6. Mechanized slash piling with shovel logging equipment (on slopes averaging less than 30% and if operating on slash) may be conducted concurrent with shovel harvesting operations during the winter period, subject to all limitations under AHCP 6.2.4.7
 7. Administrative use may occur when the following restrictions are followed: No measurable rainfall occurred within the last 14 days and no rain is forecasted by the National Weather Service on the day of use and no more than 30% chance of rain for the next 2 days, and use of the seasonal road will not cause deformation of the road surface or drainage structures.

***To track the cumulative rainfall and ensure compliance with the AHCP regarding a potential “dry fall” or “early spring drying”, GDRCo uses a variety of weather stations that are distributed across the AHCP area. The following RAWS and NWS/FAA weather stations were used to monitor the rainfall: Crescent City (Jack McNamara Field), Gasquet California, Yurok California, School House California, Westside California, Kneeland, Hoopa, Big Hill, and Arcata Airport. Each weather station is tracked independently and the conditions that occur at each of these sites are extrapolated only to specific geographic locations, integrating localized conditions such as orographic effect.

ITEM # 24 – ROADS AND LANDINGS

ITEM #24		ROAD CONSTRUCTION	
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will any road(s) be CONSTRUCTED? PROVIDE: The classification and approximate length of each of the following logging road segment categories: 1034(o) Road classification: Approximate length Feet: <input type="checkbox"/> Permanent _____ <input type="checkbox"/> Seasonal _____ <input checked="" type="checkbox"/> Temporary <u>2950</u>		
b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will new road construction be wider than single lane with turnouts? If YES, address pursuant to 14 CCR 923 [943, 963](c) & 923.2 [943.2, 963.2](d)(1)		
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any new Logging road(s) cross? <input type="checkbox"/> Unstable areas <input type="checkbox"/> Connected headwall swales (14 CCR 895.1 “Connected Headwall Swale”) <input type="checkbox"/> Both If YES, address pursuant to 14 CCR 923.1 [943.1, 963.1](d)		
d. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any new roads? <input type="checkbox"/> Exceed a grade of 20% <input type="checkbox"/> have grades greater than 15% that extend greater than 500 continuous feet <input type="checkbox"/> Both If YES, address pursuant to 14 CCR 923.2 [943.2, 963.2](d)(2). See 923 [943, 963](c).		
e. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any logging roads be constructed within? <input type="checkbox"/> 150 feet of a Class I Watercourse and Lake Transition Line (WLTL) <input type="checkbox"/> 100 feet of a class II WLTL on slopes greater than 30% <input type="checkbox"/> Class I Watercourse or Lake <input type="checkbox"/> Class II Watercourse or Lake <input type="checkbox"/> Class III Watercourse or Lake <input type="checkbox"/> Class IV Watercourse or Lake <input type="checkbox"/> A Watercourse and Lake Production Zone (WLPZ) <input type="checkbox"/> Other (Examples; marshes, wet meadows, wet areas) If “OTHER” is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging road watercourse crossing(s) - Logging road watercourse crossing(s) to be constructed or reconstructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. If YES, address per 14 CCR 923 [943, 963](c)		
f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any constructed road be located across 100 feet or more lineal distance on? <input type="checkbox"/> Slopes over 65% <input type="checkbox"/> Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)		
g. 1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 2. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will any road(s) be deactivated? Will any road(s) be abandoned? Road classification: Approximate length Feet: <input type="checkbox"/> Permanent _____ <input type="checkbox"/> Seasonal _____ <input checked="" type="checkbox"/> Temporary <u>2950 feet</u>		

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<p>3. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 4. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will any watercourse crossing(s) be deactivated? Will any watercourse crossing(s) be abandoned? If YES, describe specific measures to prevent significant sediment discharge per 14 CCR 923.8 [943.8, 963.8] et seq. and 923.9 [943.9, 963.9](e) and (p) If Logging road(s) are to be abandoned provide the blockage design Per 14 CCR 923.8 [943.8, 963.8](d) Refer to THP Item 25 for road abandonment or deactivation specifications and THP Item 24(g) for road blockage specifications.</p>
<p>h. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is there any exception to flagging or otherwise identifying the location of any road(s) to be constructed? If YES, address per 14 CCR 923.3 [943.3, 963.3](c)</p>

ROAD RECONSTRUCTION

<p>i. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will any roads be RECONSTRUCTED? PROVIDE: The classification and approximate length of each of the following logging road segment categories: 1034(o) Road classification: Approximate length Feet: <input type="checkbox"/> Permanent _____ <input checked="" type="checkbox"/> Seasonal <u>675 feet</u> <input type="checkbox"/> Temporary _____</p>
<p>j. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Will new road reconstruction be wider than single lane with turnouts? If YES, address pursuant to 14 CCR 923 [943, 963](c) & 923.2 [943.2, 963.2](d)(1)</p>
<p>k. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Will any logging roads be reconstructed within? <input type="checkbox"/> Class I Watercourse or Lake <input type="checkbox"/> Class II Watercourse or Lake <input type="checkbox"/> Class III Watercourse or Lake <input type="checkbox"/> Class IV Watercourse or Lake <input type="checkbox"/> A Watercourse and Lake Zone (WLPZ) <input type="checkbox"/> Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging road crossing(s) - Logging road watercourse crossing(s) to be constructed or reconstructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. If YES, address per 14 CCR 923 [943, 963](c)</p>
<p>l. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Will any reconstructed road be located across 100 feet or more lineal distance on? <input type="checkbox"/> slopes over 65% <input type="checkbox"/> Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake. If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)</p>
<p>m. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is there any exception to flagging or otherwise identifying the location of any road(s) to be reconstructed? If YES, address per 14 CCR 923.3 [943.3, 963.3](c)</p>

LANDING CONSTRUCTION	
n. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will any Landing(s) be CONSTRUCTED?</p>
o. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will any landing(s) be constructed within?</p> <ul style="list-style-type: none"> <input type="checkbox"/> 150 feet of a Class I Watercourse and Lake Transition Line (WLTL) <input type="checkbox"/> 100 feet of a class II WLTL on slopes greater than 30% <input type="checkbox"/> Class I Watercourse or Lake <input type="checkbox"/> Class II Watercourse or Lake <input type="checkbox"/> Class III Watercourse or Lake <input type="checkbox"/> Class IV Watercourse or Lake <input type="checkbox"/> A Watercourse and Lake Protection Zone (WLPZ) <input type="checkbox"/> Other (Examples; marshes, wet meadows, wet areas) <p>If "OTHER" is selected describe the type of feature referenced below.</p> <p>NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at:</p> <ul style="list-style-type: none"> - Existing logging road crossing(s) - Logging road watercourse crossing(s) to be constructed or reconstructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. <p style="text-align: center;">If YES, address per 14 CCR 923 [943, 963](c)</p>
p. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will any landing(s) exceed one half acre in size?</p> <p>NOTE: per 14 CCR 1034(x)(5)(D) if any landing exceeds ¼ acre in size or requires substantial excavation, the location shall be mapped.</p> <p style="text-align: center;">If YES, address per 14 CCR 923 [943, 963](c) and 923.2 [943.2, 963.2](e)(2)</p>
q. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will any Landing(s) be located on?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Unstable areas <input type="checkbox"/> Connected headwall swales (14 CCR 895.1 "Connected Headwall Swale") <input type="checkbox"/> Both <p style="text-align: center;">If YES, address pursuant to 14 CCR 923.1 [943.1, 963.1](d)</p>
r. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<p>Will any landing construction be located across 100 feet or more lineal distance on?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Slopes over 65% <input type="checkbox"/> Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake. <p style="text-align: center;">If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)</p>
s. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Will any Landing(s) be deactivated? Will any Landing(s) be abandoned? <u>Approximately 2950 feet of temporary road and associated landings will be abandoned.</u></p> <p style="text-align: center;">If YES, describe specific measures to prevent significant sediment discharge. per 14 CCR 923.8 [943.8, 963.8] et seq. and 923.9 [943.9, 963.9](e) and (p)</p>

LANDING RECONSTRUCTION	
t. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will any Landing(s) be RECONSTRUCTED?
u. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any landing(s) be reconstructed within? <input type="checkbox"/> Class I Watercourse or Lake <input type="checkbox"/> Class II Watercourse or Lake <input type="checkbox"/> Class III Watercourse or Lake <input type="checkbox"/> Class IV Watercourse or Lake <input type="checkbox"/> A Watercourse and Lake Protection Zone (WLPZ) <input type="checkbox"/> Other (Examples; marshes, wet meadows, wet areas) If "OTHER" is selected describe the type of feature referenced below. NOTE: Exceptions are permitted per 14 CCR 923.1 [943.1, 963.1](b)(1) – (3) at: - Existing logging roads crossing(s) - Logging road watercourse crossing(s) to be constructed or reconstructed that are approved as part of a Fish and Game Code process (F&GC 1600 et seq.) - Logging road watercourse crossings of class III watercourses that are dry at the time of use. If YES, address per 14 CCR 923 [943, 963](c)
u.1. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will any landing reconstruction be located across 100 feet or more lineal distance on? <input type="checkbox"/> Slopes over 65% <input type="checkbox"/> Slopes over 50% which are within 100 feet of the boundary of a WLPZ that drains toward the zoned watercourse or lake. If YES, address per 14 CCR 923.2 [943.2, 963.2](a)(7) and 923.4 [943.4, 963.4](n)

SIGNIFICANT EROSION SITE(S)	
w. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Are there any significant erosion sites? <input checked="" type="checkbox"/> Existing <input type="checkbox"/> Potential <input type="checkbox"/> Both Associated within the logging area at? <input type="checkbox"/> Logging road(s) <input type="checkbox"/> Landing(s) <input checked="" type="checkbox"/> Watercourse crossing(s) in the logging area? Per 14 CCR 923.1 [943.1, 963.1](e)(1) – (5). Also see 923.9 [943.9, 963.9](a) If YES, for each significant existing or potential erosion site, provide the following: > Describe current condition of the site. > Identify which sites can be feasibly treated, and which sites cannot. > Specify mitigations for those sites that can be feasibly treated. > Indicate logical order of treatment for those which have feasible treatments NOTE: Consider providing a MAP POINT TABLE which identifies the erosion site by mapped referenced identifier consistent with mapped locations. For significant erosion sites associated with the THP, refer to the discussion provided in item 24w below and the information provided in the Road Work Table and THP maps.

ITEM #25

NOTE: If any item listed above is checked “YES” Provide:

- **Operations Instructions to the LTO**, in accordance with the respective rule requirement(s) in **SECTION II** of the THP.
- Any required **explanation and justification** should be included in **SECTION III**

Operation instructions to the LTO:
 See information provided below.

ASP WATERSHEDS	
a. <input type="checkbox"/> Yes <input type="checkbox"/> No	Will hauling on roads and landings be limited to those which are Hydrologically disconnected from watercourses to the extent feasible, and exhibit a stable operating surface? If NO, address the exception pursuant to 923.6 [943.6,963.6] (h)(3).
Not Applicable	
ADDRESS THE FOLLOWING AS IT APPLIES TO ASP WATERSHEDS OR IMMEDIATELY UPSTREAM AND CONTIGUOUS TO, ANY WATERSHED WITH LISTED ANADROMOUS SALMONIDS	
<ul style="list-style-type: none"> • When logging road(s) or landing(s) construction or reconstruction is proposed identify: <ol style="list-style-type: none"> 1) How the proposed operations will fit into the systematic layout pattern. Per 14 CCR 923.1 [943.1, 963.1](g) Not Applicable 2) What, if any, offsetting mitigation measures (including but not limited to, abandonment of logging road(s) and landing(s) are needed to minimize potential adverse impacts to watersheds from the road system. Per 14 CCR 923.1 [943.1, 963.1](g) Not Applicable • Provide specific provisions for the protection of salmonid habitat for all logging road(s) construction: <ol style="list-style-type: none"> 3) On slopes, greater than 50% with access to a watercourse or lake. Per 14 CCR 923.4 [943.4, 963.4](s)(1) Not Applicable • Provide specific erosion control measures for all permanent and seasonal roads: <ol style="list-style-type: none"> 4) With a grade of 15% or greater which extends 500 feet or more. Per 14 CCR 923.5 [943.5, 963.5](q)(2) Not Applicable 	

Past THP’s with Shared Appurtenant Roads:

Yes No Are there other approved Timber Harvest Plans on Green Diamond Resource Co property that share appurtenant roads with the proposed Timber Harvest Plan?

State ID: 1-15-044 HUM

If yes, list those plans. Green Diamond Resource Co shall not submit a final completion report on this proposed Timber Harvest Plan until these listed plans have commenced operations. In the unique situation where one of these existing, listed plans will not be operated at all, the associated road work points on appurtenant roads, shared with this plan, shall be amended into this proposed plan and fixed in the time frame stipulated in the original plan (or site specific rationale for extending the repair date shall be provided and approved).

Road Construction:

14CCR923.7(c) During timber operations, road running surfaces in the logging area shall be treated as necessary to prevent excessive loss of the road surface materials by methods including, but not limited to, rocking, watering, paving, chemically treating, or installing commercial erosion control devices to manufacturer’s specifications.

923.6(b) Logging roads and landings shall not be used during any time of the year when operations may result in significant sediment discharge to watercourse or lakes, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs.

923.6(c) During the extended wet weather period, log hauling or other heavy equipment uses shall be limited to logging roads and landings that exhibit a stable operating surface in conformance with (b) above. Routine use of logging roads and landings shall not occur when equipment cannot operate under its own power.

Also refer to THP Item 26 for FPRs regarding the installation and removal of watercourse crossings.

For purposes of road maintenance requirements under 14 CCR 923.7, Green Diamond relies, in part, on the AHCP and programmatic approvals of CDFW and the North Coast Regional Water Quality Control Board. Further discussion of these agreements can be found in Section III Item #25, and copies of the agreements are on file with Cal Fire at the Santa Rosa and Fortuna offices.

Additional AHCP Measures Related to Road Construction

All appurtenant dirt roads associated with this THP will be hydrologically disconnected during the life of the THP. This work will be done at the end of operations or prior to the onset of the winter period.

For both new road construction and existing road maintenance in areas where existing road bank cuts have exhibited failures and have the potential to deliver to a watercourse, GDRCo will implement the following measures to the extent feasible to prevent sediment discharges to watercourses: Hydrologically disconnecting the bank cut discharge from watercourses, buttressing, or other measures and by installing and maintaining effective erosion control materials. This work will be done at the end of operations or prior to the onset of the winter period.

Seasonal Restrictions for Road and Landing Construction:

Green Diamond will not construct or rock new roads during the winter period (October 16th through May 14th). AHCP 6.2.3.5.2

Construction of Features

1. All watercourse crossings and cross drains will be installed and functional prior to October 15th.
2. By October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse AHCP 6.2.3.8.3.

Seeding and Mulching (Road Construction)

Prior to the beginning of the first winter period following construction, Green Diamond will seed all new cut and fill slopes on roads constructed within a WLPZ(RMZ) or EEZ of Class I, II, or III watercourses at a rate of at least 30 pounds per acre and mulched to a depth of at least two inches (before settling) with 90% surface coverage. AHCP 6.2.3.8.4

Soil Moisture Conditions (Road and Landing Construction)

Green Diamond will not construct roads when soil moisture conditions would result in:

1. Reduced traction by equipment as indicated by spinning or churning of wheels or tracks in excess of normal performances;
2. Inadequate traction without blading wet soil; or
3. Soil displacement in amounts that cause a visible increase in turbidity in any ditch or road surface that drains into a Class I, II, III or IV watercourse; except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs. AHCP 6.2.3.5.23 & 6.2.3.7.3

Road Daylighting: NA

24(g) and (s) - Road Deactivation and Abandonment Plan:

Yes No Does this plan include abandonment or deactivation of roads and/or landings?

This plan proposes to abandon approximately 2,950 feet of temporary road. Refer to the detailed THP maps for the location roads proposed to be abandoned.

As per 14 CCR 923.8: Road and landing abandonment and deactivation shall include the following measures:

(a) All abandoned and deactivated logging roads and landings shall be left in a condition that provides for long-term, maintenance-free function of drainage and erosion controls.

(b) Soil exposed by abandonment or deactivation operations shall be removed or stabilized as needed to minimize soil erosion and sediment transport.

(c) Logging road watercourse crossings, other drainage structures, and associated fills shall be removed and stabilized in accordance with 14 CCR § 923.9 subsections (p)(1)-(4). (See watercourse removal standards in Section II Item 26).

(d) Logging roads to be abandoned or deactivated shall be blocked upon completion of timber operations as specified in an approved winter period operating plan pursuant to 14 CCR § 914.7(b), so that standard production four wheel drive highway vehicles cannot pass the point of closure at the time of abandonment or deactivation. If the logging road is to be abandoned, then the blockage design shall be described in the plan.

- Blocking will be done with the use of high dirt berms and/or ditches, or other obstacles including but not limited to such things as logs, downed trees, root wads/stumps, boulders, or slash, or a combination of these methods.

Yes No Does this plan include decommissioning of seasonal or permanent roads as defined in GDRCo's AHCP?

24(w) Significant Existing or Potential Erosion Sites: During plan layout, the RPF or supervised designee conducted an inspection of the logging roads, landings and watercourse crossings in the logging area, including appurtenant roads. Significant existing and potential erosion sites identified during the inspections have been documented and recommendations for their repair are provided in the attached road work table. (AHCP 6.2.3.9.5 #1). The timing for the work as described in the road work table provides a logical order of treatment for these sites. The timing of this work is prioritized under the guidelines presented in the AHCP and programmatic agreements with CDFW and the NCRWQCB. If any of the identified sites prioritized as "Watch List" or "Monitor" develop into an "Imminent Risk of Failure" condition, repair work will be carried out as soon as conditions and seasonal restrictions allow.

The road inspection assessed the following: (AHCP 6.2.3.9.5 #2)

- a. Adequate waterbar spacing, depth, and complete diversion of water flow onto undisturbed soil.
- b. Interception of the ditch line by ditch relief structures.
- c. Areas having poorly drained low spots or inadequately breached outside berms.
- d. That ditches are open and properly functioning, free of debris that could plug the ditch or a culvert and cause a diversion of water onto the road surface.
- e. Culverts are functioning properly (i.e., the culvert is not at risk of imminent failure, it is not rusted out or separated at a joint; water is flowing through the pipe and not underneath; sediment and debris is not reducing the pipe capacity).
- f. Forest floor discharge sites below the outlets of drainage facilities for evidence of sediment delivery to Class I, Class II or Class III watercourses.

The RPF considered the following key factors as part of developing necessary treatments for the identified significant erosion sites as proposed in the attached road work table:

- A) The type of road (permanent, seasonal, or temporary road), road location, expected log truck haul routes, and traffic use;
- B) The age of the road and the history of sediment delivery from the road;
- C) The beneficial uses of the watercourse or lake and sensitive conditions potentially affected by the road including, but not limited to, watercourse classification and presence of listed anadromous salmonids;
- D) The hillslope grade, road grade of crossing approaches and the gradient of the stream channel;
- E) The erodibility of hill slope material exposed by the road;
- F) The length of hydrologic connectivity of a road segment, the physical properties of the connected road segment and the presence or absence of an effective sediment filter strip; and
- G) Other site-specific information regarding the condition of and location of all existing or potential sediment sources including, but not limited to: watercourse crossings, road approaches, ditch relief culverts, road surfaces, road cuts, road fills, inboard ditches, throughcuts, and landings.

Treatable and Non-treatable significant existing and potential erosion sites (road related):

Regarding 14CCR 923.1(e) The location, mapping and evaluation of treatable and non-treatable significant existing and potential erosion sites is addressed through implementation of the operational elements of GDRCo's AHCP as included in this THP and the associated programmatic agreements including the Road Management Waste Discharge Requirements (RMWDR) issued by the NCRWQCB (*Order RI-2010-0044 Waste Discharge Requirements for Discharges Related to Road Management and Maintenance Activities conducted pursuant to GDRCo's AHCP*) and the Master Agreement for Timber Operations (MATO) issued by CDF&W which includes Green Diamond's imminent risk of failure key. Refer to THP Section III Item 25 for further discussions on the AHCP, the RMWDR and the MATO, and THP Section V for a copy of GDRCo's "Road Implementation Plan and Road Maintenance and Inspection Program".

With the implementation of the operational elements of the AHCP, the RMWDR and the MATO, GDRCo has established a programmatic process that meets the requirements of 923.1(e) to assess THP related roads, identify significant existing and potential road related erosion sites, specify feasible treatments, and provide a logical order of treatment for those sites. The result of the road assessment is the identification of "imminent risk of failure" sites that meet the FPR definition of "significant existing and potential erosion sites". The road assessment may also identify "watch list" sites or "monitor" sites. These are sites that are not significant existing and potential erosion sites, but will be monitored and repaired if their status changes to "imminent risk" during the life of the plan.

The road work table identifies "imminent risk of failure sites" in the "current condition" discussion. If monitor and watch list sites are present, they are identified in the "required work" discussion. **Imminent risk of failure sites are the significant existing and potential erosion sites associated with the THP.** Other sites may be identified in the road work order, such as "access issues", or "consistency determination" sites. These other types of sites are not significant existing or potential erosion sites.

There are no imminent risk of failure sites/significant existing and potential erosion sites that do not have feasible treatment measures identified in the THP. GDRCo's AHCP and RMWDR requires that all imminent risk of failure sites (which are synonymous with FPR "significant existing and potential erosion sites" as described above) are treated as part of the THP.

Monitoring for Logging Roads and Watercourse Crossings:

Monitoring for logging roads pursuant to 14CCR 923.7(k) and for watercourse crossings pursuant to 923.9(u) is addressed through implementation of the RMWDR. As allowed under 923.7(k)(2) and 923.9(u)(2), inspections conducted pursuant to California Regional Water Quality Control Board requirements may be used to satisfy the inspection requirements of this section.

Watercourse crossing locations and culvert sizes:

As per 923.9(e) the location of all new permanent and temporary logging road watercourse crossings, including crossings to be abandoned and deactivated are shown on the Road Work Map in Section II, Item 24. Minimum culvert diameters are stated in the Road Work Order. The methods used for determining minimum culvert diameters are as follows. For drainage areas less than or equal to 80 acres the Rational Method was used. For drainage areas >80 acres the USGS Magnitude and Frequency Method was used. As per 923.9(f) Permanent water course crossings that are constructed or reconstructed shall accommodate the estimated 100 year flood, including debris and sediment loads.

THP - Road Work Order

GDRCO # : 241901						
THP Name : Ward Road Combo						
Date Print : 3/9/2020						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
01	MR-3615	Seasonal	YES	YES	YES	See comments in road work description.
Current Condition: This site does not qualify as an Imminent Risk site. A 30-inch CMP with an advanced rust line conveys water to a downspout. The culvert has no holes and is functional. The downspout has holes and is not functioning. The watercourse below the downspout is natural rock, no down cutting or splash erosion is present. Due to the age of this CMP it shall be put on the watch list. The option to abandon this crossing is included.				Required Work : Option 1: Monitoring at this site will continue at least once a year through the life of the THP, then once every three years. No treatment is required at this time. Option 2: Use this crossing as it is; prior to plan completion remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
02	MR-3615	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with an 18" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 24" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
03	MR-3615	Seasonal	YES	NO	NO	Prior to the Winter Period (Oct.16), unless 'Unseasonably Dry Fall conditions' are in effect (Oct.16 - Nov.15) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure site. Ephemeral flows may concentrate at this location.				Required Work : Instal a structure to aqquately drain the raod surface.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
04	MR-3615	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class II watercourse crossing with a 24" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 36" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
05	MR-3615	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class II watercourse crossing has failed. Channel has over-steepened sides. There is a 24" CMP that is exposed in channel.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 84" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		

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54

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THP - Road Work Order

GDRCO # : 241901 THP Name : Ward Road Combo Date Print : 3/9/2020						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
06	MR-3615	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with a 24" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 42" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
07	MR-3610	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse with an 30" CMP that is set high in the fill. The culvert is rusted through greater than 25%. There is flow under the culvert and an erosional void with a depth of 3 feet at the outlet.				Required Work : Excavate between the flagged TOP and BOT removing sediment, debris and buried logs. Install a 30" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
08	MR-3614	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with 24" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 24" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP. Or, use this crossing as it is; upon completion of operations remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP. If this option is chosen, the road work shall be completed prior to the winter period (Oct. 16), unless 'Unseasonable Dry Fall conditions' are in effect (Oct. 16-Nov.15) of the year of use.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
09	MR-3611	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse with an 24" CMP that is internally crushed. There is a large sinkhole in outboard fill side approximately 5 feet in diameter. The outboard road edge is cracked and slumped.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install either a 24" CMP or a rockford to FPR and GDRCo AHCP guidelines as described in Section II of this THP. Or, use this crossing as it is; upon completion of operations remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP. If this option is chosen, the road work shall be completed prior to the winter period (Oct. 16), unless 'Unseasonable Dry Fall conditions' are in effect (Oct. 16-Nov.15) of the year of use.		

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RESOURCE MANAGEMENT

54.1

THP - Road Work Order

GDRCO # : 241901						
THP Name : Ward Road Combo						
Date Print : 3/9/2020						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
10	MR-3611	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse with a 24" CMP that is greater than 25% rusted through. There is flow underneath the pipe with minimal erosion.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 30" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP. Or, use this crossing as it is; upon completion of operations remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP. If this option is chosen, the road work shall be completed prior to the winter period (Oct. 16), unless 'Unseasonable Dry Fall conditions' are in effect (Oct. 16-Nov.15) of the year of use.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
11	MR-3620	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with 24" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 30" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP. Or, use this crossing as it is; upon completion of operations remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP. If this option is chosen, the road work shall be completed prior to the winter period (Oct. 16), unless 'Unseasonable Dry Fall conditions' are in effect (Oct. 16-Nov.15) of the year of use.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
12	OTHER	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class II watercourse crossing with a CMP that is rusted through more than 25% of the length.				Required Work : Remove the crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
13	MR-4900	Seasonal	YES	YES	YES	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure site. A previously pulled Class II watercourse crossing.				Required Work : Excavate between flagged TOP and BOT removing sediment debris and buried logs. Install a temporary watercourse crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP and remove prior to the Winter Period of the year of use.		
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
14	MR-4900	Permanent	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with a 24" CMP that is rusted through greater than 25% of the length.				Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 24" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.		

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RESOURCE MANAGEMENT

THP - Road Work Order

GDRCO # : 241901 THP Name : Ward Road Combo Date Print : 3/9/2020						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
15	MR-4900	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse with a 24" CMP that is greater than 25% rusted through. There is flow underneath the pipe with minimal erosion.						Required Work : Excavate between flagged TOP and BOT removing sediment, debris and buried logs. Install a 24" CMP to FPR and GDRCo AHCP guidelines as described in Section II of this THP.
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
16	TEMPORARY	Temporary	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure Site. A proposed temporary road crossing a Class III watercourse.						Required Work : Install a temporary watercourse crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP and remove prior to the Winter Period of the year of use.
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
17	MR-4000.97R.18	Seasonal	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class III watercourse crossing with a 24" CMP that is rusted through greater than 25% of the length. Erosion of the outboard fill has exposed a portion of the end of the pipe.						Required Work : Excavate between flagged TOP and BOT removing sediment debris and buried logs. Remove the crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP.
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
18	MR-4800	Permanent	YES	YES	YES	Work will be completed prior to the first Winter Period pending THP approval. If the THP approval occurs on or after July 1 then work will be completed the following year prior to the Winter Period.
Current Condition: This site qualifies as an Imminent Risk of Failure site. A Class II watercourse crossing with a 60" CMP that is separated internally and rusted through at the outlet.						Required Work : No operations can start until a qualified individual has evaluated this site for the potential presence of foothill yellow-legged frogs. Remove existing culvert and install a bridge to FPR and GDRCo AHCP guidelines as described in Section II of this THP. A concrete, prefabricated or railcar bridge will be used. Excavate side slopes to a 1:1 angle. The bridge will have a minimum length of 25 feet and a minimum height of 4.5 feet from the bottom of the bridge to the base of the channel. The width of the channel under the bridge will be a minimum width of 9 feet. Fill slopes will have rip rap placed from the channel to the abutments of the bridge.
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
19	MR-3682	Seasonal	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure site. A Class III watercourse is captured by the ditchline and drains into a wet area.						Required Work : Use this crossing as it is; upon completion of operations remove the crossing to FPR and GDRCo AHCP guidelines as described Section II of this THP and re-install the drainage ditch to the fladded location. If water is present at the time of operations, install a temporary watercourse crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP and remove prior to the Winter Period of the year of use.

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54.3

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RESOURCE MANAGEMENT

THP - Road Work Order

GDRCO # : 241901 THP Name : Ward Road Combo Date Print : 3/9/2020						
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
20	MR-3682	Seasonal	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure site. A Class II crossing that has been removed to FPR and GDRCo AHCP guidelines.			Required Work : Install a temporary watercourse crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP and remove prior to the Winter Period of the year of use.			
Road Point	Road Name	Road Classification	Mitigation Planned?	Programmatic Permit?		Timing of Work And/Or Mitigation of Operation Completion
				MATO	WDR	
21	MR-3682	Seasonal	YES	YES	NO	Prior to the Winter Period (Oct.16) of the year of use.
Current Condition: This site does not qualify as an Imminent Risk of Failure site. A class II watercourse crossing that has been removed to FPR and GDRCo AHCP guidelines.			Required Work : Install a temporary watercourse crossing to FPR and GDRCo AHCP guidelines as described in Section II of this THP and remove prior to the Winter Period of the year of use.			

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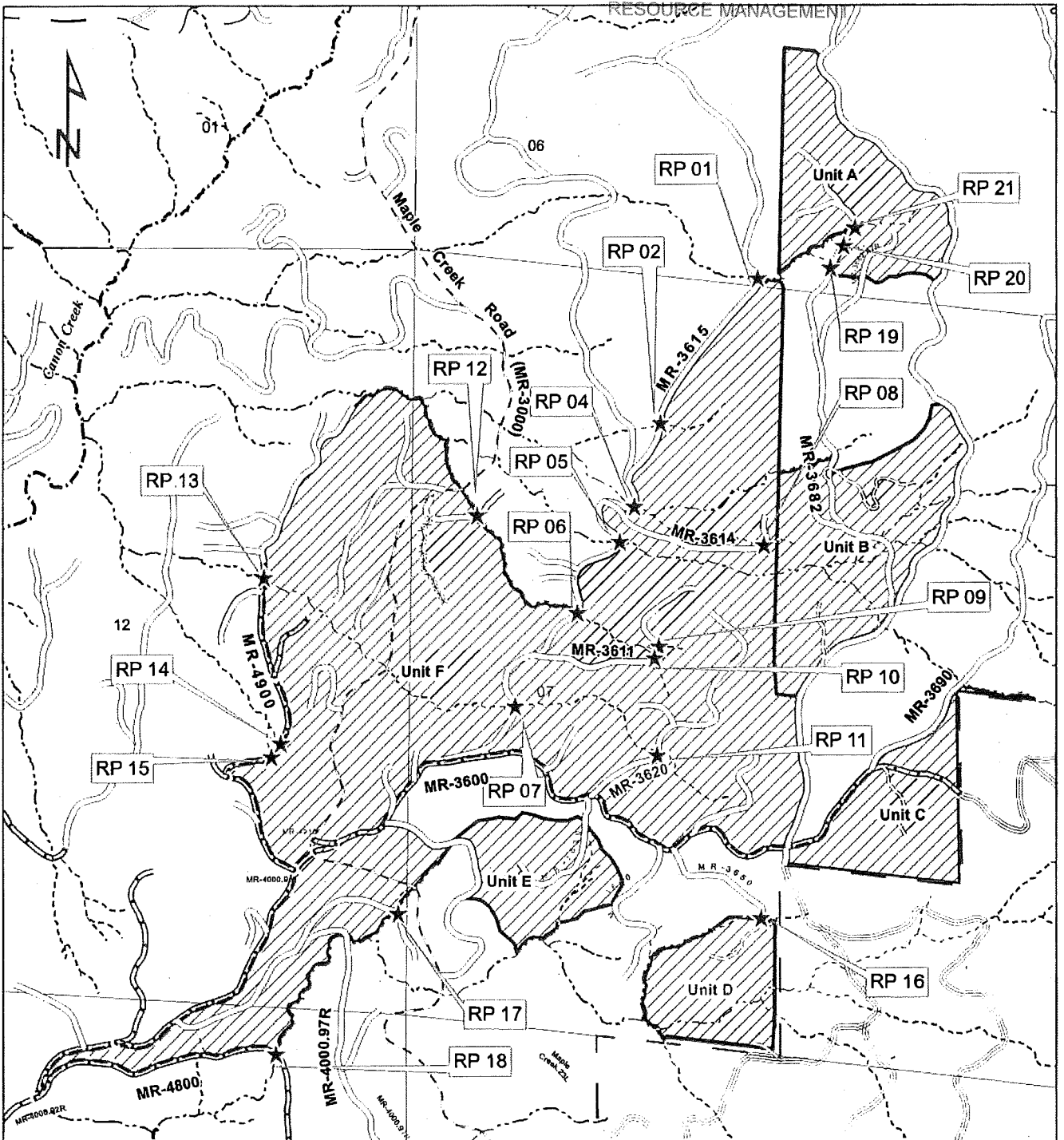
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GREEN DIAMOND
RESOURCE COMPANY

Korbels Quad Map

Ward Road Combo
GDRCo: 24-1901
Roads Points Map

Scale:
1:12,000

T5N, R2E, Sections 12 & 13;
T5N R3E Sections 06 & 07 HB&M

1 inch = 1,000 feet

Harvest Units		Roads	Public Road	Watercourse	Class I	GDRCo Ownership
Road Point		Existing Permanent Road	Class II (II-1, II-2)	Harvest Unit Boundary	INTERNAL USE ONLY	
		Existing Seasonal Road	Class III (III-A, III-B)		A: 530609	D: 530711
		Proposed Temporary Road (to be deactivated)			B: 530715	E: 530705
		Other Private Road			C: 530718	F: 530722

PART OF PLAN

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REVISED: 10/20/14
GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION
AND STREAM CROSSING INSTALLATION SPECIFICATIONS

The following road construction specifications were developed for company and contract road construction sides as general guidelines only. When questions arise that are not addressed in these guidelines the RPF should be contacted for clarification prior to continuing the project. The California Forest Practice Rules will be closely adhered to during all phases of the road construction process, and a copy of the Timber Harvest Plan will be on site at all times.

I. RIGHT-OF-WAY AND PIONEERING

1. Clearing limits will normally range from 75’ to 100’.
2. All trees over 12 inches within 5 feet of the cut slope upper limit, or where 25% of the root surface is exposed by construction, will be cleared. Refers to 923.4 (f)
3. Slash and other debris from road construction will not be incorporated into the road prism, fills or sidecast material. When feasible slash and debris will be placed parallel to the toe of road fill slopes as a filter windrow. Slash will not be bunched against residual trees which are required for silvicultural or wildlife purposes, or placed in locations where it may gain entry into Class I, II, or III watercourses. Refers to 923.4 (i)
4. Large redwood stumps and rocks that will be at least 12 inches below sub-grade can be left in place, but second growth redwood and all fir stumps must be removed to prevent slumps in road when material rots.
5. On slopes greater than 40 percent, the organic layer of the soil shall be substantially removed prior to fill placement. Refers to 923.4 (g)

II. EXCAVATION AND CONSTRUCTION

1. Minimum road width specifications will be:
 - a) Permanent Road - 16’ wide running surface plus inside ditch and occasional turnout.
 - b) Seasonal Road (Rocked) - 14’ wide running surface plus inside ditch and occasional turnout.
 - c) Seasonal Road (Dirt) - 14’ wide running surface, outsloped, with rolling dips and occasional turnout.
 - d) Temporary Road - 12’ wide running surface. Typically outsloped, rolling dips, not rocked.

See attached typical cross section diagrams

2. Greater road widths will only be allowed to satisfy requirements of alignment, safety and equipment. Curves will be widened to an additional width based on the following table:

100 feet + radius	+ 3 feet
75 – 100 feet radius	+ 5 feet
50 – 74 feet radius	+ 8 feet

3. Final grades shall not exceed 15 percent except where specified or approved by Green Diamond. Breaks in grade are not to exceed 4 percent per 200 feet of road length except where the grade may change from plus to minus or vice-versa; the intent being to create long rolls in the grade.
4. All overhanging cut slopes will be removed. Refers to 923.4 (e)
5. Cut slope ratio will vary based on steepness of sideslope and soil characteristics, see attached cross section diagrams.
6. For areas requiring “end-haul” or some degree of “waste management” (hill slopes greater than 65 percent, locations where sidecast could directly enter stream channels, areas designated in the THP or Engineering Report) excess material shall be deposited in a safe, stable location where downstream beneficial uses of water will not be adversely affected. Waste material will be seeded and mulched prior to the onset of winter. Refers to 923.2(c)
7. On slopes greater than 50 percent for greater than 100 lineal feet, fills greater than 4 feet in vertical height at the outside shoulder of the road shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade, or retained by an engineering structure. Refers to 923.4 (m)
8. Where constructed fills will exceed three feet in vertical thickness, fill slopes shall be inclined no greater than 65 percent. Refers to 923.4 (j)
9. Adequate compaction will be provided for all fill materials during road construction and crossing installation. All fills are to

be constructed in one foot lifts.

10. Fills, including through fills across watercourses, shall be constructed in a manner to minimize erosion using techniques such as insloping, berms, rock armoring of fill slopes or other suitable methods specified in the engineering report.
11. Fills shall not be constructed on slopes greater than 65% and sidecast should be minimized to the degree feasible. Refers to 923.4 (o) and (p).
12. Crowned road prisms with an inboard ditch will generally be used on Permanent and Seasonal Roads that are to be rocked. Where these roads cross watercourses, the road prism shall have a gradual transition to an insloped vertical curve as the road approaches and leaves the crossing (Critical Dip). Minimum cross drain frequency will be based on the attached table.
13. If road rocking is designated as part of the project, a minimum compacted depth of 12" (pit run) is specified unless otherwise indicated.
14. An out-sloped road prism will generally be used for dirt Seasonal and Temporary Roads. Rolling dips will be incorporated into the road prism where feasible. A combination of dips and waterbars may be necessary to meet Forest Practice Rules. When rolling dips or culvert installation is not feasible waterbars will be installed at a spacing that is appropriate to prevent water accumulation and erosion along the road surface and consistent with the standards in 923.5(f) and Technical Rule Addendum #5.
15. Turnouts will be placed at reasonable intervals along the alignment and will be located where a minimum of excavation will be required to increase the road width. A standard design for a turnout is presented with the typical cross section diagrams.
16. No road construction, reconstruction, or watercourse crossing installation shall occur under saturated soil conditions that may produce significant sediment discharge, except that construction may occur on isolated wet spots arising from localized groundwater such as seeps or springs, provided that measures are taken to prevent significant sediment discharge. Refers to 923.4(k) During any period of intense or prolonged rainfall, road construction earthwork will be halted and erosion control measures installed.

III. DRAINAGE STRUCTURES

1. Locations and size of culverts, and method used to determine culvert size, will be shown on plans or designated by Green Diamond. Refers to 923.9(e)
2. Watercourse crossings, road approaches and associated fills shall be constructed to prevent the potential diversion of stream overflows down the road and to minimize fill erosion should the drainage structure become obstructed. Methods to mitigate or address the diversion of stream overflow may include the installation of a critical dip, over sizing culvert, reduction of road fill over the crossing to accentuate the dip, insloping of the road surface over the crossing, rock armoring, trash racks, T-post, flared inlet, or the installation of additional overflow pipes. Refers to 923.9 (j) and (k)
3. Necessary erosion protection measures will be installed concurrently with the fill at all culvert watercourse crossings.
4. All watercourse crossings will be installed at, or as close as practical and feasible, to the natural grade and course of the stream. Culverts shall be installed in alignment with the watercourse channel to the extent feasible, and of the appropriate length to prevent fill erosion. Refers to 923.9(g) An exception to this would be a crossing requiring a small culvert but with extensive fill. In this case contact the RPF or appropriate GDRCo representative.
5. Culverts will be filled in with soil under haunches with a shovel or other means taking care to leave no voids. Fills for constructed and reconstructed watercourse crossings shall be thoroughly compacted in approximately one foot lifts during installation. The face of crossing fills shall be no greater than 65% (1.5:1, horizontal to vertical) except as provided for in THP Section II Item 26 and explained and justified in THP section III item 26. Refers to 923.9(i)
6. Inlets and outlets of culvert stream crossings will be protected from erosion with rock rip rap or other suitable measures. The erosion protection will extend at least 1 foot above the expected head and tail water elevations at the culvert. All bare soil on fill slopes at the culvert crossing will be seeded and/or mulched to prevent erosion and promote regeneration. Rock used to stabilize the outlets of crossings shall be adequately sized to resist mobilization with the range of rock ranging from 4 inches to 4 feet as determined by site specific conditions. Refers to 923.9(l) Logging road watercourse crossings shall not discharge water onto erodible fill or other erodible material without the installation of energy dissipaters and other necessary protective structures. When downspouts are used, they will be adequately secured to the culvert and they will be supported at intervals along their entire length.
7. Ditches will be V-shaped, have a minimum grade of 2%, and be approximately 1 foot deep relative to the subgrade. Ditches will be excavated into the road subgrade and not undercut the road cut slope. The ditch alignment should be pulled away from the cut slope to provide storage room for hillslope ravel, slumps and protection of ditch conveyance capability.
8. Ditch relief culverts will be installed at intervals based on the attached spacing chart

9. Ditch drains will normally consist of culverts with a minimum size of 18 inches.
10. For new construction ditch drains will discharge prior to an existing watercourse where needed to prevent sediment input into Class I and II streams and onto stable landforms with adequate energy dissipation and sediment filtering capacity. Outlets onto areas prone to gullying, slumping or land-sliding will be avoided. Drainage structures and facilities adjacent to logging road watercourse crossings shall be located to avoid discharging concentrated runoff onto fills, erodible soils, unstable areas and connected headwall swales. Refers to 923.9(m)(3)
11. Roads shall be hydrologically disconnected from watercourses to the extent feasible to minimize sediment delivery from road runoff to watercourses. Refers to 923.4(a)
12. Ditch drains will have a grade which is at least 2 percent greater than a contributing ditch to prevent ponding and to ensure that they are self cleaning.
13. In general, steeper road grades (>12%) will utilize cross drains, and more moderate grades will utilize rolling dips.

IV. LANDING CONSTRUCTION

Landings will be constructed to the minimum width, size and number consistent with the yarding and landing systems to be used. Landing size and location will be designated by Green Diamond.

1. No landing construction shall occur under saturated soil conditions.
2. No fill or sidecast shall be placed on slopes greater than 65 percent.
3. On slopes greater than 50 percent, fills greater than 4 feet in vertical height at the outside shoulder of the landings shall be constructed on a bench that is excavated at the proposed toe of the fill and is wide enough to compact the first lift and be compacted in approximately 1 foot lifts from the toe to the finished grade, or retained by an engineering structure. 923.4(m)
4. Waste organic material such as uprooted stumps, cull logs, accumulation of limbs and branches, or un-merchantable trees will not be buried in landing fills. Slash and other organic debris may be placed and stabilized at the toe of landing fills to restrain excavated soil from moving downslope.
5. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and within 200 feet of a watercourse or lake shall be seeded, planted, mulched, removed, or treated to adequately reduce soil erosion.
6. Landings shall be sloped (approximately 2%) to prevent water from accumulating on the landings. Concentrated flows should not be channeled over fills and should only be discharged onto stable soil. Discharge points will be located on stable landforms and adequate erosion protection and energy dissipation will be employed.

V. EROSION CONTROL

1. Appropriate erosion control measures will be utilized to minimize erosion and prevent sediments from entering watercourses during all construction activities. Erosion control measures to be utilized will include minimizing disturbed areas, road surfacing, dispersing runoff into vegetated filter areas, armoring with rock rip rap and revegetating disturbed surfaces as soon as practical.
2. Where construction activities are conducted in close proximity of watercourses, additional erosion control protection measures will be utilized to trap sediments and prevent their entry into the watercourse. As required, slash filter windrow, silt fences, mulching and straw bale check dams will be used to control runoff over fill slopes and along concentrated runoff flow paths. Temporary sediment retention ponds may be constructed.

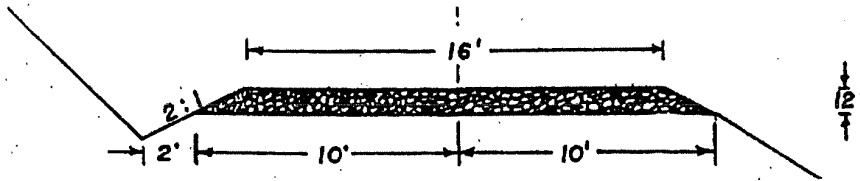
VI. REVEGETATION

Prior to the first winter period following construction, all new cut and fill slopes on road construction within the WLPZ of Class I or II watercourse shall be seeded and mulched.

**GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

PERMANENT ROAD

TYPICAL CROSS SECTION



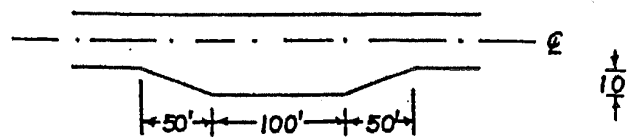
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
 ¼ : 1
 ½ : 1
 vertical

Side Slope
 10-30%
 30 - 50%
 50 + % (or sand, rock)

Road in solid
 centerline to ditch
 load carrying portion (4' outside centerline to ditch)
 entire subgrade full bench

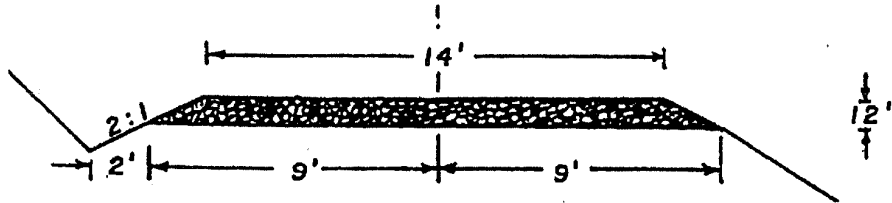
TYPICAL TURNOUT PLAN



GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS

SEASONAL ROAD

TYPICAL CROSS SECTION



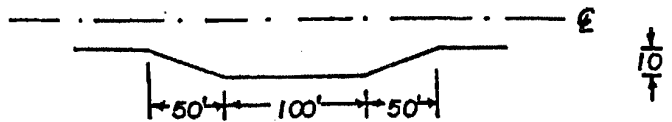
CUT SLOPES AND ROAD PLACEMENT

Cut Slope
¾ : 1
½ : 1
vertical

Side Slope
10-30%
30 - 50%
50 + % (or sand, rock)

Road in solid
centerline to ditch
load carrying portion (4' outside centerline to ditch)
entire subgrade full bench

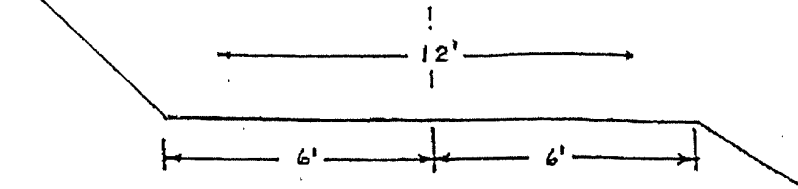
TYPICAL TURNOUT PLAN



**GREEN DIAMOND RESOURCE COMPANY
CALIFORNIA SOUTHERN OPERATIONS
ROAD SPECIFICATIONS**

TEMPORARY ROAD

TYPICAL CROSS SECTION



Temporary roads will generally not be rocked. Outsloping of road surfaces may be incorporated where appropriate.

CUT SLOPES AND ROAD PLACEMENT

Cut Slope

- 3/4 : 1
- 1/2 : 1
- vertical

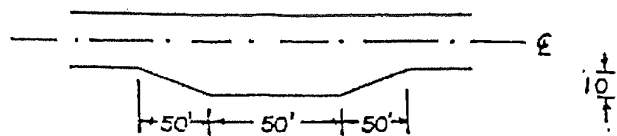
Side Slope

- 10 - 30%
- 30 - 50%
- 50 + % (or sand, rock)

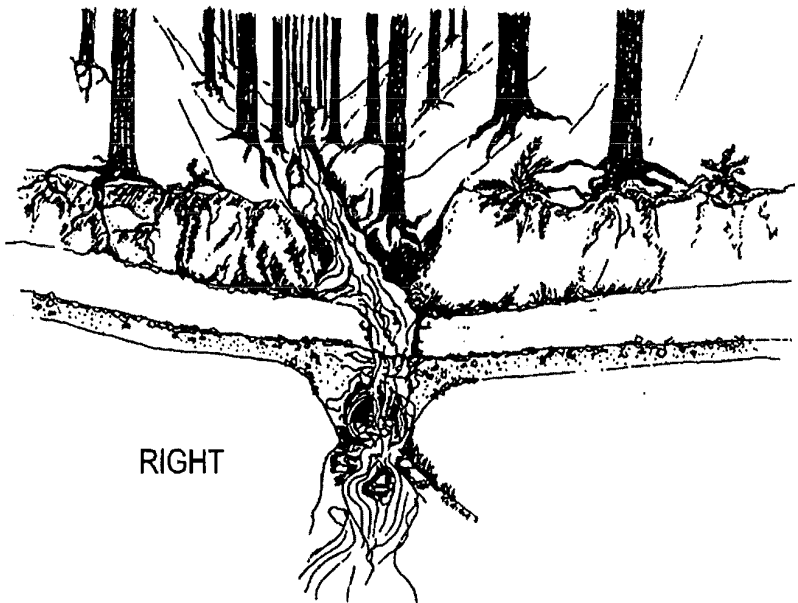
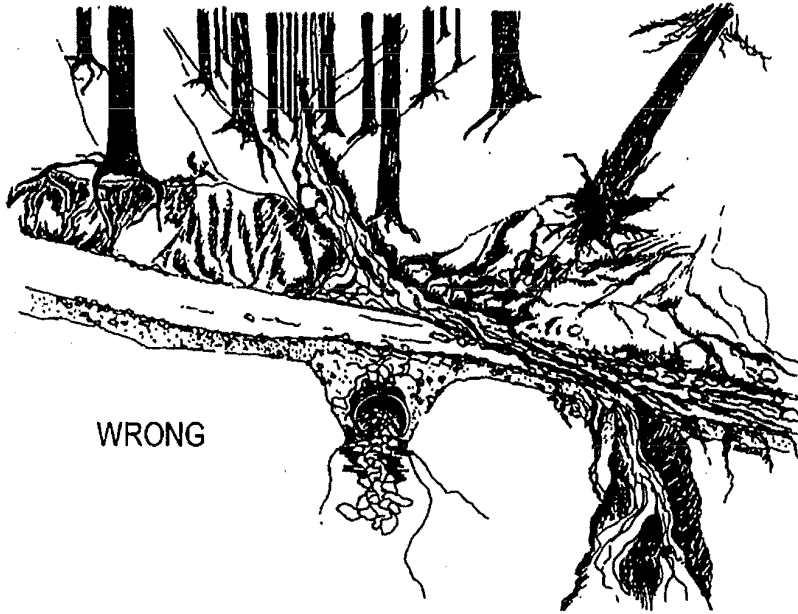
Road in spill

- centerline to ditch
- load carrying portion (4' outside centerline to ditch)
- entire subgrade full bench

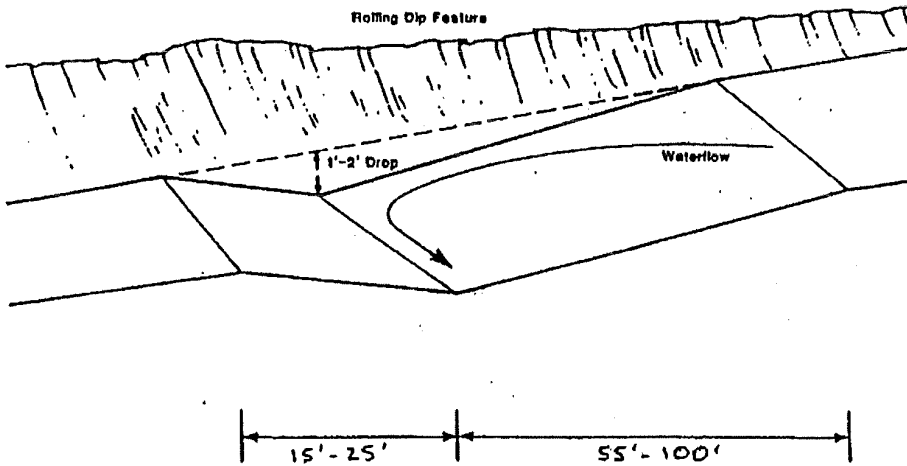
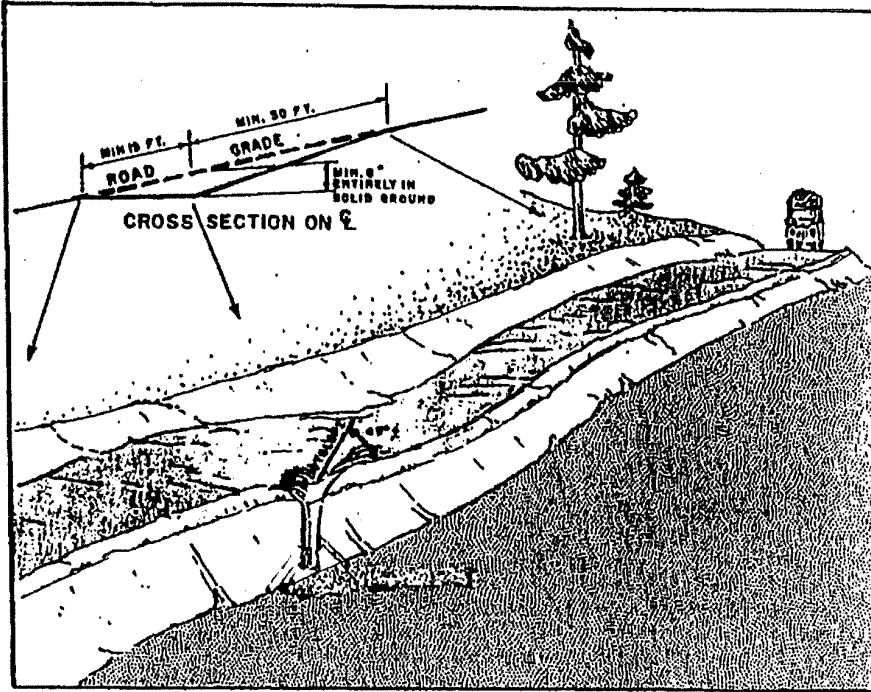
TYPICAL TURNOUT PLAN



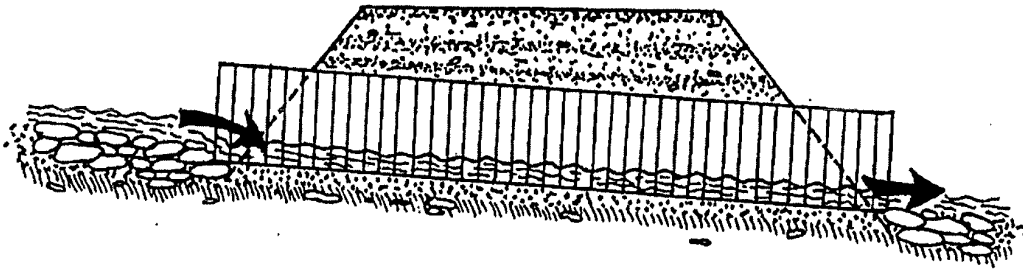
CRITICAL DIP



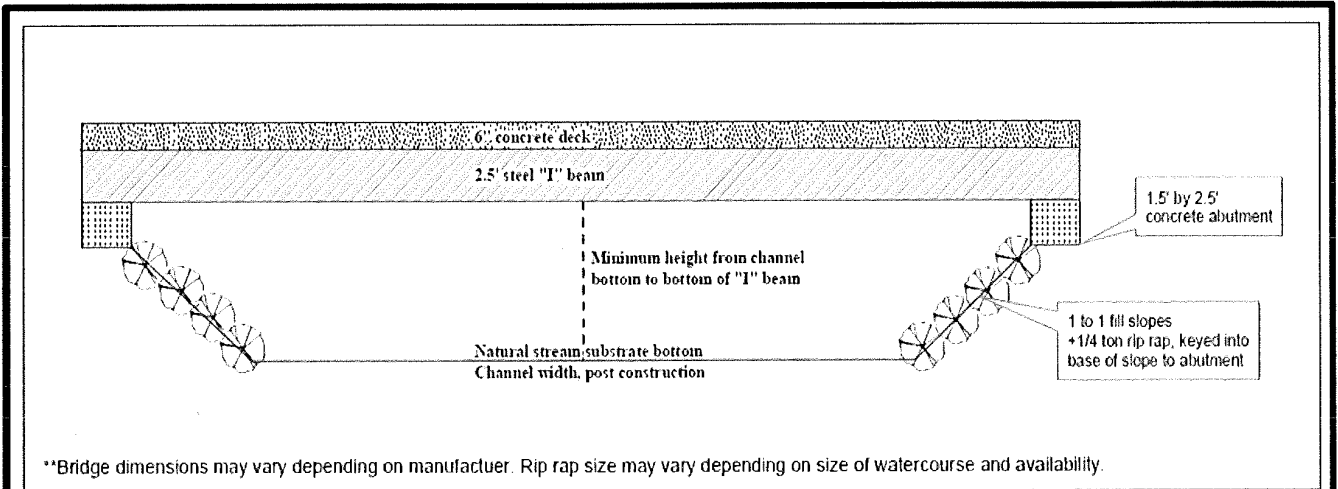
TYPICAL DRAINAGE DIP INSTALLATION



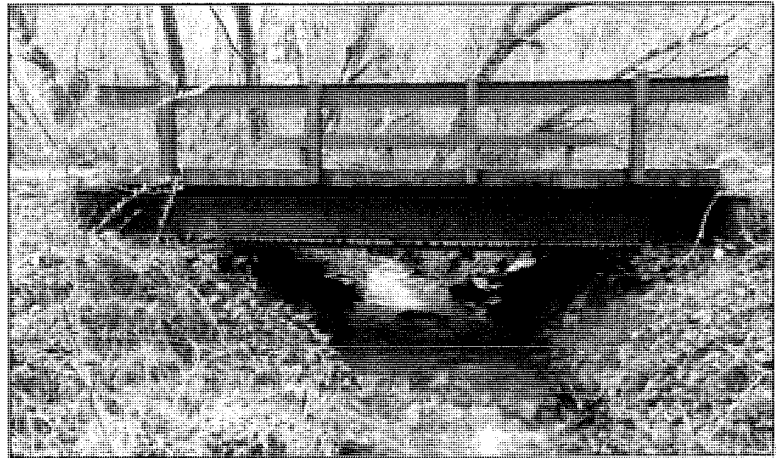
TYPICAL WATERCOURSE CROSSING CULVERT INSTALLATION



The culvert should be aligned with the natural stream channel, and set slightly below the original stream grade. Armoring of inlet and/or outlet will be assessed on an individual basis, (refer to THP and engineer report).



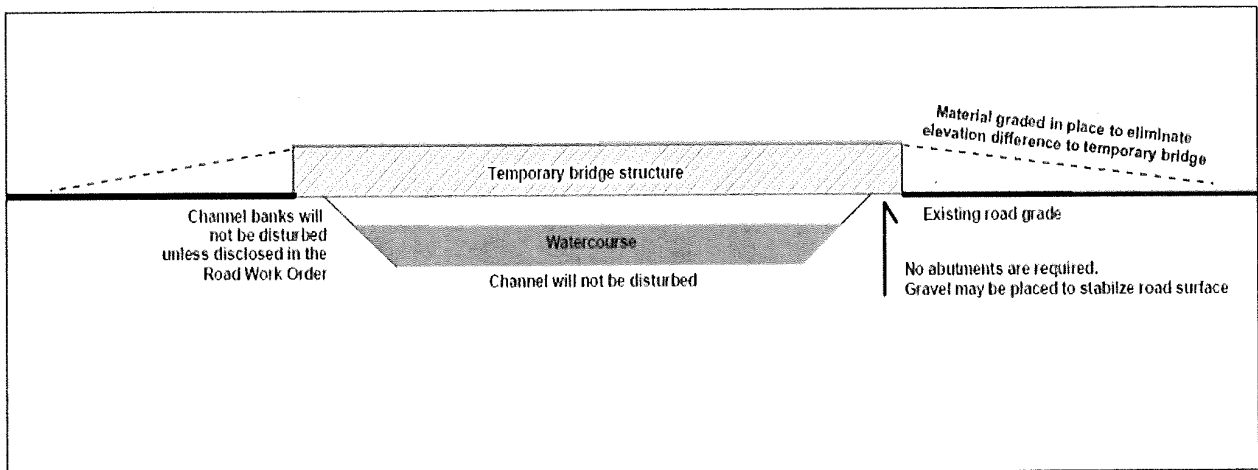
Railcar-type bridges may be used as an alternative to prefabricated concrete bridge form. Fill slopes may be steepened to increase post-construction channel width. Minimum height, channel width and minimum bridge length will be disclosed in the Road Work Order and conform with minimum requirements to pass 100-year return interval storm flows including debris.



Permanent Bridge at Watek Creek, Korbels, CA

Permanent Bridge Typical Design

 GREEN DIAMOND
RESOURCE COMPANY



Temporary Bridge Typical Design



ITEM #26– WATERCOURSE LAKE PROTECTION ZONE (WLPZ) PROTECTION MEASURES

ITEM #26		WATERCOURSES	
<p>Per 14 CCR 916, 936, 956 – Intent of Watercourse and lake Protection [ALL DISTRICTS] – The purpose of this article is to ensure that timber operations do not potentially cause significant adverse site-specific and cumulative impacts to the beneficial uses of water, native aquatic and riparian-associated species, and the beneficial functions of riparian zones; or result in an unauthorized take of listed aquatic species; or threaten to cause violation of any applicable legal requirements. This article also provides protection measures for application in watersheds with listed anadromous salmonids and watersheds listed as water quality limited under Section 303(d) of the Federal Clean Water Act.</p> <p>It is the intent of the Board to restore, enhance, and maintain the productivity of timberlands while providing appropriate levels of consideration for the quality and beneficial uses of water relative to that productivity.... Further, it is the intent of the Board that the evaluations that are made, and the measures that are taken or prescribed, be documented in a manner that clearly and accurately represents those existing conditions and those measures.</p> <p><i>Watercourse and Lake Protection measures for this plan include measures contained in Green Diamond’s Aquatic Habitat Conservation Plan (AHCP). For this THP, the term “RMZ” (Riparian Management Zone) is listed along with WLPZ in the plan to show the relationship to Green Diamond’s Aquatic Habitat Conservation Plan. RMZs serve the same function as WLPZs, and provide protection that meets or exceeds the standard FPRs for WLPZs in accordance with 14CCR 916.9(w)(2). This practice is not considered to be an in-lieu practice. The classification of waters is based on their beneficial uses as defined by the FPRs.</i></p>			
<p>a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>		<p>Are there any watercourses or lakes classified as a CLASS I through CLASS IV within or adjacent to the plan area? <i>(Check all that apply)</i></p>	
		<p><u>Within plan area</u></p>	<p><u>Adjacent to plan area</u></p>
<p><input type="checkbox"/> Class I:</p> <p><input checked="" type="checkbox"/> Class II:</p> <p><input checked="" type="checkbox"/> Class III:</p> <p><input type="checkbox"/> Class IV:</p> <p><input type="checkbox"/> Lakes:</p> <p><input type="checkbox"/> Other (Springs, Seeps)</p>		<p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	<p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>
<p>If YES, to above question list:</p> <ul style="list-style-type: none"> • Class of the water feature • Associated WLPZ or ELZ and width • Protection measures; determined from 14 CCR 916.5[936.5, 956.5], Table I. and/or 14 CCR 916.9[936.9, 956.9] et seq. • Specify if Class III or IV watercourses will have a WLPZ or ELZ 			
<p>b. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>		<p>Will Class III or IV watercourses be protected with a WLPZ or ELZ? If YES, describe below: Class III watercourses will be provided an ELZ/EEZ as described below.</p>	

Watercourse description and protection measures to be applied: (14 CCR 916.5)

Watercourse Protection Measures

WLPZ(RMZ) widths are a function of Stream Class based on beneficial uses and associated slope gradient. WLPZ(RMZ) widths will be measured from the watercourse transition line. The average side slope was determined as per 14 CCR 916.5 (a)(3) measured from the watercourse transition line to a point 100 feet upslope.

Riparian Management Measures for (Class I) Watercourses:

- Yes No Does this plan contain Class I watercourses?
- Yes No Does this plan contain a Class I Channel Migration Zone (CMZ) or Flood Plain as defined by Green Diamond’s AHCP?

Riparian Management Measures for Class II Watercourses:

Yes No Does this plan contain Class II watercourses?

Class II WLPZ(RMZ) Buffer Widths in accordance with Green Diamond’s AHCP

Stream Order*	Description	Total WLPZ (RMZ) Width	Inner Zone Width	Outer Zone Width
II-1	Top 1000’ of 1 st order Class II**	75 ft	30 ft	45 ft
II-2	Downstream from top 1000’	100 ft	30 ft	70 ft
II-2	2 nd Order Class II	100 ft	30 ft	70 ft
II-2	Within 200’ of a Class I WLPZ (RMZ)	100 ft	30 ft	70 ft

* Class II stream order is based on Green Diamond AHCP guidelines as described in section 6.3.1.2. (Figure 6-2)

** First order Class II watercourses with sideslopes >50% with ground based operations, shall have a WLPZ(RMZ) of 100ft.

Class II WLPZ(RMZ) Width

1. Green Diamond will establish an WLPZ (RMZ) of at least 75 or 100 feet on each bank of all Class II watercourses.
2. A 75-foot minimum buffer will be used on the first 1,000 feet of 1st order Class II watercourses (Class II-1 watercourses).
Downstream of this first 1000-foot section, the WLPZ (RMZ) will be expanded to at least 100 feet.
3. A 100-foot minimum buffer will be used on all 2nd order or larger Class II watercourses (Class II-2 watercourses).

For this THP the Class II WLPZ(RMZ) width varies from 75 to 100 feet based on stream order. The WLPZ (RMZ) protection measures proposed meet or exceed the minimum width and standard watercourse protection measures for Class II watercourses.

Inner and Outer Protection Zones:

Inner Zone WLPZ (RMZ) Width

Green Diamond will establish an inner zone within the WLPZ (RMZ), the width of which will be 30 feet measured from the first watercourse transition line. The WLPZ (RMZ) inner zone is not flagged. Canopy closure retention standards in the inner and outer (RMZ) zones will be determined by varying the mark of harvest trees. AHCP 6.2.1.3.1

Outer Zone WLPZ (RMZ) Width

Green Diamond will establish an outer zone of the (RMZ) within the (RMZ), which will extend the remaining 45 feet or 70 feet (depending on whether it is a Class II-1 watercourse or a Class II-2 watercourse, respectively). AHCP 6.2.1.3.2

Conservation Measures within Class II WLPZs (RMZs) AHCP 6.2.1.4

Overstory Canopy Closure

1. Green Diamond will retain at least 85% overstory canopy closure within the inner zone.
2. At least 70% overstory canopy closure will be retained within the outer zone. AHCP 6.2.1.4.1

Tree Falling for Safety Purposes

Trees may be felled within WLPZs (RMZs) to create cable yarding corridors as needed to ensure worker safety, subject to the canopy closure requirements set forth above. Such trees will be part of the harvest unit. AHCP 6.2.1.4.4

Equipment Exclusion Measures AHCP 6.2.1.4.5

The Class II WLPZ (RMZ) is an EEZ, except for a) existing roads and landings; b) construction of new spur roads to extend operations outside the (RMZ); c) road watercourse crossings; d) skid trail watercourse crossings; e) designated skid trail intrusions; and f) an outside edge of a road that partially intrudes into the RMZ either along the top margin of the RMZ at the head of a watercourse or into the lateral margin of the RMZ to avoid crossing a watercourse (e.g. for the construction of a switch-back).

The exception for a new road to partially intrude into the RMZ is only applicable when the following criteria are considered and conditions are met:

1. *Alternatives to constructing the road within the RMZ (such as other road locations, steeper road grades, crossing a watercourse, vegetation removal within the RMZ) have been evaluated.*
2. *For lateral RMZ intrusions, RPFs must consider and provide a discussion for the management of road runoff, road grade, side slopes, unstable slopes, riparian vegetation removal (comparison of basal area), other road locations and minimization of new watercourse crossings.*
3. *For intrusions into RMZs at the head of a watercourse, RPFs must consider and provide a discussion for the same issues identified for lateral RMZ intrusions as well as obtain geologic review for evaluation of potential headwall swales, cut slope heights and fill slopes to confirm this exception has lower potential of sediment delivery and slope failure than installing a watercourse crossing.*
4. *The road intrusion will encroach no more than 50 feet into the RMZ, must retain a minimum 50 foot vegetated filter strip between the road and watercourse, and the total length of the intrusion will be limited to the total width of the RMZ.*
5. *Road intrusions within the RMZ may occur only if it will have the least amount of impact to the riparian area and aquatic resources compared to the alternatives.*

[] Yes [x] No Are any of the proposed AHCP Class II Equipment Exclusion Exceptions listed above, that constitute a FPR in-lieu practice or exception, proposed for this plan?

Snag Retention

Green Diamond will retain all safe snags within the WLPZ (RMZ), and will fall unsafe snags and leave them onsite. AHCP 6.2.1.4.7

[] Yes [x] No Does this plan propose salvage within the WLPZ (RMZ) ?

[] Yes [x] No Does this plan propose the use of skid trails within the Class II WLPZ (RMZ) ?

Watercourse Protection Measures for Class I & Class II Watercourses (Standard FPR's)

- **Surface Cover:** On all Class I, II & Class I restorable watercourses, at least 75% surface cover and undisturbed area shall be retained to act as a filter strip for raindrop energy dissipation and for wildlife habitat in accordance with 14 CCR 916.4 (b)(6).
- **Large Woody Debris Recruitment:** On Class I, II & Class I restorable watercourses at least 2 living conifers per acre at least 16 inches diameter breast high and 50 feet tall within 50 feet of the watercourse will be retained in accordance with 14 CCR 916.3(g).
- **WLPZ (RMZs) Identification:** WLPZs(RMZs) have been clearly identified on the ground by the RPF who prepared the plan, or the supervised designee, in accordance with the current FPRs 14CCR 916.5 "A" and "B". All WLPZs(RMZs) will be flagged prior to the preharvest inspection.
- **Marking within WLPZs(RMZs):** Within Class I, II & Class I restorable WLPZs (RMZs) marking of harvest trees will be done prior to the Pre-Harvest Inspection. Harvest trees are marked with blue paint. The mark shall include a base mark below the cut line of the harvest trees. 14CCR 916.5 D & E.
- **As per 916.5(e)(G)&(I)** The residual overstory canopy shall be composed of at least 25% of the existing overstory conifers.

Yes No Does this plan contain Steep Streamside Slopes (SSS) as defined by GDRCo’s AHCP?

SSS HPA Group Korbelt/Humboldt Bay Interior Klamath Coastal Klamath Smith River

Protection Measures for Class II Steep Streamside Slopes (SSS):

Units D, E & F have slope section that exceed 55%. These area meet the definition of Steep Streamside Slopes (SSS) as described in Green Diamond’s AHCP section 6.2.2.1 as revised December 19, 2014. A Riparian Slope Stability Management Zone (RSMZ) will be established as per the table below. The width will be measured from the watercourse transition line. The RSMZ is entirely within the RMZ boundary. Default AHCP protection measures are outlined below.

Class II SSS Widths >55% slope			
	RSMZ		SMZ
	Inner Zone	Outer Zone	
Class II-1; Korbelt and Humboldt Bay HPA	0-30’	30-75’	75-105’
Class II-2; Korbelt and Humboldt Bay HPA	0-30’	30-100’	100-110’

The total RSMZ, SMZ or SSS width may be less where there is a “qualifying break in slope”. A “qualifying break in slope” is defined in the AHCP as a decline in slope gradient of sufficient degree (below the specified minimum slope gradient for the given HPA) and of sufficient distance that it may be reasonably expected to impede sediment delivery to watercourses from shallow rapid landslides originating above the slope break. (AHCP 6.2.2.1.3)

Prescriptions for RSMZs AHCP 6.2.2.1.6

1. On Class I and Class II-2 watercourses Green Diamond will not conduct harvesting on the inner zone of the RSMZ and there will be 85% overstory canopy retention in the outer zone of the RSMZ.
2. On Class II-1 watercourses Green Diamond will retain 85% overstory canopy in the inner zone of the RSMZ and 75% overstory canopy in the outer zone of the RSMZ.

Default Prescriptions for SMZs AHCP 6.2.2.1.7

1. The silviculture prescription employed within SMZs will be single tree selection.
2. Even spacing of unharvested trees will be provided where the trees are available to allow it, and all hardwoods will be retained. All species and size classes represented in pretreatment stands will be represented post harvest where feasible.
3. If cable corridors through SMZs are necessary to conduct intermediate treatments (e.g., commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the SMZs will be limited to cable corridors only. Any cable roads established in the SMZ as part of the intermediate treatment will, to the extent feasible, be reused during the even-aged entry in the adjacent stands.

Tree Falling for Safety and Cable Yarding AHCP 6.2.2.1.8

Green Diamond may fall trees within RSMZs and SMZs for worker safety and to create cable yarding corridors of up to 25 feet in width.

Road Construction AHCP 6.2.2.1.9

Green Diamond’s road construction will avoid RSMZs and SMZs where feasible. Where such zones cannot be avoided or where major road reconstruction is required, the road alignment within a RSMZ or SMZ will be evaluated by a PG and a RPF with experience in road construction in steep forested terrain. In addition, Green Diamond will submit to the Services an explanation, justification, and a map of the proposed [AHCP] exception as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

Protection Measures for ponds and lakes:

Yes No Does this plan contain ponds or lakes one acre and larger?

Yes No Does this plan contain ponds or lakes smaller than one acre?

Watercourse Protection Measures for Class III Watercourses:

Yes No Does this plan contain Class III watercourses?

Class III Protection Measures AHCP 6.2.1.5

Green Diamond will apply one of five tiers of protection measures within Class III watercourses (Tier A, Tier A (Modified), and Tier B). Protection measures are a function of stream class based on beneficial uses, associated slope percentage, and Hydrographic Planning Area (HPA) Group. The slope gradient was determined by measuring the average slope from the watercourse bank to a point 50 feet upslope. Tier A (Modified) mitigation measures will be applied to known areas of “soft” geology on GDRCo’s ownership: 1) Mather tract, 2) Mckinleyville tract, 3) McKay tract, 4) Salmon/ SF Elk River tract, 5) Rio Dell tract, and 6) Carlotta tract. These measures will also be applied to other GDRCo AHCP areas that possess highly erodible soils such as Tonnini’s or Wildcat derived soils, or soil with similar properties that are derived from uplifted marine sediments, and that are composed primarily of sands or silts.

AHCP Hydrographic Planning Area (HPA) Group: Humboldt Bay Korbelt Coastal Klamath Smith River

	Tier	Side slopes	EEZ Width	Tree Retention
Class III	Tier A	< 30%	30 ft	No
	Tier A	≥30%	50 ft	No
	Tier A (Modified)	<30%	30 ft	Yes
	Tier A (Modified)	≥30%	50 ft	Yes
	Tier B	> 65%	50 ft	Yes

Class III EEZ Protection Measures: AHCP 6.2.1.6&7

This THP includes Tier A and Tier B class III protection.

Tier A

Equipment Exclusion Zone

Green Diamond will establish a 30-foot EEZ, except for a) existing roads; b) road watercourse crossings; and c) skid trails and d) skid trail watercourse crossings. 6.2.1.6.1 Where sideslopes are 30% and greater, the EEZ shall be expanded to 50 feet. Reference 916.4(c)(1).

LWD Retention

Green Diamond will retain all LWD on the ground (not including felled trees) within the EEZ. 6.2.1.6.2

Tier B

Equipment Exclusion Zone

Green Diamond will establish a 50-foot EEZ, except for a) existing roads; b) road watercourse crossings; c) skid trails; and d) skid trail watercourse crossings.

Hardwood Retention

Green Diamond will retain all hardwoods and nonmerchutable trees within the EEZ except where necessary to create cable corridors or for the safe falling of merchutable trees. AHCP 6.2.1.7.2

Conifer Retention

1. Green Diamond will retain conifers where they contribute to maintaining bank stability or if they are acting as a control point in the channel.
2. A minimum average of one conifer 15 inches dbh or greater per 50 feet of stream length within the EEZ will be retained. AHCP 6.2.1.7.4

LWD Retention

Green Diamond will retain all LWD on the ground (not including felled trees) within the EEZ. AHCP 6.2.1.7.5

Additional Protection Measures for Class III Watercourses:

- **As per 14 CCR 914.1.(a):**“To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions and safety factors, trees shall be felled to lead in a direction away from watercourses and lakes.”
- **If soil and debris are deposited during timber operations in a Class III watercourse, it will be treated in accordance with 14 CCR 916.4 (c)(3):**
 “Soil deposited during timber operations in a Class III watercourse other than at a temporary crossing shall be removed and debris deposited during timber operations shall be removed or stabilized before the conclusion of timber operations, or before October 15. Temporary crossings shall be removed before the winter period, or as approved by the Director.”
- **916(b)(1)&(2). LTO protection of beneficial uses of riparian functions:**
(b) Protection of the quality and beneficial uses of water during the planning, review, and conduct of timber operations shall comply with all applicable legal requirements including those set forth in any applicable water quality control plan adopted or approved by the State Water Resources Control Board. At a minimum, the LTO shall not do either of the following during timber operations:
 - (1) Place, discharge, or dispose of or deposit in such a manner as to permit to pass into the waters of the state, any substances or materials, including, but not limited to, soil, silt, bark, slash, sawdust, or petroleum, in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water;
 - (2) Remove water, trees or large woody debris from a watercourse or lake, the adjacent riparian area, or the adjacent flood plain in quantities deleterious to fish, wildlife, beneficial functions of riparian zones, or the quality and beneficial uses of water.

c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is there any tractor road watercourse crossings that require mapping per 14 CCR 1034(x)(7)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will TRACTOR road watercourse crossings involve the use of a culvert? If YES, per 14 CCR 914.8[934.8, 954.8](e) state the minimum diameter and length for each culvert.	
Map Reference Points (MRP)	Culver Diameter	Culvert Length

MATO or SAA INSTRUCTIONS TO LTO	
d. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is there a Master Agreement for Timber Operations (MATO) for Streambed Alteration Agreement (SAA) approved by the Department of Fish and Wildlife for any portion of this plan? MATO or SSA Number: <u>MATO No. 1600-2010-0114-R-1</u> If YES, provide a list of the crossings, water drafting sites, or other water features to be used during operations and provide the conditions to be utilized and or consider from the MATO or SAA as operational instruction to the LTO in SECTION II.
Specific water feature under MATO or SAA (crossings, drafting sites, etc.)	Conditions of MATO or SAA to be utilized at each specific feature
	Refer to the road work table provided in THP Section II, Item 24/25 for a list of the road points that will have work conducted as per the MATO. All operational instructions to the LTO regarding watercourse crossings are provided in Section II Items 24/25 and 26.

<p>e. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is this THP Review Process to be used to meet Department of Fish and Wildlife CEQA review requirements? If YES, attach the required 1611 Addendum at the end of SECTION II and include any supporting information and analysis in SECTION III.</p> <p>List instructions to the LTO in SECTION II for installation, protection measures, and mitigation measures, per THP from instructions or CDF Mass Mailing (07/02/1999) “Fish and Game Code 1611 Agreements and THP Documentation.”</p>
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LTO INSTRUCTIONS:
 The property wide Master Agreement for Timber Operations from Department of Fish and Wildlife (MATO No. 1600-2010-0114-R-1) will be used to meet Department of Fish and Wildlife CEQA review requirements. Further discussion on the MATO is located in Section III, Item#25. A copy of the agreement is on file with Cal Fire at the Santa Rosa and Fortuna offices.

Water Drafting: Water drafting will be conducted under the procedures and standards described in the property wide Master Agreement for Timber Operations from Department of Fish and Wildlife (MATO No. 1600-2010-0114-R-1). A copy of the agreement is on file with Cal Fire at the Santa Rosa and Fortuna offices.

<p>f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are any exceptions provided under F & G code 1600 et seq., and made an enforceable part of plan? If YES, per 14 CCR 923 [943,963](d) identify the exceptions and provide the enforceable standards as instructions to the LTO in SECTION II.</p>
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<p>g. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Will new drainage structures and facilities on watercourses that support fish or listed aquatic species be constructed? If YES, per 14 CCR 914.8[934.8, 954.8](c) and 923.9 [943.9, 963.9](c). Structures and facilities shall be fully described and allow unrestricted passage of all life stages of fish or listed aquatic species, and natural movement of bedload. Provide operational instructions to the LTO in SECTION II.</p>
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<p>Per 14 CCR 923.9(e) – The location of all NEW permanent constructed and reconstructed, and temporary logging road watercourse crossings, including those crossings to be abandoned or deactivated, SHALL be shown on a map. If the structure is a culvert intended for permanent use, the minimum diameter of the culvert and the method(s) used to determine the culvert diameter SHALL be specified in the plan,</p>	
<p>h. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Are there any NEW PERMANENT constructed logging road watercourse crossings requiring mapping?</p>
<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any NEW RECONSTRUCTED logging road watercourse crossings requiring mapping?</p>
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Are there any temporary logging road watercourse crossings requiring mapping?</p>
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Are there any watercourse crossings to be ABANDONED or DEACTIVATED?</p>
<p>If YES, to the above questions these crossing shall be shown on a map in section II</p> <p>Per 14 CCR 923.9(e) If any watercourse crossing has a culvert intended for permanent use, the minimum diameter of the culvert and the method(s) used to determine culvert diameter shall be stated in the plan.</p> <p>Per 14 CCR 923.9(f) permanent watercourse crossings that are constructed or reconstructed SHALL accommodate the estimated 100-year flood flow, including debris and sediment loads.</p> <p>Method for sizing crossing: As per 923.9(e) the location of all new permanent, temporary or reconstructed logging road watercourse crossings, including crossings to be abandoned and deactivated are shown on the Road Work Map in Section II, Item 24. Minimum culvert diameters are stated in the Road Work Order in Section II, Item 24.</p> <p>Watercourse crossing culvert sizes: The methods used for determining minimum culvert diameters are as follows. For drainage areas less than or equal to 80 acres the Rational Method was used. For drainage areas >80 acres the USGS Magnitude and Frequency Method was used. As per 923.9(f) Permanent water course crossings that are constructed or reconstructed shall accommodate the estimated 100 year flood, including debris and sediment loads. For permanent bridge installations, Manning’s Equation is used to calculate the minimum length and height of the bridge (see Section II, Item 25 for site specific information if applicable).</p>	
<p>i. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is there any exception to flagging or otherwise identifying the location of any constructed or reconstructed road watercourse crossing prior to the pre-harvest inspection?</p> <p>If YES, per 14 CCR 923.9[943.9, 963.9](j) provide the explanation and justification in SECTION III.</p>
<p>j. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will other methods for diversion of overflow at culvert crossings be utilized (<u>other than critical dips</u>) in the construction or reconstruction of logging road watercourse crossings which culverts?</p> <p>If YES, per 14 CCR 923.9[943.9, 963.9](j) provide instructions to the LTO in SECTION II identifying the methods to be used for the diversion of overflow at watercourse crossings.</p> <p>Please refer to THP item 25, GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS, Section III #2 which states:</p> <p>Watercourse crossings, road approaches and associated fills shall be constructed to prevent the potential diversion of stream overflows down the road and to minimize fill erosion should the drainage structure become obstructed. Methods to mitigate or address the diversion of stream overflow may include the installation of a critical dip, over-sizing the culvert, reduction of road fill over the crossing to accentuate the dip, insloping of the road surface over the crossing, rock armoring, trash racks, T-post, flared inlet, or the installation of additional overflow pipes.</p>

<p>Per 14 CCR 923.9[943.9, 963.9](k) watercourse crossings and associated fills and approaches SHALL be constructed and maintained to prevent diversion of stream overflow down the road, and to minimize fill erosion should the drainage structure become obstructed.</p>	
<p>k. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Are there any existing watercourse crossings that are located on logging roads within the logging area?</p>
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Are there any watercourse crossing proposed for construction located on logging roads within the logging area? Refer to the Road Work Table and Road Work Maps in THP Section II, Item 25 for locations of proposed watercourse crossings. If YES, per 14 CCR 923.9[943.9, 963.9](k) identify the crossing and provide the methods to mitigate or address the diversion of stream overflow at the crossing. Please refer to THP item 26 (j) above and THP item 25, GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS, Section III #2 for a description of how the THP addresses diversion potential for proposed logging road watercourse crossings. The THP addresses diversion potential of <u>existing</u> watercourse crossings on THP logging roads through the road assessment process described in THP Section II Item 25 and in the AHCP Road Maintenance and Inspection Plan as described in THP Section V including the imminent risk of failure key. When existing crossings are identified that required work to address diversion potential, the methods to mitigate or address the diversion of stream overflow may include the installation of a critical dip, over-sizing the culvert, reduction of road fill over the crossing to accentuate the dip, insloping of the road surface over the crossing, rock armoring, trash racks, T-post, flared inlet, or the installation of additional overflow pipes. If these types of sites are identified, they are included as a road point in the road work table and map in THP Section II, Item 25.</p>
<p>i. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will rock be used to stabilize crossing outlets? If YES, per 14 CCR 923.9[943.9, 963.9](k) Rock used to stabilize outlets of crossings shall be adequately sized to resist mobilization of soil and significant sediment discharge. The range of rock size shall be described within the plan as instruction to the LTO in SECTION II indicate the range of the rock dimensions to be used. Rock used to stabilize the outlets of crossings shall be adequately sized to resist mobilization with the size of rock typically ranging from 4 inches to 4 feet as determined by site specific conditions.</p>
<p>m. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Watercourse crossing proposed to be reconstructed or removed, are there any significant volumes of sediment accumulated upstream of the watercourse crossing? If, YES per 14 CCR 923.9[943.9, 963.9](n) provide instructions to the LTO, in SECTION II, describing how the material will be stabilized, removed (the extent feasible), and in conformance with CDFW agreements, where applicable.</p>
<p>n. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Do logging road watercourse crossing drainage structures and other erosion control features have high historical fail rate within the project area?</p>

<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Do/will existing watercourse crossings utilizing a culvert have large amounts of fill material covering the culvert making up the crossing?
	<p>If, YES per 14 CCR 923.9[943.9,963.9](o) drainage structures and erosion control features shall be oversized, designed for low maintenance, reinforced, or removed before the completion of timber operations or as specified in the approved plan.</p> <p>Provide instruction to the LTO in SECTION II identifying these crossings, providing instruction of how these crossings will be treated.</p> <p>Please refer to THP item 25, GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS, for a description of how the THP addresses proposed watercourse crossings.</p> <p>The THP addresses existing watercourse crossings on THP logging roads through the road assessment process described in THP Section II Item 25 and in the AHCP Road Maintenance and Inspection Plan as described in THP Section V including the imminent risk of failure key. Specific crossings are addressed in the Road Work Table included in Item 25.</p>

Guidance on reducing the potential for failure at high risk watercourse crossings may be found in “Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk crossings” (1st Edition, revised 10/27/14)

o. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will any logging road watercourse crossing be removed? If YES, provide instructions to the LTO, in SECTION II, describing the removal plan pursuant to the standards per 14 CCR 923.9[943.9, 963.9](p)(1)-(4) THP specific information is provided in the Road Work Table in THP Item 25. General information on crossing removal is provided in THP Section II Item 26.
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FOR PLANS LOCATED WITHIN AN ASP WATERSHED

This plan is prepared in accordance with 14CCR 916.9(w)(2) and 923(f)(2) which state that: The provisions of 14 CCR 916.9, 923(e), 923.1(g) (h)and (i), 923.4(r)and (s), 923.5(q), 923.6(h), 923.7(j) (l), 923.9(d) (s)and (t)(4)shall not apply to a plan that is subject to a federal incidental take statement or incidental take permit that addresses anadromous salmonid protection, for which a consistency determination has been made pursuant to Section 2080.1 of the Fish and Wildlife Code.

THP Items 26 (p) – (t) are not applicable

p. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will timber operations occur within a class I WLPZ?
<input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will timber operations occur within a WLPZ adjacent to a restorable Class I watercourse?
	If YES, Address per 14 CCR 916.9[936.9, 956.9](f)(2)(A)-(E).

Per 14 CCR 916.9[936.9, 956.9](e)(1)(A)-(E) there shall be NO timber operations within a channel zone with the exception of those conditions listed within 916.9[936.9, 956.9](e)(1)(A)-(E)

q. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will there be any timber operations within the channel zone of any watercourse? If YES, Indicted the location and type of timber operations to be conducted and provide instructions to the LTO in SECTION II.
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Per 14 CCR 923.1[943.1, 963.1](h) NO logging road(s) or landing(s) shall be planned for construction or reconstruction in the CMZ or Core Zone of a Class I watercourse or within 150 feet of a watercourse transition line. with the exception of those conditions listed within 916.9[936.9, 956.9](e)(1)(A)-(E) and 916.9[936.9, 956.9](v)

<input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will there be any logging road(s) or landing(s) constructed in the CMZ or Core Zone of a Class I?
	If Yes, indicate the location and provide instructions to the LTO in SECTION II.

Per 14 CCR 923.9[943.9, 963.9](d) Watersheds with listed anadromous salmonids. A description of all existing permanent Class I watercourse crossings shall be provided, where fish are always or seasonally present or fish passage is restorable.	
r. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Are there existing permanent Class I crossings where fish are always present?
<input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Are there existing permanent Class I crossings where fish are seasonally present?
<input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Are there existing permanent Class I crossings where fish passage is restorable?
	If YES, provide a description of the existing permanent Class I watercourse crossings. Indicate in the description where the current crossing conditions may be adversely affecting fish passage and identify the proposed measures, if feasible, to address the conditions.
s. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Will water drafting occur in association with the timber operations?
	If YES, timber operations shall comply with Fish and Game Code Section 1600, et seq.
t. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable	Is there a Fish and Game Code Section 1600 Master Agreement for Timber Operations which addresses water drafting? If YES, provide the operational restrictions from the Master Agreement in SECTION II as instructions to the LTO. If NO, describe the water drafting site conditions and proposed water drafting activity in the plan. Per 14 CCR 923.7[943.7, 963.7](I)(2)(A)-(F) (See Below)
Per 14 CCR 923.7[943.7, 963.7](I)(2)(A)-(F) the description of water drafting site conditions and proposed water drafting activity shall include:	
General description of proposed site:	
Watercourse Classification:	
Drafting parameters including:	
Month(s) of use -	
Estimated volume needed per day -	
Estimated maximum instantaneous drafting rate and filling time -	
Other water drafting activities in same watershed -	
Drainage area (acres) above point of diversion -	
Estimated:	
Unimpeded stream flow -	
Pumping rate -	
Drafting duration -	
A discussion of the effects on aquatic habitat downstream from the drafting site(s) of single pumping operations, or multiple operations at the same location, and at other locations in the same watershed:	

Permanent Watercourse Crossing Construction and Reconstruction:

923.9 (f)-(i)

(f) All permanent watercourse crossings that are constructed or reconstructed shall accommodate the estimated 100-year flood flow, including debris and sediment loads.

(g) All culverts used for new and replacement logging road watercourse crossings shall be installed at or as close as practical and feasible to the natural watercourse grade. Culverts shall be installed in alignment with the watercourse channel to the extent feasible, and of the appropriate length to prevent fill erosion.

(h) Logging road watercourse crossings shall not discharge water onto erodible fill or other erodible material without the installation of energy dissipaters and other necessary protective structures.

(i) Fills for constructed and reconstructed logging road watercourse crossings shall be thoroughly compacted in approximately one-foot lifts during installation. The face of crossing fills shall be no greater than 65 percent (1.5:1, horizontal to vertical). Excavated material and cut banks resulting from construction or reconstruction which has access to a watercourse shall be sloped back from the channel to prevent slumping, to minimize soil erosion, and to prevent significant sediment discharge.

- An exception is proposed for 923.9(i) to allow for the face of crossing fills to exceed 65% at temporary watercourse crossings and at permanent crossings where the crossing fill has been stabilized with rip-rap, large wood debris or other similar methods. An explanation and justification is provided in THP Section III Item 26. Site specific instructions to the LTO are included here:

The following crossing construction standards for permanent culvert installations are part of GDRCo's AHCP, RMWDR and MATO:

- GDRCo shall construct all new watercourse crossings to minimize fill over any culverts.
- GDRCo shall install erosion protection measures such as inlet and outlet rip-rap armoring of culverts where necessary to prevent erosion concurrently with the fill at all culverted watercourse crossings.
- The armoring shall extend at least 1 foot above the expected head and tail water elevations at the culvert.
- All bare soil on fill slopes at the culvert crossing will be seeded and/or mulched to prevent erosion and promote regeneration.
- GDRCo shall compact fill faces during construction.

Also refer to the GREEN DIAMOND RESOURCE COMPANY ROAD CONSTRUCTION AND STREAM CROSSING INSTALLATION SPECIFICATIONS in Section II Item #24

AHCP Temporary Road Watercourse Crossings Design

1. *Watercourse crossings on temporary roads designed for one time summer season use will be designed to carry the flow at the time of construction and will be removed prior to October 15 in the year it was installed.*
2. *A minimum six-inch pipe size will be used on small seeps and springs. 6.2.3.6.3*

Watercourse crossing removal standards:

923.9(p) All logging road watercourse crossings that are proposed by the plan submitter to be removed, including temporary crossings and those along abandoned or deactivated roads, shall be removed as described in the plan and shall apply the following standards:

- (1) Fills shall be excavated to form a channel that is as close as feasible to the natural watercourse grade and orientation, and that is wider than the natural channel as observed upstream and downstream of the logging road watercourse crossing to be removed.
- (2) The excavated material and any resulting cut bank shall be no greater than 65 percent (1.5:1, horizontal to vertical) from the outside edge of the constructed channel to prevent slumping, to minimize soil erosion and sediment transport, and to prevent significant sediment discharge. Exposed soil located between the watercourse crossing and the nearest adjacent drainage facility or hydrologic divide, whichever is closer, including cut banks and excavated material, shall be stabilized by seeding, mulching, rock armoring, replanting, or other suitable treatment to prevent soil erosion and significant sediment discharge.
- (3) Where it is not feasible to remove a logging road watercourse crossing or its associated fill to the above standards, the plan shall identify how soil erosion and significant sediment discharge will be prevented.

- As per AHCP section 6.2.3.8.5, Green Diamond will pull back the fill slope at removed crossings to the natural watercourse side slopes and deposit the removed material in a stable location where sediment will not deliver to any watercourse. This may result in "resulting cut banks" that exceed 65% where the natural watercourse side slopes exceed 65%. All exposed areas associated with the crossing removal will be treated for erosion control as per THP item 18.

(4) All logging road watercourse crossings proposed for removal shall be removed upon completion of use, prior to the winter period or as specified in the applicable CDFW 1600 agreement, whichever is earlier, or as otherwise specified in the plan.

- Refer to the Road Work Table included in Item 24 for site specific timing of crossing removals.

Installation Instructions for Temporary Watercourse Crossings: The LTO shall refer to the specific instructions in the Road Work table in THP Item 24. The following crossing construction standards for temporary crossing installations are part of GDRCo's AHCP, RMWDR and MATO:

- Temporary crossings will be removed and stabilized prior to October 15th of the year of use.
- If a dirt fill crossing is used at a dry temporary crossing, GDRCo shall place straw or other material on the bed and banks before placing fill to designate the lower limit of subsequent excavation during crossing removal.
- Green tree tops, slash, rock, hay bales and/or log fill shall be used at temporary crossings when it may be difficult to remove all the fill material from the channel without undue disturbance, or when flows would transport sediment downstream.
- The temporary crossing shall be removed as per 923.9(p) provided above, and exposed soils will be treated for soil stabilization as stated in Item #18 of the THP.

ITEM #27– WLPZ IN-LIEU OR ALTERNATIVE PRACTICES

ITEM #27 WLPZ IN-LIEU OR ALTERNATIVES	
<p>Per 14 CCR 916.1[936.1, 956.1] (In-Lieu Practices) – In rule sections where provision is made for site specific practices to be proposed by the RPF, approved by the Director and included in the THP in lieu of a standard rule, the RPF shall:</p> <ul style="list-style-type: none"> • Reference the standard rule • Explain and describe each proposed practice • Explain how it differs from the standard practice, • Explain and justify how the protection provided by the proposed practice is at least equal to the protection provided by the standard rule. • Identify the specific location where it shall be applied. 14 CCR 1034(x)(15) and (16) <p>Per 14 CCR 916.6[936.6, 956.6] (Alternatives) – Alternative prescription for the protection of watercourses and lakes may be developed by the RPF or proposed by the Director on a site specific basis provided the following conditions are complied with and the alternative prescription will achieve compliance with the standards set forth in 14 CCR 916.3[936.3, 956.3] and 916.4[936.4, 956.4](b) The alternative prescription shall include in the THP information per 14 CCR 916.6[936.6, 956.6]a)(1)-(3)</p>	
<p>u. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the prohibition of the construction or use of tractor roads listed below?</p> <p>Per 14 CCR 916.3[936.3, 956.3(c) Timber operators shall not construct or use tractor roads in a Class I, II, III, IV watercourses, in the WLPZ, marshes, wet meadows and other wet areas unless explained and justified in the plan by the RPF. Except at:</p> <ul style="list-style-type: none"> • Prepared tractor crossing described in 14 CCR 914.8[934.8, 954.8](b) • Class III watercourse crossings dry at the time of use • At new and existing tractor road crossings approved as part of a Fish and Game Code Process (F&GC 1600 et seq.) <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Prove the explanation and justification in SECTION III, (see table below)</p>
<p>v. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the retention of non-commercial vegetation bordering and covering meadows and wet areas? 14 CCR 916.3[936.3, 956.3(d)</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Prove the explanation and justification in SECTION III, (see table below)</p>
<p>w. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Directional felling of trees within any WLPZ away from the watercourse or lake? 14 CCR 916.3[936.3, 956.3(e)</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Prove the explanation and justification in SECTION III, (see table below)</p>
<p>x. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the standard WLPZ(s) width(s) identified in 14 CCR 916.5[936.5, 956.5], Table I? If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Prove the explanation and justification in SECTION III, (see table below)</p>
<p>y. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the protection of Class IV watercourse(s)? 14 CCR 916.4[936.4,956.4](c) and 916.5[936.5, 956.5], Table I If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Prove the explanation and justification in SECTION III, (see table below)</p>

<p>z. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the exclusion of heavy equipment from the WLPZ except at those locations listed below?</p> <p>Per 14 CCR 916.4[936.4, 956.4(d)&(f) – Heavy equipment shall not be used in timber falling, yarding, or site preparation within the WLPZ unless such use is explained and justified in the THP and approved by the Director.</p> <p>Except at:</p> <ul style="list-style-type: none"> • Prepared tractor crossing described in 14 CCR 914.8[934.8, 954.8](b) • Class III watercourse crossings dry at the time of use • Existing road crossings • New tractor and road crossings approved as part of a Fish and Game Code Process (F&GC 1600 et seq.) <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Provide the explanation and justification in SECTION III, (see table below)</p>
<p>aa. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the establishment of ELZ(s) for Class III watercourses unless side slopes are 30% and EHR is low? 14 CCR 916.4[936.4, 956.4](c)(1)</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Provide the explanation and justification in SECTION III, (see table below)</p>
<p>bb. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Retention of at least 50% of the overstory canopy in the WLPZ? 14 CCR 916.5[936.5, 956.5](e)“G”</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Provide the explanation and justification in SECTION III, (see table below)</p>
<p>cc. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any site-specific practices proposed in-lieu of, or as an alternative, to the Retention of at least 50% of the understory in the WLPZ? 14 CCR 916.5[936.5, 956.5](e)“G”</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Provide the explanation and justification in SECTION III, (see table below)</p>
<p>dd. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any additional in-lieu or alternative practices proposed for watercourse or lake protection?</p> <p>If YES, provide operational information to the LTO under each item selected YES, in SECTION II. Provide the explanation and justification in SECTION III, (see table below)</p>

ITEM #28-29 – DOMESTIC WATER NOTIFICATIONS

ITEM #28	DOMESTIC WATER NOTIFICATIONS
	<p>Per 14 CCR 1032.10 – The THP submitter shall provide notice by letter to all other landowners within 1,000 feet downstream of the THP boundary whose ownership adjoins or includes a Class I, II, or IV watercourse(s) which receives surface drainage from the proposed timber operations.</p> <p>The notice shall request that the THP submitter be advised of surface domestic water use from the watercourse, within the THP or within 1,000 feet downstream of the THP boundary.</p> <p>When required to notice by letter, publication shall also be given one time by the THP submitter in a newspaper of general circulation in the area affected by the proposed project.</p> <p>Such letter and publication shall notify the adjoining party:</p> <ul style="list-style-type: none"> • of the proposed timber operation • describe its legal location • identify the name, if any, of the watercourse it may affect • request a response by the property owner within ten days of the post-marked date on the letter or the date of publication as appropriate <p>The RPF may propose, with justification and explanation, an exemption to such notification requirements, and the Director may agree.</p> <p>Copies of either notice, proof of service and publication, and any responses shall be attached to the THP (SECTION V) when submitted.</p>

<p>If domestic use is noted, the plan shall contain mitigations necessary to protect domestic water use.</p> <p>THE PLAN SHALL NOT BE SUBMITTED UNTIL <u>TEN DAYS</u> AFTER THE ABOVE NOTIFICATION(S) HAVE BEEN COMPLETED</p>	
<p>a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any landowners with 1,000 feet downstream of the THP boundary whose ownership adjoins or includes a class I, II or IV watercourse(s) which receives surface drainage from the proposed timber operations?</p> <p>If YES, the requirement of 1032.10. Proof of letter notification shall be included in THP SECTION V.</p> <p>If NO, notification exemption request below need not be answered.</p>
<p>b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Letter <input type="checkbox"/> Newspaper <input type="checkbox"/> Both</p>	<p>Is an exemption to the notification requirements requested? (check notification requesting to be exempted)</p> <p>If YES, provide the explanation and justification for the exemption request in SECTION III of the THP.</p>
<p>c1. <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Was any information received in response to domestic water notifications indicating domestic water supplies may be present within or downstream of the project area?</p>
<p>c2. <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>If YES, are there any additional mitigation measures needed beyond that required by standard watercourse and lake protection rules?</p> <p>If YES, provide the site-specific instruction to the LTO in SECTION II.</p>
<p>ITEM #29 SENSITIVE WATERSHEDS</p>	
<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is any part of the THP area within a Sensitive Watershed as designated by the Board of Forestry and Fire Protection?</p> <p>If YES, identify the watershed and list the special rules, operating procedures or mitigation that will be used to protect the resources identified at risk.</p>

WATERSHED	SPECIAL RULE	MITIGATION MEASURES PROTECTING RESOURCES IDENTIFIED AT RISK

ITEM #30 – HAZARD REDUCTION

ITEM #30 HAZARD REDUCTION	
<p>Per 14 CCR 917, 937, 957 - Hazard reduction shall provide standards for the treatment of snags and logging slash in order to reduce fire and pest safety hazards in the logging area, to protect such area from potential insect and disease attack, and to prepare the area for natural or artificial reforestation while retaining wildlife habitat.</p> <p>Per 14 CCR 917.2, 937.2, & 957.2 – The following standards shall apply to the treatment of slash created by timber operations within the plan area and on roads adjacent to the plan area.</p>	
<p>a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will slash treatment occur within 100 feet of the edge of the traveled surface of a PUBLIC road?</p> <p>Item 30 (a): 14 CCR917.2 (b) Within 100 feet of the edge of the traveled surface of public roads, slash created and trees knocked down by road construction or timber operations shall be treated by lopping for fire hazard reduction, piling and burning, chipping, burying or removal from the zone. This applies to harvest areas along Maple Creek Road associated with Unit F. In addition to measures below; slash and all non-conifer trees within commercial thinning areas located within 100’ of Maple Creek Road shall be slashed, piled and burned or removed prior to April 1st following the year of its creation.</p>
<p>b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Will slash treatment occur within 50 feet of the edge of the traveled surface of PERMANENT private roads open for public use where permission to pass is not required?</p>
<p>c. <input type="checkbox"/> Yes <input type="checkbox"/> No Not Applicable</p>	<p>[SOUTHERN only] Will slash treatment occur within 50 feet of the edge of the traveled surface of SEASONAL private roads open for public use where permission to pass is not required?</p>
<p>If YES to any of the above, slash created or trees knocked down by road construction or timber operations shall be treated by: (Select all that apply)</p> <p><input type="checkbox"/> lopping for Fire hazard reduction per (14 CCR 895.1) <input type="checkbox"/> Piling and burning per (14 CCR 917.2, 937.2, 957.2(a)(1-3)) <input type="checkbox"/> chipping <input type="checkbox"/> burying <input type="checkbox"/> removal <input type="checkbox"/> Other (explain)</p>	
<p>d. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Are there any permanently located structures maintained for human habitation requiring slash treatment?</p> <p>If YES, identify distance slash treatment will occur and indicate the method of treatment</p> <p><input type="checkbox"/> Within 100 feet of permanent structure <input type="checkbox"/> Removed <input type="checkbox"/> Piled and burned per (14 CCR 917.2, 937.2, 957.2(a)(1-3)) <input type="checkbox"/> Other (explain)</p> <p><input type="checkbox"/> Between 100-200 feet of permanent structure <input type="checkbox"/> Lopped for fire hazard reduction (per 14 CCR 895.1) <input type="checkbox"/> removed <input type="checkbox"/> chipped <input type="checkbox"/> Piled and burned per (14 CCR 917.2, 937.2, 957.2(a)(1-3))</p>
<p>e. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Has the RPF or Director determined there is an unusual fire risk or other hazard exists within the proposed project area?</p> <p>If YES then lopping is required within 200-500 feet of permanent structures.</p>

<p>f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is the RPF proposing any alternatives to treating slash along roads and within 200 feet of structures?</p> <p>If YES, the RPF shall explain and justify in the plan how equal fire protection will be provided. The explanation and justification shall include:</p>
	<p>Description of the alternative treatment(s):</p>
	<p>Estimated amount / distribution of slash:</p>
	<p>Type of remaining vegetation:</p>
	<p>Topography:</p>
	<p>Climate:</p>
	<p>Degree of public exposure fire history:</p>
	<p>Provide a description of where the alternative will be used: (mapping area(s) is suggested)</p>
<p>g. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Will piling and burning be used for hazard reduction?</p> <p>If YES, refer to 14 CCR 917.2, 937.2, 957.2(a)(1-3). (select all that apply)</p> <p><input checked="" type="checkbox"/> Piles created prior to September 1 shall be treated not later than April 1 of the year following its creation, or within 30 days following climatic access after April 1 of the year following its creation.</p> <p><input checked="" type="checkbox"/> Piles created on or after September 1 shall be treated not later than April 1 of the second year following its creation, or within 30 days following climatic access after April 1 of the second year following its creation.</p>
<p>h. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Is the RPF proposing any alternatives to piling and burning from those required in 14 CCR 917.2, 937.2, 957.2(a)(1-2)?</p> <p>If YES, the RPF shall provide and explanation and justification in the plan to be approved by the director.</p>

ITEM # 32 – BIOLOGICAL RESOURCES

ITEM #32		LISTED PLANT or ANIMAL SPECIES INCLUDING HABITAT			
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Are there any <u>ANIMAL SPECIES</u> , including their habitat(s), which are listed as rare, threatened or endangered under Federal or state law, or a sensitive species by the Board of Forestry associated with the THP area?			
If YES, identify the animal species and the provisions to be taken for the protection of the species.					
Listed and Sensitive Animal Species Table					
Animal Species	Species type Mammal / bird / reptile / amphibian / fish	FEDERAL Threatened / Endangered /	STATE Threatened / Endangered / Candidate	BOF Sensitive	Protection measures
Northern Spotted Owl	Bird	Threatened	Threatened	Yes	See below for protection measures.
Humboldt Marten	Mammal	Not listed	Endangered	No	See below for protection measures.
Gray Wolf	Mammal	Endangered	Endangered	No	See below for protection measures.
Coho	Fish	Threatened	Threatened	No	See below for protection measures.
Chinook	Fish	Threatened	Not Listed	No	See below for protection measures.
Steelhead	Fish	Threatened	Not Listed	No	See below for protection measures.
Foothill Yellow Legged Frog	Amphibian	Not listed	Candidate	No	See below for protection measures.

Northern Spotted Owl Protection Measures:

This species is a federally threatened species and listed as threatened under the California State Endangered Species Act. This plan is being submitted under 14 CCR 919.9 (d). A copy of Green Diamond’s Forest Habitat Conservation Plan (FHCP) and the Section 10(a) permit issued by the U.S. Fish and Wildlife Service have been provided and are on file at the CALFIRE Santa Rosa and Fortuna offices, and on GDRCo’s web site. California Department of Fish and Wildlife (CDFW) has determined that the Biological Opinion for the Northern spotted owl and its associated Incidental Take Statement, the Incidental Take Permit, and FHCP are consistent with California’s Endangered Species Act with respect to the Project. A copy of the CDFW Consistency Determination is on file at the CALFIRE Santa Rosa and Fortuna offices, and on GDRCo’s web site.

Marten Protection Measures:

This THP has been prepared and submitted in accordance with the Marten Safe Harbor Agreement (SHA) as entered into between Green Diamond and CDFW. A copy of the SHA is on file with CalFire. See THP Section III, Item 32 for a summary of the SHA Habitat Management Commitments and Marten Avoidance and Minimization Measures that are addressed in THPs. See THP Section V for a copy of TREE Guidelines and scorecard.

This THP is located outside the Marten Special Management Area (MSMA): tracts 51, 56, 61, 66, 67, 70, 71, 72, 73, 85, 86, 88, 98, the Moore tract (tract 87), or a Calwater planning watershed where martens have been detected. Marten are not known to occur within the BAA nor are they known to occur within the THP area.

Tree Retention:

Trees have been designated for retention in the proposed harvest units in accordance with the Marten SHA. Tree retention may be in the form of individual trees, tree clumps and/or habitat retention areas (HRAs). The approximate location(s) of tree clumps and HRAs are designated on the THP maps. HRAs may be “no harvest” or have limited harvest as designated on the THP maps. If harvest is proposed in an HRA, harvest trees will be marked prior to operations according to the silviculture prescribed in THP Section II, Item 14.

- All conifer and hardwood scorecard trees to be retained in clearcut silviculture areas will be marked for retention with a painted pink “W”.
- Other individual conifer and hardwood trees to be retained within clearcut silviculture areas will be marked for retention with a painted pink “L”.
- Tree clumps and HRAs will be marked in the field with pink painted “L”s and/or flagging (Blue and White stripe tied with Red).

Directions to the LTO regarding marked retention trees:

- All conifer and hardwood scorecard trees that are marked with a painted pink “W” shall be retained. An exception is allowed for trees that must be felled as required by federal and state safety laws and regulations. In the event that a scorecard tree marked for retention with a painted pink “W” must be felled as required by federal and state safety laws and regulations, the LTO shall notify the RPF or designee and a replacement scorecard tree or similar replacement tree will be marked for retention to the extent feasible.
- All other designated retention trees (i.e. individual trees, tree clumps or retention trees within HRAs) marked for retention with a painted pink “L” or flagging shall be retained to the extent feasible. In the event that a designated retention tree has to be cut during operations, the LTO shall notify the RPF or designee and a similar replacement tree will be marked for retention to the extent feasible.

LWD Retention:

- Retain pre-existing non-merchantable LWD within harvest units unless otherwise specified in the THP.
- Pre-existing merchantable redwood logs without internal rot outside of RMZ(s)/WLPZ(s) and class III EEZ(s) may be harvested.

Protection Measures for Known Natal or Maternal Den Structures:

Not Applicable

Protection Measures for Identified Occupied Marten Den Structure:

If marten monitoring (radio telemetry and remote cameras) identifies an occupied den site within 0.25 miles of the proposed logging area, the occupied den tree or other structure will be marked for retention. The occupied den site will be protected with a 0.25-mile radius buffer that excludes timber operations during the marten denning season (March 15 – August 15) until the marten denning season has ended or it has been determined, with the concurrence of CDFW, that the den site is unoccupied. Timber operations may occur within the den site buffer under the following limited circumstances:

- Timber operations associated with road use of existing roads (i.e. log hauling, road watering, water drafting, road grading, culvert replacement).
- If a female marten establishes an occupied den site within 0.25 miles of active timber harvesting operations after such operations have commenced, harvesting timber operations that modify habitat may continue provided that area where active timber falling, yarding, and road construction occurs (the footprint of activities that modify habitat) does not move any closer to the occupied den site.
- Tail holds and guy line anchors for timber yarding are permitted within the 0.25 mile marten den site buffer provided that they are not located within 500 feet of the occupied marten den site.
- All confirmed den trees shall be retained.

Gray Wolf Protection Measures:

The gray wolf is not known to occur in the THP area or within the biological assessment area. It is considered extremely unlikely for a grey wolf to be present in the THP area or biological assessment area. However, if a gray wolf, or active gray wolf den or rendezvous site, is observed during timber operations, all vegetation disturbing activities within 200 feet of the active den, rendezvous site, or gray wolf siting will be suspended and the RPF will consult with CDFW and CALFIRE. The results of the consultation will be amended into the plan.

Foothill Yellow Legged Frog (FYLF):

This THP has been prepared and submitted in accordance with Foothill Yellow Legged Frog Incidental Take Permit (ITP) as entered into between Green Diamond and CDFW (ITP No. 2081-2018-026-01). A copy of the ITP is on file with CalFire and CDFW. See THP Section III, Item 32 for a biological review and analysis of FYLF in relation to this THP. See THP Section V for a copy of FYLF Road Point Checklist referenced below.

FYLFs are known to occur in the in Unit A and near Unit B of this THP. Therefore, the following FYLF ITP protection measures shall be implemented in this THP:

FYLF Take Minimization Measures

7.1 Class I watercourse crossings:

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Are class I watercourse crossings proposed for installation or removal as part of this THP? If yes, include FYLF take minimization measures for class I crossings 7.1.1 – 7.1.6 below. If no, FYLF take minimization measures for class I crossings are not applicable.
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7.2 Class II watercourse crossings:

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Are class II watercourse crossings proposed for construction, reconstruction, removal or other in-channel maintenance as part of this THP? If yes, include ITP take minimization measures for class II crossings 7.2.1 – 7.2.10 below. If no, FYLG take minimization measures for class II crossings are not applicable.
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- 7.2.1 During THP road assessment surveys designed to identify potential road sites planned for construction, reconstruction, removal or other in-channel activities, AHCP Roads Department staff and/or RPFs shall identify and document for subsequent survey(s) Class II watercourse crossings that have potential FYLF habitat or presence of FYLFs.
 - Refer to the Road Work Order in THP Section II Item 24 for class II crossings that have potential FYLF habitat or known presence of FYLFs.
- 7.2.2 AHCP Roads Department staff and RPFs that perform road assessments shall follow GDRCo’s FYLF Road Point Checklist.
 - Refer to THP Section V for a copy of the checklist.
- 7.2.3 Staff performing these road assessments shall be annually trained by a qualified GDRCo biologist to identify Class II watercourses having potential FYLF habitat and FYLF.
- 7.2.4 Prior to operational activities associated with class II crossing construction, reconstruction, removal, or other in-channel activities, a qualified biologist shall field inspect the sites identified by trained AHCP Roads Department staff and/or RPFs to confirm whether potential FYLF habitat is present.
 - Refer to the Road Work Order in THP Section II Item 24 for class II crossings that require inspections prior to operational activities.
- 7.2.5 If habitat for FYLF is confirmed, the work area (defined as the area where equipment operations will occur) and 100 feet upstream and 100 feet downstream of the work area (collectively defined as the project area) will be examined prior to any class II crossing construction, reconstruction, removal or other in-channel activities.
- 7.2.6 Visual encounter surveys shall consist of walking the project area and visually scanning in the water and on streambanks.

- 7.2.7 If FYLF egg masses are located within the project area, a qualified biologist shall move the egg masses out of the project area provided a suitable location upstream or downstream of the project area can be located. If a suitable location is not found, the egg masses shall be temporarily held upstream of the project area and returned upon completion of the project; or operations shall not commence until after the eggs within the project area have hatched and the tadpoles are relocated out of harm's way.
- 7.2.8 If FYLF tadpoles are found during the survey, a qualified biologist shall relocate them upstream or downstream of the project area or retain them until the project is complete, then release back into the project area. If FYLF juveniles or adults are found during the survey, a qualified biologist or individual shall relocate them upstream or downstream of the project area or retain them until the project is complete, then release back into the project area.
- 7.2.9 Block nets, with less than ¼-inch mesh, shall be installed upstream and downstream of the project area to prevent migration into the work area. The top end of the block net shall be folded over to prevent juveniles and adult FYLFs climbing over the net into the project area. The nets shall extend perpendicular to at least 10 feet into wetted channel and 10 feet onto the bank, where feasible, to prevent tadpoles, juveniles and adults from migrating into the work area.
- 7.2.10 If the project requires more than one day to complete and FYLF were found on the first day of construction, measures 7.2.6, 7.2.7, 7.2.8, and 7.2.9 shall be implemented prior to each of the following day's construction activities.

7.3 Water Drafting:

All water drafting activities will be conducted according to the requirements of the GDRCo MATO as indicated in Section II, Item 26. If infiltration galleries are constructed, they shall not be removed at the end of the season, to avoid impacts to FYLF using the sites.

7.4 Log Hauling:

Log hauling shall not occur on roads in the Riparian Management Zone (RMZ)/Watercourse Lake and Protection Zone during the winter period where saturated soil conditions exist which results in ponded water present on the running surface of roads (small puddles or water filled potholes do not constitute ponded water), unless a visual encounter survey for juvenile and adult FYLF by a qualified individual has occurred one day prior to log hauling on such roads. This protection measure does not restrict routine road maintenance activities as otherwise allowed for in THPs.

7.5 Timber Falling:

In Class I watercourses and Class II watercourses with free water present, all trees shall be felled away from the watercourse. In Class III watercourses with free water present, all trees shall be felled away from the watercourse, where feasible.

Listed Anadromous Fish (Steelhead, Chinook, Coho):

Yes No Is this plan in a coho watershed as identified by the California Dept. of Fish and Wildlife?

GDRCO has an Incidental Take Permit from the USFWS, and a Consistency Determination from CDFW. A copy of these documents is on file at the CAL FIRE Santa Rosa and Fortuna offices.

This THP complies with the Coho Considerations rule package which became effective in January 2001. Maps and habitat data required for 14CCR 916.4 (a)(2) are included in Section V, if required for the plan.

Protection measures for all watercourses are contained in Section II Items 26 & 27. A description of stream habitat conditions is included in Section IV, subsection A3.

This THP has been prepared and submitted in accordance with Green Diamond's Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances (AHCP). A copy of the AHCP is on file with Cal Fire at the Santa Rosa and Fortuna offices. Implementation of the AHCP will minimize and mitigate the potential adverse effects to any species

covered by the AHCP that may occur incidental to Green Diamond’s activities. The protection measures provided throughout this plan to maintain cool water temperatures, minimize and mitigate human caused sediment inputs, and provide for large wood recruitment will ensure that any authorized take and its probable impacts will not appreciably reduce the likelihood of survival and recovery to the species covered by the AHCP. In addition, the implementation of the 1973 Z’berg-Njedly Forest Practice Act, and the Forest Practice Rules authorized by the Act, have greatly changed the manner in which timber harvest operations are conducted. One of the primary goals of the Rules is to protect the water quality and biological characteristics of California’s watercourses and lakes. Specific measures that have been included in this THP to ensure watershed integrity and minimize impacts to watercourses within this plan and the assessment area include:

- Enhanced WLPZ (RMZ) shade canopy on Class II watercourses.
- Limited or no harvest operations within Class II WLPZs (RMZs).
- Restricted winter operations.
- Road maintenance program.
- No removal of large organic debris from Class II WLPZs (RMZs).
- SSS protection measures on Class II watercourses.

b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are there any <u>PLANTS</u> , including their habitat(s), which are listed as rare threatened or endangered under Federal or state law, or a sensitive species by the Board of Forestry associated with the THP area?				
	If YES, identify the plant species and the provisions to be taken for the protection of the species.				
Plant Species Table					
Plant Species	FEDERAL T/E	STATE T/E/C	BOF Sensitive	CRPR* (1A, 1B, 2A, 2B)	Protection measures
					See the GDRCo Sensitive Plant Conservation Plan (SPCP) information below and in THP Section III, Item 32.

*The California Native Plant Society California Rare Plant Ranking system: 1A – Extirpated in CA, rare or extinct elsewhere; 1B – Rare; 2A – Extirpated in CA, common elsewhere; 2B rare in CA, common elsewhere.

Sensitive Plant Conservation Plan (SPCP):

1. Botanical Scoping Results:

Scoping methods are provided in the “November 2008 Sensitive Plant Conservation Plan (SPCP)” in THP Section III, Item 32 along with the project scoping list. Only those species present in the project area will be addressed in this section.

2. Botanical Surveys:

Surveys will be conducted for all sensitive plant species potentially present during the appropriate time period and prior to beginning operations if;

- a) habitat for one or more sensitive plant species exists in the planned operational area
- b) the project area is within the geographic range of one or more of these species
- c) the project area is not exempted from a survey under a CDFW approved Botanical Management Plan (BMP)

For THPs within a Botanical Management Area (BMA) with a CDFW approved Botanical Management Plan (BMP), GDRCo shall provide a statement in the THP disclosing survey status from one of the following three choices:

1. GDRCo shall conduct a floristic survey
2. A floristic survey will not be conducted, or
3. It is unknown at this time if GDRCo will conduct a floristic survey

The statement shall be included in THP Section II, Item 32 at filing and will reference the appropriate BMP on file with CALFIRE at Santa Rosa and Fortuna. If the BMP requires the RPF to conduct a focused survey of habitat and/or species, the results of this focused survey shall be included in the THP.

A floristic survey will be conducted for this THP.

3. Botanical Survey Results:

If a floristic survey has occurred prior to filing the THP, the “Botanical Project Survey Report” is provided in Section V. If a floristic survey occurs after the plan has been filed, the results of the survey will be amended into the THP.

A survey will be conducted in advance of operations and if sensitive species are encountered that require protection, the specific protection measures will be amended into Section II of the THP and the Botanical Project Survey Report will be amended to Section V. If no sensitive species are found, a minor amendment will be submitted to CalFire with a copy to CDFW stating that no sensitive species were found and when the survey occurred. The Botanical Project Survey Report will remain on file at GDRCo.

4. Plant Protection Measures (PPMs):

CDFW and GDRCo will continue working together to develop property wide consultation and mitigation measures for sensitive species that regularly occur within project areas. These PPMs will reduce impacts to sensitive plant taxa to less than significant levels while also providing operational flexibility. Where consultations with CDFW have provided specific PPMs, they may be applied appropriately, as in the case of Indian pipe (*Monotropa uniflora*) and Howell’s montia (*Montia howellii*).

If neither a property wide consultation nor a conservation plan has been adopted for a sensitive species encountered during a floristic survey or after operations commence, the following default mitigation measure of avoidance will be implemented by placing a 50-foot no-harvest EEZ around the outer perimeter of the sensitive plant occurrence until specific mitigation measures can be developed for that species at that site. Following consultation with CDFW the alternative mitigation may be more or less restrictive than the default 50-foot (15.2-meter) buffer.

Default plant protection measure: No timber harvesting or road construction shall occur within 50 feet of any location supporting sensitive plants unless alternative mitigation measures developed through consultation with CDFW are applied. The size and shape of the protection area will vary based upon the size and extent of the sensitive plant occurrence. The 50-foot measurement should begin at the outermost location of the subject sensitive plant.

The scoping list for this THP includes Indian pipe (*Monotropa uniflora*), seaside bittercress (*Cardamine angulata*) and Howell’s montia (*Montia howellii*), for which a property-wide consultation has been developed by GDRCo and CDFW. The full property-wide consultation has been included in Section III, along with the scoping list, for review.

GDRCo and CDFW agree that GDRCo shall include the following measures as enforceable provisions in Section II, Item 32 of all THPs with suitable habitat for *Cardamine angulata* submitted after June 1, 2018. These measures apply on all lands owned and operated on/by GDRCo including those designated as Botanical Management Areas (BMA).

1. During the course of timber harvesting and planning activities, GDRCo staff shall document and report all newly discovered occurrences of *Cardamine angulata* in the THP as a minor amendment prior to plan completion. GDRCo shall report the locations of identified populations of sensitive plant species to the California Natural Diversity Database (CNDDDB) on an annual basis as described in the Sensitive Plant Conservation Plan (SPCP).
2. The property-wide plant protection measures for *Cardamine angulata* on GDRCo lands follows:
 - a. GDRCo shall establish a 50-foot (15.2-meter) no-harvest equipment limitation zone (ELZ) around *Cardamine angulata* occurrences.
 - b. Within the outer 25 feet of the 50-foot ELZ, GDRCo may utilize existing roads, skid trails and landings for hauling, skidding and loading, road maintenance and upgrading within the ELZ.
 - c. No road, skid trail or landing construction, reconstruction or daylighting shall occur within the ELZ, with the exception of minor adjustments to the alignment of road and skid trail prism(s) in order to minimize impacts to populations of *Cardamine angulata*.
 - d. In the circumstance that there are no feasible alternatives, harvest of trees within the outer 25 feet of the ELZ for the purpose of facilitating cable yarding corridors is permitted. The overstory canopy within the ELZ shall not be reduced below 65%.
 - e. Trees harvested outside of the ELZ, or as described above in item 2d, shall be directionally felled away from the occurrence.
 - f. There shall be no site preparation within the ELZ and there shall be no herbicide application within the ELZ.
3. A site-specific consultation with CDFW shall be required for GDRCo to conduct operations other than those specifically listed in item 2 above.
4. GDRCo and CDFW shall work together to monitor the biological and ecological effects of implementation of the proposed mitigation measures. GDRCo shall afford CDFW access to the THP area to conduct monitoring activities. Such access shall be granted with a minimum of 48-hours' notice.
5. This property-wide consultation shall be in effect until either GDRCo or CDFW wish to break from it or request modification(s).

NON-LISTED SPECIES IMPACTS		
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are there any NON-LISTED plant or animal species which will be significantly impacted by the operation? If yes, identify the species and the provisions to be taken for the protection of the species.	
Non-Listed Species Table		
Species	Species type Mammal / bird / reptile / amphibian / fish / Invertebrate / plant	Protection measures
Fisher	Mammal	If an active fisher den site is discovered prior to or during operations, the site will be protected with a 0.25-mile radius no-harvest buffer until it has been determined that the den has been abandoned or the fisher kits have been moved to another den tree more than 0.25 miles from the harvest area. Any confirmed fisher den trees will be retained. (FHCP Section 5.3.3.2)
Red and Sonoma Tree Voles	Mammals	When trees will be harvested from RMZs, RSMZs or Geologic buffers, falling trees that contain tree vole nest(s) will be avoided to the extent feasible. The RPF or supervised designee will inspect potential harvest trees in these areas during harvest tree marking and avoid marking trees for harvest where evidence of an active or remnant vole nest is observed. (FHCP Section 5.3.3.3)

ITEM # 35 – OTHER WILDLIFE PROTECTION REQUIRED BY FOREST PRACTICE RULES

a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Are there any other provisions for wildlife protection required by the rules? If YES, describe.
Description: If a species listed as Rare, Threatened or Endangered (or a candidate for listing) is discovered during timber operations, the LTO shall stop operations and notify Green Diamond’s Wildlife Department personnel and the RPF who prepared the THP. The RPF shall take appropriate steps to comply with the laws under which activities effecting that species are regulated. This also pertains to raptor species as stated in Fish & Game Code 3503.5.	

ITEM # 33 – SNAGS

ITEM #33 SNAGS	
Per 14 CCR 919, 939, 959 – Timber operations shall be planned and conducted to maintain suitable habitat for wildlife species as specified by the provisions of Article 9 of the Forest Practice Rules.	
Within the logging area all snags shall be retained to provide wildlife habitat with the exception of snags for safety reasons Per 14 CCR 919.1, 939.1, 959.1(a)-(f)	
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Are there any snags which must be felled for fire protection or safety reasons? All snags within the logging area shall be retained to provide wildlife habitat except where federal and state safety laws and regulations require the felling of snags.
b. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will snags over 20 feet in height and 16 inches dbh be felled within 100 feet of a main ridge that is suitable for fire suppression? If YES, ridge shall be delineated on a THP map.
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will snags over 20 feet in height and 16 inches dbh be felled within 100 feet of all public roads, permanent roads, landings and railroads? (select all that apply) <input type="checkbox"/> Public road(s) <input type="checkbox"/> Permanent road(s) <input type="checkbox"/> Landing(s) <input type="checkbox"/> Railroad(s)
d. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Will snags be felled where federal and state safety laws and regulations require the felling of snags?
e. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will snags be felled within 100 feet of structures maintained for human habitation?
f. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will merchantable snags be felled in any location as provided for in the plan?
g. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Will snags be felled as required to control insect or disease concerns?

ITEM # 34 – LATE SUCCESSIONAL FOREST STANDS

ITEM #34 LATE SUCCESSIONAL FOREST STANDS	
a. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Are any Late Successional Forest stands proposed for harvest? If YES, describe measures to be implemented by the LTO to avoid long-term significant adverse effects on fish, wildlife and listed species known to be primarily associated with late successional forests.
Describe:	

ITEM # 36 – CULTURAL RESOURCES

ITEM #36 ARCHAEOLOGICAL / HISTORICAL	
a. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Has an archaeological / historical survey been made for the THP area?
b. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Has a current archaeological / historical records check been conducted for the THP area?
c. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	During pre-field research and surveys were archaeological or historical sites identified within the plan area? If YES, THIS INFORMATION IS CONFIDENTIAL AND NOT AVAILABLE TO REVIEW AGENCIES AND THE GENERAL PUBLIC, OTHER THAN CAL FIRE. The Confidential Archaeological Addendum (CAA) is located in Section VI of the THP.

ITEM # 37 – GROWTH AND YIELD INFORMATION

<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Has any inventory or growth and yield information designated “TRADE SECRET” been submitted in a separate confidential envelope in Section VI of this THP? If YES, THIS INFORMATION IS CONFIDENTIAL AND NOT AVAILABLE TO REVIEW AGENCIES AND THE GENERAL PUBLIC.
---	---

ITEM # 38 – SPECIAL INSTRUCTIONS OR CONSTRAINTS

LTO Special Instructions Regarding Utility Lines

- **Unit F Overhead Utility Line along Maple Creek Road** – There is an overhead utility line (fiber optic line) that runs along Maple Creek Road that is located within Unit F. Protection Measures are as follows:
 - Fall trees away from overhead lines
 - Logging equipment should maintain a safe distance from overhead lines and line poles

Yes No **Does this plan propose any exceptions to the AHCP?**

Waste Discharge Enforcement: Conditions stated in the THP which pertain to NCRWQCB General Waste Discharge requirements will not be enforced by the Department unless those same conditions are subject to the Forest Practice Act/Rules and included as enforceable provisions in Section II of the THP.

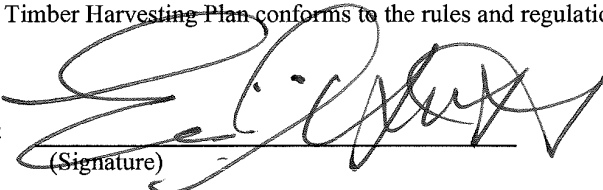
The person responsible for notifying the department of commencement of operations will be the Plan Submitter or its representative. The person notified will be the Cal Fire Office Technician at the Fortuna office 1-707-726-1253.

GDRCo California Flagging Code

- THP BOUNDARY _____ PINK (THP Boundary imprinted in black)
 - SILVICUTURE _____ RED with LIME GREEN
 - ROAD CENTER LINE _____ ORANGE (Truck Road imprinted in black)
 - PROPERTY LINE _____ BLUE / YELLOW
 - SKID ROAD _____ YELLOW (Skid Road imprinted in black)
 - YARDING TYPES _____ RED with YELLOW
 - WLPZ (RMZ/RSMZ) _____ BLUE with GLO PINK
 - CLASS III Tier A _____ GLO PINK (Tier A imprinted in black)
 - CLASS III Tier A (MODIFIED) _____ GLO PINK (Tier A imprinted in black)/with BLUE&WHITE STRIPE
 - CLASS III Tier B _____ GLO PINK (Tier B imprinted in black)
 - SSS / SMZ _____ PINK/WHITE w/ BLUE DOTS (SSS ZONE imprinted in black)
 - CMZ (Channel Migration Zone) _____ YELLOW (CMZ imprinted in black)
 - FLOOD PLAIN _____ WHITE (Flood Plain imprinted in black)
 - EEZ _____ GLO PINK
 - HRA _____ BLUE&WHITE STRIPE / with RED
 - GEOLOGY PROTECTION AREAS _____ ORANGE&WHITE STRIPE (STZ imprinted in black) with
WHITE (GEOLOGY imprinted in blue)
 - SENSITIVE PLANT LOCATION _____ BLACK&YELLOW STRIPE / PINK
 - RECON / PROFILES _____ RED&WHITE STRIPE
 - OTHER (Arch, STAs, etc.) _____ ORANGE/WHITE STRIPE (STZ imprinted in black)
 - CRUISERS _____ PURPLE
- Paint**
- MARK TO CUT _____ BLUE
 - MARK TO LEAVE _____ PINK
 - ROAD CENTER LINE _____ ORANGE
 - WILDLIFE TREES _____ FLOURESCENT PINK PAINT
 - PLAN SPECIFIC NEEDS _____ GREEN

DIRECTOR OF FORESTRY AND FIRE PROTECTION

This Timber Harvesting Plan conforms to the rules and regulations of the Board of Forestry and Fire Protection and the Forest Practice Act:

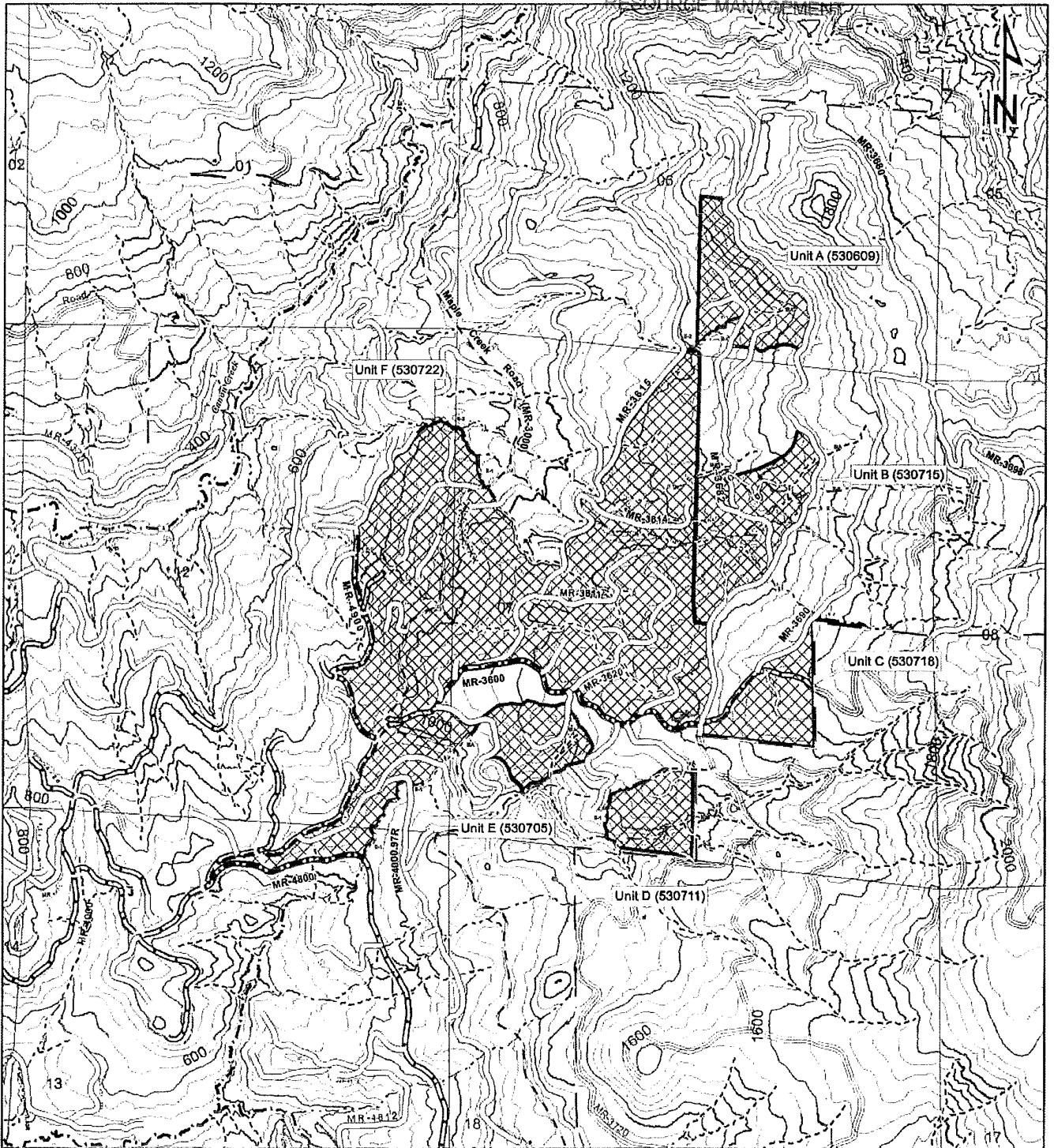
By:  April 3, 2020
(Signature) (Date)

ERIC K. HUFF Staff Chief
(Printed Name) (Title)

RECEIVED

FEB 12 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT



GREEN DIAMOND
RESOURCE COMPANY

Korbel Quad Map

Ward Road Combo
GDRCo: 24-1901

Scale:
1:18,000

T5N, R2E, Sections 12 & 13;
T5N R3E Sections 06 & 07 HB&M

Overview Map

Contour Interval = 40 ft.

1 inch = 1,500 feet

Harvest Units



Roads

- Public Road
- Existing Permanent Road
- Existing Seasonal Road
- Proposed Temporary Road (to be abandoned)
- Existing Seasonal Road (to be reconstructed)
- Other Private Road

Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

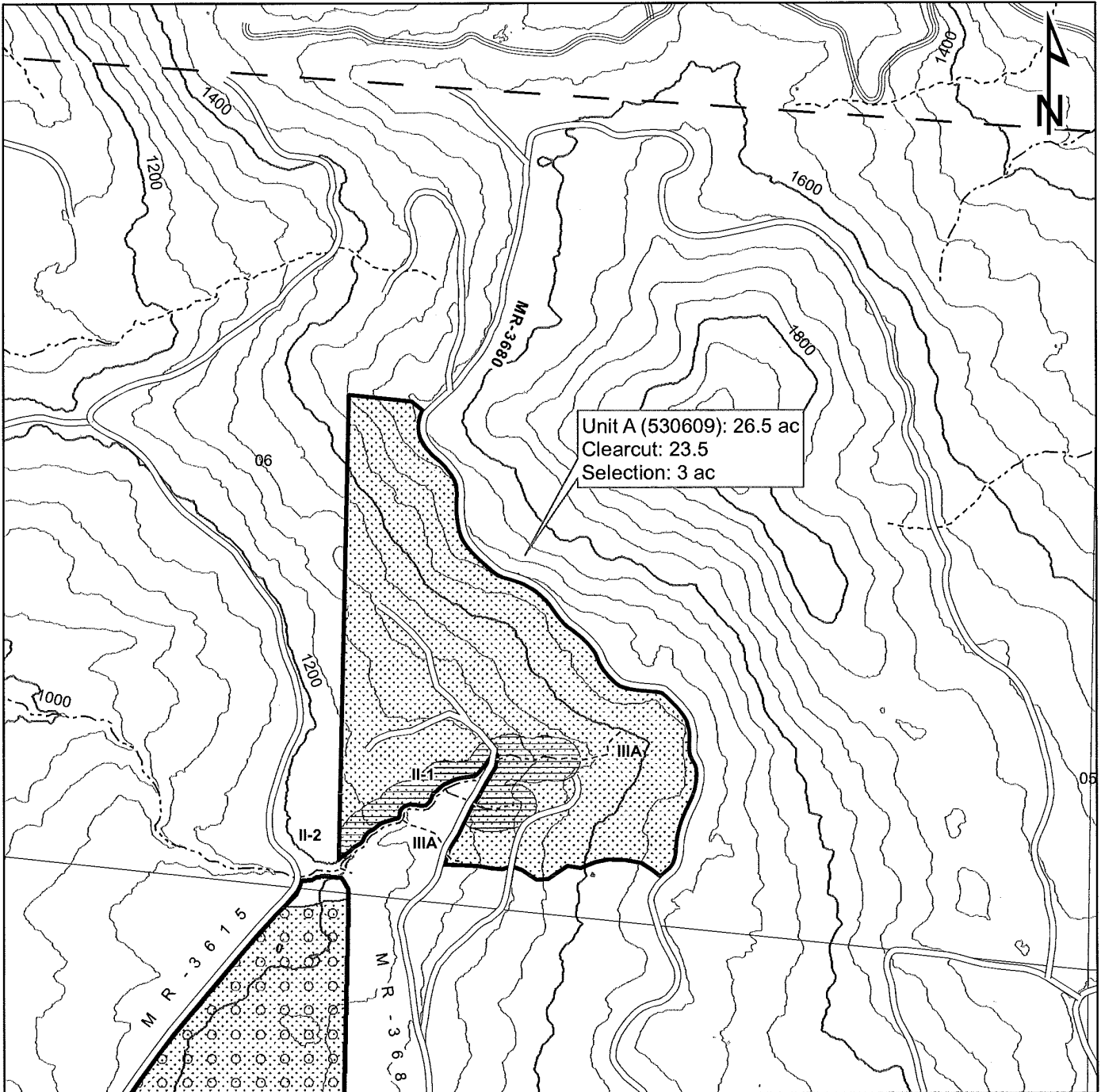
- GDRCo Ownership
- Harvest Unit Boundary

INTERNAL USE ONLY

A: 530609 D: 530711
B: 530715 E: 530705
C: 530718 F: 530722

PART OF PLAN

96



Unit A (530609): 26.5 ac
 Clearcut: 23.5
 Selection: 3 ac

GREEN DIAMOND
 RESOURCE COMPANY

Korbel Quad Map

Ward Road Combo

GDRCo: 24-1901

Scale:

1:6,000

T5N, R2E, Sections 12 & 13;
 T5N R3E Sections 06 & 07 HB&M

Detailed Unit A Map

Contour interval = 40 ft.

1 inch = 500 feet

Ground Based Yarding
 - Clearcutting
 - Low EHR
 - Site Class II/III



Ground Based Yarding
 - Commercial Thin
 - Low EHR
 - Site Class II/III



Roads

- Public Road
- Existing Permanent Road
- Existing Seasonal Road

- GDRCo Ownership
- Harvest Unit Boundary

Ground Based Yarding
 - Selection
 - Low EHR
 - Site Class II/III



No Harvest
 - Low EHR
 - Site Class II/III



Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

Note: All Ground based yarding areas may be cable yarded.

INTERNAL USE ONLY

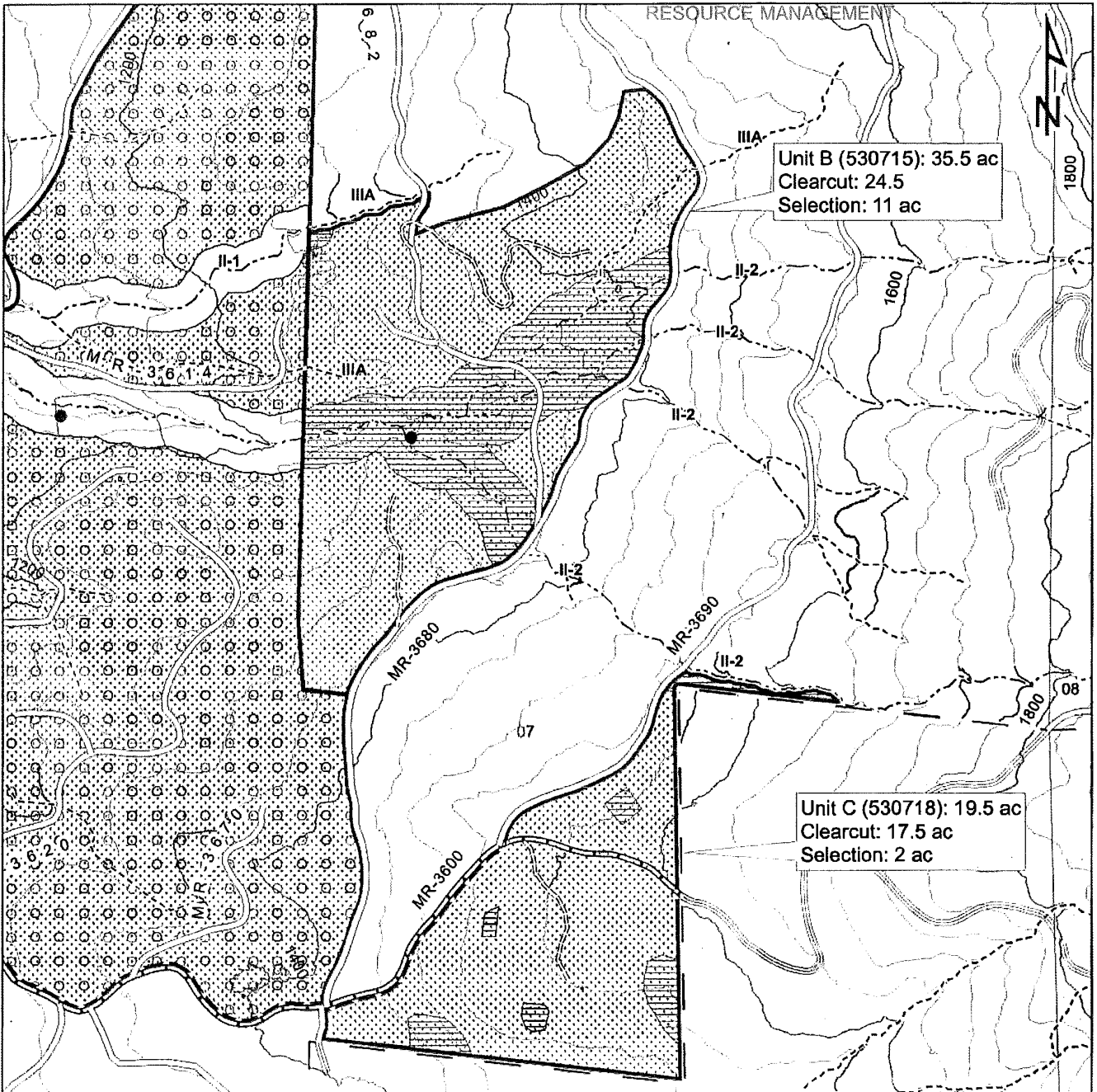
A: 530609 D: 530711
 B: 530715 E: 530705
 C: 530718 F: 530722

96.1

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FEB 12 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT



Unit B (530715): 35.5 ac
Clearcut: 24.5
Selection: 11 ac

Unit C (530718): 19.5 ac
Clearcut: 17.5 ac
Selection: 2 ac

GREEN DIAMOND
RESOURCE COMPANY

Korbel Quad Map

Ward Road Combo
GDRCo: 24-1901

Scale:
1:6,000

T5N, R2E, Sections 12 & 13;
T5N R3E Sections 06 & 07 HB&M

Detailed Unit B,C Map

Contour interval = 40 ft.

1 inch = 500 feet

Ground Based Yarding

- Clearcutting
- Low EHR
- Site Class II/III



Ground Based Yarding

- Commercial Thin
- Low EHR
- Site Class II/III



Ground Based Yarding

- Selection
- Low EHR
- Site Class II/III



No Harvest

- Low EHR
- Site Class II/III



Roads

- Public Road
- Existing Permanent Road
- Existing Seasonal Road
- Proposed Temporary Road (to be abandoned)
- Other Private Road

- GDRCo Ownership
- Harvest Unit Boundary
- SRL (<100 sq. ft.)

Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

PART OF PLAN

INTERNAL USE ONLY

A: 530609 D: 530711
B: 530715 E: 530705
C: 530718 F: 530722

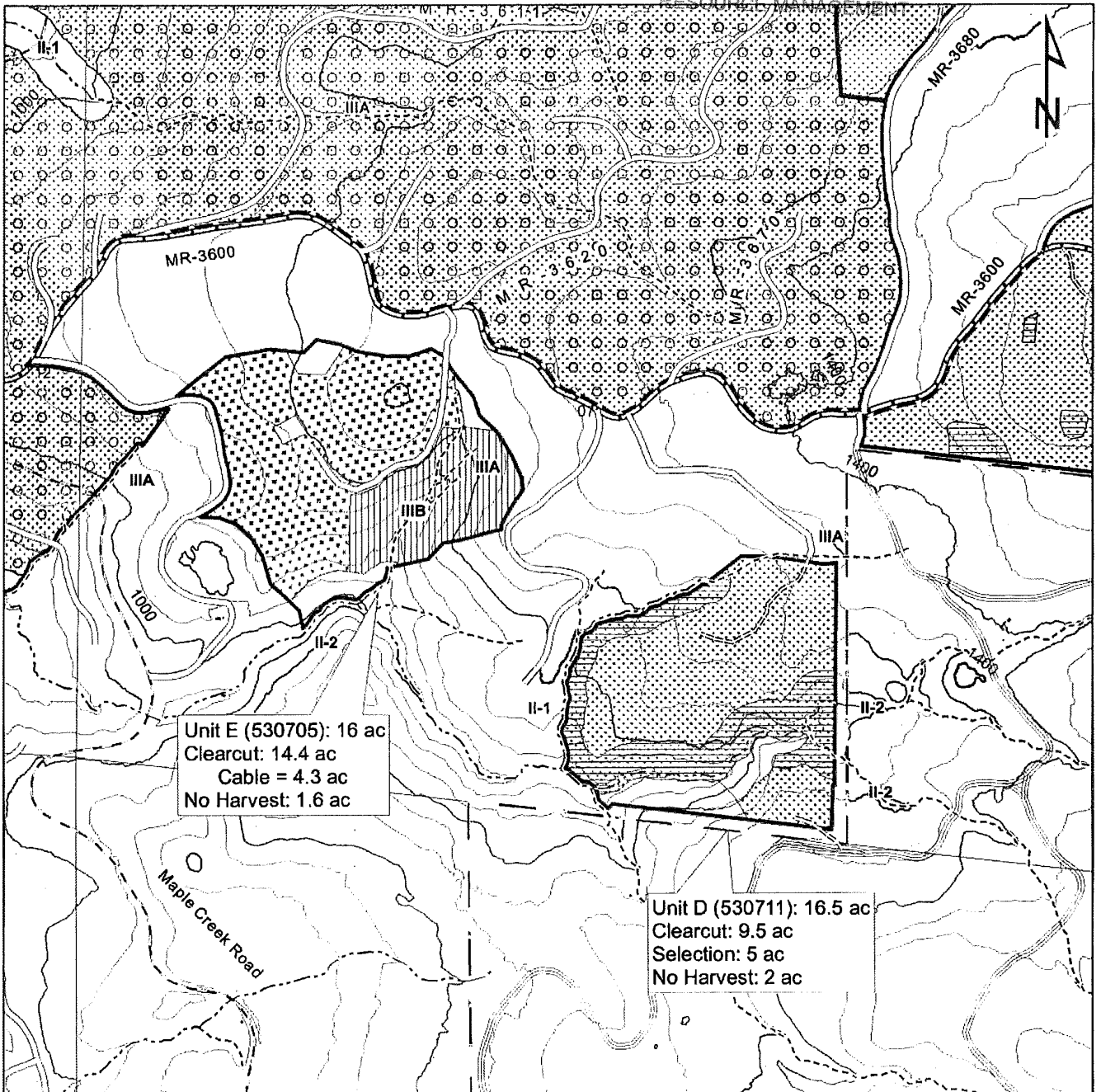
Note: All Ground based yarding areas may be cable yarded.

96.2

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FEB 12 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT



Unit E (530705): 16 ac
 Clearcut: 14.4 ac
 Cable = 4.3 ac
 No Harvest: 1.6 ac

Unit D (530711): 16.5 ac
 Clearcut: 9.5 ac
 Selection: 5 ac
 No Harvest: 2 ac

GREEN DIAMOND
RESOURCE COMPANY

Korbel Quad Map

Ward Road Combo
 GDRCo: 24-1901

Scale:
 1:6,000

T5N, R2E, Sections 12 & 13;
 T5N R3E Sections 06 & 07 HB&M

Detailed Unit D, E Map

Contour interval = 40 ft.

1 inch = 500 feet

Ground Based Yarding

- Clearcutting
- Low EHR
- Site Class II/III



Ground Based Yarding

- Clearcutting
- Low EHR
- Site Class IV



Ground Based Yarding

- Selection
- Low EHR
- Site Class II/III



Ground Based Yarding

- Commercial Thin
- Low EHR
- Site Class II/III



No Harvest

- Low EHR
- Site Class II/III



Cable Yarding

- Clearcutting
- Moderate EHR
- Site Class IV



Roads

- Public Road
- Existing Permanent Road
- Existing Seasonal Road
- Proposed Temporary Road (to be abandoned)
- Other Private Road

- GDRCo Ownership
- Harvest Unit Boundary

Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

PART OF PLAN

INTERNAL USE ONLY

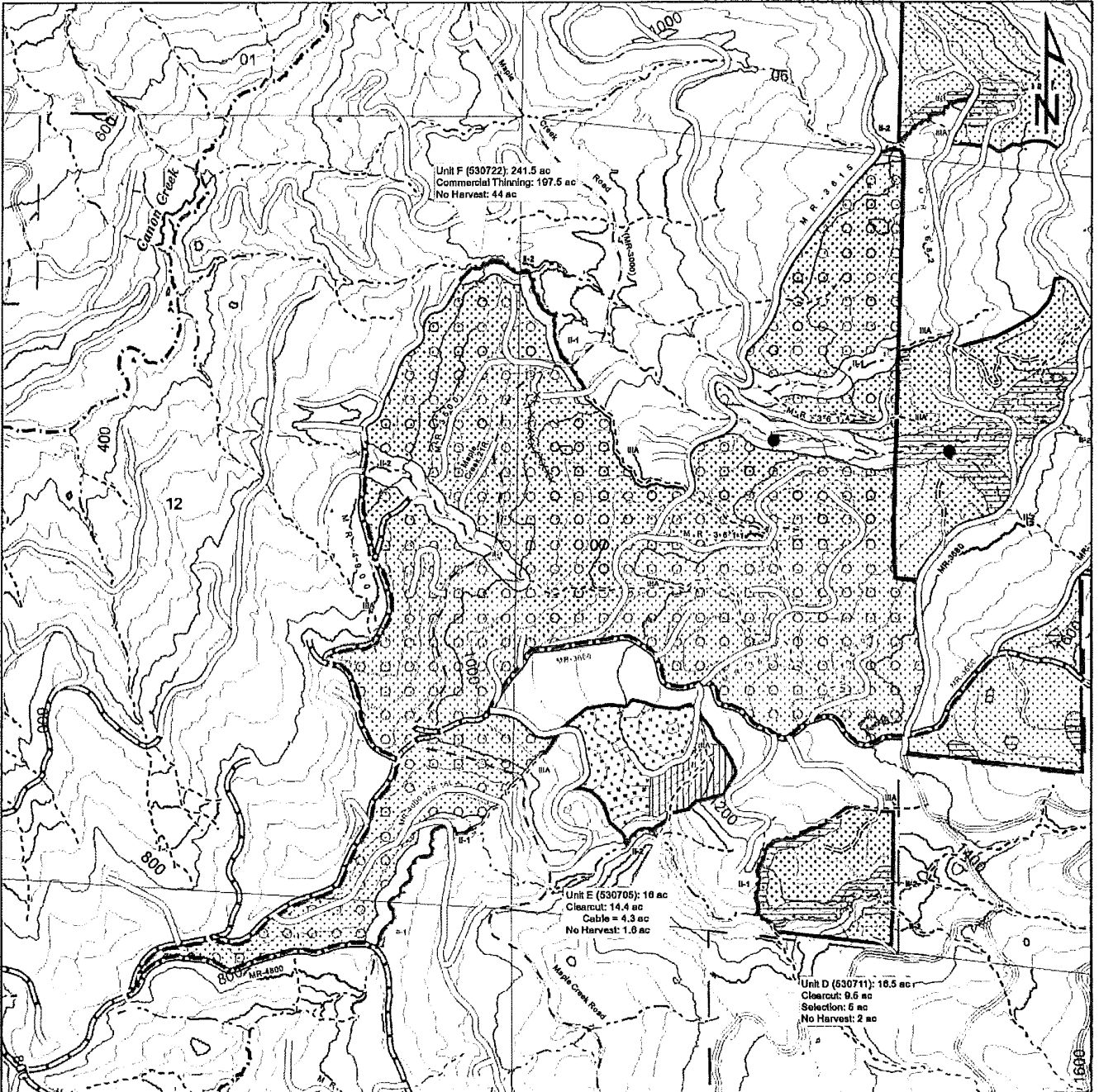
A: 530609 D: 530711
 B: 530715 E: 530705
 C: 530718 F: 530722

Note: All Ground based yarding areas may be cable yarded.

96.3

FEB 12 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT



GREEN DIAMOND
RESOURCE COMPANY

Korbel Quad Map

Ward Road Combo

Scale:

GDRCo: 24-1901

1:12,000

T5N, R2E, Sections 12 & 13;
T5N R3E Sections 06 & 07 HB&M

Detailed Unit F Map

Contour interval = 40 ft.

1 inch = 1,000 feet

Ground Based Yarding

- Clearcutting
- Low EHR
- Site Class II/III



Ground Based Yarding

- Clearcutting
- Low EHR
- Site Class IV



Ground Based Yarding

- Selection
- Low EHR
- Site Class II/III



Ground Based Yarding

- Commercial Thin
- Low EHR
- Site Class II/III



No Harvest

- Low EHR
- Site Class II/III



Cable Yarding

- Clearcutting
- Moderate EHR
- Site Class IV



Note: All Ground based yarding areas may be cable yarded.

Roads

- Public Road
- Existing Permanent Road
- Existing Seasonal Road
- Proposed Temporary Road (to be abandoned)
- Existing Seasonal Road (to be reconstructed)
- Other Private Road

Watercourse

- Class I
- Class II (II-1, II-2)
- Class III (IIIA, IIIB)

- GDRCo Ownership
- Harvest Unit Boundary
- SRL (<100 sq. ft.)

PART OF PLAN

INTERNAL USE ONLY

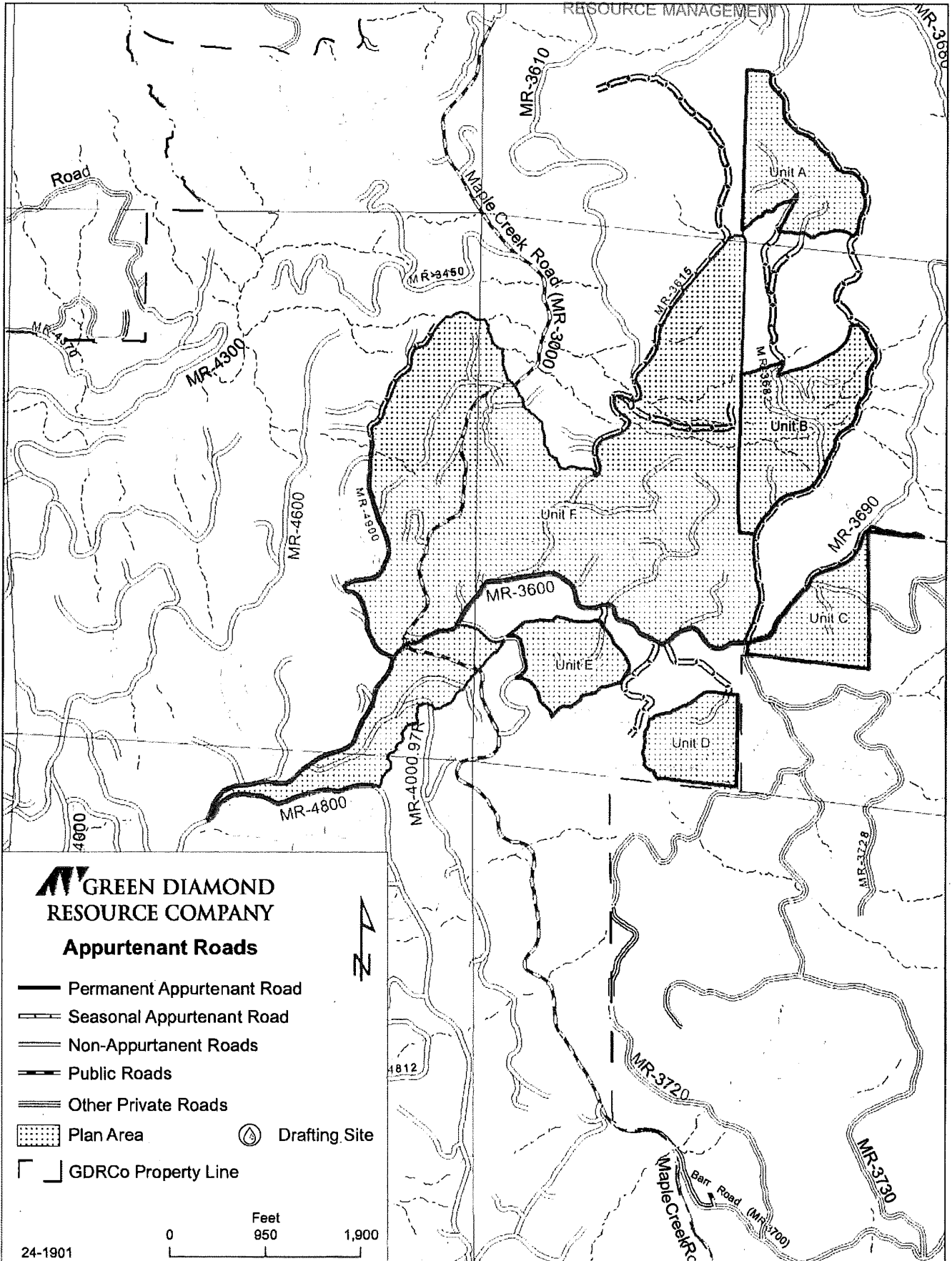
A: 530609 D: 530711
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C: 530718 F: 530722

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FEB 12 2020

COAST AREA OFFICE
RESOURCE MANAGEMENT



PART OF PLAN

96.5

Appendix 4

Confidential Addendums

Ver. 10/27/11



December 22, 2021

NWIC File No. 21-0931

Stephen Hohman
Hohman and Associates Forestry Consultants
P.O. Box 733
Hydesville, CA 95547

Re: Anthony and Mary Massei Living Trust; T5N/R3E portion of section 12, T5N/R4E portion of section 7; Maple Creek 7.5' Quad; Humboldt County

Dear Mr. Hohman:

Per your request received by our office on December 14, 2021, a records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Humboldt County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures. In addition to this letter summarizing the results of the research, the data from the NWIC maps have been transferred to the Anthony and Mary Massei Living Trust map you provided and copies of all records for recorded sites both within the project boundaries and within 1/16th of a mile of the project boundaries are enclosed.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS: Our office has record of four previous studies that include approximately 5% of the Anthony and Mary Massei Living Trust project area (see attached NWIC Report Listing for bibliographic information).

NATIVE AMERICAN RESOURCES: The NWIC base maps show that there is one previously recorded archaeological resource with a Native American component that is within the Anthony and Mary Massei Living Trust project area (P-12-000625 contains a Native American lithic scatter).

At the time of Euroamerican contact, the people living in the general area of the Anthony and Mary Massei Living Trust were speakers of the Whilkut language, which is part of the

Athapaskan language family (Shipley 1978: 90). There are two Native American resources in close proximity to the project area that are referenced in the ethnographic literature (Baumhoff 1958).

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Humboldt County have been found near areas populated by oak, buckeye, manzanita, and pine, as well as near a variety of plant and animal resources. Sites are also found near watercourses, particularly where there is access to salmon. The Anthony and Mary Massei Living Trust project area encompasses an area of forested hills. The project area contains a seasonal drainage and is situated between two creeks. Given the similarity of these environmental factors and the presence of known archaeological and ethnographic sites, there is a high potential for unrecorded Native American resources in the Anthony and Mary Massei Living Trust project area.

HISTORIC-PERIOD CULTURAL RESOURCES: The NWIC base maps show no previously recorded historic-period archaeological resources within or adjacent to the Anthony and Mary Massei Living Trust project area. There is one previously recorded historic-period building or structure located within Anthony and Mary Massei Living Trust project area (P-12-000625 contains Ayres Cabin and an associated historic-period structure).

Review of historical literature and maps indicated additional historic-period activity within the Anthony and Mary Massei Living Trust project area. Three early 20th century maps depict the cabin of Victor Gibault and Frank Ayres' trail within the project area (Belcher 1921; General Land Office 1909a, 1909b). With this information in mind, there is a high potential for unrecorded historic-period archaeological resources in the Anthony and Mary Massei Living Trust project area.

The 1945 and 1951 USGS Blue Lake 15-minute topographic quadrangles fail to depict any additional buildings or structures within the Anthony and Mary Massei Living Trust project area. Therefore, there is a low possibility of identifying any additional buildings or structures that are 45 years of age or older within the project area.

LITERATURE REVIEWED: The following literature and maps were reviewed for unrecorded cultural resources: Built Environment Resources Directory (OHP BERD), which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places; Historic Spots in California; California Place Names; General Land Office Plats; Historic Maps; Handbook of North American Indians, Volume 8: California; and California Athabascan Groups.

SUMMARY: As noted above, there is one previously recorded cultural resource with an historic-period component (P-12-000625) and one previously recorded archaeological resource with a Native American component (P-12-000625) that is within the Anthony and Mary Massei

Living Trust 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.

Thank you for your inquiry and for your continued effort to conserve California's cultural resources. If you have any questions, please contact our office at nwic@sonoma.edu or at (707) 588-8455.

Sincerely,

Jessika Akmenkalns, Ph.D.
THP Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Northwest Information Center of the Historical Resources Information System, the following literature was reviewed:

Baumhoff, Martin A.

- 1958 *California Athabascan Groups*. University of California Publications, Anthropological Records 16(5):157-237. University of California Press, Berkeley and Los Angeles. (1976 Reprint by Kraus Reprint Corporation, New York).

General Land Office

- 1873a Survey Plat for Township 5 North/Range 3 East.
1873b Survey Plat for Township 5 North /Range 4 East.
1883 Survey Plat for Township 5 North /Range 4 East.
1909a Survey Plat for Township 5 North /Range 3 East.
1909b Survey Plat for Township 5 North /Range 4 East.

Gudde, Erwin G.

- 1969 *California Place Names*. Third Edition. University of California Press, Berkeley and Los Angeles.

Hart, James D.

- 1987 *A Companion to California*. University of California Press, Berkeley and Los Angeles.

Herbert, Rand F., Alan M. Paterson, and Stephen R. Wee

- 1980 *The Historical Development of Interior Sections of Humboldt and Mendocino Counties*. California-Pacific Research Associates, Davis. Northwest Information Center, File No: S-2541.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, revised by William N. Abeloe

- 1966 *Historic Spots in California*. Third Edition. Stanford University Press, Stanford, CA.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, William N. Abeloe, revised by Douglas E. Kyle

- 1990 *Historic Spots in California*. Fourth Edition. Stanford University Press, Stanford, CA.

Hope, Andrew

- 2005 *Caltrans Statewide Historic Bridge Inventory Update*. Caltrans, Division of Environmental Analysis, Sacramento, CA.

Kroeber, A.L.

- 1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C. (Reprint by Dover Publications, Inc., New York, 1976)

Roberts, George, and Jan Roberts

- 1988 *Discover Historic California*. Gem Guides Book Co., Pico Rivera, California.

State of California Department of Parks and Recreation

1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

State of California Department of Parks and Recreation and Office of Historic Preservation

1988 *Five Views: An Ethnic Sites Survey for California*. State of California Department of Parks and Recreation and Office of Historic Preservation, Sacramento.

State of California Office of Historic Preservation **

2021 *Built Environment Resources Directory*. Listing by City (through November 2021). State of California Office of Historic Preservation, Sacramento.

Thornton, Mark V.

1993 *An Inventory and Historical Significance Evaluation of CDF Fire Lookout Stations*. CDF Archaeological Reports No. 12.

Wallace, William J.

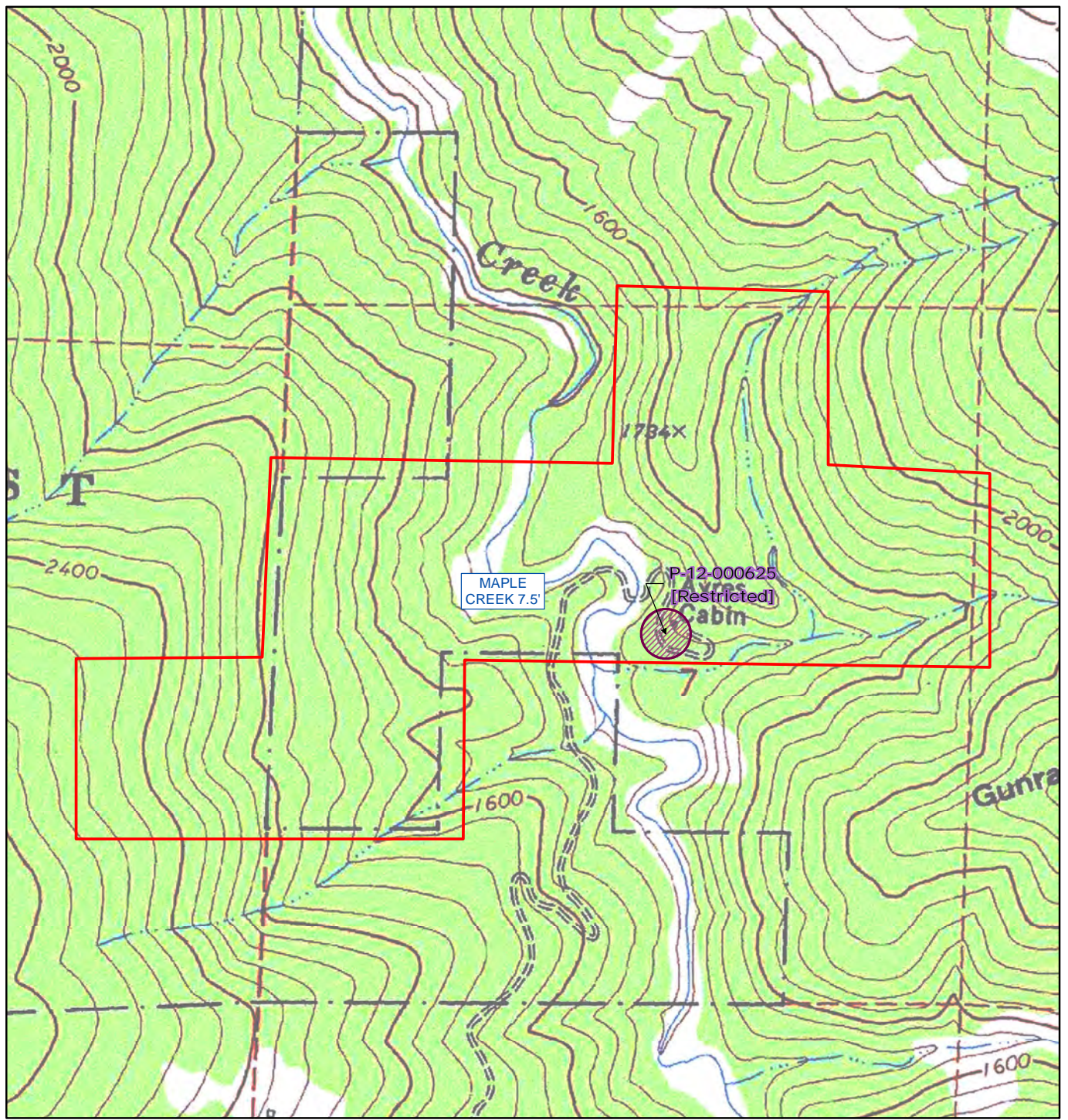
1978 Hupa, Chilula, and Whilkut. In *California*, edited by Robert F. Heizer, pp. 164-179. *Handbook of North American Indians*, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Works Progress Administration

1984 *The WPA Guide to California*. Reprint by Pantheon Books, New York. (Originally published as *California: A Guide to the Golden State in 1939* by Books, Inc., distributed by Hastings House Publishers, New York).

**Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

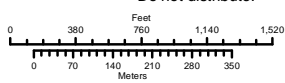
Resource Map
Anthony and Mary Massei Living Trust






Northwest Information Center

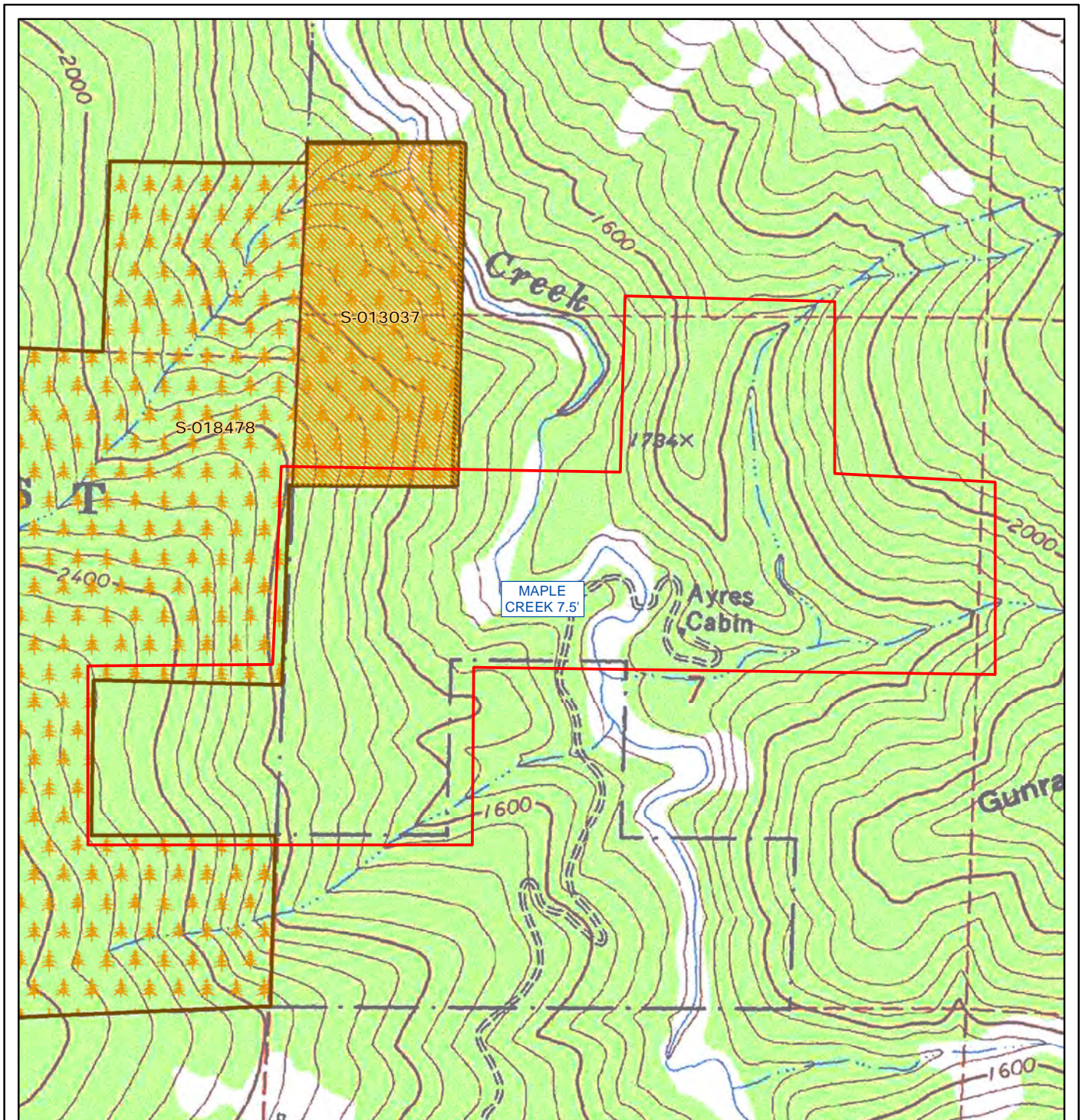
File #21-0931 22 Dec 2021 J. Akmenkalns

May depict confidential cultural resource locations.
Do not distribute.



 Project Area  Restricted resources  Quad outlines

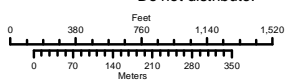
Report Map No. 2
Anthony and Mary Massei Living Trust



Northwest Information Center

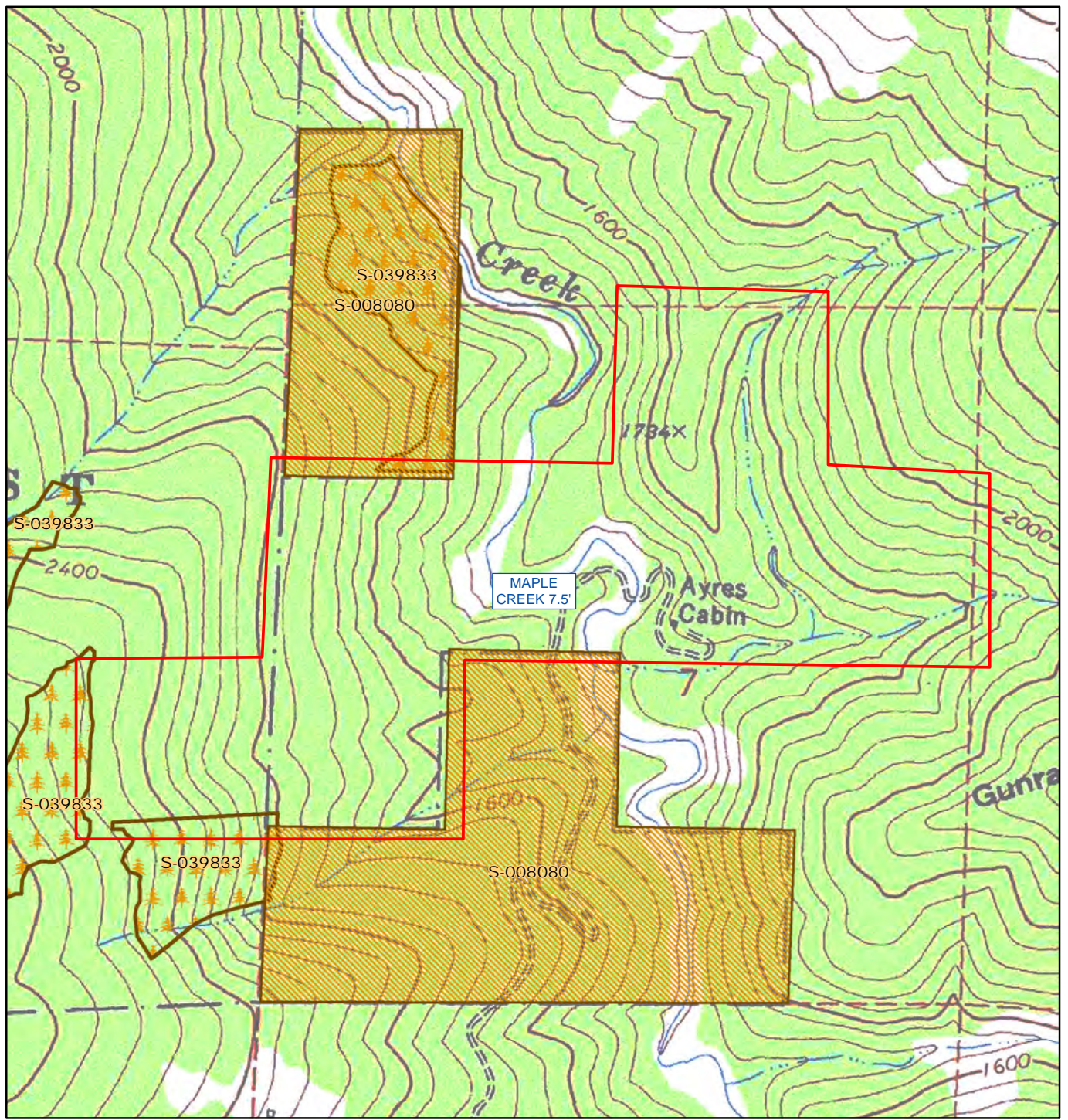
File #21-0931 22 Dec 2021 J. Akmenkalns

May depict confidential cultural resource locations.
Do not distribute.



- Project Area
- Quad outlines
- Reports (polygons)
- Reports (CFMOU)

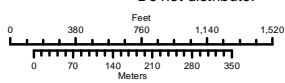
Report Map No. 1
 Anthony and Mary Massei Living Trust



Northwest Information Center

File #21-0931 22 Dec 2021 J. Akmenkalns

May depict confidential cultural resource locations.
 Do not distribute.



- Project Area
- Quad outlines
- Reports (polygons)
- Reports (CFMOU)

Resource List

Anthony and Mary Massei Living Trust

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-12-000625	CA-HUM-000624/H	Resource Name - Ayres Cabin; USFS - FS 05-10-53-208; Other - Chimmahnonahk	Site	Prehistoric, Protohistoric, Historic	AP02; HP02	1979 (Glenn Gmoser, USFS; Six Rivers National Forest)	

Report List

Anthony and Mary Massei Living Trust

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-008080	USFS - ARR No. 05-10-244	1980	Thomas S. Keter	Simpson Land Exchange, Archaeological Reconnaissance Report	Six Rivers National Forest	12-000661, 12-000662, 12-000679
S-013037	USFS - ARR No. 05-10-513	1988	Thomas S. Keter	Archaeological Survey Report, Kermit Land Exchange, ARR No. 05-10-513	Six Rivers National Forest	
S-018478	CAL FIRE - THP #1-96-107 HUM	1996	Thomas L. Walz	Archaeological and Historical Resources Survey and Impact Assessment, Hyper, THP #1-96-107 HUM	Sierra Pacific Industries	12-001011, 12-001012, 12-001013
S-039833	CAL FIRE - THP #1-12-042 HUM	2012	Michael Lommori	An Archaeological Survey Report for the Hiker's Parade Timber Harvesting Plan, Humboldt County, California	Sierra Pacific Industries	12-001011, 12-001012, 12-001013

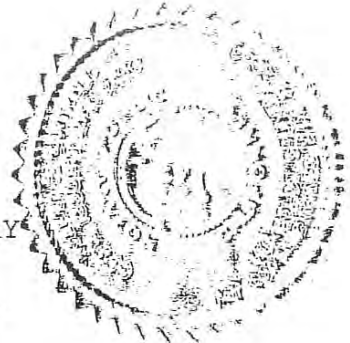
Original 10-29-18

ANTHONY AND MARY MASSEI LIVING TRUST

DECLARATION OF TRUST

PART 1. TRUST NAME

This Trust shall be known as the ANTHONY AND MARY MASSEI LIVING TRUST dated AUGUST 13, 2002.



PART 2. TRUST PROPERTY

- A. ANTHONY J. MASSEI III and MARY R. MASSEI, called the "Trustees", or "Grantors", depending on the context, and sometimes referred to as "Husband" and "Wife" declare that they have set aside and hold in the ANTHONY AND MARY MASSEI LIVING TRUST dated 08/13/02, all their interest in that property described in the attached Schedule "A". ANTHONY J. MASSEI III shall also be referred to as JOE in this instrument.
- B. It is Husband's and Wife's desire, by this instrument, to create an Inter Vivos Revocable Trust in accordance with the laws of the State of California whereby they will hold in trust their community property and manage it for their benefit during their respective lives and provide for their issue upon the death of the last survivor of Husband and Wife. The identification number for this trust shall be the Social Security number of one of the co-Trustees. Only one of the co-Trustee's signature shall be required for all banking transactions.

ANTHONY AND MARY MASSEI LIVING TRUST

PART 3. TERMINOLOGY

The term "this declaration of Trust" includes any provisions added by valid amendment.

PART 4. ADDING PROPERTY TO THE TRUST

Either Grantor, or both may add additional, or after-acquired property to the Trust at any time by listing it on the appropriate schedule, and transferring its title to the Trust where appropriate.

PART 5. CHARACTER OF TRUST PROPERTY

All Trust property listed on Schedule A is community property of the Grantors, and shall retain that character after being transferred to this Trust. Any power reserved to Grantors to alter, amend, modify, or revoke this Trust, as to the property listed in Schedule A, is held by the Grantors during their joint lifetimes as managers of the community property. If the Trust is revoked, any property listed in Schedule A shall be returned to Grantors as their community property and not as the separate property of either or both.

A. Revocation

Either Grantor may revoke this Trust at any time, without notifying any Beneficiary. Revocation may be made in writing or any manner allowed by law.

ANTHONY AND MARY MASSEI LIVING TRUST

B. Amendment by Grantors

While both Grantors are alive, the ANTHONY AND MARY MASSEI LIVING TRUST may be amended only by both of them acting together. All amendments must be in writing and signed by both Grantors.

C. The power to revoke or amend this Trust is personal to the Grantors. A conservator, guardian or other person shall not exercise it on behalf of either Grantor.

PART 6. TRUSTEES

A. The original Trustees of the ANTHONY AND MARY MASSEI LIVING TRUST shall be ANTHONY J. MASSEI III and MARY R. MASSEI. Either Trustee may act for, and represent, the Trust in any transaction.

B. The first Trustee to die shall be called the "deceased Spouse." The living Trustee shall be called the "surviving Spouse."

C. Upon the death of JOE OR MARY, (or upon the incapacity of either of them as authorized in separate DURABLE POWERS OF ATTORNEY FILED IN THE HUMBOLDT COUNTY RECORDER'S OFFICE), the other spouse shall serve as sole trustee. Should both spouses be impaired at the same time, the attorney in fact is empowered by said DURABLE POWER OF ATTORNEY to manage the assets of this trust until either or both spouses are again able

ANTHONY AND MARY MASSEI LIVING TRUST

to manage their own affairs. After the death of the deceased spouse, if at any time the surviving spouse has become physically or mentally incapacitated, the attorney in fact shall manage this trust, as authorized by said DURABLE POWERS OF ATTORNEY, and shall apply for the benefit of the surviving spouse any amount of trust income, or trust principal, necessary in the attorney in fact's discretion for the proper health care, support, maintenance, comfort or welfare of the surviving spouse, in accordance with his or her accustomed manner of living, until he or she is again able to manage his or her own affairs or until his or her death. Any income in excess of amounts applied for the benefit of the surviving spouse shall be accumulated and added to the trust property.

D. Upon the death of the surviving spouse, or upon the grantors' incapacity as set forth above, the Successor Trustee shall be ANNA MARIE TOMASINI. If she fails to serve or continue serving, the next Successor Trustee shall be LEE ANN REEVES. If she fails to serve or continue serving, the next successor Trustee shall be ANTHONY J. MASSEI IV.

E. Any Trustee in office may resign at any time by signing a notice of resignation and delivering it to the person or

ANTHONY AND MARY MASSEI LIVING TRUST

Trustees, they shall be reimbursed without Court Order) from the Trust Assets for ordinary and extra-ordinary expenses incurred in the performance of their duties as Trustees.

J. With respect to the exercise or non-exercise of discretionary powers granted by this Declaration of Trust, the Trustee shall not be liable for actions taken in good faith. Such actions shall be binding on all persons interested in the Trust property.

K. The Successor Trustee shall notify all Beneficiaries upon the death of the surviving Spouse that the Trust has become irrevocable, and upon the request of said Beneficiaries, shall provide them with a copy of the Trust, as per California Probate Code Section 16061.7. This notice must be sent within 60 days after the surviving Spouse's death, and must include:

1. The name and date of death of the surviving Spouse, and the date the Trust was signed by the Grantor.
2. The name, mailing address, and phone number of the Successor Trustee.
3. The address of the physical location at which the principal place administration of the Trust is located. The wording of the warning is required to be as follows:

ANTHONY AND MARY MASSEI LIVING TRUST

"You may not bring an action to contest the Trust more than 120 days from the date this notification by the Successor Trustee is served upon you or 60 days from the day on which a copy of the terms of the Trust is mailed or personally delivered to you in response to your request during that 120 day period, whichever is later".

PART 7. BENEFICIARIES

A. Until the death of the deceased Spouse, the Grantors retain all rights to income, profits, or control of the property in the ANTHONY AND MARY MASSEI LIVING TRUST.

B. Upon the death of JOE, the Beneficiaries of the Trust property owned by him as his share of the property listed on Schedule A shall be:

1. Specific Beneficiaries:

ANTHONY J. MASSEI IV shall be given ITEMS NUMBER THREE, FOUR AND FIVE, as listed on Schedule "A". If ANTHONY IV fails to survive his father, JOE, ANTHONY IV's interest in this gift shall be given to MARY R. MASSEI, unless ANTHONY IV has children; in which case ANTHONY IV'S interest in this gift shall be given to his children, in equal shares. MARY R. MASSEI shall be given a LIFE INTEREST IN ITEM NUMBER 4 (APN 316-196-04).

MARY R. MASSEI shall be given JOE'S interest in ALL OTHER ITEMS AS LISTED ON SCHEDULE "A". If MARY fails to survive JOE, his interest in said ITEMS, shall be given to TYLER J. OPP, CAMERON

ANTHONY AND MARY MASSEI LIVING TRUST

L. OPP and CHELSEA K. OPP, in equal shares. If any of these three Beneficiaries fails to survive JOE, the deceased Beneficiary's interest in this gift shall be given to the surviving Beneficiaries (among the three of them), in equal shares, unless the deceased Beneficiary has children, in which case the deceased Beneficiary's interest in this gift shall be given to said Beneficiary's children, in equal shares.

C. Upon the death of MARY, the Beneficiaries of the Trust property owned by her as her share of the property listed on Schedule A shall be:

1. Specific Beneficiaries:

JOE shall be given MARY'S interest in all items listed on Schedule "A." If JOE fails to survive MARY, her interest in the property listed on Schedule "A", shall be given to TYLER J. OPP, CAMERON L. OPP AND CHELSEA K. OPP, in equal shares. If any Beneficiary fails to survive MARY, the deceased Beneficiary's interest in this gift shall be given to the surviving Beneficiaries, in equal shares, unless the deceased Beneficiary has children, in which case the deceased Beneficiary's interest in this gift shall be given to said Beneficiary's children, in equal shares.

ANTHONY AND MARY MASSEI LIVING TRUST

PART 8. ADMINISTRATION OF THE TRUST

A. Until the death of the deceased Spouse, the Trust shall be administered as provided in Part 7 (A).

B. Upon the death of the deceased Spouse, the Trust shall be administered as follows:

1. The surviving Spouse reserves the power to amend or revoke this Trust at any time during his or her lifetime, without notifying any Beneficiary.

2. Until the death of the surviving Spouse, all rights Income, profits or control of property in the Trust shall be retained by or distributed to the surviving Spouse.

3. Upon the death of the surviving Spouse, the Trust becomes irrevocable, and the property in the trust shall be distributed OUTRIGHT to the Beneficiaries listed in Part 7 (B) and (C).

PART 9. TRUSTEE'S POWERS AND DUTIES

A. To carry out the provisions of this Trust instrument, each Trustee shall have all authority and powers allowed or conferred on a Trustee under California law and subject to the Trustee's fiduciary duty to the Grantors and the Beneficiaries.

B. All debts and taxes of the Grantors shall be paid by the Trustees.

ANTHONY AND MARY MASSEI LIVING TRUST

Part 10. GENERAL ADMINISTRATIVE PROVISIONS

A. The validity of the ANTHONY AND MARY MASSEI LIVING TRUST and the construction of its beneficial provisions shall be governed by the laws of California.

B. The Trustee shall not be required to make any accountings or reports.

PART 11. CHILDREN'S SUB-TRUSTS

All trust property left to TYLER J. OPP, CAMERON L. OPP AND CHELSEA K. OPP, If they are under 21 years of age, shall be retained in trust for them in separate sub-trusts of the ANTHONY AND MARY MASSEI LIVING TRUST. The following terms apply to the sub-trusts:

A. Sub-trust Age Limits

The sub-trust shall end when the beneficiary of that sub-trust, becomes age 23.

B. Powers and Duties of Sub-trust Trustee

1. Until the sub-trusts end, the Trustee may distribute to or use for the benefit of the beneficiaries as much of the net income or principal of the sub-trusts as the trustee deems necessary for the beneficiaries' health, support, maintenance or education. Education includes, but is not limited to, college, graduate, postgraduate and vocational studies, and reasonably related living expenses.

2. In deciding whether to make a distribution to the beneficiaries, the trustee may take into account the beneficiaries' other income, resources and sources of support.

ANTHONY AND MARY MASSEI LIVING TRUST

3. Any sub-trust income that is not distributed to the beneficiaries by the trustee shall be accumulated and added to the principal of the sub-trust for the beneficiaries.

C. Assignment of Interest of Beneficiary Prohibited

The interests of the beneficiaries of the sub-trusts shall not be transferable by voluntary or involuntary assignment or by operation of law before actual receipt by the beneficiaries. These interests shall be free from the claims of creditors and from attachments, execution, bankruptcy or other legal process to the fullest extent permitted by law.

D. Termination of Sub-trusts

The sub-trust shall end when any of the following events occurs:

1. The beneficiary reaches age 23. If the sub-trust ends for this reason, the remaining principal and accumulated income of the sub-trust shall be given outright to the beneficiary.
2. The beneficiary dies. If the sub-trust ends for this reason, the sub-trust property shall pass to the beneficiary's heirs.
3. The trustee distributes all sub-trust property under the provisions of this Declaration of Trust.

ANTHONY AND MARY MASSEI LIVING TRUST

PART 12. CUSTODIANSHIP UNDER THE UNIFORM TRANSFERS TO MINORS
ACT

All property TYLER J. OPP, CAMERON L. OPP AND CHELSEA K. OPP
become entitled to under this trust document shall be given to
CURTIS J. OPP, as custodian for all three of them under the
Uniform Transfers to Minors Act of California, until EACH OF THEM
reaches age 23. If CURTIS fails to serve or continue serving as
custodian, LEE ANN REEVES shall serve as custodian.

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CERTIFICATION OF TRUST

We certify that we have read this Declaration and
Instrument of Trust and that it correctly states the
terms and conditions under which the Trust property is
to be held, managed, and disposed of by the Trustees,

ANTHONY AND MARY MASSEI LIVING TRUST

and we approve the Declaration and instrument of Trust.

Dated: AUGUST 13, 2002.



GRANTOR AND TRUSTEE



GRANTOR AND TRUSTEE

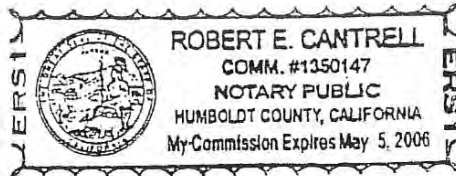
State of California
County of Humboldt

On 08/13/02, 2002, before me, Robert E. Cantrell, a notary public for the State of California personally appeared ANTHONY J. MASSEI III and MARY R. MASSEI, personally known to me to be the persons whose names are subscribed to the within instrument (Declaration of Trust) and acknowledged to me that they executed the same in their authorized capacities, and that by their signatures on the instrument the persons or the entity upon behalf of which the persons acted, executed the instrument. My Commission expires 05/05/06.

IN WITNESS WHEREOF, I have set my hand and affixed my official seal the day and year first above written.



notary public



ANTHONY AND MARY MASSEI LIVING TRUST

SCHEDULE "A"

- ITEM NUMBER ONE: All that real property located at 1944 Brandi Lane, Fortuna, California as per enclosed Cal-Vet Assignment.
- ITEM NUMBER TWO: All of the contents of the Grantors' residence including all of their personal property and personal effects, wherever located.
- ITEM NUMBER THREE: All that real property located in Humboldt County, State of California, as per enclosed Grant Deed, APN 316-196-02.
- ITEM NUMBER FOUR: All of the Grantor's interest in that real property located in Humboldt County, State of California as per enclosed Grant Deed, APN 316-196-04.
- ITEM NUMBER FIVE: All of the Heavy Equipment and Machinery.
- ITEM NUMBER SIX: All of those assets at COAST CENTRAL CREDIT UNION.
- ITEM NUMBER SEVEN: All of those assets at SIX RIVERS NATIONAL BANK.

1st Amendment

AMENDMENT TO TRUST

This Amendment to the ANTHONY AND MARY MASSEI LIVING TRUST dated AUGUST 13, 2002 is made this 14TH day of JANUARY, 2006 by Anthony J. Massei III and Mary R. Massei, under the power of amendment reserved to the Grantors on page 3 of the trust PART 5 B, the Grantor amends the trust as follows:

1. The following is added to the trust:

PART 7. BENEFICIARIES

B. Upon the death of JOE, the Beneficiaries of the Trust property owned by him as his share of the property listed on Schedule A shall be:

1. Specific Beneficiaries:

ANTHONY J. MASSEI IV shall be given ITEMS NUMBER THREE, FOUR AND FIVE, as listed on Schedule "A". If ANTHONY IV fails to survive his father, JOE, ANTHONY IV's interest in this gift shall be given to MARY R. MASSEI, unless ANTHONY IV has children; in which case ANTHONY IV'S interest in this gift shall be given to his children, in equal shares. MARY R. MASSEI shall be given a LIFE INTEREST IN ITEM NUMBER 4 (APN 316-196-04).

KIMBERLY D. MASSEI has been provided with a large life insurance benefit outside this trust and shall be given ten thousand dollars from this trust. If Kimberly fails to survive her father, this gift shall be given to her children, in equal shares.

MARY R. MASSEI shall be given JOE'S interest in ALL OTHER ITEMS AS LISTED

(continued)

AMENDMENT TO TRUST (continuation)

ON SCHEDULE "A". If MARY fails to survive JOE, his interest in said ITEMS, shall be given to TYLER J. OPP, CAMERON L. OPP and CHELSEA K. OPP, in equal shares. If any of these three Beneficiaries fails to survive JOE, the deceased Beneficiary's interest in this gift shall be given to the surviving Beneficiaries (among the three of them), in equal shares, unless the deceased Beneficiary has children, in which case the deceased Beneficiary's interest in this gift shall be given to said Beneficiary's children, in equal shares.

If any beneficiary under this trust in any manner, directly or indirectly, contests or attacks this trust or the Grantor's Wills or amendments thereto or any of their provisions, any property, share or interest in the property in this trust given to the contesting beneficiary is revoked and shall be disposed of in the same manner provided herein as if that beneficiary had predeceased the Grantors without issue.

2. The following is deleted from the trust:

PART 7. BENEFICIARIES

B. Upon the death of JOE, the Beneficiaries of the Trust property owned by him as his share of the property listed on Schedule A shall be:

1. Specific Beneficiaries:

ANTHONY J. MASSEI IV shall be given ITEMS NUMBER THREE, FOUR AND FIVE, as listed on Schedule "A". If ANTHONY IV fails to survive his father, JOE, ANTHONY IV's interest in this gift shall be given to MARY R.MASSEI, unless

(continuation)

AMENDMENT TO TRUST (continuation)

ANTHONY IV has children; in which case ANTHONY IV'S interest in this gift shall be given to his children, in equal shares. MARY R. MASSEI shall be given a LIFE INTEREST IN ITEM NUMBER 4 (APN 316-196-04).

MARY R. MASSEI shall be given JOE'S interest in ALL OTHER ITEMS AS LISTED ON SCHEDULE "A". If MARY fails to survive JOE, his interest in said ITEMS, shall be given to TYLER J. OPP, CAMERON L. OPP and CHELSEA K. OPP, in equal shares. If any of these three Beneficiaries fails to survive JOE, the deceased Beneficiary's interest in this gift shall be given to the surviving Beneficiaries (among the three of them), in equal shares, unless the deceased Beneficiary has children, in which case the deceased Beneficiary's interest in this gift shall be given to said Beneficiary's children, in equal shares.

THIS AMENDMENT SHALL PREVAIL OVER ANY AND ALL CONFLICTING TERMS TO THIS AMENDMENT FOUND IN THE ORIGINAL TRUST AND DELETES ANY SUCH CONFLICTING TERMS OF THE ANTHONY AND MARY MASSEI LIVING TRUST dated August 13, 2002. All other, non-conflicting terms of the original trust remain applicable.

(continued)

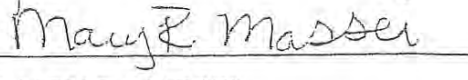
AMENDMENT TO TRUST (continuation)

CERTIFICATION OF AMENDMENT TO TRUST

We certify that We have read this Amendment to the ANTHONY AND MARY MASSEI LIVING TRUST and that it correctly states the terms and conditions under which the trust estate is to be held, managed, and disposed of by the trustee. We approve this Amendment.

Dated: JANUARY 14, 2006.

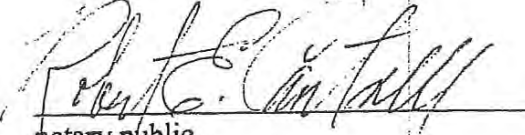

ANTHONY J. MASSEI III

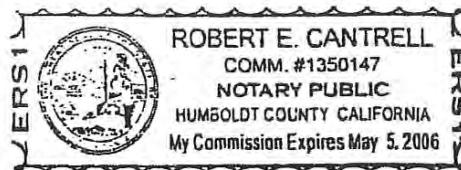

MARY R. MASSEI

State of California
County of Humboldt

On 01/14, 2006, before me, Robert E. Cantrell, a notary public for the State of California, personally appeared ANTHONY J. MASSEI III AND MARY R. MASSEI, personally known to me to be the persons whose names are subscribed to the within instrument (Declaration of Trust) and acknowledged to me that they executed the same in their authorized capacity, and that by their signature or the entity upon behalf of which the person acted, executed the instrument.

IN WITNESS WHEREOF, I have set my hand and affixed my official seal the day and year first above written. My Commission expires 05/05/06.


notary public



2nd Amendment

SECOND AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST
DATED AUGUST 13, 2002

ANTHONY AND MARY MASSEI, as Grantors and Trustees, hereby amend the Anthony and Mary Massei Living Trust established August 13, 2002, as follows:

1. The First Amendment to the Trust is revoked in its entirety.
2. Part 11 of the Trust is hereby stricken from the Trust.
3. Schedule A shall be modified and amended as attached hereto, and made a part hereof.
4. PART 7. BENEFICIARIES IS AMENDED IN ITS ENTIRETY. Part 7 is hereby amended to provide:

A. Until the death of the deceased Spouse, the Grantors retain all rights to income, profits, and control of the property in the ANTHONY AND MARY MASSEI LIVING TRUST.

B. Upon the death of ANTHONY J. MASSEI III, the Beneficiaries of the Trust property owned by him as his share of the property listed on Schedule A shall be:

1, Specific Bequests:

Upon the death of the Surviving Spouse, an undivided 51% interest in that real property located in Humboldt County, State of California with the APN 316-196-04 to ANNA MARIE TOMASINI by right of representation, and an undivided 49% interest in said real property to KIMBERLY D. MASSEI and ANTHONY J. MASSEI IV in equal shares by right of representation. All heavy equipment listed on Schedule A shall be distributed in this same manner, and is intended to remain with the land for use by any beneficiary for improvements or use on those parcels of real property situated in Humboldt County, State of California with the APN numbers of 316-196-07, 316-195-02, 316-196-02, and 316-196-04 or as otherwise directed by ANNA MARIE TOMASINI, KIMBERLY D. MASSEI, and ANTHONY J. MASSEI IV.

Upon the death of the Surviving Spouse, the Trust's interest in that real property located in Humboldt County, State of California with the APN number 316-196-02 to ANTHONY J. MASSEI IV by right of representation.

Upon the death of the Surviving Spouse, the residence commonly known as 232 Dick Smith Road, Fortuna, Humboldt County, California with the APN number of 202-181-015 shall be distributed to TYLER J. OPP, CAMERON L. OPP AND CHELSEA K. OPP in equal shares by right of representation.

2. General Bequests:

Upon the death of the Surviving Spouse, the remainder of all trust property shall be distributed to KIMBERLY D. MASSEI, and ANTHONY J. MASSEI IV. If either of them fails to survive

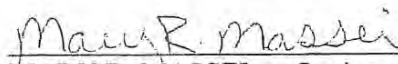
the Surviving Spouse, then their share is to be distributed to their respective issue by right of representation. If either or both fail to survive the Surviving Spouse, without issue, then the remainder and residue of the Trust property shall be distributed to ANNA MARIE TOMASINI. If ANNA MARIE TOMASINI fails to survive the Surviving Spouse, without issue, the remainder of the trust property shall be distributed according to the laws of intestacy of the laws of the State of California.

5. **Restatement of Trust.** In all other respects, the Trust Declaration executed by ANTHONY AND MARY MASSEI as Grantors and Trustees of the Anthony and Mary Massei Living Trust established August 13, 2002, is hereby restated and confirmed.

We, as Settlers of the Trust Declaration executed originally on August 13, 2002, certify that we have read this SECOND AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST DATED AUGUST 13, 2002 and that such agreement correctly states the terms and conditions under which the Trust Estate is to be held, managed, and disposed of by the Trustee. We approve this Trust Amendment in all particulars and as Trustees named in the Trust Agreement, as amended, approve and accept the Trust provided for in this Agreement.

DATED this 10th day of June, 2010


ANTHONY J. MASSEI III, as Settlor and Trustee

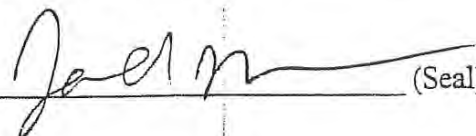

MARY R. MASSEI, as Settlor and Trustee

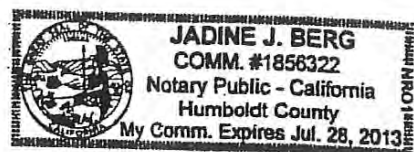
STATE OF CALIFORNIA §
 §
COUNTY OF HUMBOLDT §

On June 10, 2010, before me, Jadine Berg, Notary Public, personally appeared ANTHONY J. MASSEI III, and MARY R. MASSEI, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature:  (Seal)



Schedule "A"

1. All that real property located in Humboldt County, State of California, with the APN number of 316-196-02;
2. All that real property located in Humboldt County, State of California, with the APN number of 316-196-04;
3. All that real property located in Humboldt County, State of California, with the APN number of 202-181-015 and commonly known as 232 Dick Smith Road, Fortuna;
4. All of the Grantors' personal property and personal effects, wherever located.
5. All heavy equipment located on Grantors' property, including but not limited to:
 - a. Cat Grader, #12F, 99E5242;
 - b. John Deere 2755, CD4239-742767;
 - c. Cat Skipper 518, 50S310; and
 - d. Cat Dozer 7E, 48A74878.
6. All of those assets at Coast Central Credit Union; and
7. All of those assets at U.S. Bank.

**FIFTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST
DATED AUGUST 13, 2002**

ANTHONY AND MARY MASSEI, as Grantors and Trustees, hereby amend the Anthony and Mary Massei Living Trust established August 13, 2002, as follows:

1. Schedule A shall be modified and amended as attached hereto, and made a part hereof.

2. All prior Amendments to the Anthony and Mary Massei Living Trust are hereby revoked in their entirety.

3. **PART 6. TRUSTEES IS AMENDED IN ITS ENTIRETY.** Part 6 is hereby amended to provide:

A. The original Trustees of the ANTHONY AND MARY MASSEI LIVING TRUST shall be ANTHONY J. MASSEI III and MARY R. MASSEI. Either Original Trustee may act for, and represent, the Trust in any transaction.

B. If either Original Trustee dies, becomes incapacitated, or declines to serve, the other Original Trustee shall be the sole Trustee of the Trust.

C. Upon the death or incapacity of both original Trustees, the Successor Trustee shall be ANNA MARIE TOMASINI. If she fails to serve or continue serving as Successor Trustee, the next Successor Trustee shall be LEE ANN REEVES. If she fails to serve or continue serving as Successor Trustee, the next Successor Trustee shall be KIMBERLY D. MASSEI.

D. Under no circumstance shall ANTHONY J. MASSEI IV serve in any fiduciary capacity under this Trust.

E. Any Trustee or Successor Trustee in office may resign at any time by signing a notice of resignation and delivering it to the person or institution who is either named in this Trust or appointed by the Trustee under this Part.

F. If no one named as a Successor Trustee in this Part is willing or able to serve, the last acting Successor Trustee named in this Part may appoint a Successor Trustee and may require the posting of a reasonable bond, to be paid with Trust funds. In the event the Trust is left without a named or appointed Trustee by this Part, any Beneficiary may petition a court of competent jurisdiction to appoint a Trustee of the Trust.

G. As used in this Part, the term Trustee includes any original or Successor Trustee. The singular includes the plural, and the plural includes the singular.

H. No bond shall be required of any Trustee specifically named in this Part.

I. Any Trustee acting under this Part may request reasonable compensation for services as Trustee.

4. **PART 7. BENEFICIARIES IS AMENDED IN ITS ENTIRETY.** Part 7 is hereby amended to provide:

A. Until the death of the Surviving Spouse, the Grantors retain all rights to income,

profits, and control of the property in the ANTHONY AND MARY MASSEI LIVING TRUST.

B. Upon the death of ANTHONY J. MASSEI III, the Beneficiaries of the Trust property owned by him as his share of the property listed on Schedule A shall be:

1, Specific Bequests:

Upon the death of the Surviving Spouse, an undivided 51% interest in that real property located in Humboldt County, State of California with the APN 316-196-04 to ANNA MARIE TOMASINI by right of representation, and an undivided 49% interest in said real property to KIMBERLY D. MASSEI and the Sub-Trust created in Part 7 B. 4. below for the benefit of ANTHONY J. MASSEI IV in equal shares by right of representation. All heavy equipment listed on Schedule A shall be distributed in this same manner, and is intended to remain with the land for use by any beneficiary for improvements or use on those parcels of real property situated in Humboldt County, State of California with the APN numbers of 316-196-07, 316-195-02, 316-196-02, and 316-196-04 or as otherwise directed by ANNA MARIE TOMASINI, KIMBERLY D. MASSEI, and the Sub-Trust created in Part 7 B. 4. below for the benefit of ANTHONY J. MASSEI IV.

Upon the death of the Surviving Spouse, the Trust's interest in that real property located in Humboldt County, State of California with the APN number 316-196-02 to the Sub-Trust created in Part 7 B. 4. below for the benefit of ANTHONY J. MASSEI IV.

Upon the death of Mary Massei, her wedding ring shall be distributed to TYLER J. OPP, subject to lapse.

2. General Bequests:

Upon the death of the Surviving Spouse, the remainder of all trust property shall be distributed to KIMBERLY D. MASSEI, and the Sub-Trust created in Part 7 B. 4. below for the benefit of ANTHONY J. MASSEI IV. If either of them fails to survive the Surviving Spouse, then their share is to be distributed to their respective issue by right of representation or as by directed in the Sub-Trust, respectively. If either or both fail to survive the Surviving Spouse, without issue, then the remainder and residue of the Trust property shall be distributed to ANNA MARIE TOMASINI. If ANNA MARIE TOMASINI fails to survive the Surviving Spouse, without issue, the remainder of the trust property shall be distributed according to the laws of intestacy of the laws of the State of California.

3. Acknowledgment of provisions outside of trust

Grantors acknowledge that TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP are not named as beneficiaries of this trust, and hereby state that they have been provided for outside of this trust in a manner consistent with the wishes of Grantors.

4. Creation of beneficial equitable interest for the benefit of ANTHONY J. MASSEI IV, no legal interest created.

All Trust property left to ANTHONY J. MASSEI IV shall be held in a separate Sub-Trust of the ANTHONY AND MARY MASSEI LIVING TRUST, which is hereby created. The following terms apply to the sub-trust:

- a. The Sub-Trust shall terminate upon the death of ANTHONY J. MASSEI, IV.
- b. Powers and Duties of Sub-Trust Trustee
 1. Until the sub-trust ends, the Trustee may distribute to or use for the benefit of ANTHONY J. MASSEI IV as much of the net income or principal of the sub-trust as the Trustee deems necessary for the beneficiary's health, support, maintenance, or education.
 2. In deciding whether to make a distribution to the beneficiary, the trustee shall take into account the beneficiary's other income, resources, and sources of support.
 3. The trustee shall not make any distribution to ANTHONY J. MASSEI IV that would be immediately subject to assignment, attachment, execution, or claims of known creditors, under relevant exemption laws then applicable at the time of the anticipated distribution.
 4. ANTHONY J. MASSEI IV shall have the right to use the real property held in the sub-trust for recreation and enjoyment during his lifetime.
- c. Upon the death of ANTHONY J. MASSEI IV, the sub-trust property shall be distributed to the intestate heirs of ANTHONY MASSEI IV. ANTHONY J. MASSEI, IV shall have no right to direct the distribution of any interest in the subtrust by will, by trust, or otherwise, and acquires no legal interest in any sub-trust property that survives his death.
- d. The trustee shall distribute all sub-trust property with the powers and duties directed in Parts 6 and 9 herein.

5. **PART 9 IS HEREBY AMENDED IN IT'S ENTIRETY:** Part 9 is amended to read as follows:

A. **Powers.** The Trustee shall have all of the powers conferred upon trustees by the California Probate Code, and by any future amendments to the California Probate Code, except for any instance in which the California Probate Code, as amended, or any such other statutory provisions may conflict with the express provisions of this Trust Agreement, in which case the express provisions of this Trust Agreement shall control. In addition to such powers, the Trustee is specifically authorized:

1. To retain, in the discretion of the Trustee, any property transferred to the Trustee by the Settlor or any other person, including securities of any corporate Trustee, without regard to the duty to diversify investments under the California Probate Code and without liability for any depreciation or loss occasioned by such retention;

2. To exchange, sell or lease (including leases for terms exceeding the duration of the trusts created by this instrument) for cash, property or credit, or to partition, from time to time, publicly or privately, at such prices, on such terms, times and conditions and by instruments of such character and with such covenants as the Trustee may deem proper, all or any part of the assets of the trusts, and no vendee or lessee of the Trustee shall be required to look to the application made by the Trustee of any funds paid to the Trustee;

3. To borrow money from any source (including any Trustee) and to mortgage, pledge or in any other manner encumber all or any part of the assets of the trusts as may be advisable in the judgment of the Trustee for the advantageous administration of the trusts;

4. To invest and reinvest the property of the trusts in any kind of property whatsoever, real or personal, whether or not productive of income and without regard to the proportion that such property or property of a similar character held may bear to the entire trust; provided, however, that the Settlor may direct the Trustee as to the investments to be made by the Trustee, and the Trustee shall not be liable to any person for any losses resulting from following the written direction of the Settlor in investing the trust assets;

5. To employ attorneys, accountants, investment managers, specialists and such other agents as the Trustee shall deem necessary or desirable; to have the authority to nominate an investment manager or managers to manage all or any part of the assets of the trusts, and to delegate to said manager investment discretion and such nomination shall include the power to acquire and dispose of such assets; and to charge the compensation of such attorneys, accountants, investment advisors, investment managers, specialists and other agents and any other expenses against such trusts;

6. To register and carry any securities or other property in the name of the Trustee or in the name of the nominee of any corporate Trustee (or to hold any such property unregistered) without increasing or decreasing the fiduciary liability of the Trustee; to exercise any option, right or privilege to purchase or to convert bonds, notes, stocks (including shares or fractional shares of stock of any corporate Trustee), securities or other property, and to borrow money for the purpose of exercising any such option, right or privilege; to vote any stock which may be held in the trusts; and if two or more Trustees are serving hereunder and no such Trustee is a corporate Trustee, to open any type of account in such a manner that all activities associated with such account may be handled by one of the Co-Trustees acting alone;

7. To enter into any transaction on behalf of the trusts (including loans to beneficiaries for adequate security and adequate interest) despite the fact that another party to any such transaction may be (i) a trust of which any Trustee under this instrument is also a trustee; (ii) an estate of which any Trustee under this instrument is also an executor, personal representative, or administrator; (iii) a business or trust controlled by any Trustee under this instrument or of which any such Trustee, or any director, officer or employee of any such corporate Trustee, is also a director, officer or employee; or (iv) the Settlers, any other beneficiary or any Trustee under this instrument acting individually;

8. To make, in the Trustee's discretion, any distribution required or permitted to be made to any beneficiary under this trust instrument, in any of the following ways when such beneficiary is a minor or is incapacitated: (i) to such beneficiary directly; (ii) to the guardian or conservator of such beneficiary's person or estate; (iii) by utilizing the same, directly and without the interposition of any guardian or conservator, for the health, support, maintenance, or education of such beneficiary; (iv) to a person or financial institution serving as custodian for such beneficiary under a uniform gifts to minors act or a uniform transfers to minors act of any state; (v) by reimbursing the person who is actually taking care of such beneficiary (even though such person is not the legal guardian or conservator) for expenditures made by such person for the benefit of such beneficiary; and (vi) by managing such distribution as a separate fund on the beneficiary's behalf, subject to the beneficiary's continuing right to withdraw the distribution; and the written receipts of the persons receiving such distributions shall be full and complete acquittances to the Trustee;

9. To invest the assets of the trusts in any life insurance policy or policies (including term insurance) on the life of the Settlers, or on the life of any person or persons in whom the Settlers have an insurable interest;

10. To store personal property given to a person who is a minor or who is incapacitated for later distribution to such person, or to sell such property and add the proceeds of sale to a trust of which such person is a beneficiary;

11. To make divisions, partitions, or distributions in money or in kind, or partly in each, whenever required or permitted to divide, partition, or distribute all or any part of the trusts; and, in making any such divisions, partitions, or distributions, the judgment of the Trustee in the selection and valuation of the assets to be so divided, partitioned, or distributed shall be binding and conclusive, and the Trustee shall not be liable for any differing tax consequences to the beneficiaries hereunder;

12. To release, in the discretion of the Trustee, any fiduciary power at any time, in whole or in part, temporarily or permanently, whenever the Trustee may deem it advisable, by an instrument in writing executed and acknowledged by the Trustee;

13. To invest and reinvest all or part of the assets of the trusts in any common trust fund of any corporate Trustee;

14. To open margin accounts or similar accounts with brokerage firms, banks or others for purposes of investing the properties of each trust; to conduct, maintain and operate these accounts, directly or through designation of another as agent, for purchase, sale and exchange of stocks, bonds, commodities and other securities; and in connection therewith, to borrow money, obtain guarantees and engage in all other activities necessary or incidental to conducting, maintaining and operating such accounts;

15. To continue any business (whether a proprietorship, corporation, partnership, limited partnership or other business entity) which may be transferred to the trusts for such time as the Trustee may deem it to be in the best interest of the trusts; to employ in the conduct of any such business such capital out of the trusts as the Trustee may deem proper; to borrow money for use in any such business alone or with other persons financially interested in such business, and to secure such loan or loans by a mortgage, pledge or any other manner of encumbrance of, not only the interest of such trusts in such business, but also such portion of such trust outside of such business as the Trustee may deem proper; to organize, either alone or jointly with others, new corporations, partnerships, limited partnerships or other business entities; and generally to exercise with respect to the continuance, management, sale or liquidation of any business which may be transferred to the trust estate, or of any new business or business interest, all the powers which may be necessary for its successful operation;

16. To transfer such sums of the property of a Settlor to an individual serving as agent or attorney-in-fact under a valid power of attorney signed by such Settlor (or to several individuals serving jointly as agents or attorneys-in-fact under a valid power of attorney signed by such Settlor) as such agent or agents may request in order to make gifts, which are specifically authorized by such power of attorney, on behalf of such Settlor;

17. To select and employ, at the discretion of the Trustee but at the expense of the trusts, any person, firm or corporation, engaged in rendering investment advisory services or investment management services, to furnish professional assistance or management in connection with making investments, managing securities, or making any other decisions with respect to the purchase, retention, sale or other disposition of property or securities belonging to the trusts;

18. To employ a bank or trust company located anywhere within the United States, at the discretion of the Trustee but at the expense of the trusts, as custodian or agent; to have stock and securities registered in the name of such agent or custodian or a nominee thereof without designation of fiduciary capacity; and to nominate such bank or trust company to perform such other ministerial functions as the Trustee may direct. While such stock or securities are in the custody of any such bank or trust company, the Trustee shall be under no obligation to inspect or verify such stock or securities nor shall the Trustee be responsible for any loss by such bank or trust company; and

19. Whenever in this Trust Agreement an action is authorized in the discretion of the Trustee, the term "discretion" shall mean the absolute and uncontrolled discretion of the Trustee.

B. Accounting. The Trustee shall have no duty to provide any beneficiary with a periodic account, but shall, upon reasonable request, render accounts at least annually, at the termination of a trust, and on a change of Trustee to the person entitled to an account in the manner required by California law. All properties, books of account and records of the trust created under Article II shall be made available for inspection at all times during normal business hours by the Settlers or by any person designated by the Settlers.

C. Notice. Any notice required or permitted to be given by or to a Trustee acting under this Trust Agreement must be given by acknowledged instrument actually delivered to the person or Trustee to whom it is required or permitted to be given. Any notice required or permitted to be given to a minor or an incapacitated person shall be given to such minor's parents or guardian or to such incapacitated person's conservator. If such notice concerns a trusteeship, it shall state its effective date and shall be given at least 30 days prior to such effective date, unless such period of notice is waived. Any action permitted to be taken by a minor or an incapacitated person shall be taken by such minor's parent or guardian or by such incapacitated person's conservator.

D. Acts of Prior Trustees. Each Trustee shall be relieved of any duty to examine the acts of any prior Trustee and no court accounting shall be required. Each successor Trustee shall be responsible only for those properties which are actually delivered to such Trustee. Each successor Trustee, upon executing an acknowledged acceptance of the trusteeship and upon receipt of those properties actually delivered to such successor Trustee, shall be vested

with all of the estates, titles, rights, powers, duties, immunities and discretions granted to the prior Trustee.

E. Reliance on Legal Opinion. In acting or declining to act, each Trustee may rely upon the written opinion of a competent attorney, any facts stated in any instrument in writing and believed true, or any other evidence deemed sufficient. Each Trustee shall be saved harmless from any liability for any action taken, or for the failure to take any action, if done in good faith and without gross negligence.

F. Survivorship Provisions. For purposes of this Trust Agreement, no person shall be presumed to have survived a Settlor if such person should die within 30 days of such Settlor's death.

G. Combination of Trusts. After the death of the last to die of the Settlers, the Trustee, in the Trustee's discretion, may combine any trust created under this Trust Agreement with any other trust or trusts if the terms of such trusts are substantially similar, if such trusts have the same primary beneficiaries, and if such trusts have the same inclusion ratio as defined in Section 2642(a) of the Code. The Trustee shall not be obligated to combine such trusts. If trusts which are combined are to terminate at different times, the combined trust shall terminate in stages, with a pro rata portion of the combined trust being distributed to the appropriate beneficiaries when each such trust terminates. If trusts which are combined are to terminate at the same time but have different contingent beneficiaries, the remaining property of the combined trust shall be divided pro rata among the contingent beneficiaries of each trust. Any such pro rata distributions shall be made in proportion to the value of each trust at the time such trusts were combined.

H. Maximum Duration of Trusts. Notwithstanding anything to the contrary contained in this Trust Agreement, each trust created under this Trust Agreement, unless earlier terminated according to the terms of this Trust Agreement, shall terminate one day less than 21 years after the date of death of the last to die of the Settlers and the following persons who are living on the date of death of the first Settlor to die: (i) the descendants of the Husband's parents, (ii) the descendants of the Wife's parents, and (iii) all of the persons who are specifically named as beneficiaries in Article II, Section E; provided, however, that if the Trustee at any time combines and administers as one trust any trust or trusts created hereunder and any trust or trusts under any other instrument, such combined trust shall not continue beyond the date on which either of such trusts would, without regard to such combination, have been required to expire under the rule against perpetuities or other applicable law governing the maximum duration of trusts. If any trust (including a combined trust) would, but for the terms of this Section, continue beyond such date, such trust shall nevertheless at that time terminate and the remaining property of such trust shall be distributed as provided in the Article which creates such trust.

6. PART 11 IS HEREBY ADDED TO THE TRUST: Part 11 provides as follows:

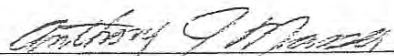
SPENDTHRIFT PROVISION:

No interest of any beneficiary in the income or principal distributable under any trust created by this Trust Agreement shall be subject to voluntary or involuntary transfer, nor shall such interest be subject to anticipation or assignment by any beneficiary, or to attachment by or to the interference or control of any creditor or assignee of any beneficiary, or be taken or reached by any legal or equitable process in satisfaction of any debt or liability of any beneficiary, and any attempted transfer or encumbrance of any interest in such property by any beneficiary hereunder prior to distribution shall be void.

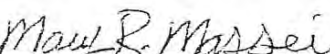
7. **Restatement of Trust.** In all other respects, the Trust Declaration executed by ANTHONY AND MARY MASSEI as Grantors and Trustees of the Anthony and Mary Massei Living Trust established August 13, 2002, and as subsequently amended on June 10, 2010, and further amended on March 30, 2015, is hereby restated and confirmed.

We, as Settlers of the Trust Declaration executed originally on August 13, 2002, certify that we have read this FOURTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST DATED AUGUST 13, 2002 and that such agreement correctly states the terms and conditions under which the Trust Estate is to be held, managed, and disposed of by the Trustee. We approve this Trust Amendment in all particulars and as Trustees named in the Trust Agreement, as amended, approve and accept the Trust provided for in this Agreement.

DATED this 15th day of May, 2019



ANTHONY J. MASSEI, as Settlor and Trustee



MARY R. MASSEI, as Settlor and Trustee

NOTARY ACKNOWLEDGEMENT ON FOLLOWING PAGES

Schedule "A"

1. All that real property located in Humboldt County, State of California, with the APN number of 316-196-02;
2. All that real property located in Humboldt County, State of California, with the APN number of 316-196-04;
3. All that real property located in Humboldt County, State of California, with the APN number of 203-360-008;
4. All of the Grantors' personal property and personal effects, wherever located.
5. All heavy equipment located on Grantors' property, including but not limited to:
 - a. Cat Grader, #12F, 99E5242;
 - b. John Deere 2755, CD4239-742767;
 - c. Cat Skipper 518, 50S310; and
 - d. Cat Dozer 7E, 48A74878.
6. All of those assets at Coast Central Credit Union; and
7. All of those assets at U.S. Bank.
8. All of those assets at Wells Fargo Bank
9. All of those assets at Redwood Capital Bank

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Humboldt

On May 15, 2019 before me, Danielle Jacobson-Elcock, Notary Public
(insert name and title of the officer)

personally appeared Anthony J. Massei and Mary R. Massei
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is(are)
subscribed to the within instrument and acknowledged to me that he/she/they executed the same in
his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the
person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature DJ Elcock (Seal)



**SEVENTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST
DATED AUGUST 13, 2002**

ANTHONY AND MARY MASSEI, as Grantors and Trustees, hereby amend the Anthony and Mary Massei Living Trust established August 13, 2002, as follows:

1. **PART 7. IS AMENDED IN ITS ENTIRETY.** Part 7 is hereby amended to provide:

A. Until the death of the Surviving Spouse, the Grantors retain all rights to income, profits, and control of the property in the ANTHONY AND MARY MASSEI LIVING TRUST.

B. The Beneficiaries of the Trust property are:

1. **Specific Bequests:**

Upon the death of ANTHONY J. MASSEI III, an undivided 51% interest in that real property located in Humboldt County, State of California with the APN 316-196-04 to ANNA MARIE TOMASINI by right of representation, and an undivided 49% interest in said real property to KIMBERLY D. MASSEI in equal shares by right of representation. All heavy equipment listed on Schedule A shall be distributed in this same manner, and is intended to remain with the land for use by any beneficiary for improvements or use on those parcels of real property situated in Humboldt County, State of California with the APN numbers of 316-196-07, 316-195-02, 316-196-02, and 316-196-04 or as otherwise directed by ANNA MARIE TOMASINI and KIMBERLY D. MASSEI.

Upon the death of ANTHONY J. MASSEI III, the Trust's interest in that real property located in Humboldt County, State of California with the APN number 316-196-02 to ANNA MARIE TOMASINI by right of representation.

Upon the death of MARY MASSEI, her wedding ring shall be distributed to TYLER J. OPP, subject to lapse.

Upon the death the Surviving Settlor, the real property commonly known as 1835 Liberty Court, Fortuna, CA, 95540, shall be distributed in equal shares to TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP, subject to lapse.

Upon the death of the Surviving Spouse, the bank accounts shall be distributed as follows:

U.S. Bank Account, to ANNA MARIE TOMASINI and KIMBERLY D. MASSEI, in equal shares by right of representation;

Wells Fargo Bank account, to TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP, in equal shares by right of representation;

Redwood Capital Bank, 50% to ANNA MARIE TOMASINI and KIMBERLY D. MASSEI, in equal shares by right of representation and 50% to TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP, in equal shares by right of representation.

2. **General Bequests:**

Upon the death of the Surviving Spouse, the remainder of all trust property shall be distributed

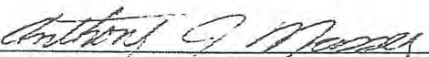
with ANTHONY J. MASSEI III's personal property and effects distributed to ANNA MARIE TOMASINI and KIMBERLY D. MASSEI, in equal shares by right of representation. MARY MASSEI's personal property and effects shall be distributed to TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP, in equal shares by right of representation.

Any remaining Trust property shall be distributed according to the laws of intestacy of the laws of the State of California.

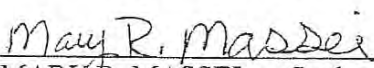
2. Restatement of Trust. In all other respects, the Trust Declaration executed by ANTHONY AND MARY MASSEI as Grantors and Trustees of the Anthony and Mary Massei Living Trust established August 13, 2002, and as subsequently amended on May 15, 2019, is hereby restated and confirmed.

We, as Settlers of the Trust Declaration executed originally on August 13, 2002, certify that we have read this SEVENTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST DATED AUGUST 13, 2002 and that such agreement correctly states the terms and conditions under which the Trust Estate is to be held, managed, and disposed of by the Trustee. We approve this Trust Amendment in all particulars and as Trustees named in the Trust Agreement, as amended, approve and accept the Trust provided for in this Agreement.

DATED this 19th day of February, 2020



ANTHONY J. MASSEI, as Settlor and Trustee



MARY R. MASSEI, as Settlor and Trustee

NOTARY ACKNOWLEDGEMENT ON FOLLOWING PAGES

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Humboldt

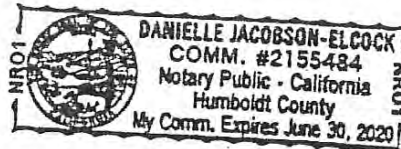
On Feb 19, 2020 before me, Danielle Jacobson-Elcock, Notary Public
(insert name and title of the officer)

personally appeared Anthony J. Massei
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) (is/are) subscribed to the within instrument and acknowledged to me that (he/she/they) executed the same in (his/her/their) authorized capacity(ies), and that by (his/her/their) signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature DJelcock (Seal)



ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Humboldt

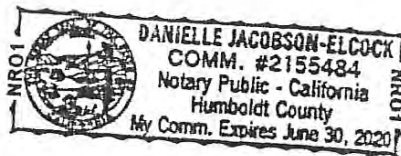
On Feb 19, 2020 before me, Danielle Jacobson-Elcock, Notary Public
(insert name and title of the officer)

personally appeared Mary R. Massei
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature DJelcock (Seal)



SIXTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST
DATED AUGUST 13, 2002

ANTHONY AND MARY MASSEI, as Grantors and Trustees, hereby amend the Anthony and Mary Massei Living Trust established August 13, 2002, as follows:.

1. **PART 7. BENEFICIARIES IS AMENDED IN PART.** The following additional Specific Bequest is added to Part 7, Paragraph B, subparagraph 1. All other Specific Bequests and General Bequests in the Fifth Amendment to the Anthony and Mary Massei Living Trust remain in full force and effect.

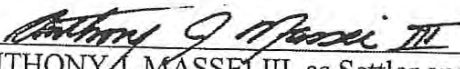
2. Specific Bequests:

Upon the death of both Settlers, the real property commonly known as 1835 Liberty Court, Fortuna, CA, 95540, shall be distributed in equal shares to TYLER J. OPP, CAMERON L. OPP, and CHELSEA K. OPP, subject to lapse.

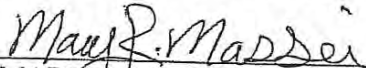
2. **Restatement of Trust.** In all other respects, the Trust Declaration executed by ANTHONY AND MARY MASSEI as Grantors and Trustees of the Anthony and Mary Massei Living Trust established August 13, 2002, and as subsequently amended on May 15, 2019, is hereby restated and confirmed.

We, as Settlers of the Trust Declaration executed originally on August 13, 2002, certify that we have read this SIXTH AMENDMENT TO THE ANTHONY AND MARY MASSEI LIVING TRUST DATED AUGUST 13, 2002 and that such agreement correctly states the terms and conditions under which the Trust Estate is to be held, managed, and disposed of by the Trustee. We approve this Trust Amendment in all particulars and as Trustees named in the Trust Agreement, as amended, approve and accept the Trust provided for in this Agreement.

DATED this 29th day of May, 2019



ANTHONY J. MASSEI III, as Settlor and Trustee



MARY R. MASSEI, as Settlor and Trustee

NOTARY ACKNOWLEDGEMENT ON FOLLOWING PAGES

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Humboldt

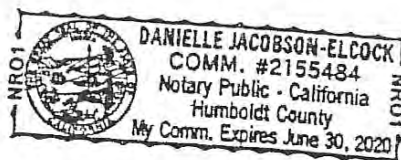
On May 29, 2019 before me, Danielle Jacobson-Elcock, Notary Public
(insert name and title of the officer)

personally appeared Anthony J. Massei III and Mary R. Massei
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is(are)
subscribed to the within instrument and acknowledged to me that he/she/they executed the same in
his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the
person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing
paragraph is true and correct.

WITNESS my hand and official seal.

Signature DJelcock (Seal)



ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Humboldt

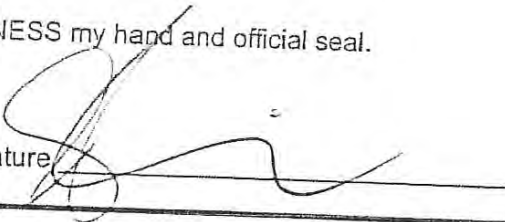
On 3-4-19 before me, R. Judevine, Notary Public
(insert name and title of the officer)

personally appeared Joseph A. Massari & Mary R. Massari who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature



(Seal)



Appendix 5

Supporting Data

Timber Stand Tables

Hohman Forest Inventory

Stand Table

Monday, December 13, 2021

Stand 1				Design	40 BAF	Source	Expand	Current	Cruised
Unit	Massei CFIP			Plots	Varies by Species	Unit	Timber Cruise	Inv Yr	2021
Area	268.00	Maj Sp	DF	SI	123	Stand	1	Tot Age	52
QMDS	12.2	QMD	14.6 ±	Strata		Expand	As Cruised	BH Age	45
Notes	Species sampled different intensities.								

DBH Class	Avg		Tot		Board			Cubic			Carbon Tons	User Tons
	DBH	TPA	BA	Ht	Total	Gross	Net	Total	Gross	Net		
Total	13.8			53.1	2,809m	2,721m	2,586m	1,378m	1,268m	1,144m	35,993.7	
Per Acre		272.1	222.3		10,482	10,152	9,649	5,140	4,730	4,270	134.3	
SE	4%	9%	4%		11%	11%	11%	5%	5%	5%	5%	
95% CI												
CV	0.04	0.09	0.04		0.11	0.11	0.11	0.05	0.05	0.05	0.1	

Douglas Fir		Site Index		123.00	QMD 18 ±			Plots 88		Trees 235		
4	4.2	19.0	1.8	23.6	0	0	0	0	0	0		
6	6.2	28.3	5.9	35.8	0	0	0	0	0	0		
8	8.2	13.5	5.0	40.5	251	218	208	72	51	49	2.5	
10	10.3	18.8	10.9	48.9	671	572	550	187	145	139	5.9	
12	12.2	8.4	6.8	54.4	430	423	407	131	121	116	4.0	
14	14.7	11.6	13.6	60.3	1,110	1,008	968	281	246	236	8.6	
16	16.2	4.7	6.8	62.1	517	513	471	143	138	128	4.5	
18	18.2	6.8	12.3	69.7	1,215	1,201	1,093	283	274	249	8.5	
20	20.2	3.5	7.7	79.1	1,024	1,007	973	216	209	202	5.6	
22	22.1	3.2	8.6	79.1	1,011	980	934	220	209	199	6.6	
24	24.8	2.6	8.6	89.9	1,216	1,212	1,161	239	236	226	6.9	
26	26.2	0.6	2.3	99.7	378	375	354	73	72	67	1.9	
28	28.2	1.0	4.5	80.0	533	525	499	109	106	100	3.8	
30	30.0	0.3	1.4	84.4	175	172	160	35	34	32	1.2	
32	32.2	0.4	2.3	92.0	341	341	331	63	63	61	2.0	
34	34.5	0.3	1.8	101.6	318	318	308	56	55	54	1.7	
36	36.0	0.1	0.9	104.0	161	161	156	28	28	27	0.9	
38	38.0	0.2	1.8	115.3	388	386	375	63	62	60	1.8	
42	42.0	0.0	0.5	112.8	92	92	89	15	15	15	0.5	
44	45.0	0.0	0.5	50.0	27	27	13	6	6	3	0.5	
48	48.0	0.1	0.9	120.7	200	199	193	31	31	30	1.0	
52	52.0	0.0	0.5	125.6	104	104	101	16	16	16	0.5	
54	55.0	0.0	0.5	80.0	55	55	49	10	10	9	0.5	
56	56.0	0.0	0.5	165.0	151	151	147	22	22	21	0.5	
60	60.0	0.0	0.5	134.5	112	112	109	17	17	16	0.5	
Total	17.6			64.2	2,809,254	2,720,751	2,586,006	621,168	580,605	551,001	18,847.7	
Per Acre		123.6	106.8		10,482	10,152	9,649	2,318	2,166	2,056	70.3	
SE	6%	16%	10%		11%	11%	11%	10%	11%	11%	10%	
95% CI												

Other Hardwood		Site Index		100.00	QMD 13.2 ±			Plots 88		Trees 5	
10	10.0	0.8	0.5	62.6							
12	13.0	0.5	0.5	68.7							
14	14.5	0.8	0.9	71.2							
16	17.0	0.3	0.5	74.9							
Total	13.0			68.4							
Per Acre		2.4	2.3								
SE	3%	72%	72%								
95% CI											

Hohman Forest Inventory

Stand Table

Monday, December 13, 2021

Stand 1				Design	40 BAF	Source	Expand	Current	Cruised			
Unit				Plots	Varies by Species	Unit	Timber Cruise	Inv Yr	2021			
Area				Calib	SWO ORGANON	Stand	1	Tot Age	52			
QMDS				Strata		Expand	As Cruised	BH Age	45			
Notes												
Species sampled different intensities.												
DBH Class	Avg DBH	TPA	BA	Tot Ht	Board			Cubic			Carbon Tons	User Tons
					Total	Gross	Net	Total	Gross	Net		
Total	13.8			53.1	2.809m	2.721m	2.586m	1.378m	1.268m	1.144m	35,993.7	
Per Acre		272.1	222.3		10,482	10,152	9,649	5,140	4,730	4,270	134.3	
SE	4%	9%	4%		11%	11%	11%	5%	5%	5%	5%	
95% CI												
CV	0.04	0.09	0.04		0.11	0.11	0.11	0.05	0.05	0.05	0.1	
Pacific Madrone		Site Index		100.00	QMD 27.2 ±			Plots 88		Trees 23		
4	5.0	3.3	0.5	35.0				0	0	0		
8	8.0	1.3	0.5	54.0				13	7	7	0.2	
10	10.0	0.8	0.5	52.2				13	10	10	0.2	
12	13.0	0.5	0.5	59.5				14	13	13	0.2	
22	22.0	0.2	0.5	74.8				17	16	11	0.3	
24	25.0	0.1	0.5	78.6				17	17	12	0.3	
26	27.0	0.2	0.9	80.9				35	34	34	0.7	
28	28.0	0.3	1.4	82.0				53	51	41	1.1	
30	30.0	0.5	2.3	82.3				89	85	71	1.8	
32	32.0	0.3	1.8	79.6				69	66	52	1.5	
34	35.0	0.1	0.5	88.8				19	18	13	0.4	
38	39.0	0.1	0.5	92.0				19	19	19	0.4	
40	40.0	0.1	0.5	92.8				19	19	15	0.4	
Total	27.2			76.7				101,148	94,826	79,396	2,044.8	
Per Acre		7.8	10.5					377	354	296	7.6	
SE	8%	49%	24%					24%	25%	24%	24%	
95% CI												
Red Alder		Site Index		100.00	QMD 13 ±			Plots 88		Trees 21		
8	8.1	7.5	2.7	69.0				78	58	56	1.1	
12	12.5	1.1	0.9	85.1				30	29	26	0.4	
14	15.0	2.2	2.7	92.1				95	93	79	1.4	
16	16.0	0.7	0.9	94.6				32	32	25	0.5	
18	18.0	0.5	0.9	99.1				33	33	26	0.5	
20	20.0	0.6	1.4	103.1				51	51	46	0.8	
Total	12.7			83.7				85,871	79,175	69,338	1,302.7	
Per Acre		12.6	9.5					320	295	259	4.9	
SE	12%	50%	44%					45%	45%	45%	45%	
95% CI												
Sitka Spruce		Site Index		100.00	QMD ±			Plots 88		Trees 0		
Total												
Per Acre												
SE												
95% CI												
Tanoak		Site Index		100.00	QMD 15.6 ±			Plots 88		Trees 205		

Hohman Forest Inventory

Stand Table

Monday, December 13, 2021

Stand 1				Design	40 BAF	Source	Expand	Current	Cruised			
Unit	Massei CFIP			Plots	Varies by Species	Unit	Timber Cruise	Inv Yr	2021			
Area	268.00	Maj Sp	DF	SI	123	Stand	1	Tot Age	52			
QMDS	12.2	QMD	14.6 ±	Strata		Expand	As Cruised	BH Age	45			
Notes	Species sampled different intensities.											
DBH Class	Avg		Tot		Board			Cubic			Carbon	User
	DBH	TPA	BA	Ht	Total	Gross	Net	Total	Gross	Net	Tons	Tons
Total	13.8			53.1	2.809m	2.721m	2.586m	1.378m	1.268m	1.144m	35,993.7	
Per Acre		272.1	222.3		10,482	10,152	9,649	5,140	4,730	4,270	134.3	
SE	4%	9%	4%		11%	11%	11%	5%	5%	5%	5%	
95% CI												
CV	0.04	0.09	0.04		0.11	0.11	0.11	0.05	0.05	0.05	0.1	

Tanoak		Site Index	100.00		QMD	15.6 ±		Plots	88		Trees	205
4	5.0	16.7	2.3	24.2				0	0	0		
6	6.7	28.0	6.8	31.8				0	0	0		
8	8.4	27.2	10.5	36.3				205	123	116	4.6	
10	10.2	15.1	8.6	41.0				181	145	136	4.1	
12	12.3	10.4	8.6	43.5				188	169	148	4.5	
14	14.7	12.3	14.5	48.8				349	327	284	8.3	
16	16.3	3.4	5.0	52.9				129	122	116	3.0	
18	18.1	3.6	6.4	54.0				164	156	126	4.0	
20	20.1	2.7	5.9	58.4				162	155	124	3.9	
22	22.4	2.0	5.5	60.7				155	148	127	3.8	
24	24.8	2.0	6.8	62.7				195	187	155	5.0	
26	26.0	0.5	1.8	67.4				56	54	47	1.4	
28	28.2	0.6	2.7	65.4				81	78	60	2.1	
30	30.0	0.4	1.8	67.6				55	53	44	1.5	
32	32.0	0.2	1.4	74.3				45	43	37	1.1	
34	35.0	0.3	2.3	77.8				78	74	69	2.0	
38	38.0	0.1	0.5	81.1				16	15	11	0.4	
40	40.5	0.1	0.9	83.8				33	31	30	0.8	
42	42.0	0.0	0.5	85.3				17	16	14	0.4	
48	48.0	0.0	0.5	91.1				17	17	15	0.5	
Total	15.2			47.7				569,394	513,160	444,492	13,798.5	
Per Acre		125.7	93.2					2,125	1,915	1,659	51.5	
SE	6%	17%	11%					11%	12%	12%	12%	
95% CI												

Hohman Forest Inventory

Stand Table

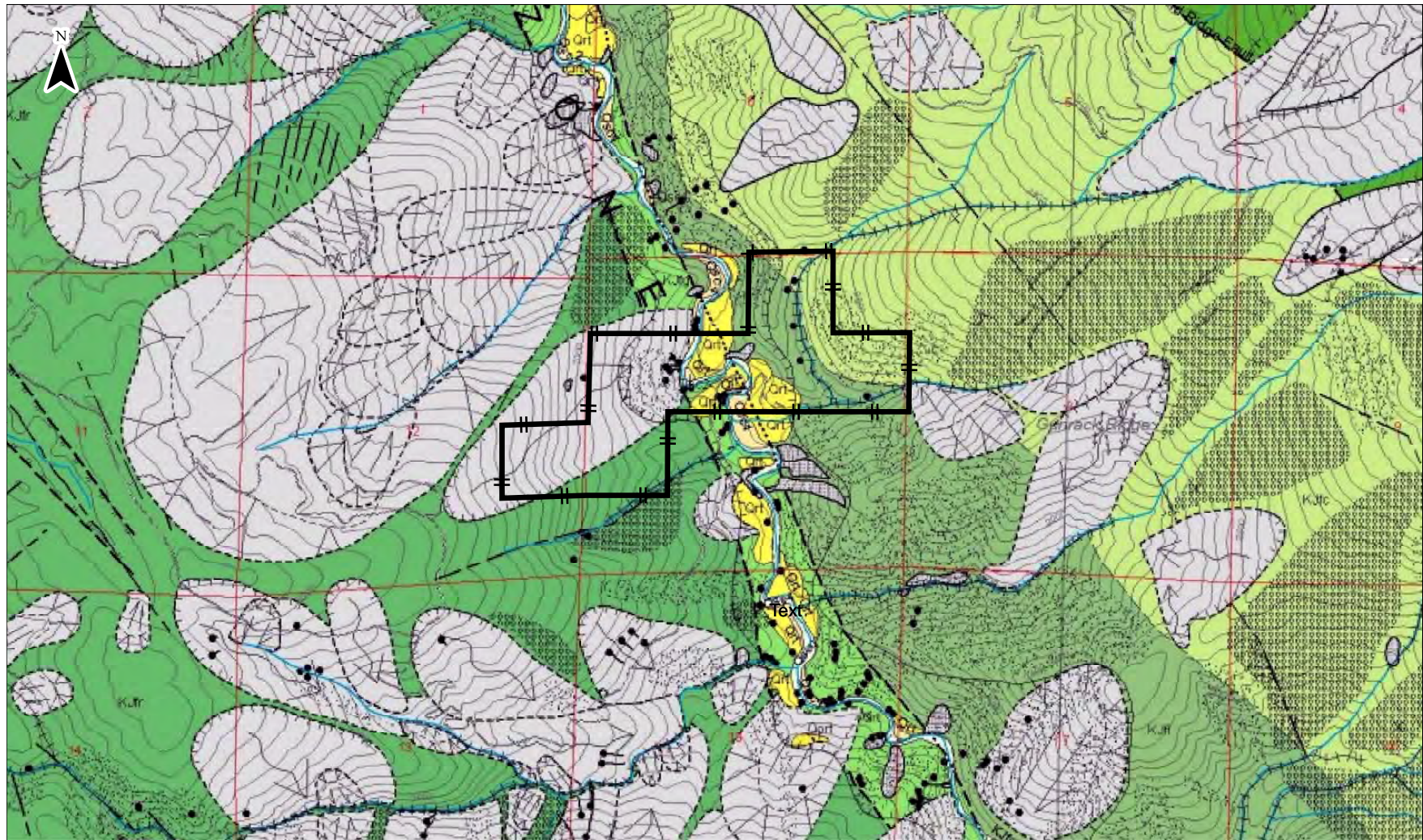
Monday, December 13, 2021

Stand 1				Design	40 BAF	Source	Expand	Current	Cruised			
Unit	Massei CFIP			Plots	Varies by Species	Unit	Timber Cruise	Inv Yr	2021			
Area	268.00	Maj Sp	DF	SI	123	Stand	1	Tot Age	52			
QMDS	12.2	QMD	14.6 ±	Strata		Expand	As Cruised	BH Age	45			
Notes	Species sampled different intensities.											
DBH Class	Avg		Tot		Board			Cubic			Carbon	User
	DBH	TPA	BA	Ht	Total	Gross	Net	Total	Gross	Net	Tons	Tons
Total	13.8			53.1	2,809m	2,721m	2,586m	1,378m	1,268m	1,144m	35,993.7	
Per Acre		272.1	222.3		10,482	10,152	9,649	5,140	4,730	4,270	134.3	
SE	4%	9%	4%		11%	11%	11%	5%	5%	5%	5%	
95% CI												
CV	0.04	0.09	0.04		0.11	0.11	0.11	0.05	0.05	0.05	0.1	


All Species

4	4.7	39.0	4.5	27.6	0	0	0	0	0	0	0.0	
6	6.4	56.2	12.7	33.8	0	0	0	0	0	0	0.0	
8	8.2	49.6	18.6	50.0	251	218	208	367	240	228	0.0	
10	10.1	35.6	20.5	51.2	671	572	550	381	300	285	0.0	
12	12.6	20.9	17.3	62.2	430	423	407	364	331	303	0.0	
14	14.7	26.9	31.8	68.1	1,110	1,008	968	725	666	599	0.0	
16	16.4	9.1	13.2	71.1	517	513	471	305	292	269	0.0	
18	18.1	10.9	19.5	74.3	1,215	1,201	1,093	481	464	401	0.0	
20	20.1	6.8	15.0	80.2	1,024	1,007	973	430	416	373	0.0	
22	22.2	5.4	14.5	71.5	1,011	980	934	391	373	338	0.0	
24	24.9	4.7	15.9	77.1	1,216	1,212	1,161	451	439	393	0.0	
26	26.4	1.3	5.0	82.7	378	375	354	164	159	148	0.0	
28	28.1	2.0	8.6	75.8	533	525	499	243	235	201	0.0	
30	30.0	1.1	5.5	78.1	175	172	160	179	173	147	0.0	
32	32.1	1.0	5.5	81.9	341	341	331	177	172	150	0.0	
34	34.8	0.7	4.5	89.4	318	318	308	152	148	135	0.0	
36	36.0	0.1	0.9	104.0	161	161	156	28	28	27	0.0	
38	38.3	0.3	2.7	96.2	388	386	375	98	96	90	0.0	
40	40.2	0.2	1.4	88.3				52	50	45	0.0	
42	42.0	0.1	0.9	99.0	92	92	89	32	31	29	0.0	
44	45.0	0.0	0.5	50.0	27	27	13	6	6	3	0.0	
48	48.0	0.1	1.4	105.9	200	199	193	49	48	45	0.0	
52	52.0	0.0	0.5	125.6	104	104	101	16	16	16	0.0	
54	55.0	0.0	0.5	80.0	55	55	49	10	10	9	0.0	
56	56.0	0.0	0.5	165.0	151	151	147	22	22	21	0.0	
60	60.0	0.0	0.5	134.5	112	112	109	17	17	16	0.0	
Total	13.8			53.1	2,809,254	2,720,751	2,586,006	1,377,581	1,267,766	1,144,227	35,993.7	
Per Acre		272.1	222.3		10,482	10,152	9,649	5,140	4,730	4,270	134.3	
SE		9%	4%		11%	11%	11%	5%	5%	5%	5%	
CI												

Soils and Geology Map

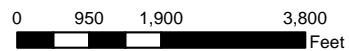


Massei CFIP
 Geologic and Geomorphic
 Features
 APNs: 316-196-004, 316-196-007
 Section 12; T5N; R3E; Section 7; T5N; R4E
 HB&M; Humboldt
 Located on the Maple Creek 7.5' USGS
 Quadrangle

 Parcel Boundary

Geologic and Geomorphic Features Related to Landsliding
 Redwood Creek Watershed, Humboldt County, California
 Plate 1, Sheet 3 of 3 (Southern Portion)

Dale R. Dell'Osso, CEG, James N. Falls, CEG and Dawn J. McGuire, RG
 2002



1 inch = 2,095 feet
 Contour Interval: 40'

Hohman And Associates Forestry Consultants
 Date: 12/21/2021



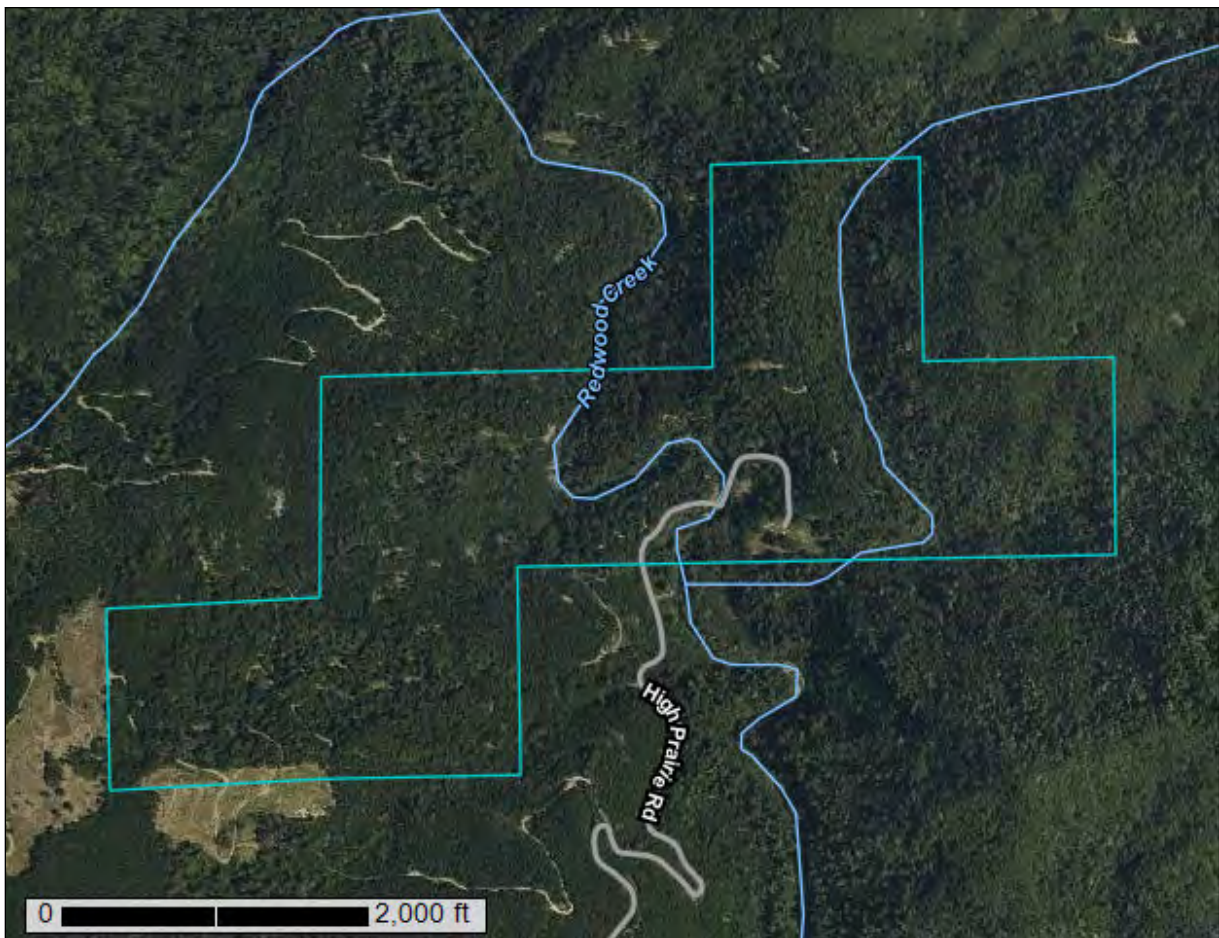
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Humboldt and Del Norte Area, California



November 29, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	8
Soil Map (Massei CFIP).....	9
Legend.....	10
Map Unit Legend (Massei CFIP).....	11
Map Unit Descriptions (Massei CFIP).....	11
Humboldt and Del Norte Area, California.....	13
445—Burroin-Redtop complex, 9 to 30 percent slopes.....	13
446—Bagaul-Burroin-Redtop complex, 15 to 50 percent slopes.....	15
447—Hullygully-Burroin complex, 50 to 75 percent slopes.....	17
452—Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes.....	19
469—Tannin-Burgsblock-Rockyglen complex, 50 to 75 percent slopes.....	23
References	27

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

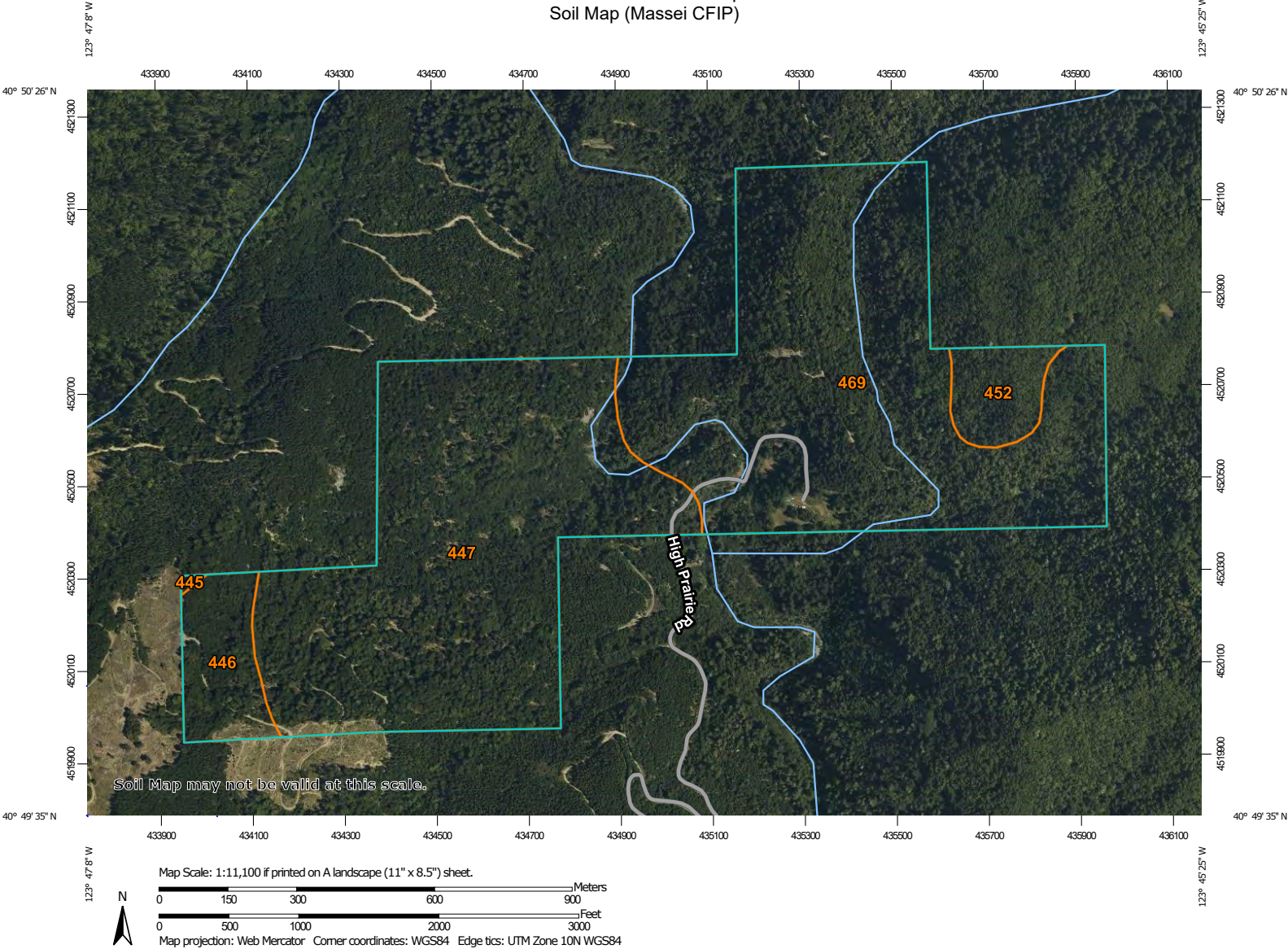
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.





































Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Massei CFIP)



MAP LEGEND

- Area of Interest (AOI)**
-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

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.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Humboldt and Del Norte Area, California
 Survey Area Data: Version 15, Sep 6, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—Jun 21, 2019

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.

Map Unit Legend (Massei CFIP)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
445	Burroin-Redtop complex, 9 to 30 percent slopes	0.3	0.1%
446	Bagaul-Burroin-Redtop complex, 15 to 50 percent slopes	14.9	5.4%
447	Hullygully-Burroin complex, 50 to 75 percent slopes	120.0	43.9%
452	Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes	10.2	3.7%
469	Tannin-Burgsblock-Rockyglen complex, 50 to 75 percent slopes	128.1	46.8%
Totals for Area of Interest		273.5	100.0%

Map Unit Descriptions (Massei CFIP)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

Custom Soil Resource Report

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Humboldt and Del Norte Area, California

445—Burroin-Redtop complex, 9 to 30 percent slopes

Map Unit Setting

National map unit symbol: mg9d
Elevation: 110 to 4,100 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Burroin and similar soils: 50 percent
Redtop and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burroin

Setting

Landform: Mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from schist

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: very gravelly clay loam
B_{t1} - 4 to 7 inches: clay loam
B_{t2} - 7 to 17 inches: gravelly clay loam
B_{t3} - 17 to 33 inches: clay loam
BC_t - 33 to 37 inches: extremely gravelly loam
R - 37 to 47 inches: bedrock

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to moderately high (0.14 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F005XZ021CA - Very Deep Gravelly Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Redtop

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from schist

Typical profile

O_i - 0 to 0 inches: slightly decomposed plant material
A - 0 to 9 inches: clay loam
B_t - 9 to 61 inches: clay

Properties and qualities

Slope: 9 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt
Hydric soil rating: No

Minor Components

Bagaul

Percent of map unit: 8 percent
Landform: Mountains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F005XB108CA - Douglas-fir-tanoak/tanoak-California hazelnut, mountain slopes, phyllite and schist, loam and very channery loam
Hydric soil rating: No

Hullygully

Percent of map unit: 7 percent
Landform: Mountain slopes, landslides, colluvial aprons
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

446—Bagaul-Burroin-Redtop complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: mg9f
Elevation: 150 to 4,560 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Bagaul and similar soils: 35 percent
Burroin and similar soils: 30 percent
Redtop and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bagaul

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from phyllite and schist

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 20 inches: gravelly loam
Bt₁ - 20 to 48 inches: gravelly clay loam
Bt₂ - 48 to 61 inches: gravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Custom Soil Resource Report

Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Burroin

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Colluvium and residuum derived from schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 6 inches: loam
Bt1 - 6 to 12 inches: clay loam
Bt2 - 12 to 24 inches: gravelly clay loam
BCt - 24 to 33 inches: extremely gravelly loam
R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ021CA - Very Deep Gravelly Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Redtop

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Colluvium and residuum derived from schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 10 inches: loam
AB - 10 to 20 inches: clay loam
Bt - 20 to 61 inches: clay loam

Properties and qualities

Slope: 15 to 50 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt
Hydric soil rating: No

Minor Components

Hullygully

Percent of map unit: 10 percent
Landform: Mountain slopes, landslides, colluvial aprons
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Landform: Bluffs
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

447—Hullygully-Burroin complex, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: mg9h
Elevation: 110 to 3,940 feet
Mean annual precipitation: 49 to 80 inches
Mean annual air temperature: 50 to 59 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Hullygully and similar soils: 45 percent

Burroin and similar soils: 40 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hullygully

Setting

Landform: Mountain slopes, landslides, colluvial aprons

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Parent material: Colluvium and/or residuum weathered from schist

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material

A - 2 to 7 inches: very gravelly loam

B_w - 7 to 38 inches: gravelly loam

C₁ - 38 to 61 inches: very gravelly silty clay loam

C₂ - 61 to 71 inches: extremely channery loamy sand

Properties and qualities

Slope: 50 to 75 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

*Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to high
(0.06 to 2.00 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: F005XZ021CA - Very Deep Gravelly Mesic Mountains 40-60"ppt

Hydric soil rating: No

Description of Burroin

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Colluvium and residuum derived from schist

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material

A - 1 to 8 inches: loam

Custom Soil Resource Report

Bt1 - 8 to 18 inches: clay loam
Bt2 - 18 to 26 inches: gravelly clay loam
Bt3 - 26 to 38 inches: clay loam
R - 38 to 48 inches: bedrock

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F005XZ021CA - Very Deep Gravelly Mesic Mountains 40-60"ppt
Hydric soil rating: No

Minor Components

Redtop

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Landform: Bluffs
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

452—Burgsblock-Coolyork-Tannin complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hs7g
Elevation: 200 to 3,280 feet

Custom Soil Resource Report

Mean annual precipitation: 49 to 90 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Burgsblock and similar soils: 35 percent
Coolyork and similar soils: 30 percent
Tannin and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burgsblock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from sandstone and/or colluvium derived from mudstone and/or residuum weathered from sandstone and/or residuum weathered from mudstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: gravelly loam
Bt1 - 4 to 14 inches: very gravelly clay loam
Bt2 - 14 to 51 inches: very gravelly clay loam
Bt3 - 51 to 79 inches: very gravelly clay loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Coolyork

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank

Custom Soil Resource Report

Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from schist

Typical profile

A1 - 0 to 8 inches: loam
A2 - 8 to 14 inches: loam
Bt1 - 14 to 23 inches: clay loam
Bt2 - 23 to 41 inches: clay
Bt3 - 41 to 57 inches: clay
Bt4 - 57 to 63 inches: clay

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C/D
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt
Hydric soil rating: No

Description of Tannin

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 7 inches: loam
ABt - 7 to 13 inches: loam
Bt1 - 13 to 26 inches: sandy clay loam
Bt2 - 26 to 38 inches: sandy clay loam
Bt3 - 38 to 79 inches: sandy clay loam

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: F005XZ022CA - Mesic Mountains >60"ppt

Hydric soil rating: No

Minor Components

Rockyglen

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder, backslope, footslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Concave, convex, linear

Across-slope shape: Linear, concave, convex

Hydric soil rating: No

Wohly

Percent of map unit: 4 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Hydric soil rating: No

Chalkmountain

Percent of map unit: 3 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave, convex, linear

Across-slope shape: Linear, concave, convex

Hydric soil rating: No

Yorknorth

Percent of map unit: 2 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

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Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

469—Tannin-Burgsblock-Rockyglen complex, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: xhw0
Elevation: 200 to 3,280 feet
Mean annual precipitation: 49 to 90 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Tannin and similar soils: 40 percent
Burgsblock and similar soils: 25 percent
Rockyglen and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tannin

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: loam
ABt - 9 to 22 inches: loam
Bt₁ - 22 to 35 inches: sandy clay loam
Bt₂ - 35 to 67 inches: gravelly sandy clay loam
BCt - 67 to 79 inches: gravelly sandy clay loam

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches

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Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Burgsblock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Colluvium derived from sandstone and/or colluvium derived from mudstone and/or residuum weathered from sandstone and/or residuum weathered from mudstone

Typical profile

A - 0 to 7 inches: very gravelly loam
Bt1 - 7 to 24 inches: very gravelly loam
Bt2 - 24 to 39 inches: very gravelly clay loam
Bt3 - 39 to 55 inches: very gravelly clay loam
Bt4 - 55 to 79 inches: very gravelly clay loam

Properties and qualities

Slope: 50 to 75 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Rockyglen

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Center third of mountainflank

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Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from mudstone and/or residuum weathered from sandstone

Typical profile

Oi - 0 to 2 inches: gravelly slightly decomposed plant material
A - 2 to 9 inches: very gravelly loam
AB - 9 to 22 inches: very gravelly loam
Bt1 - 22 to 39 inches: very gravelly loam
Bt2 - 39 to 63 inches: extremely gravelly loam
BC - 63 to 79 inches: extremely gravelly sandy clay loam

Properties and qualities

Slope: 50 to 75 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Minor Components

Wohly

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Coolyork

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Chalkmountain

Percent of map unit: 4 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank

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Down-slope shape: Concave, convex, linear

Across-slope shape: Linear, concave, convex

Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Custom Soil Resource Report

How Carbon Trading Works

How Carbon Trading Works

by Sarah Dowdey

The dramatic imagery of global warming frightens people. Melting glaciers, freak storms and stranded polar bears -- the mascots of climate change -- show how quickly and drastically greenhouse gas emissions (GHG) are changing our planet. Such graphic examples, combined with the rising price of energy, drive people to want to reduce consumption and lower their personal shares of global emissions. But behind the emotional front of climate change lies a developing framework of economic solutions to the problem. Two major market-based options exist, and politicians around the world have largely settled on **carbon trading** over its rival, **carbon tax**, as the chosen method to regulate GHG emissions.

Renewing the Grid Image Gallery

Carbon trading, sometimes called emissions trading, is a market-based tool to limit GHG. The carbon market trades emissions under **cap-and-trade schemes** or with **credits** that pay for or offset GHG reductions.

Cap-and-trade schemes are the most popular way to regulate carbon dioxide (CO₂) and other emissions. The scheme's governing body begins by setting a **cap** on allowable emissions. It then distributes or auctions off **emissions allowances** that total the cap. Member firms that do not have enough allowances to cover their emissions must either make reductions or buy another firm's spare credits. Members with extra allowances can sell them or bank them for future use. Cap-and-trade schemes can be either mandatory or voluntary.

A successful cap-and-trade scheme relies on a strict but feasible cap that decreases emissions over time. If the cap is set too high, an excess of emissions will enter the atmosphere and the scheme will have no effect on the environment. A high cap can also drive down the value of allowances, causing losses in firms that have reduced their emissions and banked credits. If the cap is set too low, allowances are scarce and overpriced. Some cap and trade schemes have safety valves to keep the value of allowances within a certain range. If the price of allowances gets too high, the scheme's governing body will release additional credits to stabilize the price. The price of allowances is usually a function of supply and demand.

Credits are similar to carbon offsets except that they're often used in conjunction with cap-and-trade schemes. Firms that wish to reduce below target may fund preapproved emissions reduction projects at other sites or even in other countries.

Mandatory Carbon Trading

The **Kyoto Protocol**, an international treaty on climate change that came into force in 2005, dominates the mandatory carbon market. It serves as both a model and a warning for every emerging carbon program.

In the early 1990s, nearly every member state of the United Nations resolved to confront global warming and manage its consequences. Although the resulting United Nations Framework Convention on Climate Change (UNFCCC) international treaty recognized a unified resolve to slow global warming, it set only loose goals for lowering emissions. In 1997, the Kyoto amendment strengthened the convention.

Under the Protocol, members of the convention with industrialized or transitional economies (Annex I members) receive specific reduction targets. Member states with developing economies are not expected to meet emissions targets -- an exception that has caused controversy because some nations like China and India produce enormous levels of GHG. The Protocol commits Annex I members to cut their emissions 5 percent below 1990 levels between 2008 and 2012. But because the Protocol does not manage the way in which members reduce their emissions, several mechanisms have arisen. The largest and most famous is the **European Trading Scheme (ETS)**, still in its two-year trial phase.

The ETS is mandatory across the European Union (EU). The multisector cap and trade scheme includes about 12,000 factories and utilities in 25 countries [source: Europa]. Each member state sets its own emissions cap, or **national allocation plan**, based on its Kyoto and national targets. Countries then distribute allowances totaling the cap to individual firms. Even though countries distribute their own allowances, the allowances themselves can be traded across the EU. Independent third parties verify all emissions and reductions.

There has been, however, some question as to whether the ETS has actually helped reduce emissions. Some people even call it a "permit to pollute" because the ETS allows member states to distribute allowances free of charge [source: BBC News]. The ETS also excludes transport, homes and public sector emissions from regulation. And as with all cap-and-trade schemes, governments can essentially exempt influential industries by flooding them with free allowances.

The ETS allows its members to earn credits by funding projects through two other Kyoto mechanisms: the **Clean Development Mechanism (CDM)** and **Joint Implementation (JI)**. CDM allows Annex I industrialized countries to pay for emissions reduction projects in poorer countries that do not have emissions targets. By funding projects, Annex I countries earn certified emissions reduction (CER) credits to add to their own allowances. JI allows Annex I parties to fund projects in other Annex I countries.

The Kyoto Protocol expires in 2012. Lawmakers around the world are rushing to analyze its achievements and shortcomings and negotiate a successor. The United States, Kyoto's most famous holdout, lacks any national mandatory carbon legislation but, ironically, has a booming voluntary carbon market. In the next section we'll learn about the Chicago Climate Exchange

Voluntary Carbon Trading

The Clinton administration helped develop the Kyoto Protocol. But when it came time to ratify the treaty in 2001, the United States chose not to. The government believed that Kyoto was fatally flawed and could cause economic havoc [source: Washington Post]. Not all Americans agreed, however. In 2005, 132 of the nation's mayors pledged to meet Kyoto-like emissions targets. Many cited the economic consequences of dwindling water supplies and rising oceans.

Some cities and companies took action even earlier. In 2003, Dr. Richard Sandor founded the **Chicago Climate Exchange (CCX)**, a voluntary carbon market. Members of the CCX willingly join the pooled commodity but commit to legally binding reductions. Since the CCX is voluntary, all sorts of organizations have joined: companies, universities and even cities. Michigan State, Ford, DuPont and the cities of Chicago and Portland, Ore., are among its members.

Like other cap-and-trade programs, the CCX sets a limit on total allowable emissions and issues allowances that equal the cap. Member firms then trade the allowances -- **carbon financial instruments (CFIs)** -- amongst themselves. Each CFI equals 100 metric tons of CO2 equivalent. Members that meet their targets can sell or bank their allowances. Firms can also generate CFIs, specifically exchange offsets, by funding approved GHG reduction projects outside of the pool. In 2006, CCX traded a total of 10.2 million tons of CO2 [Climate Exchange, Plc]. Because CCX is owned by an independent, publicly traded company, it's free from the federal regulations that can bog down mandatory carbon trading schemes.

Like Kyoto or the ETS, the CCX has two phases of implementation. In the first phase, which ran from 2003 to 2006, members committed to reducing emissions by only 1 percent per year below their baselines. In the second phase, which will run from 2007 to 2010, members will reduce emissions 6 percent below their baselines.

Although the CCX's high cap has drawn criticism, the pooled commodity's true benefit may end up being the market-based practice it provides its members. Cities across the country have already created municipal carbon schemes. Some states are fashioning mandatory carbon markets for utilities. The United States is very likely headed toward some form of national carbon legislation. When such a time comes, members of the CCX will have the valuable advantage of experience.

Carbon trading and other market-based schemes add a needed dose of economic practicality to the emotionally charged issue of global warming. They help change the way we think about emissions, energy efficiency and the environment.

To learn more about carbon trading, carbon offsets and global warming, check out the links on the next page.

Lots More Information

Related HowStuffWorks Links

- [How Carbon Offsets Work](#)
- [How Carbon Footprints Work](#)
- [How Global Warming Works](#)
- [How Ozone Pollution Works](#)
- [How Acid Rain Works](#)
- [Is global warming destroying Mount Everest?](#)
- [How the United Nations Works](#)
- [Are climate skeptics right?](#)

More Great Links

- [A Carbon Cartoon Series from NPR and National Geographic](#)
- [The Chicago Climate Exchange](#)

Sources

- "Cap and Trade." Environmental Protection Agency. <http://www.epa.gov/airmarkets/cap-trade/index.html>
- Chicago Climate Exchange. <http://www.chicagoclimatex.com/index.jsf>
- "Cleaning Up." The Economist. May 31, 2007. http://www.economist.com/specialreports/displaystory.cfm?story_id=9217992
- "Emission Trading Scheme (EU ETS)." Europa. <http://ec.europa.eu/environment/climat/emission.htm>
- "Energy/carbon taxes." U.S. Environmental Protection Agency. <http://yosemite.epa.gov/EE/Epalib/incent.nsf/c484aff385a753cd85256c2c0057ce35/0483a144da8fa434852564f7004f3e68!OpenDocument>
- "Joint Implementation (JI)." UNFCCC. http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php
- "Kyoto Protocol." United Nations Framework Convention on Climate Change. http://unfccc.int/kyoto_protocol/items/2830.php
- "Lightly carbonated." The Economist. August 2, 2007. http://www.economist.com/business/displaystory.cfm?story_id=9587705
- O'Halloran, Julian. "Carbon trade scheme 'is failing.'" BBC News. June 5, 2007. http://news.bbc.co.uk/2/hi/programmes/file_on_4/6720119.stm
- "Q&A: The Carbon Trade." BBC News. April 20, 2006. <http://news.bbc.co.uk/2/hi/business/4919848.stm>
- "Q&A: The Kyoto Protocol." BBC News. February 16, 2005. <http://news.bbc.co.uk/2/hi/science/nature/4269921.stm>
- Sanders, Eli "Rebuffing Bush, 132 Mayors Embrace Kyoto Rules." The New York Times. May 14, 2005. <http://www.nytimes.com/2005/05/14/national/14kyoto.html?ex=1273723200&en=c02e1cce1ca43706&ei=5088>

- "The Senate Proposals." The Washington Post.<http://www.washingtonpost.com/wp-dyn/content/graphic/2007/07/14/GR2007071401459.html>.
- Tietenberg, Tom. "European Union Emissions Trading Scheme (EU ETS). The Encyclopedia of Earth. January 30, 2007. [http://www.eoearth.org/article/European_Union_Emissions_Trading_Scheme_\(EU_ETS\)](http://www.eoearth.org/article/European_Union_Emissions_Trading_Scheme_(EU_ETS))
- Vedantam, Shankar. "Kyoto Treaty Takes Effect Today." The Washington Post. February 16, 2005. <http://www.washingtonpost.com/wp-dyn/articles/A27318-2005Feb15.html>

Project Carbon Accounting: Harvesting Emissions

This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 9- 14 on this worksheet.

Harvest Periods	Falling Operations	Production per Day	Emissions Associated with Yarders and Loaders			Emissions Associated with Tractors and Skidders			Emissions Associated with Helicopters			Landing Saws	Trucking Emissions	
			Step 10. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Yarders and Loaders CO2 equivalent/mbf (metric tonnes)	Computed. Yarders and Loaders CO2 equivalent per Acre Harvested (metric tonnes)	Step 11. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Tractor and skidder CO2 equivalent/mbf (metric tonnes)	Computed. Tractors and Skidders CO2 equivalent per Acre Harvested (metric tonnes)	Step 12. Enter number of pieces of equipment in use per day for each harvest entry	Computed. Helicopter CO2 equivalent/mbf (metric tonnes)	Computed. Helicopters CO2 equivalent per Acre Harvested (metric tonnes)		Computed. Landing Saws CO2 equivalent per Acre Harvested (metric tonnes)	Step 13. Enter Estimated Load Average: Mbf/Truck
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	Assumption: ((.25 gallons gasoline per MBF harvested * 5.33 (pounds carbon per gallon))/2205 (conversion to metric tonnes)) mbf per acre harvested	MBF (all species) Yarded Delivered to Landing	Assumption:(((35 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)) * 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((55 gallons diesel per day per piece of equipment * 6.12 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)) * 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((200 gallons jet fuel per day per piece of equipment * 5 pounds carbon / gallon)/2205 to convert to metric tonnes carbon)) * 3.67 to convert to metric tonnes CO2 equivalent)/Production per Day			Assumption: (((.16 gallons gasoline per MBF * 5.33 (pounds carbon per gallon))/2205 (conversion to metric tonnes)) * 3.67 to convert to metric tonnes CO2 equivalent)/mbf per acre harvested. Applies to all species whether harvested or not.	Assumption: Round Trip Hours/Load average (from below, to compute the mbf/hour) /((6 gallons diesel/hour * 6.12 pounds carbon/gallon)/2205 (conversion to metric tonnes carbon)) * 3.67 (conversion to metric tonnes carbon dioxide equivalent)	
	Computed. Metric Tonnes CO2 equivalent per mbf harvested Applies to all species whether harvested or treated	Step 9. Enter the estimated volume delivered to the landing in a day.											Steps 13 and 14 below	
0	(0.00)	15	1	-0.02	0.00	1	-0.04	0.00	0	0.00	0.00	0.00		0
20	(0.01)	15	1	-0.02	-0.11	1	-0.04	-0.18	0	0.00	0.00	-0.01	Step 13. Enter Estimated Load Average: Mbf/Truck	4.8
40	(0.01)	15	1	-0.02	-0.11	1	-0.04	-0.18	0	0.00	0.00	-0.01		-0.082397959
60	(0.01)	15	1	-0.02	-0.11	1	-0.04	-0.18	0	0.00	0.00	-0.01	Step 14. Enter Estimated Round Trip Haul in Hours	5
80	(0.01)	15	1	-0.02	-0.11	1	-0.04	-0.18	0	0.00	0.00	-0.01		-0.082397959
100	(0.01)	15	1	-0.02	-0.11	1	-0.04	-0.18	0	0.00	0.00	-0.01		-0.082397959
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00		0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00		0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00		0
0	-	0	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00		0
Sum Emissions	-0.07				-0.56			-0.89			0.00	-0.04		-0.41

Breakout into multiple production sites and by harvest year

Project Carbon Accounting: Harvested Wood Products and Processing Emissions

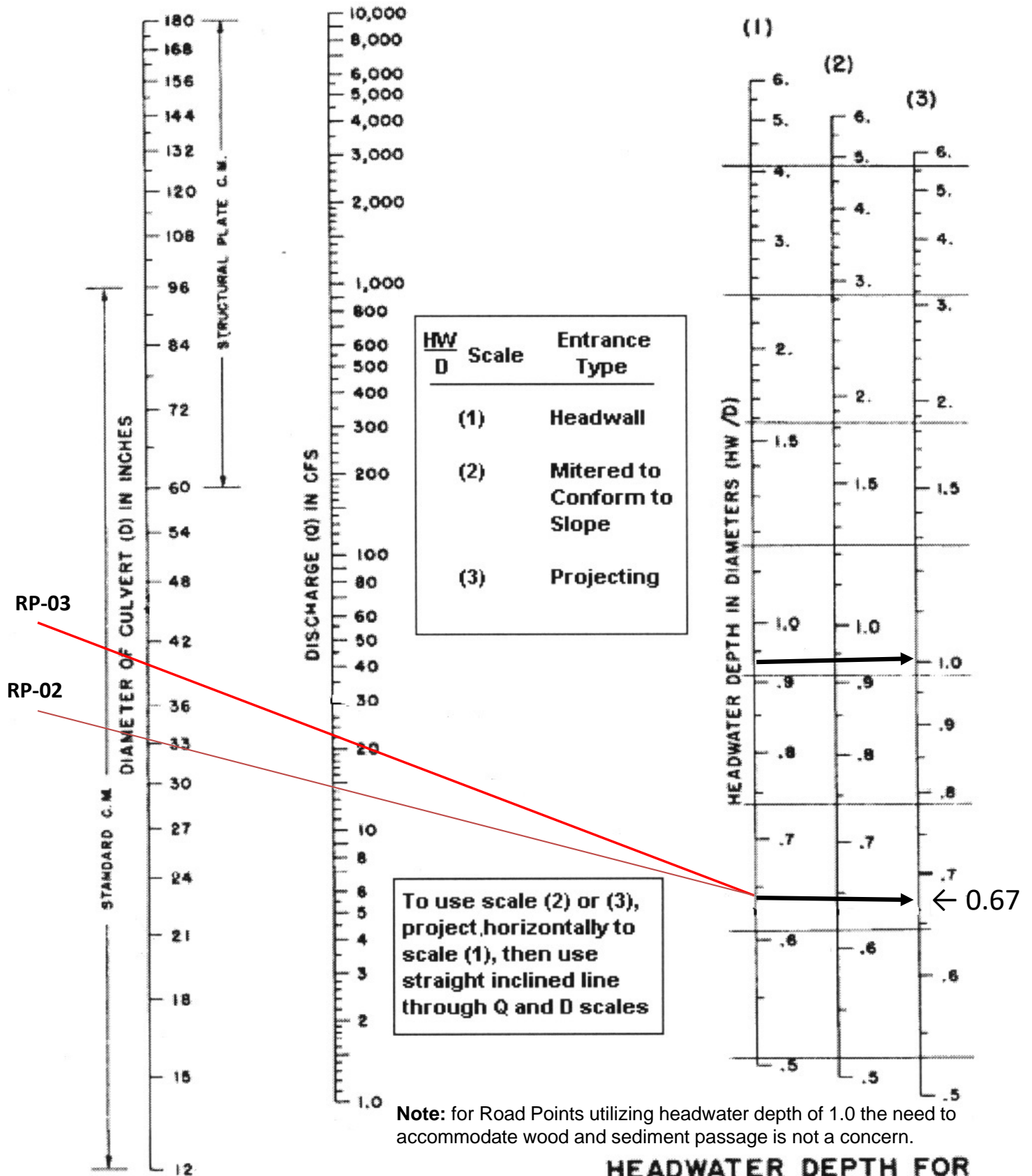
This worksheet addresses the non-biological emissions associated with the project area's harvesting activities. Complete the input for Steps 15- 16 on this worksheet.

Harvest Periods	Quantity of Forest Carbon Delivered to Mills				Non-Biological Emissions Associated with Mills	Quantity of Forest Carbon Remaining Immediately After Milling (Mill Efficiency)		Long-Term Sequestration in Wood Products	
	Conifer Percentage Delivered to Mills	Hardwood Percentage Delivered to Mills	Conifer CO2e Delivered to Mills / Acre	Hardwood CO2 equivalent Delivered to Mills / Acre	Assumption. 20 kw/hour (mill energy use) / (40mbf lumber processed/hour) * (.05 metric tonnes/kw hour) * mbf processed	Computed. Remaining CO2 equivalent after Milling Efficiency for Conifers	Computed. Remaining CO2 equivalent after Milling Efficiency for Hardwoods	Computed. CO2 Equivalent Tonnes in Conifer Wood Products in Use-100 Year Weighted Average / Acre and Landfill	Computed. CO2 Equivalent Tonnes in Hardwood Wood Products in Use-100 Year Weighted Average / Acre
from Inventory, Growth, and Harvest Page (Time of Harvest as years from project approval)	Step 15. Insert the percentage of conifer trees harvested that are subsequently delivered to sawmills	Step 16. Insert the percentage of hardwoods harvested or treated that are subsequently delivered to sawmills	Computed: The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	Computed: The merchantable portion determined by the conversion factors (Sampson, 2002) on the Inventory, Growth, and Harvest worksheet. This is multiplied by the percent delivered to mills to reflect the carbon delivered to mills.	Calculated. The CO2e associated with processing the logs at the mill	The difference between carbon delivered to mills and carbon remaining after milling is assumed to be emitted immediately		Estimate. The weighted average carbon remaining in use at year 100 is 46.3%	Estimate. The weighted average carbon remaining in use at year 100 is 23.0%
						The efficiency rating from mills in California is 0.67 (DOE 1605b) for conifers	The efficiency rating from mills in California is .5 (DOE 1605b) for hardwoods	Estimate. The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.	Estimate. The carbon in landfills at year 100 is 29.8% of the initial carbon produced in wood products.
0	95%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	95%	0%	18.77	0.00	-0.12	12.57	0.00	9.57	0.00
40	95%	0%	18.77	0.00	-0.12	12.57	0.00	9.57	0.00
60	95%	0%	18.77	0.00	-0.12	12.57	0.00	9.57	0.00
80	95%	0%	18.77	0.00	-0.12	12.57	0.00	9.57	0.00
100	95%	0%	18.77	0.00	-0.12	12.57	0.00	9.57	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0%	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum of emissions associate with processing of lumber					-0.59	Sum of CO2 equivalent in wood products		47.84	0.00

Summary			Years until Carbon Stocks are Recouped from Initial Harvest (Includes Carbon in Live Trees, Harvested Wood Products, and Landfill)
	Beginning Stocks	Ending Stocks	
Emissions Source/Sink/Reservoir	Metric Tonnes CO2 Equivalent Per Acre Basis		3 Years
Live Trees (Conifers and Hardwoods)	120.19	490.43	
Wood Products		47.84	
Site Preparation Emissions		0.00	
Non-biological emissions associated with harvesting		-1.98	
Non-biological emissions associated with milling		-0.59	
Sum of Net Emissions/Sequestration over Identified Harvest Cycles (CO2 metric tonnes)		415.51	
Project Summary			
Project Acres	Step 17- Insert the acres that are part of the harvest area.	268	
Total Project Sequestration over defined Harvesting Periods (CO2 metric tonnes)		111,358	

Culvert Sizing

Massei CFIP



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

Determination of 100-Year Flood Flow

Location: Precison Cannabis 2.0 Road Assessment

(Enter data in fields with red-colored headings. Other data fields will be calculated automatically.)

Magnitude and Frequency Method for 100-year flood flow (A > 100 acres)

No.	Crossing	Area (acres) A	Basin maximum elevation (ft)*	Crossing elevation (ft)*	Area (mi ²) A	Avg. Annual Precipitation (in/yr) P	Elevation Index (mean basin)	100-yr flood flow Q ₁₀₀ (cfs)			
								North Coast ⁽¹⁾ (NC)	Sierra ⁽²⁾ (S)	North-east ⁽³⁾ (NE)	Central Coast ⁽⁴⁾ (CC)
1	RP02	12	2880	2480	0.019	65	2680	15.8	15.7	26.2	24.7
2	RP03	20	2880	2160	0.031	65	2520	24.6	24.9	38.1	37.9
3											
4											
5											
6											
7											
8											

**To estimate discharges for bridges, use elevations along watercourse at 85 percent and 10 percent of water-course length from crossing to drainage divide, respectively, instead of using maximum and crossing elevations.*

See below for M&F equations

Rational Method for 100-year flood flow (A < 200 acres)

No.	Crossing	T _c = 60((11.9 X L ³)/H) ^{0.385}			Q ₁₀₀ = CIA				Magnitude & Frequency Q ₁₀₀ equations
		Channel length (to top of basin) (mi) L	Elevation difference (ft) H	Concentration time (min) T _c	Runoff coefficient C	100-year Return-Period Precipitation (in/hr) I*	Area (acres) A	100-yr flood flow (cfs) Q ₁₀₀	
1	RP02	0.13	400	2	0.3	3.94	12	14.2	NC (1) Q ₁₀₀ = 48.5(A) ^{0.866} (P) ^{0.556} S (2) Q ₁₀₀ = 20.6 (A) ^{0.614} (P) ^{1.24} (H) ^{-0.200} NE (3) Q ₁₀₀ = 0.713 (A) ^{0.729} (P) ^{1.56} CC (4) Q ₁₀₀ = 11.0 (A) ^{0.84} (P) ^{0.994}
2	RP03	0.26	720	3	0.3	3.94	20	23.6	
3									
4									
5									
6									
7									
8									

**Use 100-yr precipitation of duration similar to T_c or for 10 min, whichever is larger; convert to in/hr for input as "I"*

Initial Biological Scoping Report

Initial Biological Scoping Report
Anthony and Mary Massei Living Trust CFIP
APNs: 316-196-004, 316-196-007, 316-195-002

Prepared by
Corrina Kamoroff
12/13/2021

For
Hohman and Associates Forestry Consultants
Hydesville, CA

Signature:



Date: 12/13/2021

Setting

The Anthony and Mary Massei Living Trust CFIP project is located in Section 12, Township 5 North, Range 3 East, and Section 7, Township 5 North, Range 4 East; HB&M; Humboldt County, on the Maple Creek USGS 7.5' quadrangle. The project area is located southeast of the town of Blue Lake, CA, off of High Prairie Road. The biogeographic region can be described using a three-tiered hierarchy of province, region and sub-region. This site lies within the California Floristic Province, Northwestern California region, and North Coast sub-region. Redwood Creek bisects the parcels. The elevation ranges from approximately 1,200 to 2,600 feet. Slopes on the property are moderate to steep. The vegetation is mapped by the USFS CALVEG as primarily Douglas fir (*Pseudotsuga menziesii*), Oregon White Oak (*Quercus garryana*), Canyon Live Oak (*Quercus chrysolepis*) and Tanoak (*Notholithocarpus densiflorus*). The parcel totals approximately 273 acres.

Methods

The Biological Resource Assessment for this project was conducted by Corrina Kamoroff. Corrina Kamoroff is a Wildlife Biologist for Hohman and Associates Forestry Consultants. Corrina received her B.S. in Evolution, Ecology and Biodiversity from University of California, Davis. Corrina is currently pursuing her M.S. in Natural Resources with a concentration in Wildlife from Humboldt State University. Corrina has over 8 years of wildlife experience in Northern California, including over two years conducting biological surveys and evaluating potential impacts in fulfillment of CEQA requirements.

The Biological Scoping report considers the potentially occurring species and communities that could be affected by the project based on available spatial data and habitat requirements. A site visit should be conducted to further evaluate potential habitat value to protected, endangered, threatened, rare, and sensitive species and finalize survey recommendations.

A list of special-status animal species to consider was downloaded from CNDDDB BIOS for the Maple Creek 9-quad area. Animals on the CNDDDB list were primarily included based on state or federal listing status or CDFW designation. Additional species were added to the CNDDDB list for consideration based on potential habitat or high levels of conservation concern. Habitats within the 1.3-mile Biological Assessment Area (BAA) for potentially occurring species were evaluated based on CALVEG vegetation mapping and aerial photos. Attachment A shows the vegetation map of the CALVEG (Classification and Assessment with LANDSAT of Visible Ecological Groupings) dominant vegetation alliances for the parcel and surrounding area (U.S. Forest Service 2000). Attachment B shows nearby occurrences of special status taxa as mapped in CNDDDB. A Spotted Owl Database Check Map can be found in Attachment C. Rank Definitions are provided in Attachment D. Additional surveys have been recommended to fully address potential biological impacts (See Table 6).

Results: Potentially Occurring Special-Status Animal Species for Maple Creek 9-Quad Area

Table 1. Birds

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
<i>Accipiter cooperii</i>	Cooper's hawk	None	None	WL	G5	S4	Yes
<i>Accipiter gentilis</i>	northern goshawk	None	None	SSC	G5	S3	Yes
<i>Accipiter striatus</i>	sharp-shinned hawk	None	None	WL	G5	S4	Yes
<i>Adrea herodias</i>	great blue heron	None	None	SSC	G5	S4	Yes
<i>Ammodramus savannarum</i>	grasshopper sparrow	None	None	SSC	G5	S3	Yes
<i>Aquila chrysaetos</i>	golden eagle	None	None	FP ; WL	G5	S3	Yes
<i>Brachyramphus marmoratus</i>	marbled murrelet	Threatened	Endangered	-	G3	S2	Yes
<i>Charadrius montanus</i>	mountain plover	None	None	SSC	G3	S2S3	No
<i>Empidonax traillii</i>	willow flycatcher	None	Endangered	-	G5	S1S2	Yes
<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	G4T4	S3S4	Yes
<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	Endangered	FP	G5	S3	Yes
<i>Icteria virens</i>	yellow-breasted chat	None	None	SSC	G5	S3	Yes
<i>Pandion haliaetus</i>	osprey	None	None	WL	G5	S4	Yes
<i>Riparia riparia</i>	bank swallow	None	Threatened	-	G5	S2	Yes
<i>Strix occidentalis caurina</i>	northern spotted owl	Threatened	Threatened	SSC	G3G4T 2T3	S2	Yes

Table 2. Mammals

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
<i>Aplodontia rufa humboldtiana</i>	Humboldt Mountain Beaver	None	None	-	G5TNR	SNR	Yes
<i>Arborimus albipes</i>	White-footed vole	None	None	-	G3G4	S2	Yes
<i>Arborimus pomo</i>	Sonoma tree vole	None	None	SSC	G3	S3	Yes
<i>Corynorhinus townsendii</i>	Townsend’s big-eared bat	None	None	SSC	G4	S2	Yes
<i>Erethizon dorsatum</i>	North American porcupine	None	None	-	G5	S3	Yes
<i>Martes caurina humboldtensis</i>	Humboldt Marten	Threatened	Endangered	SSC	G4G5T1	S1	Unlikely
<i>Myotis evotis</i>	Long-eared myotis	None	None	-	G5	S3?	Yes
<i>Myotis thsanodes</i>	Fringed myotis	None	None	-	G4	S3	Yes
<i>Pekania pennanti</i>	fisher	None	None	SSC	G5	S2S3	Yes

Table 3. Amphibians and Reptiles

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
<i>Ascaphus truei</i>	Pacific tailed frog	None	None	SSC	G4	S3S4	Yes
<i>Emys marmorata</i>	Western pond turtle	None	None	SSC	G3G4	S3	Yes
<i>Plethodon elongatus</i>	Del Norte salamander	None	None	WL	G4	S3	Yes
<i>Rana aurora</i>	Northern red-legged frog	None	None	SSC	G4	S3	Yes
<i>Rana boylei</i> *	foothill yellow-legged frog	None	None	SSC	G3	S3	Yes
<i>Rhyacotriton variegatus</i>	Southern torrent salamander	None	None	SSC	G3G4	S2S3	Yes

* CESA listing of the Foothill yellow-legged frog varies by clade as follows: Southwest/South Coast, West/Central Coast, and East/Southern Sierra clades are endangered; northeast/Northern Sierra and Feather River clades are threatened; listing of the Northwest/North Coast clade is not warranted.

Table 4. Fish

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
<i>Lampetra richardsoni</i>	Western brook lamprey	None	None	SSC	G4G5	S3S4	Yes
<i>Oncorhynchus mykiss irideus</i> <i>pop. 1</i>	Steelhead-Klamath Mountains Province DPS	None	None	SSC	G5T3Q	S2	Yes
<i>Oncorhynchus clarkii clarkii</i>	coast cutthroat trout	None	None	SSC	G5T4	S3	Yes
<i>Oncorhynchus kisutch pop. 2</i>	coho salmon - southern Oregon / northern California ESU	Threatened	Threatened	-	G5T2Q	S2	Yes
<i>Oncorhynchus mykiss irideus</i> <i>pop. 16</i>	steelhead - northern California DPS	Threatened	None	-	G5T2T 3Q	S2S3	Yes
<i>Oncorhynchus mykiss irideus</i> <i>pop. 36</i>	summer-run steelhead trout	None	Candidate Endangered	SSC	G5T4Q	S2	Yes
<i>Oncorhynchus tshawytscha</i> <i>pop. 17</i>	chinook salmon - California coastal ESU	Threatened	None	-	G5T3Q	S1S2	Yes
<i>Oncorhynchus tshawytscha</i> <i>pop. 30</i>	Chinook salmon-upper Klamath and Trinity Rivers ESU	Candidate	Candidate Endangered	SSC	G5T3Q	S1S2	Yes
<i>Thaleichthys pacificus</i>	eulachon	Threatened	None	-	G5	S2	Yes

Table 5. Invertebrates

Scientific Name	Common Name	FESA	CESA	CDFW	GRank	SRank	Potential in BAA
<i>Bombus caliginosus</i>	obscure bumble bee	None	None	-	G4?	S1S2	Yes
<i>Bombus occidentalis</i>	western bumble bee	None	None	-	G2G3	S1	Yes

Potential Special-Status Animal Species Details

Birds

1. Cooper's hawk (*Accipiter cooperii*)

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4

Family: Accipitridae

Habitat/Life-history Requirements: Cooper's hawks are common year-round residents in wooded areas of California, and they can be found in urban and suburban areas as well (Cornell Lab). The raptor commonly nests in riparian and lowland habitats throughout much of Humboldt County (Hunter et al. 2005). The medium-sized hawk builds nests made of piles of sticks over two feet wide in tall trees, typically 25-50 feet off the ground (Cornell Lab). Nesting trees include pines, oaks and Douglas firs (Cornell Lab). Dense stands are typically used for nesting and patchy open areas are commonly used for hunting (Zeiner et al. 1988).

Potential Impact: The BAA could provide habitat for the Cooper's hawk. The raptor is on the CDFW Watch List and Protected under the Migratory Bird Treaty Act (MBTA). Raptor scans are recommended prior to any tree removal.

2. Northern goshawk (*Accipiter gentilis*)

Special Status: CDFW Species of Special Concern; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S3

Family: Accipitridae

Habitat/Life-history Requirements: The northern goshawk inhabits mature coniferous and mixed-coniferous forests that provide suitable nesting structures and adequate prey for this large hawk (Shuford and Gardali 2008). The northern goshawk builds nests that are 3-4 feet wide (Cornell Lab) in stands of large trees with high canopy closure and an open understory (Shuford and Gardali 2008). Northern goshawks are known to breed in the Klamath and Inner North Coast Ranges (Hunter et al. 2005). They have also been spotted in the southwestern area of the county (Hunter et al. 2005). The northern goshawk is sensitive to disturbance, and aggressive toward intruders near their nest. They typically nest in wild forested areas, away from human-caused disturbances (Cornell Lab).

Potential Impact: The BAA could provide habitat for the northern goshawk. The raptor is on the CDFW Species of Special Concern and protected under the Migratory Bird Treaty Act (MBTA). Raptor scans are recommended prior to any tree removal.

3. Sharp-shinned hawk (*Accipiter striatus*)

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4

Family: Accipitridae

Habitat/Life-history Requirements: The sharp-shinned hawk is an uncommon breeder in California, and is more commonly a migrant or winter resident (Zeiner et al. 1988). The small hawk is typically found in mature mixed forests. Breeding habitats include mixed coniferous forest and

riparian habitat, especially areas characterized by ponderosa pine, Jeffrey pine, or black oak (Zeiner et al. 1988). Nests are typically placed high in dense stands of trees, and they are less conspicuous than the nests of most other raptors (Zeiner et al. 1988).

Potential Impact: The area could provide habitat for the sharp-shinned hawk. The raptor is on the CDFW Watch List and Protected under the Migratory Bird Treaty Act (MBTA). Raptor scans are recommended prior to any tree removal.

4. Great blue heron (*Ardea herodias*)

Special Status: California Department of Forestry and Fire Protection classified as *Sensitive* to timber operations; protected under the California Forest Practice Rules; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4.

Family: Ardeidae

Habitat/Life-history Requirements: Great blue herons are fairly common in estuaries and emergent wetlands throughout California, and are occasionally observed in a variety of other habitats as well (Zeiner et al. 1988). These waterbirds are highly sensitive to disturbance of nesting colonies, which may cause desertion (Zeiner et al. 1988). Great blue herons typically nest in conspicuous colonies known as rookeries, but may build solitary nests as well (Zeiner et al. 1988) Although they prefer to nest in large trees adjacent to wetland feeding areas, nests may be up to 10 miles from feeding grounds (Zeiner et al. 1988). In Humboldt County, breeding areas are typically limited to the coastal slope and waterways in more inland areas (Hunter et al. 2005).

Potential Impact: Potential habitat occurs in the BAA along Redwood Creek. The property is unlikely breeding habitat for water birds. Operations are not expected to impact the great blue heron.

5. Grasshopper sparrow (*Ammodramus savannarum*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G5, S3

Family: Emberizidae

Habitat/Life-history Requirements: The grasshopper sparrow is an uncommon and local, summer resident and breeder in foothills west of the Sierra-Nevada crest from Mendocino and Trinity counties south to San Diego County. It occurs in dry, dense grasslands with especially those with high diversity and some shrubs (Zeiner et al. 1988). Searches for food on ground and low foliage within relatively dense grasslands; sometimes scratches in litter. Builds nest of grasses and forbs in a slight depression in ground (Zeiner et al. 1988).

Potential Impact/Mitigation: Potential habitat exists within the project and the BAA. There is little to no habitat for the Grasshopper sparrow on the parcels. The project is not expected to impact the species.

6. Golden eagle (*Aquila chrysaetos*)

Special Status: CDFW Fully Protected and Watch List; Protected under Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3

Family: Accipitridae

Habitat/Life-history Requirements: The golden eagle is an uncommon migrant and year-round resident (Zeiner et al. 1988). The golden eagle typically utilizes open habitats away from human environments (Sibley 2003). Small mammals are the primary prey for the golden eagle (Sibley 2003). One of the largest raptors in North America, the golden eagle builds massive nests, about 6

feet across (Cornell Lab). Nests are typically located on cliffs, but may also be found on trees, man-made structures, or on the ground (Cornell Lab).

Potential Impact: No large open areas for foraging occur within the BAA, and it is not likely breeding habitat. The nearest occurrence mapped in CNDDDB over 10 miles from the project. The project is not expected to impact the Golden Eagle.

7. Marbled murrelet (*Brachyramphus marmoratus*)

Special Status: Federally Threatened; California Endangered; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G3, S2

Family: Alcidae

Habitat/Life History Requirements: The federally Threatened and state Endangered marbled murrelet nests in large trees in mature coastal forests along the Pacific coast, especially old-growth redwood and Douglas-fir forests (Zeiner et al. 1988). Fish are the primary source of food for the unique alcid, which travels daily between nesting areas in mature forests and feeding grounds offshore during the breeding season (Cornell Lab). U.S. Fish and Wildlife Service has designated areas of mature coastal forest in Northern California as critical habitat based on the presence of individual trees with potential nesting platforms, and forested areas within 0.5 miles of individual trees with potential nesting platforms that had a canopy height of at least one-half the average maximum potential height for trees given local growing conditions (USFWS 2011). The presence of trees with potential nesting platforms (flat areas at least 4 inches wide, 33 feet high in the canopy of coniferous forests) is the most important predictor of marbled murrelet presence (Evans Mack et al. 2003). Audio-visual surveys should be conducted in areas that contain mature coniferous forest or trees with suitable platforms (Evans Mack et al. 2003).

Potential Impact: Marbled murrelets have been documented over 12 miles to the southeast of the project area. The project area and within the BAA do not appear to contain likely habitat for the marbled murrelet. The project is not expected to impact the species.

8. Mountain plover (*Charadrius montanus*)

Special Status: CDFW Species of Special Concern; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G3, S2S3

Family: Chararidae

Habitat/Life-history Requirements: Population declining and very local; occasionally fairly common. Winter resident from September through March. Found on short grasslands and plowed fields of the Central Valley from Sutter and Yuba cos. southward. Also found in foothill valleys west of San Joaquin Valley, Imperial Valley, plowed fields of Los Angeles and western San Bernardino counties, and along the central Colorado River valley. Recent extralimital records exist for locations along the northern coast of California. Winters below 1000 m (3200 ft) (Hunting and Edson 2008).

Potential Impact: The nearest occurrence mapped in CNDDDB is over 12 miles from the project. The parcel and the surrounding BAA does not provide any suitable habitat for the Mountain plover and no impacts to this species are expected.

9. Willow flycatcher (*Empidonax traillii*)

Special Status: California Endangered, Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S1S2

Family: Tyrannidae

Habitat/Life-history Requirements: The willow flycatcher is a rare to locally uncommon summer resident that breeds in the Cascades and the Sierra Nevada (Craig and Williams 1998). The willow flycatcher breeds in wet meadows and montane riparian habitats at 2,000-8,000 feet elevation (Craig and Williams 1998). The riparian songbird requires dense willow thickets for nesting and roosting (Bombay et al. 2003, Zeiner et al. 1988). Destruction of riparian vegetation, modification of hydrology, and nest parasitism by brown headed cowbirds are the main threats to this species (Bombay et al. 2003).

Potential Impact: There are no recorded observations for the Willow flycatcher within the BAA. Riparian habitat is present on the parcel and within the BAA. No ground disturbing activities shall occur in a riparian area unless nesting bird surveys are conducted.

10. American peregrine falcon (*Falco peregrinus anatum*)

Special Status: Federally Delisted, State Delisted, CDFW Fully Protected; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G4T4, S3S4

Family: Falconidae

Habitat/Life-history Requirements: The formerly federally endangered American peregrine falcon was delisted in 1999 due to recovery (USFWS ECOS). The American peregrine falcon is an uncommon year-round resident and migrant in California (Zeiner et al. 1988). Peregrine falcons typically use cliffs and ledges near bodies of water for cover and nesting areas, but they may also nest on buildings or bridges in the city (Sibley 2003, Cornell Lab). Peregrine falcons may breed in woodland, forest, or coastal habitat (Zeiner et al. 1988). Riparian and wetland areas are important habitat yearlong (Zeiner et al. 1988).

Potential Impact: Peregrine falcons may breed in a wide variety of habitats, and they have the potential to nest in the area on suitable ledges or other structures. No likely nesting cliffs or ledges were observed in aerial photos, but they have the potential to exist in the area. The nearest occurrence mapped in CNDDDB over 15 miles from the project. Raptor scans are recommended prior to any tree removal.

11. Bald eagle (*Haliaeetus leucocephalus*)

Special Status: Federally Delisted, California Endangered, CDFW Fully Protected; Protected under Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act; NatureServe Ranks: G5, S3

Family: Accipitridae

Habitat/Life-history Requirements: Federally delisted, but still considered Endangered in California, bald eagles occur along rivers, large creeks, and coastlines throughout Northwestern California (Harris 2005). Fish are a primary source of prey, and bald eagles are typically found in forested areas near large fish-bearing waters (Cornell Lab). Bald eagles build large nests about 6 feet wide. Nests are typically found in large trees, but may be built on other available vegetation or structures (Cornell Lab).

Potential Impact: The nearest occurrence mapped in CNDDDB is approximately 12 miles from the project. The bald eagle may occur in the BAA, which has fish bearing waters and large trees. Raptor scans are recommended prior to any tree removal.

12. Yellow-breasted chat (*Icteria virens*)

Special Status: CDFW Species of Special Concern; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S3

Family: Parulidae

Habitat/Life-history Requirements: The yellow-breasted chat is a CDFW Species of Special Concern. This songbird nests in dense riparian brush. The distribution of the yellow-breasted chat in Humboldt County largely follows the riparian habitat surrounding the major rivers, especially the Eel, Trinity, Klamath, and Mad Rivers (Hunter et al. 2005). The yellow breasted chat is relatively numerous in Humboldt County, whereas much of California has seen a decline in population (Shuford and Gardali 2008). Protecting riparian areas, including shrub layers, is important for the conservation of this species.

Potential Impact: The yellow-breasted chat could occur in dense riparian brush in the surrounding BAA, but is unlikely to breed in the project area. If vegetation removal is planned in riparian areas, pre-construction nesting bird surveys will be recommended.

13. Osprey (*Pandion haliaetus*)

Special Status: CDFW Watch List; Protected under Migratory Bird Treaty Act; NatureServe Ranks: G5, S4

Family: Accipitridae

Habitat/Life-history Requirements: Ospreys primarily prey on fish and they require large fish-bearing waters for hunting (Zeiner et al. 1988). Ospreys are widespread along the Trinity, Klamath, Van Duzen, Eel, and South Fork Eel Rivers in Humboldt County (Harris 2005). Ospreys typically make large nests in tall snags or trees high off the ground in open forest habitats (Zeiner et al.).

Potential Impact/Mitigation: Osprey may occur in the BAA, which has fish bearing waters and large trees. Raptor scans are recommended prior to any tree removal.

14. Bank swallow (*Riparia riparia*)

Special Status: State Threatened, NatureServe Ranks: G5, S2

Family: Hirundinidae

Habitat/Life-history Requirements: Bank swallows nest in vertical sand banks and eroding bluffs, and they forage over nearby meadows and water. They require sandy banks for excavating nests (Zeiner et al.) They breed from May to early July (Sibley 2014).

Potential Impact/Mitigation: Potential habitat may exist within the BAA in vertical banks along Redwood Creek. Nesting habitat does not occur in the project area. The project should minimize offsite impacts to sensitive birds and other wildlife by adhering to standards for noise.

15. Northern spotted owl (*Strix occidentalis caurina*)

Special Status: Federally Threatened, California Threatened, CDFW Species of Special Concern, Protected under Migratory Bird Treaty Act; NatureServe Ranks: G3G4T2T3, S2S3.

Family: Strigidae

Habitat/Life-history Requirements: Northern spotted owls typically nest or roost in multi-layered, mature coniferous forest with high canopy closure, large overstory trees, and broken-topped trees or other nesting platforms (USFWS 2012). Confirmed breeding areas are widespread throughout

Humboldt County (Hunter et al. 2005). Northern spotted owls may use a broad range of habitats for foraging. Their favored prey, the dusky-footed woodrat (*Neotoma fuscipes*), typically inhabits the forest edge (Harris 2005).

Potential Impact: USFWS protocol surveys are needed for any activity that may modify nesting, roosting, or foraging habitats for northern spotted owls (USFWS 2012). Potential habitat has been mapped on the property and surrounding 0.7 miles (See Attachment C). Two Spotted Owl Activity Centers is mapped within 0.7 miles of the project boundary (HUM0450 and HUM0183). It is recommended USFWS Northern Spotted Owl Protocol surveys are conducted prior to any tree removal.

Mammals

1. Humboldt Mountain Beaver (*Aplodontia rufa humboldtiana*)

Special Status: NatureServe Ranks: G5TNR, SNR

Family: Aplodontidae

Habitat/Life-history Requirements: Mountain beavers inhabit riparian forests with dense, brushy understories (Zeiner et al. 1988). The Humboldt subspecies is typically found in lower elevation, moist coniferous forests. The small rodent feeds on vegetative parts of a variety of plants, including ferns, coniferous and deciduous trees, shrubs, forbs, and grasses (Zeiner et al. 1988). The underground burrows made by mountain beavers may provide habitat for many other many other mammals as well (Zeiner et al. 1988).

Potential Impact: The nearest occurrence mapped in CNDDDB is approximately 11 miles from the project. The project will not likely impact the Humboldt Mountain Beaver.

2. White-footed vole (*Arborimus albipes*)

Special Status: NatureServe Ranks: G3G4, S2

Family: Muridae

Habitat/Life-history Requirements: The white-footed vole is a CDFW Species of Special Concern. The white-footed vole can be found in coastal redwood, coniferous, and riparian forests of Humboldt and Del Norte counties (Zeiner et al. 1988). The white-footed vole nests on the ground under stumps, logs, and rocks. The rodent primarily feeds in trees and red alder (*Alnus rubra*) leaves are a principal part of its diet (Zeiner et al. 1988). The white-footed vole is typically found in mature forests near clear freshwater streams (Zeiner et al. 1988).

Potential Impact: The nearest occurrence mapped in CNDDDB is approximately 9 miles from the project. The White-footed vole could occur in the surrounding BAA, but the property does not provide ideal habitat for the species. The project is not expected to impact the species.

3. Sonoma tree vole (*Arborimus pomo*)

Special Status: CDFW Species of Special Concern, NatureServe Ranks: G3, S3

Family: Muridae

Habitat/Life-history Requirements: The Sonoma tree vole occurs along the North Coast in in old-growth and other forests, mainly Douglas-fir, redwood, and montane hardwood-conifer habitats (Zeiner et al. 1988). The small rodent specializes in feeding on Douglas-fir and grand fir needles, and typically constructs nests in Douglas-fir trees (Zeiner et al. 1988).

Potential Impact: The Sonoma tree vole may occur in the surrounding BAA. The nearest occurrence mapped in CNDDDB is approximately 2 miles from the project. The project is not expected to impact any old growth stands, the project is not likely to affect the Sonoma tree vole.

4. Townsend's big-eared bat (*Corynorhinus townsendii*)

Special Status: CDFW Species of Special Concern, NatureServe Ranks: G4, S2.

Family: Vespertilionidae

Habitat/Life-history Requirements: Although it can be found in a wide range of habitats, the bat requires caves, mines, tunnels, buildings, or other human-made structures for roosting (Zeiner et al. 1988). Townsend's big-eared bat is highly sensitive to disturbance of roosting sites (Zeiner et al. 1988).

Potential Impact: If any unused structures or caves occur in the area, they may provide roosting habitat. The nearest occurrence mapped in CNDDDB is approximately 8.5 miles from the project. The project should incorporate measures to reduce disturbance from generator noise and lights for bats and other sensitive wildlife.

5. Humboldt marten (*Martes caurina humboldtensis*)

Special Status: Federally Endangered, California Endangered, CDFW Species of Special Concern, NatureServe Ranks: G4G5T1, S1.

Family: Mustelidae

Habitat/Life-history Requirements: Martens use structurally complex conifer forest with large trees and low human disturbance (Zeiner et al. 1988). Martens require old-growth conifers and snags with cavities for denning and nesting (Zeiner et al. 1988). Martens are currently known to inhabit the northern part of Humboldt County near Prairie Creek Redwood State Park and the Klamath Mountains. Historically, martens occupied a great deal of Humboldt and Mendocino Counties.

Potential Impact: The Humboldt marten is not likely extant at the project site. An occurrence is mapped approximately 12 miles away from the project area, which was within the marten's range. No impacts to the Humboldt marten are expected.

6. Long-eared myotis (*Myotis evotis*)

Special Status: NatureServe Ranks: G5, S3?.

Family: Vespertilionidae

Habitat/Life-history Requirements: The long-eared myotis is widespread in California, but uncommon. The insectivore nests in cavities, under bark, in snags, or in buildings (Zeiner et al. 1988).

Potential Impact: If any unused structures or caves occur in the area, they may provide roosting habitat for the species. The nearest occurrence mapped in CNDDDB is approximately 9.5 miles from the project. The project should incorporate measures to reduce disturbance from generator noise and lights for bats and other sensitive wildlife.

7. Fringed myotis (*Myotis thsanodes*)

Special Status: NatureServe Ranks: G4, S3?.

Family: Vespertilionidae

Habitat/Life-history Requirements: The fringed myotis uses a wide variety of open habitats, especially pinyon-juniper, valley foothill hardwood and hardwood-conifer habitats. The insectivore

requires water, and typically forages over lakes, streams, and ponds (Zeiner et al. 1988). The bat roosts in caves, mines, buildings, and crevices (Zeiner et al. 1988).

Potential Impact: If any unused structures or caves occur in the area, they may provide roosting habitat for the species. The nearest occurrence mapped in CNDDDB is approximately 12.5 miles from the project. The project should incorporate measures to reduce disturbance from generator noise and lights for bats and other sensitive wildlife.

8. Fisher - (*Pekania pennanti*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G5, S2S3

Family: Mustelidae

Habitat/Life-history Requirements: The fisher uses large expanses of forest with moderate to high canopy closure, and will avoid open forest, grasslands, and wetlands (USFWS 2014). Fishers use cavities in live trees, snags and down logs for reproductive dens (USFWS 2014). Structural complexity is a critical element of fisher habitat, necessary to provide cover for resting and denning, and habitat for prey (USFWS 2014).

Potential Impact: The nearest occurrence documented on CNDDDB is approximately 3.5 miles away from the project area. The property may contain potential habitat for the fisher. If any expansion into old growth Douglas fir forest is required, the area must be search for potential denning structures. Structurally complex old growth forest with potential habitat structures should be avoided if possible. If potential denning structures are located, field camera surveys are recommended to determine occupancy, and any potential impacts to active den sites may be avoided by redesigning the project or waiting until sites are unoccupied.

Amphibians and Reptiles

1. Pacific tailed frog (*Ascaphus truei*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S3S4

Family: Ascaphidae

Habitat/Life-history Requirements: The Pacific tailed frog requires permanent, cool streams in conifer-dominated habitats including redwood, Douglas fir, mixed-conifer, and ponderosa pine habitats (Zeiner et al. 1988). They prefer turbulent waters with rocky substrates in steep-walled valleys with dense vegetation, where the water temperature remains low (Zeiner et al. 1988). Increased water temperature and siltation from logging pose threats to the amphibian (Zeiner et al. 1988). Additionally, invasive American bullfrogs may pose a threat to native amphibians through competition, predation, and spread of disease.

Potential Impact: The nearest occurrence mapped in CNDDDB is approximately 3 miles from the project. The project will not likely impact the Pacific tailed frog, but the project should avoid impacts to amphibians working outside of the SMA.

2. Western pond turtle (*Emys marmorata*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S3

Family: Emydidae

Habitat/Life-history Requirements: The western pond turtle is associated with permanent or nearly permanent water in ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams (Zeiner et al. 1988). Invasive American bullfrogs prey upon hatchlings and juveniles (Zeiner et al. 1988).

Potential Impact: The BAA provides habitat for the western pond turtle. The nearest occurrence mapped in CNDDDB is within the BAA, approximately 6 miles from the project. The project should avoid impacts to the western pond turtle by working outside of the SMA.

3. Western pond turtle (*Emys marmorata*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S3

Family: Emydidae

Habitat/Life-history Requirements: The western pond turtle is associated with permanent or nearly permanent water in ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams (Zeiner et al. 1988). Invasive American bullfrogs prey upon hatchlings and juveniles (Zeiner et al. 1988).

Potential Impact: The BAA provides habitat for the western pond turtle. The nearest occurrence mapped in CNDDDB is within the BAA, approximately 6 miles from the project. The project should avoid impacts to the western pond turtle by working outside of the SMA.

4. Del Norte salamander (*Plethodon elongatus*)

Special Status: CDFW Watch List; NatureServe Ranks: G4, S3

Family: Plethodontidae

Habitat/Life-history Requirements: The Del Norte salamander can be found in moist forested habitats, including riparian, Douglas-fir, redwood, and montane hardwood-conifer forests at low to middle elevations (up to ~3,600ft) (Zeiner et al. 1988). The lungless terrestrial salamander takes cover under rotting logs, stabilized talus, or other elements that provide moist microhabitats (Zeiner et al. 1988). Breeding occurs on moist soil, and standing water is not a habitat requirement (Zeiner et al. 1988).

Potential Impact: There are not documented occurrences of the Southern torrent salamander within the BAA. Permanent, rocky streams in the surrounding area could provide habitat for the southern torrent salamander. The project should avoid impacts to amphibians by working outside of the SMA.

5. Northern red-legged frog (*Rana aurora*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4, S3

Family: Ranidae

Habitat/Life-history Requirements: The northern red-legged frog inhabits low-elevation wetlands of the North Coast Ranges from Del Norte to Mendocino Counties (Zeiner et al. 1988). The northern red-legged frog requires permanent or nearly permanent pools in streams, marshes, or ponds (Zeiner et al. 1988).

Potential Impact: Areas of permanent or near-permanent water in the surrounding area could provide habitat for the northern red-legged frog. The nearest occurrence mapped in CNDDDB is approximately 5 miles from the project. The project should avoid impacts to amphibians by working outside of any SMAs.

6. Foothill yellow-legged frog (*Rana boylei*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3, S3

Family: Ranidae

Habitat/Life-history Requirements: The foothill yellow legged frog inhabits rocky streams with permanent water in many habitats, including valley-foothill hardwood, valley-foothill hardwood-

conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadows (Zeiner et al. 1988). The invasive American bullfrog and introduced fish species contribute to the reduction of foothill yellow legged frog populations (Zeiner et al. 1988). CESA listing of the foothill yellow-legged frog varies by clade as follows: Southwest/South Coast, West/Central Coast, and East/Southern Sierra clades are endangered; northeast/Northern Sierra and Feather River clades are threatened; listing of the Northwest/North Coast clade is not warranted (CDFW 2021).

Potential Impact: Riparian areas in the BAA are likely to provide habitat for the foothill yellow-legged frog. The nearest occurrence mapped in CNDDDB overlaps the BAA, approximately 6 miles to the south. The project should avoid impacts to amphibians working outside of any SMAs.

7. Southern torrent salamander (*Rhyacotriton variegatus*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G3G4, S2S3

Family: Rhyacotritonidae

Habitat/Life-history Requirements: The southern torrent salamander primarily occupies cold, shaded permanent streams and seeps in redwood, Douglas fir, mixed conifer, montane riparian and montane hardwood-conifer habitats in Sonoma, Mendocino, Humboldt and Lake Counties (Zeiner et al. 1988). The salamander requires rapid, permanent streams with rocky substrate for breeding and larval development (Zeiner et al. 1988).

Potential Impact: There are no documented occurrences of the Southern torrent salamander within the BAA. Permanent, rocky streams in the surrounding area could provide habitat for the southern torrent salamander. The project should avoid impacts to amphibians by working outside of any SMAs.

Fish

1. Western brook lamprey (*Lampetra richardsoni*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G4G5, S3S4

Family: Petromyzontidae

Habitat/Life-history Requirements: The Western brook lamprey is endemic to freshwater coastal waterways. The Western brook lamprey require clear, cold water in little disturbed watersheds as well as clean gravel near cover for spawning (CalFish).

Potential Impact: The nearest occurrence mapped in CNDDDB is in the Fields Landing quad. The project will avoid significant impacts to streams on the property and in the downstream watershed.

2. Steelhead – Klamath Mountain Province DPS (*Oncorhynchus mykiss irideus pop. 1*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G5T3Q, S2

Family: Salmonidae

Habitat/Life-history Requirements: Steelhead are anadromous rainbow trout that migrate to the ocean as juveniles and return to freshwater habitats to spawn. The Klamath Mountains Distinct Population Segment (DPS) ranges from Klamath and Trinity basins and streams north to the Smith, Rogue and Elk Rivers in Oregon (Moyle et al. 2008). Salmonids, including steelhead, require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment. Winter steelhead may swim upstream to stream segments that are not accessible to other salmonids during low flows to spawn (Moyle et al. 2008).

Potential Impact: Redwood Creek and associated tributaries provide habitat for the anadromous salmonid. Permanent streams on the parcel and in the surrounding area could provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working out of and SMAs.

3. Coast cutthroat trout (*Oncorhynchus clarkii clarkii*)

Special Status: CDFW Species of Special Concern; NatureServe Ranks: G5T4, S3

Family: Salmonidae

Habitat/Life-history Requirements: The coastal cutthroat trout is a small salmonid that may be anadromous or resident to watersheds of the Pacific coast from the Eel River of Humboldt County north to Alaska (Moyle et al. 2008). Much like steelhead and other salmonids, coastal cutthroat requires cool streams with deep pools and cover (Moyle et al. 2008). Coastal cutthroat prefers small, low gradient coastal streams, and they may be outcompeted by steelhead in larger streams and rivers where they co-occur (Moyle et al. 2008). Spawning occurs in gravel-bottom riffles and pools (Moyle et al. 2008). The Smith and Klamath River drainages support nearly half of the coastal cutthroat populations in California (Gerstung 1997 cited in Moyle et al. 2008).

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

4. Coho salmon - southern Oregon / northern California ESU (*Oncorhynchus kisutch* pop. 2)

Special Status: Federally Threatened, State Threatened; NatureServe Ranks: G5T2Q, S2

Family: Salmonidae

Habitat/Life-history Requirements: Coho salmon are a federally and state-listed anadromous fish that occupy low gradient rivers and coastal streams (CDFW). The anadromous salmonids return to these watersheds in the fall and early winter to spawn in gravel substrate, after the first major rains (Moyle et al. 2008). Coho require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment (Moyle et al. 2008). Juveniles are most abundant in well-shaded, deep pools with many structural elements that provide cover (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages. The southern Oregon/northern California ESU range includes watersheds from Cape Blanco in Oregon south to the Mattole River (Moyle et al. 2008).

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

5. Steelhead - northern California DPS (*Oncorhynchus mykiss irideus* pop. 16)

Special Status: Federally Threatened; NatureServe Ranks: G5T2T3Q, S2S3

Family: Salmonidae

Habitat/Life-history Requirements: Steelhead are anadromous rainbow trout that migrate to the ocean as juveniles and return to freshwater habitats to spawn. The Northern California Distinct Population Segment (DPS) ranges from Redwood Creek to just south of the Gualala River, and includes the Eel River watershed (Moyle et al. 2008). Salmonids, including steelhead, require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment. Steelhead may swim upstream in during the winter to spawn in stream segments that are not

accessible to other salmonids during low flows (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

6. Summer-run steelhead trout (*Oncorhynchus mykiss irideus* pop. 36)

Special Status: State Candidate Endangered; CDFW Species of Special Concern; NatureServe Ranks: G5T4Q, S2

Family: Salmonidae

Habitat/Life-history Requirements: Summer-run steelhead trout remain in freshwater habitats until they reach maturity (Moyle et al. 2008). These steelhead have similar requirements during their juvenile stages, with an additional need for freshwater habitats to remain suitable throughout the summer (Moyle et al. 2008). Summer steelhead are sensitive to human disturbance and typically are only found in the most remote areas of the watersheds (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

7. Chinook salmon - California coastal ESU (*Oncorhynchus tshawytscha* pop. 17)

Special Status: Federally Threatened; NatureServe Ranks: G5T3Q, S1S2

Family: Salmonidae

Habitat/Life-history Requirements: The Federally Threatened Chinook salmon is the largest Pacific salmonid (Moyle et al. 2008). The California Coast Evolutionary Significant Unit (ESU) is composed of Chinook spawning in watersheds ranging from Redwood Creek south to the Russian River (Moyle et al. 2008). The anadromous salmonids return to these watersheds in the fall to spawn, after the first major rains (Moyle et al. 2008). Chinook, like other salmonids, require cool, clear perennial streams and rivers with structural complexity for cover and low suspended sediment (Moyle et al. 2008). Juvenile chinook may inhabit estuaries for an extended period (Moyle et al. 2008). Chinook are particularly sensitive to temperature and water quality, and require larger cobble and coarse gravel substrate for spawning compared to other salmonids (Moyle et al. 2008). Sedimentation is a major threat to salmonids in their early life stages.

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

8. Chinook salmon – upper Klamath and Trinity Rivers ESU (*Oncorhynchus tshawytscha* pop. 30)

Special Status: Federally Candidate, State Candidate Endangered, CDFW Species of Special Concern; NatureServe Ranks: G5T3Q, S1S2

Family: Salmonidae

Habitat/Life-history Requirements: The Upper Klamath and Trinity Rivers ESU includes both spring and fall-run chinook spawning upriver of the confluence of the Klamath and Trinity Rivers (Moyle et al. 2008). While fall-run chinook re-enter freshwater habitat for spawning as sexually mature adults, spring-run chinook will re-enter freshwater prior to reaching maturity and inhabit cold-water refugia for 2-4 months before spawning (Moyle et al. 2008). The anadromous salmonids

may emigrate to the ocean in the summer after emergence, or they may rear in freshwater habitats for an extended period through the fall or winter (Moyle et al. 2008). A small number remain in fresh water for a year and emigrate as yearlings (Moyle et al. 2008). Chinook are the largest Pacific salmon, and preservation of cool water habitats in the upper Klamath and Trinity Rivers is essential to the conservation of the ESU (Moyle et al. 2008). Like other salmonids, chinook are also threatened by flow reduction, sedimentation, and reduced water quality.

Potential Impact: Redwood Creek and its tributaries provide habitat for the anadromous salmonid. The project should avoid impacts to fish and other aquatic species by minimizing runoff and working outside of any SMAs.

9. Eulachon (*Thaleichthys pacificus*)

Special Status: Federally Threatened; NatureServe Ranks: G5, S2

Family: Osmeridae

Habitat/Life-history Requirements: The eulachon is an anadromous smelt that occupies the nearshore ocean bottom and coastal inlets. This fish lives for about 5 years, becoming sexually mature at 3 or 4 years. Spawns in coastal freshwater up to a few miles inland upon silt, sand, gravel, cobble, or detritus, preferably at bar or riffle habitat (NatureServe 2021).

Potential Impact/Mitigation: The eulachon is threatened by overfishing but also impacted by degradation of freshwater and marine habitats caused by water diversions, dredging, logging, and industrial pollution. The nearest occurrence mapped in CNDDDB is in the Fields Landing quad. If the avoids significant impacts to streams on the property.

Invertebrates

1. Obscure bumble bee (*Bombus caliginosus*)

Special Status: NatureServe Ranks: G4?, S1S2

Family: Apidae

Habitat/Life-history Requirements: The obscure bumble bee occupies open grassy coastal prairies and Coast Range meadows (IUCN). This long-tongued species may pollinate flowers with elongated corollas, such as *Keckiella* spp. (IUCN). The obscure bumblebee does not fare well in agricultural or urban/suburban environments, where it is often outcompeted by more common bumblebees (NatureServe 2021). The obscure bumblebee has declined in the San Francisco Bay area, and may be threatened by habitat loss from development (NatureServe 2017).

Potential Impact: The nearest occurrence mapped in CNDDDB is approximately 6 miles away from the project area. The property has the potential to support many native pollinators, and the project should take measures to minimize potential impacts. The project should observe restrictions on pesticide use and avoid any drift of allowed pesticides to the natural area.

2. Western bumble bee (*Bombus occidentalis*)

Special Status: NatureServe Ranks: G2G3, S1

Family: Apidae

Habitat/Life-history Requirements: The western bumble bee is a generalist short-tongued forager that may be found in open habitats such as grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows (IUCN). Like many bumble bees, the western bumble bee nests underground in abandoned rodent holes (IUCN). The western bumble bee is threatened by disease, habitat loss and degradation, and insecticides.

Potential Impact: The nearest occurrence mapped in CNDDDB over 10 miles away from the project area. The property has the potential to support many native pollinators, and the project should take measures to minimize potential impacts. The project should observe restrictions on pesticide use and avoid any drift of allowed pesticides to the natural area.

Conclusion

The Anthony and Mary Massei Living Trust project is set in an upland forested habitat. Northern spotted owl surveys are recommended to determine their presence and evaluate potential impacts (**BIO-1**). Floristic surveys are recommended to minimize impacts to any sensitive or rare plant species (**BIO-2**). Amphibian surveys are recommended for ground disturbing work within 200 feet of potentially affected wet areas (**BIO-4**). If vegetation or tree removal is planned, pre-construction surveys are recommended to avoid impacts to nesting birds or other sensitive species (**BIO-5, BIO-6**). An on-the-ground site evaluation of potential habitat and potential impacts of operations is recommended to determine whether additional surveys or mitigations are warranted (**BIO-3**). All operations should occur outside of the California State Waterboard Streamside Management Area (SMA) buffers or appear to be impacting wetlands, a wetland delineation may be necessary. The applicant may avoid indirect impacts to special-status fish, amphibians, and reptiles by adhering to guidelines to minimize runoff from operations.

Table 6. Recommended Biological Surveys

Number	Survey	Description	Timing
BIO-1	Northern Spotted Owl (NSO) Surveys	USFWS Northern Spotted Owl Protocol surveys (2012) are recommended prior to tree removal operations.	March-August, 6 visits/year
BIO-2	Floristic Survey	Complete floristic surveys based on the Protocol for Surveying and Evaluating Impacts to Special Status native Plant Populations and Natural Communities (CDFW 2018).	Seasonally appropriate surveys will be completed prior to operations
BIO-3	Site habitat and impact evaluation	A site visit is recommended to evaluate habitats and site operations and determine whether further mitigations or surveys are needed	Prior to operations
BIO-4	Amphibian and Western Pond Turtle Surveys	A walk-and-turn survey of the diversion area and any other potentially affected wet areas is recommended. The walking survey will include listening for calls and checking under any potential cover within 200 feet of potentially affected wet areas.	Peak amphibian breeding season prior to operations
BIO-5	Pre-Construction Nesting Bird Surveys	Pre-construction surveys for nesting birds are recommended covering areas within at least 50ft of the planned footprint. Pre-construction nesting bird surveys would be needed prior to any vegetation removal or construction during the breeding season.	Surveys will occur prior to any construction or clearing native vegetation during the breeding season Feb. 1 – Aug. 31.
BIO-6	Pre-Construction Raptor Scans	The area will be surveyed for nesting/roosting raptors by scanning the property and surrounding area from a prominent location.	Two three-hour surveys will occur during the early/peak breeding season, March-June. Surveys will occur prior to any additional construction or clearing native vegetation between Feb. 1 and Aug. 31.

References

Bombay, H.L., Benson, T.M., Valentine, B.E. and Stefani, R.A., 2003. A willow flycatcher survey protocol for California. U.S. Forest Service, Pacific Southwest Region, Vallejo, California.

CalFish: A California Cooperative Anadromous Fish and Habitat Data Program. Species Pages. <http://www.calfish.org/FisheriesManagement/SpeciesPages/PacificLamprey.aspx>.

California Department of Fish and Wildlife, Natural Diversity Database, BIOS. 2021. California Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento, CA.

California Department of Fish and Wildlife (CDFW), California Natural Diversity Database, Special Animals List. 2021. California Department of Fish and Wildlife, Biogeographic Data Branch, Sacramento, CA. <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline>>.

Cornell Lab of Ornithology, "All About Birds: Bird Guide." <<https://www.allaboutbirds.org/guide/search.aspx>>.

Craig, D. and P. L. Williams. 1998. Willow Flycatcher (*Empidonax traillii*). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html.

Evans Mack, D., W. P. Ritchie, S. K. Nelson, E. Kuo-Harrison, P. Harrison, and T. E. Hamer. 2003. Methods for surveying Marbled Murrelets in forests: a revised protocol for land management and research. Pacific Seabird Group Technical Publication Number 2. Available from <http://www.pacificseabirdgroup.org>.

Harris, S.W. 2005. Northwestern California birds. 3rd Ed. Humboldt State Univ., Arcata, CA.

Hunter, J.E., Fix, D., Schmidt, G.A., and Power, J.C. 2005. Atlas of the breeding birds of Humboldt County, California. Redwood Region Audubon Society.

Hunting, K., and L. Edson. 2008. Mountain Plover in Shuford, W. D., and Gardali, T., eds. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

IUCN. 2021. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available from <http://explorer.natureserve.org>.

Moyle, P.B., J.A. Israel, and S.E. Purdy. 2008. Salmon, Steelhead, and Trout in California: Status of an Emblematic Fauna. U.C. Davis Center for Watershed Sciences.

NatureServe. 2021. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>.

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and

California Department of Fish and Game, Sacramento.
<<https://www.wildlife.ca.gov/Conservation/SSC/Birds>>.

Sibley, D.A., 2003. The Sibley field guide to birds of Western North America. Alfred A. Knopf, New York.

Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biological Conservation* 142: 2282-2292.

U.S. Fish and Wildlife Service (USFWS ECOS). ECOS Environmental Conservation Online System.
<<https://ecos.fws.gov/ecp/>>.

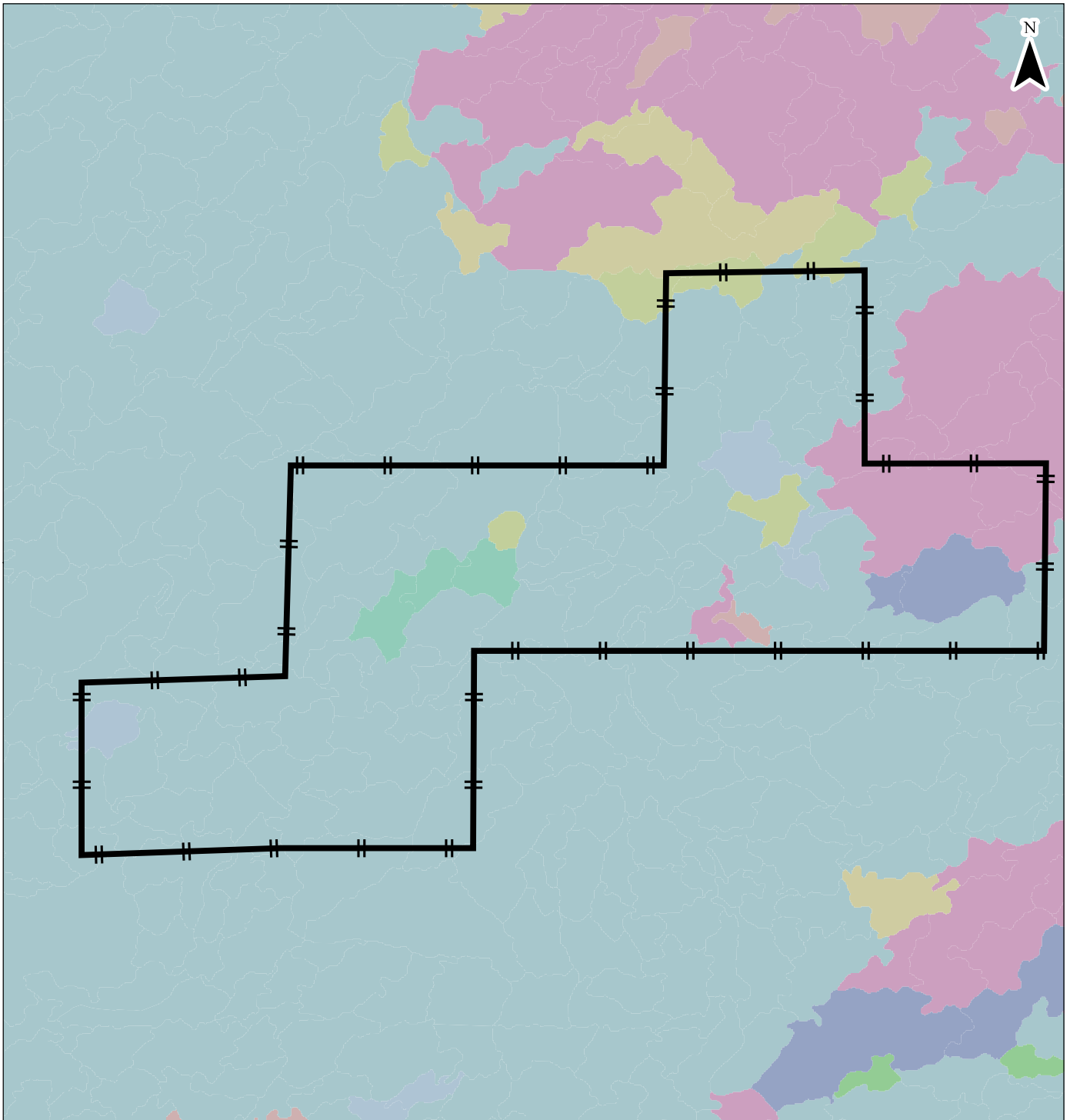
U.S. Fish and Wildlife Service (USFWS). 2011. Revised Critical Habitat for the Marbled Murrelet: Final rule. *Federal Register* (76 FR 61599 61621).
<<https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=4467>>.

U.S. Fish and Wildlife Service (USFWS). 2012. Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted owls.

U.S. Fish and Wildlife Service (USFWS). 2014. Draft Species Report: Fisher (*Pekania pennanti*), West Coast Population. https://www.fws.gov/yreka/20140911_WCF SR_finaldraft.pdf.

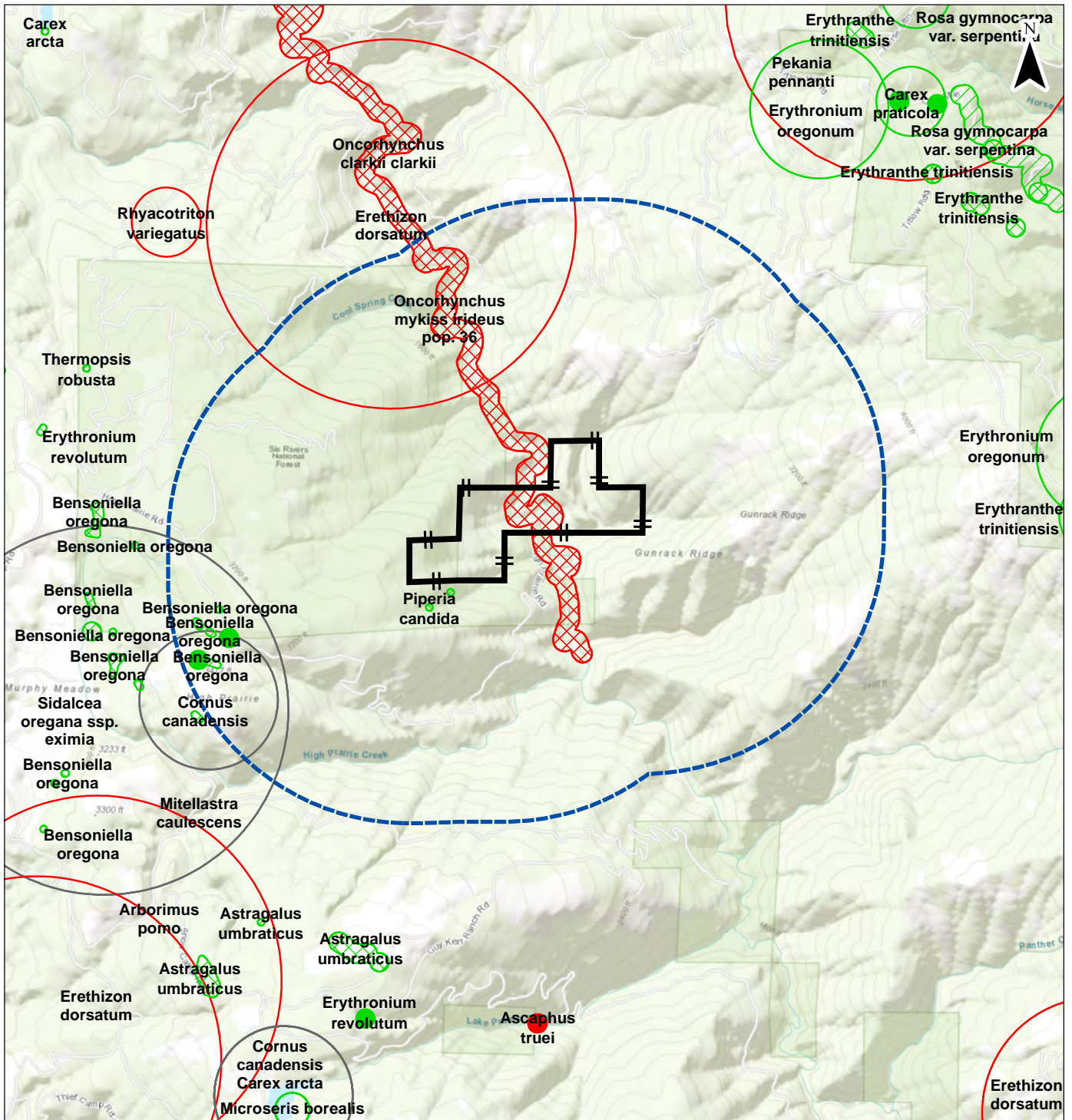
Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, February 2005. <<https://www.wildlife.ca.gov/data/cwhr/life-history-and-range>>.

Attachment A. CALVEG Vegetation Alliance Map of Surrounding Area

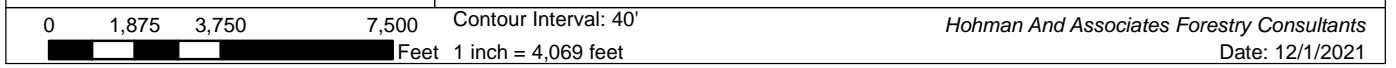


<p>Massei CFIP CALVEG Vegetation Map APNs: 316-196-004, 316-196-007 & 316-195-002</p> <p><i>Section 12; T5N; R3E; Section 7; T5N; R4E HB&M; Humboldt Located on the Maple Creek 7.5' USGS Quadrangle</i></p>	<p> Massei Boundary</p> <p> Annual Grasses and Forbs</p> <p> Black Oak</p> <p> Canyon Live Oak</p> <p> Interior Mixed Hardwood</p> <p> Montane Mixed Hardwood</p> <p> Oregon White Oak</p> <p> Pacific Douglas-Fir</p> <p> Red Alder</p> <p> Tanoak (Madrone)</p>	<p>Contour Interval: 40'</p> <p>1 inch = 986 feet</p> <p><i>Hohman And Associates Forestry Consultants</i> Date: 12/1/2021</p>
<p>0 450 900 1,800 Feet</p>		

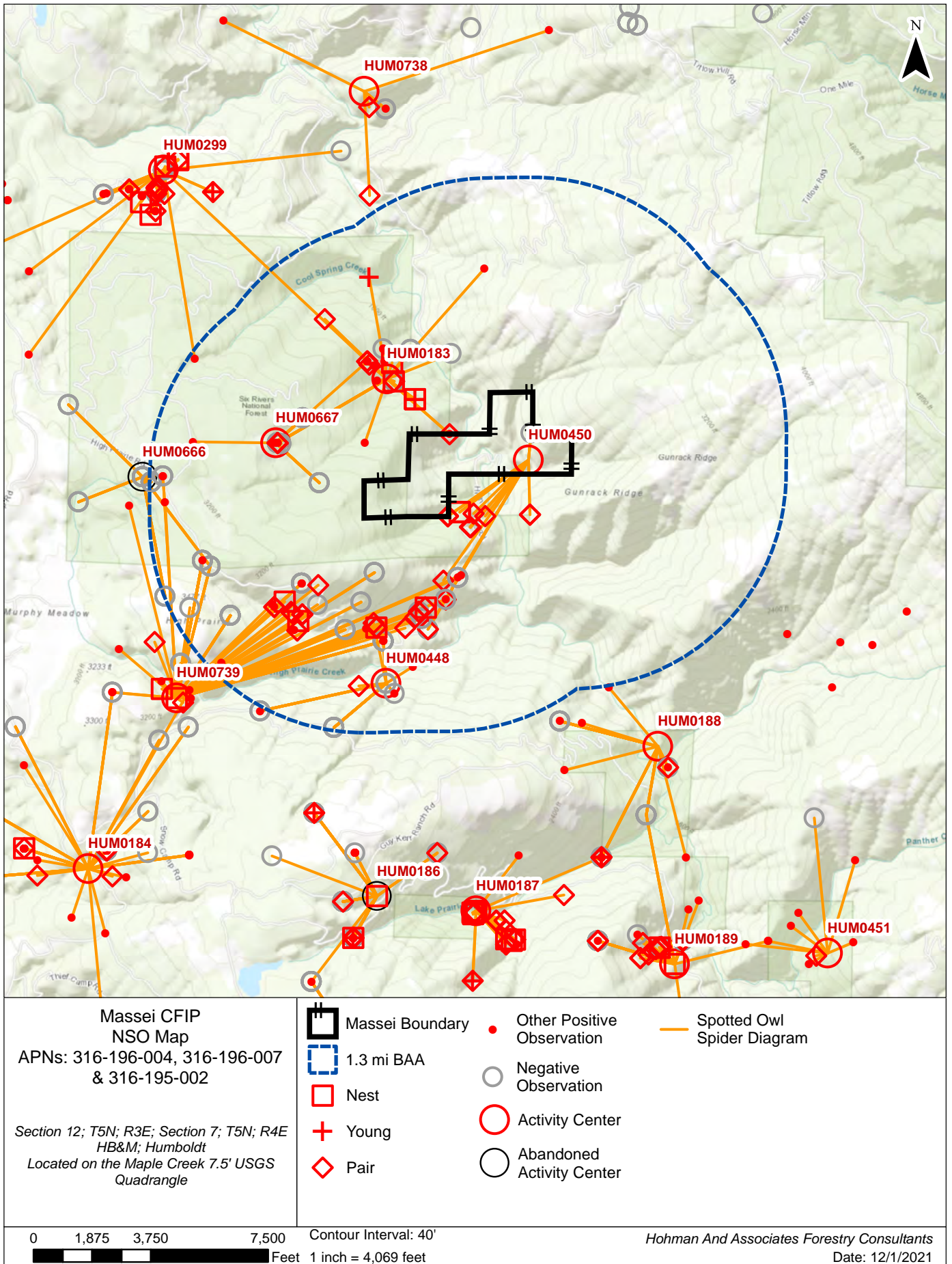
Attachment B. CNDDDB Special-Status Species Search Map



<p>Massei CFIP CNDDDB Map APNs: 316-196-004, 316-196-007 & 316-195-002</p> <p>Section 12; T5N; R3E; Section 7; T5N; R4E HB&M; Humboldt Located on the Maple Creek 7.5' USGS Quadrangle</p>	Massei Boundary	Plant (circular)
	1.3 mi BAA	Animal (80m)
Plant (80m)	Animal (specific)	
Plant (specific)	Animal (circular)	
Plant (non-specific)	Multiple (circular)	



Attachment C. Northern Spotted Owl Database Check Map



Attachment D. Rank Definitions

Global Conservation Status Definition

Listed below are definitions for interpreting NatureServe global (range-wide) conservation status ranks. These ranks are assigned by NatureServe scientists or by a designated lead office in the NatureServe network.

- G1 Critically Imperiled** – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
- G2 Imperiled** – At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.
- G3 Vulnerable** – At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.
- G4 Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- G5 Secure** – Common; widespread and abundant.
- G#G# Range Rank** – A numeric range rank (e.g. G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).

Infraspecific Taxon Conservation Status Ranks

- T# Intraspecific Taxon (trinominal)** – The status of infraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon’s informal taxonomic status.

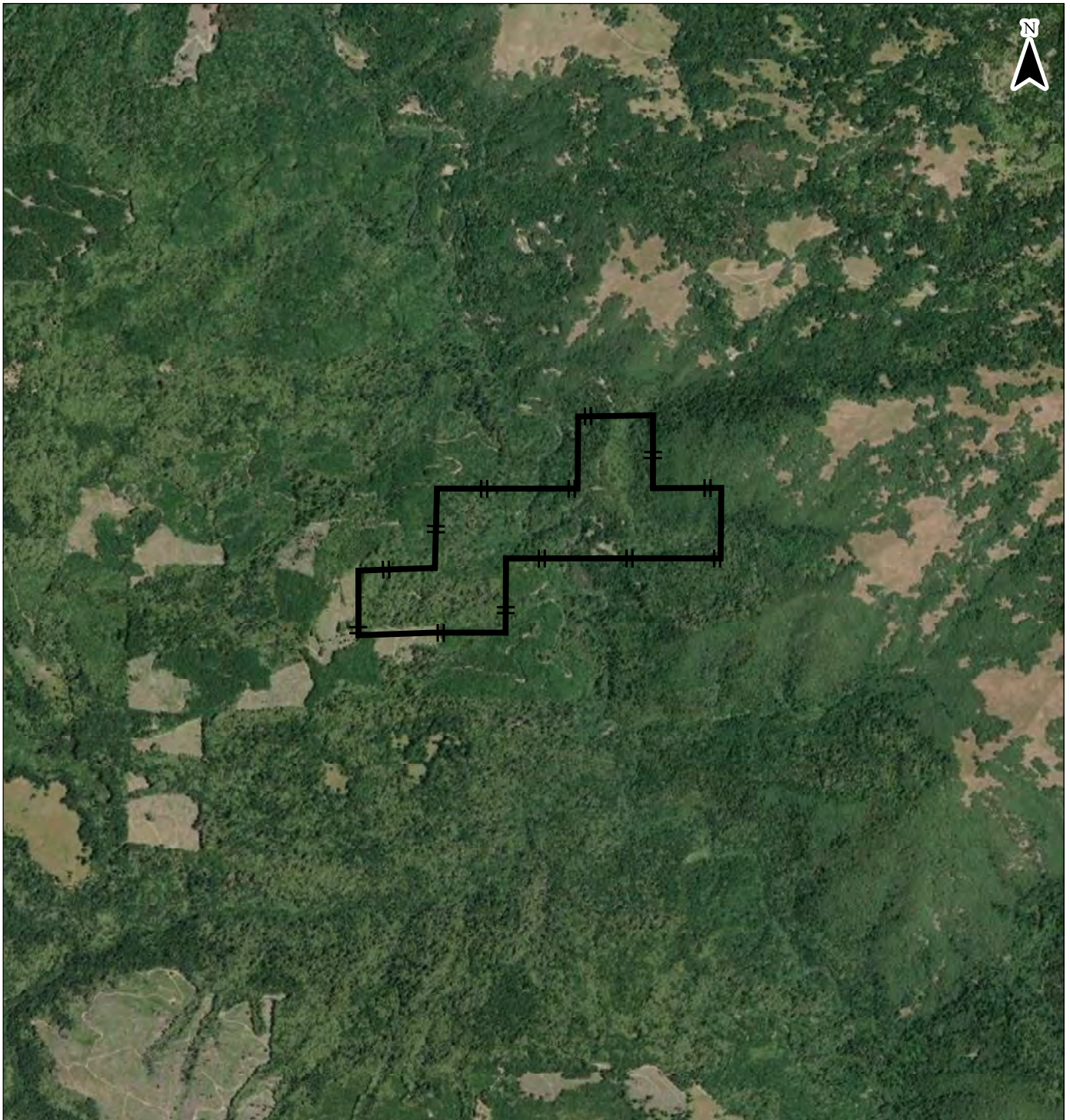
Subnational (S) Conservation Status Ranks



- S1 Critically Imperiled** – Critically imperiled in the jurisdiction because of extreme rarity or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the jurisdiction.
- S2 Imperiled** – Imperiled in the jurisdiction because of rarity due to very restricted range, very few populations, steep declines, or other factors making it very vulnerable to extirpation from jurisdiction.
- S3 Vulnerable** – Vulnerable in the jurisdiction due to a restricted range, relatively few populations, recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 Secure** – Common, widespread, and abundant in the jurisdiction.
- S#S# Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip more than two ranks (e.g., SU is used rather than S1S4).

Rank Qualifiers

- ? Inexact Numeric Rank** – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status
- Q Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

Attachment E. Aerial Imagery



<p>Massei CFIP Aerial Imagery APNs: 316-196-004, 316-196-007 & 316-195-002</p> <p><i>Section 12; T5N; R3E; Section 7; T5N; R4E HB&M; Humboldt Located on the Maple Creek 7.5' USGS Quadrangle</i></p>	<p> Massei Boundary</p>
<p>0 1,200 2,400 4,800 Contour Interval: 40'  Feet 1 inch = 2,621 feet</p> <p style="text-align: right;"><i>Hohman And Associates Forestry Consultants</i> Date: 12/1/2021</p>	

CNPS Data and Invasive Species



*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

11 matches found. [Click on scientific name for details](#)

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B], Found in Humboldt County,
Community = Cismontane woodland

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Ericaceae	perennial evergreen shrub	(Jan)Mar-May(Jul)	1B.3	S3	G5T3
Astragalus umbraticus	Bald Mountain milk-vetch	Fabaceae	perennial herb	May-Aug	2B.3	S2	G4
Downingia willamettensis	Cascade downingia	Campanulaceae	annual herb	Jun-Jul(Sep)	2B.2	S2	G4
Erythranthe trinitiensis	pink-margined monkeyflower	Phrymaceae	annual herb	Jun-Jul(Aug)	1B.3	S2	G2
Erythronium oregonum	giant fawn lily	Liliaceae	perennial bulbiferous herb	Mar-Jun(Jul)	2B.2	S2	G4G5
Hesperolinon adenophyllum	glandular western flax	Linaceae	annual herb	May-Aug	1B.2	S2S3	G2G3
Rosa gymnocarpa var. serpentina	Gasquet rose	Rosaceae	perennial rhizomatous shrub	Apr-Jun(Aug)	1B.3	S2	G5T3T4
Silene marmorensis	Marble Mountain campion	Caryophyllaceae	perennial herb	Jun, Aug	1B.2	S2	G2
Sisyrinchium hitchcockii	Hitchcock's blue-eyed grass	Iridaceae	perennial rhizomatous herb	Jun	1B.1	S1	G2
Tracyina rostrata	beaked tracyina	Asteraceae	annual herb	May-Jun	1B.2	S2	G2
Viburnum ellipticum	oval-leaved viburnum	Adoxaceae	perennial deciduous shrub	May-Jun	2B.3	S3?	G4G5

Suggested Citation

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 03 June 2020].

Search the Inventory

[Simple Search](#)

Information

[About the Inventory](#)

Contributors

[The Calflora Database](#)

Weed Alert! Scotch broom



www.cal-ipc.org

Scotch broom

(*Cytisus scoparius*)

Mature Size Shoulder



Description

- 5-10 ft. deciduous shrub with pea-like flowers
- Single or paired golden yellow flowers (or slightly to fully red), $\frac{3}{4}$ -1 $\frac{1}{4}$ in. long
- Leaves generally composed of 3 leaflets, each less than 1 in. long
- Stems are star-shaped in cross-section
- Pods are $\frac{3}{4}$ -2 in. long, flattened, dark brown to black, with silky hairs on the margin
- Reproduces by seed and by resprouting if damaged
- Spread by roads and trails, equipment, water, soil movement, animals, ants, horticulture
- Native to central and southern Europe and northern Africa



Bloom Period Mar - May

Habitat Coastal scrub and prairie, chaparral, riparian areas, oak woodland, coniferous forest



2-Minute Removal Dig

Image credits: Front and back: J.M. DiTomaso ©2007 The Regents of the University of California; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert! French broom



www.cal-ipc.org

French broom

(*Genista monspessulana*)

Mature Size Shoulder



Description

- 3-8 ft. perennial shrub with bright yellow pea-like flowers
- Flowers in dense clusters of 4-10 on short branches
- Leaves composed of three leaflets $\frac{1}{2}$ - $\frac{3}{4}$ in. long
- Leaves, stems, and seed pods covered with long, silky, silvery to reddish-gold hairs
- Stems green, erect, and typically leafy
- Seed pods brown, slightly flattened at maturity, and $\frac{1}{4}$ - $1\frac{1}{4}$ in. long
- Reproduces by seed
- Spread by water, roads, trails, equipment, horticulture, animals
- Native to the Mediterranean region and Azores Islands



Bloom Period Mar - May

Habitat Coastal scrub and prairie, chaparral, grassland, riparian and cismontane woodland, forest



2-Minute Removal Pull

Image credits: Front and back: J.M. DiTomaso ©2007 The Regents of the University of California; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert!
Himalayan blackberry



www.cal-ipc.org

Himalayan blackberry

(*Rubus armeniacus*)

Mature Size Shoulder



Description

- Prickly perennial shrub that can form impenetrable thickets up to 15 ft. tall
- White to pale pink flowers have 5 petals and are 1 in. wide
- Leaves of 5 leaflets (sometimes 3) with white undersides
- 5-angled stem with stout, curved thorns
- Fruits are blackberries that ripen from green to black, and are ~ ½ in. wide
- Reproduces by seed and by rooting at stem nodes
- Spread by birds or other animals
- Native to Europe



Bloom Period Apr - Aug

Habitat Riparian, scrub, grassland, forest



2-Minute Removal Dig

Image credits: Front top: © Michael Charters; all other images: NPS; icons by Tim Hyland
These cards were adapted from a design by National Park Service.

Weed Alert! Big periwinkle



www.cal-ipc.org

Big periwinkle

(*Vinca major*)

Mature Size Ground



Description

- 8-18 in. herbaceous perennial groundcover with lavender-blue flowers
- Solitary 5-petaled, funnel-shaped flowers are 1-2 in. wide
- Flowers grow on tips of thin stalks and resemble pin-wheels
- Leaves are opposite with smooth edges
- Glossy dark-green, leathery leaves are oval-shaped and ½-3½ in. long
- Somewhat woody with trailing stems up to 3 ft. long
- Produces a milky sap
- Reproduces vegetatively by rooting at stem nodes and from stem fragments
- Spread by wind, waterways, horticulture
- Native to Europe and the Mediterranean region



Bloom Period Jan - May

Habitat Coastal scrub, marsh and swamp, riparian, oak woodland, coniferous forest

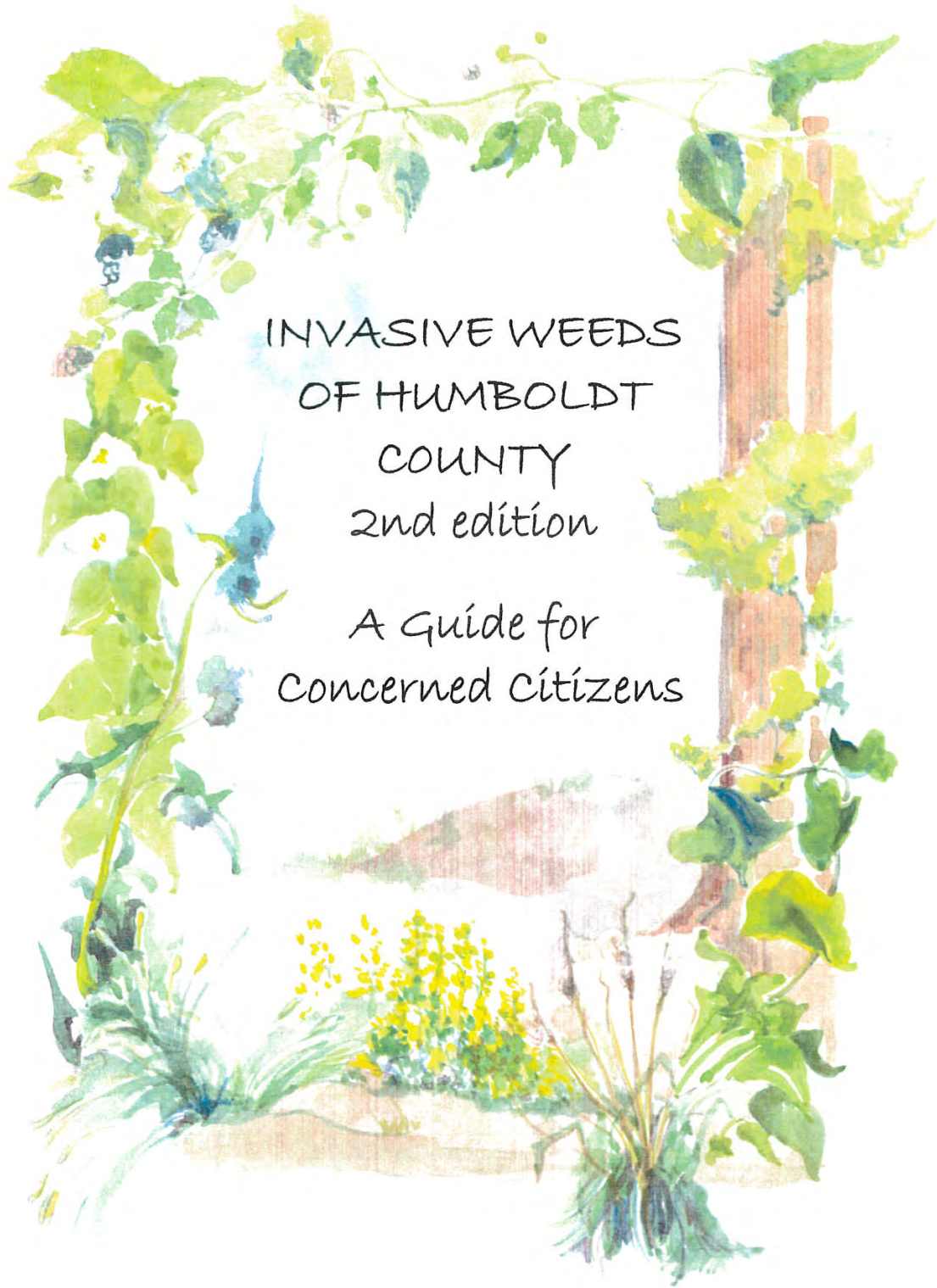
2-Minute Removal Dig



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DoD Legacy Project 13-621

Attachment C



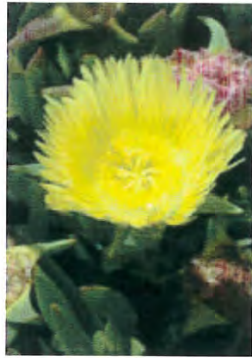
INVASIVE WEEDS
OF HUMBOLDT
COUNTY
2nd edition

A Guide for
Concerned Citizens



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European Beachgrass, pg 4



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Iceplant, pg. 4



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Yellow Bush Lupine, pg. 4



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Poison Hemlock, pg. 6



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Teasel, pg. 7



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Bull Thistle, pg. 8



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Canada Thistle, pg. 8

More photos on inside of back cover

CONTENTS

Introduction

How to use this guide	2
What is an invasive weed?	2
Why worry about invasive weeds?.....	2
What can you do?.....	3

Plants that Invade Coastal Sand Dunes

European Beachgrass	4
Iceplant	4
Yellow Bush Lupine	4

Plants that Invade Grasslands, Fields, and Roadsides

Fennel	5
Foxglove	5
Gorse	5
Himalayan Blackberry	5
Jubata Grass and Pampas Grass	6
Klamathweed	6
Poison Hemlock	6
Scotch Broom and French Broom	7
Spanish Heath	7
Teasel	7
Thistles	
Bull Thistle and Canada Thistle	8
Spotted Knapweed, Diffuse Knapweed, and Meadow Knapweed	8
Yellow Star Thistle	8

Plants that Invade Forest Habitats

Butterfly Bush	9
Cotoneaster (Orange and Silverleaf)	9
English Holly	9
Ivies	
English Ivy	10
Cape (German) Ivy	10
Pittosporum (Victorian Box)	10

Plants that Invade Streambanks

Japanese Knotweed, Himalayan Knotweed, and Giant Knotweed	11
Periwinkle	11
Tree of Heaven	11

Plants that Invade Wetland Habitats

Parrotfeather.....	12
Purple Loosestrife	12
Spartina	12


Introduction

How to use this guide

This guide is intended to help you understand the problem of invasive weeds, identify them around your home and community, and take direct action to save our wildlands and protect our natural and agricultural resources from the threat of invasion.

We grouped the weeds by the primary habitat type that they invade. This does not mean, however, that you won't find them in other habitats as well. While some species are fairly specific—for example, European beachgrass is restricted to coastal sand dunes—other weedy species such as pampas grass can occur in a variety of habitats, from dunes to roadsides to your neighbor's backyard.

Color photos are provided on the inside front and back covers of this guide, arranged in the same order as they appear in the text. In addition to the weeds presented here, numerous other invasive weeds occur in Humboldt County. To learn more about them, visit our website at <http://www.cdfa.ca.gov/go/HumboldtWMA> or consult the other web resources and books listed on the back.

 **Report new sightings of red alert weed species.** While most weeds listed here are widespread in Humboldt County, some are relative newcomers or have a limited distribution. Finding new infestations of "red alert" species and responding quickly is the most cost-effective means of control. Look for the phone symbol throughout this guide to indicate which species to report. If you find them, please call the Humboldt County Department of Agriculture, (707)441-5260, agcommissioner@co.humboldt.ca.us.

What is an invasive weed?

Most people are familiar with the concept of weeds in the context of their yard or garden. Weeds are simply undesirable plant species. This same principle holds true for our natural areas, which are home to a diverse array of native plants. The number and variety of these native species is described by the term "biological diversity." Over the past 150 years, many non-native plants have been introduced to our region, both accidentally and intentionally. Many do not pose an ecological threat, however, some are able to reproduce in the wild and proliferate rapidly and cause the decline or loss of our native plants. Others invade agricultural lands, becoming pests that compete with crops, reduce forage values, and may be poisonous to livestock. We call these invasive weeds.

Why worry about invasive weeds?

Invasive weeds:

- **Change the look and function of landscapes and ecosystems.** Invasive weeds are smothering diverse forest, wetland, dune, and grassland flora, cutting off the base of diverse food webs.
- **Cost us money.** \$82 million dollars is spent annually in California to fight invasive weeds, and the cost of impacts is estimated at over \$2.4 billion (Cal-IPC 2009). Invasive plants harm local agricultural economies by out-competing native forages and interfering with forest regeneration.
- **Increase the risk of fire.** Prolific growth of some weeds, especially flammable woody plants and annual grasses, increase the risk of wildland fires and/or fires in urban areas.
- **Reduce recreational opportunities.** Invasive weeds can form impenetrable thickets that make access to recreational areas difficult or directly degrade the aesthetic value of parklands.
- **Alter hydrology and/or impede water flows.** Aquatic invasive weeds can clog waterways, affect water quality, and/or interfere with complex aquatic food webs that affect numerous organisms.
- **Change native soils chemically and physically.** Some invasive weeds release chemicals into the soil that make it hard for other plants to grow. Weeds can also physically alter soil structure.
- **Disrupt wildlife corridors and bird migratory routes.** Weeds can restrict movements by wildlife.
- **Contribute to the decline of native species.** Invasive weeds are a major driver of plant and animal species decline, primarily due to habitat loss from ecosystem conversion. In some cases, the damages are irreversible, possibly leading to species extinction.

Introduction

What can you do?

Your individual actions to combat the threat of invasive weeds will make a difference! Your efforts will help protect the diversity of native plant communities in Humboldt County.

Don't plant invasive species.

Be selective when you choose plants for home landscaping. Some invasive plants are still sold in nurseries and garden shops, so beware! If you plant these in your yard, they may escape into nearby natural areas. There are many beautiful horticultural plants available for you to choose from that are not invasive. Consider planting native plant species in your home garden. Natives offer a good choice for home landscaping because they are well-adapted to local conditions and often thrive with less care and less water than required by many non-natives. Native plant gardening enhances the value of your yard for local wildlife including birds and butterflies. Check web resources on the back for suggestions.

Control invasive weeds at home and in your neighborhood.

You may have invasives already growing in your backyard. Wind, water, birds and other animals that eat the seeds of these plants can disperse them in nearby natural areas or rangelands. You can help stop these invasions by removing the source plants. Use the tips in this guide for control methods, and share what you've learned with friends and neighbors. Carefully dispose of the plants you remove so as not to inadvertently spread the plants. You will most likely need to follow-up initial efforts with additional treatments. Persistence is the key to any effective weed control program.

Help prevent the accidental spread of invasive weeds.

When you venture into natural areas, be aware that you could be introducing invasive weeds inadvertently. After driving, hiking, biking, or working in areas with invasive weeds, clean your shoes, socks, clothing, backpack, bicycle, pets, or anything else that might be a carrier of weed seeds. **Never** dump aquarium plants into natural water bodies or storm drains!

Participate in organized weed cleanup activities.

Watch for announcements and opportunities to participate in local community workdays aimed at controlling invasive weeds. Many land managers sponsor volunteer events to help pull invasive weeds on public lands. This is a good chance for you to learn to identify invasive species and to learn about the native plant communities that you will help save.

Educate yourself about integrated pest management.

Integrated pest management is a strategy based on using a combination of techniques to achieve the most cost-effective results with the least detrimental impacts to the environment, non-target species, and people. There are many factors to consider, including the unique characteristics of the target weed and of the infested site. For small infestations, manual or mechanical methods are often a good place to start. With some species, however, these methods may make matters worse by inadvertently spreading the plant. In large infestations, mechanical methods can cause soil erosion. Other methods to consider include repeated mowing, smothering, burning, chemical control, biological control, and/or revegetation with native species. Often, a combination of methods is the most effective.

Understanding how each weed reproduces is critical to learning how to control it. Herbs are plants that lack woody tissue. They can have an annual life cycle, meaning that they germinate, grow, reproduce, and die within a single growing season. Biennial herbs produce vegetative growth their first year, flower and produce seed their second year, then die. Perennial herbs are longer lived, typically flowering each year, and though their above-ground parts may die back over winter, the roots survive from one year to the next. Shrubs and trees are woody plants that can either be evergreen, meaning that they keep their leaves all year, or deciduous, meaning that they lose their leaves during part of the year, typically during winter months. Some plants reproduce primarily by seed and others by creeping roots (rhizomes) or creeping stems (stolons).

Plants that Invade Coastal Sand Dunes

European Beachgrass

Ammophila arenaria (Grass family)

Where you will find it: coastal sand dunes

Description: Perennial grass, 1-4 feet tall. European beachgrass is a coarse, clumped grass. It has stiff, narrow, rolled leaves that turn brown in the fall. Conversely, the native dune grass *Leymus mollis* has broad, flat, blue-green leaves.

What it does: This aggressive grass is responsible for nearly wiping out native dune plant communities along the west coast. It was introduced to stabilize dunes and prevent sand from blowing. It creates a steepened foredune and cuts off sand flow, starving native plants that need moving sand to thrive. At risk in local dunes are two federally endangered plants, the Humboldt Bay wallflower and beach layia.

How to get rid of it: Dig out the roots about 3 ft. deep, and use a rake to thoroughly remove rhizome fragments. Remove new resprouts every few weeks spring through fall. Land managers on the North Coast have used this method successfully to restore and protect native dune plant communities.



Iceplant

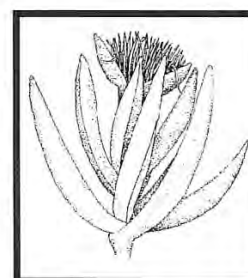
Carpobrotus edulis (Fig-Marigold family)

Where you will find it: sand dunes, sandy roadsides, coastal bluffs, coastal prairies

Description: Perennial groundcover. Iceplant has succulent leaves and bright purple or yellow flowers, with a fig-like fruit. Also called "Hottentot fig" or "highway iceplant," the species has been planted to stabilize sandy areas adjacent to roadways and as a hardy ornamental groundcover.

What it does: Iceplant forms dense mats that smother native plants. Iceplant can reduce soil pH and cause an increase in organic matter that is detrimental to native dune plant species. Iceplant fruits are eaten by rabbits, who then disperse the seed.

How to get rid of it: If you have a dense patch, "roll it up" like a carpet as you sever the roots underneath. Sparser patches need to be dug up. Use a rake to thoroughly remove all root fragments and follow up by removing re-sprouts. If possible, dispose of the material off-site.



Yellow Bush Lupine

Lupinus arboreus (Legume family)

Where you will find it: sandy areas, mostly near the coast

Description: Evergreen shrub, 4-6 feet tall. It is easily identified as the shrub in the dunes with many spikes of bright yellow pea-shaped flowers. Yellow bush lupine is native to the central and southern coastal regions of California, introduced here as an ornamental plant and to stabilize dunes along the railroad.

What it does: Yellow bush lupine adds nitrogen to nutrient poor dune soils in which native dune plants are well-adapted. Increased soil fertility allows non-native plant species to invade, out-competing native species.

How to get rid of it: Before they go to seed, cut mature plants at the base and split the trunk to discourage re-sprouting. Small seedlings can be pulled up. The seedbank lasts for years so you'll need to continue to pull seedlings in subsequent years.



Plants that Invade Grasslands, Fields, and Roadsides

Fennel

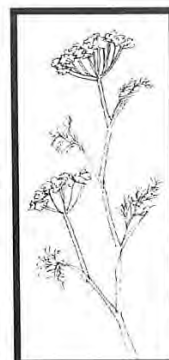
Foeniculum vulgare (Carrot family)

Where you will find it: widely distributed in disturbed areas, especially moist sites

Description: Perennial herb, 2-10 ft. tall. Fennel has upright stems, a stout taproot, feathery leaves with a licorice scent, and flowering stalks with umbrella-like clusters of small yellow flowers. Do not confuse fennel with poison hemlock, which has purple spots on the stem.

What it does: Fennel aggressively competes with native plants for available light, water, and nutrients. It has prolific seed production and a long-lived seed bank.

How to get rid of it: If seeds are present, carefully bag the seed head, cut it off and dispose of it. Dig out individual plants. For large infestations, repeated cutting or mowing can control fennel. Fall burning followed by chemical control in the spring is also effective.



Foxglove

Digitalis purpurea (Figwort family)

Where you will find it: disturbed sites in full sun to part shade, on well-drained acid soils

Description: Perennial herb, 1-5 ft. tall. It's hard to miss this beautiful plant, with one-sided stalks of nodding, bell-shaped, pinkish purple to white flowers. It is cultivated both ornamentally and as a medically important heart stimulant.

What it does: This popular garden plant has escaped into the wild where it may grow so densely that it crowds out native plants. It is toxic to humans, pets, and livestock.

How to get rid of it: Foxglove reproduces only by seed. Pull it up before it goes to seed. Wear gloves, as it can cause numbness of the hands.



Gorse

Ulex europaeus (Legume family)



[Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: disturbed sites, sand dunes, gravel bars, pastures, logged areas

Description: Prickly evergreen shrub, 6-10 ft. tall. Similar to Scotch broom, gorse has yellow pea-shaped flowers. Unlike broom species, gorse has linear leaves that develop into long, sharp spines.

What it does: Gorse aggressively displaces native plants, acidifies soils, and creates a fire hazard. While relatively uncommon in Humboldt County, it is a major pest in neighboring counties.

How to get rid of it: Like Scotch broom, this plant is best removed by its roots with a tool like a Weed Wrench™, or it will resprout. Remove it before it goes to seed, as the seed bank can persist for decades.



Himalayan Blackberry

Rubus armeniacus (Rose family)

Where you will find it: widely distributed in disturbed sites, roadsides, and streambanks

Description: Evergreen, sprawling shrub, forming dense mounds. Himalayan blackberry can be distinguished from native blackberries by its stout arching stems, broad-based spines, and larger black berries.

What it does: Despite its tasty berries, Himalayan blackberry poses a threat by creating dense thickets that shade out native plants and reduce the forage value of pastures.

How to get rid of it: Grub out the roots. Himalayan blackberry will resprout from any remaining roots and it will also regenerate from seed, so infested sites need persistent treatment. Repeated mowing can be an effective control method. Grazing by goats has been used with some success.



Plants that Invade Grasslands, Fields, and Roadsides

Jubata Grass and Pampas Grass

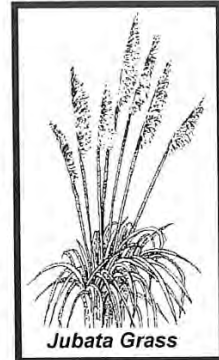
Cortaderia jubata and *C. selloana* (Grass family)

Where you will find them: disturbed sites near the coast, post-logging forest lands

Description: Perennial grass, 6-15 ft. tall. Jubata grass is often confused with and called pampas grass. Jubata grass has flowering stems twice as long as the leaves with pink to violet plumes. Pampas grass has stems about the same length as the leaves, with light violet to white plumes.

What it does: All jubata grass are female plants, however, each plant can produce prolific viable seed without pollination, making this species highly invasive. True pampas grass needs to have both male and female plants present to successfully reproduce.

How to get rid of it: Remove and place any seed plumes in a sealed plastic bag for disposal. Stems can be chopped down with a pulaski or an axe, while the root ball must be dug out using a combination of chopping and digging, or you can cover the root ball with black plastic until it dies. Seeds do not persist long in the soil.

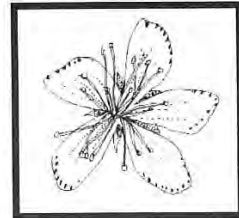


Klamathweed

Hypericum perforatum (St. John's wort family)

Where you will find it: roadsides and pastures

Description: Annual herb, 1-3 ft. tall. Klamathweed has bright yellow, five-petaled flowers with numerous showy, purple-tipped stamens. The leaves are opposite. Both leaves and flowers have purplish spots.



What it does: Klamathweed is an aggressive competitor that crowds out native plants. Over-grazing promotes this weed, which is poisonous to livestock.

How to get rid of it: A beetle has been successfully introduced as a biological control for this plant in Northern California, and consequently Klamathweed is not nearly as prevalent as it once was. However, the beetle does not tolerate dust well, so Klamathweed populations tend to grow more densely on the edges of dusty gravel and dirt roads.

Poison Hemlock

Conium maculatum (Carrot family)

ALL PARTS OF THIS PLANT ARE HIGHLY POISONOUS AND FATAL IF INGESTED

Where you will find it: disturbed sites, especially where moist or shady; streambanks

Description: Biennial herb, 2-10 ft. tall. A member of the carrot family, poison hemlock has characteristic umbrella-shaped clusters of small white flowers. Purple blotches on the stem are a diagnostic feature.

What it does: Poison hemlock crowds out native plants. It is fatally toxic to humans, pets, livestock, and wildlife. This is the plant that was reputedly used to poison Socrates.

How to get rid of it: Be extremely careful when weeding out this plant as it can poison humans via oral contact with a small amount of seed, leaves, or roots. Additionally, direct contact with the skin can cause dermatitis. Using gloves, pull up plants before they go to seed. Repeated mowing close to the ground will also work.



Plants that Invade Grasslands, Fields, and Roadsides

Scotch Broom and French Broom

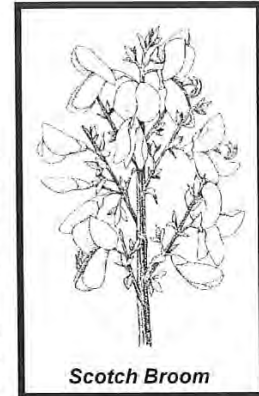
Cytisus scoparius and *Genista monspessulana* (Legume family)

Where you will find them: disturbed sites, streambanks, logged forests; acid soils

Description: Evergreen shrubs, 6-10 ft. tall. Brooms can be identified by their yellow pea-shaped flowers, small leaves, and spineless stems. Scotch broom can have yellow or yellow-red flowers, and it has very small or no leaves. French broom has small but distinct, oval-shaped leaves. A third broom, Spanish broom (*Spartium junceum*) is present but less common in Humboldt County. It has slender stems with linear leaves that are deciduous.

What it does: Invasive brooms aggressively compete with native plants for available light and water. Brooms add nitrogen to the soil, a change that can be detrimental to native plants. Brooms are unpalatable for livestock and wildlife. Brooms invade forest openings and timber lands after logging, and they increase the risk of wildland fires.

How to get rid of it: Use a Weed Wrench™ or other tool to remove large plants when soils are damp in winter and spring. If you cut down established plants you will need to dig out their roots or they will resprout. You will need to continue to treat invaded areas because new plants will grow from the seed bank, which can persist for decades.



Spanish Heath

Erica lusitanica (Heath family)

Where you will find it: disturbed open sites near the coast, especially on sandy soils

Description: Evergreen shrub, 3-6 ft. tall. This shrub, erroneously called "heather," is popular in floral bouquets. It has beautiful tiny, white, bell-shaped flowers and soft, needle-like, bright green foliage.

What it does: Spanish heath alters soil pH, making it difficult for native plants to survive. It can totally dominate the shrub layer.

How to get rid of it: Chop down the shrub and dig out the roots, as they will resprout. Regeneration from the seed bank will also require follow-up treatment.



Teasel

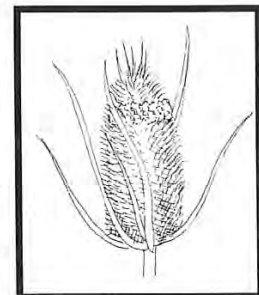
Dipsacus fullonum (Teasel family)

Where you will find it: disturbed sites, especially where moist; streambanks

Description: Biennial herb, 4-6 ft. tall. Teasel resembles a thistle, but it is not one! Teasel has a spiny flower head with tiny purple flowers composed in circular rings. The stems are prickly, with opposite leaves. Teasel is used in dried flower arrangements.

What it does: Teasel out-competes native plants and reduces the forage value of pastures.

How to get rid of it: Before it sets seed, remove teasel by pulling it up, using gloves to protect your hands from prickles. Alternatively, repeated cutting will exhaust root reserves, eventually killing the plants.



Plants that Invade Grasslands, Fields, and Roadsides

Bull Thistle and Canada Thistle

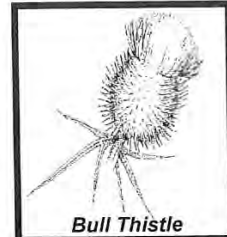
Cirsium vulgare and *C. arvense* (Sunflower family)

Where you will find them: open disturbed sites

Description: Herbs, 1-4 ft. tall. Bull thistle is a biennial plant that forms a basal rosette of leaves the first year, produces a flower stalk the second year, and then dies. It has cobwebby stems, spined leaves, and purple flower heads 1-2 inches wide. Canada thistle is a multi-stemmed perennial with pink to purplish flower heads 0.5-1 inch wide.

What it does: Bull and Canada thistles are serious agricultural pests, lowering the forage value of pasture and rangelands and competing with crops for nutrients and water. Dense thistles can also limit access to recreational areas and invade wildlands.

How to get rid of it: To control bull thistle, cut flowering stalks before they go to seed or hoe out the leafy rosettes. Canada thistle is especially problematic because it can reproduce from tiny root fragments. For this reason, cultivation should be minimized in dense infestations. Repeated mowing during the growing season can drain the plants' reserves and eventually kill the plants.



Bull Thistle



Canada Thistle

Spotted Knapweed, Diffuse Knapweed, and Meadow Knapweed

Centaurea maculosa, *C. diffusa*, and *C. debeauxii* (Sunflower family)



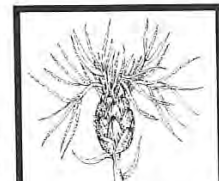
Call 441-5260 to report new sightings

Where you will find them: open disturbed sites

Description: Herbs, 3-4 ft. tall. Spotted knapweed has divided leaves and pink to purple flowers. Black tips on the bud bracts, which lack a vertical spine, are a diagnostic feature of spotted knapweed. Diffuse knapweed produces a many-branched stem with lobed leaves and white to purple flowers. Flower bracts have 4 to 5 pairs of horizontal spines and one long vertical spine. Meadow knapweed is bushy, with simple leaves and slightly larger, bright pink to purple flowers with fringed bracts that lack a vertical spine.

What it does: Among the greatest threats to grazing lands and grasslands in the Western U.S., knapweeds severely decrease forage quality for livestock and wildlife.

How to get rid of it: Knapweeds are known from only a few isolated locations in Humboldt County. You can help by reporting new infestations.



Spotted Knapweed



Diffuse Knapweed

Yellow Star Thistle

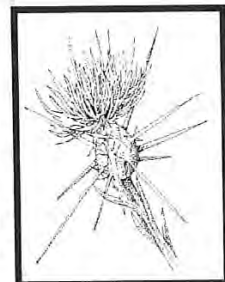
Centaurea solstitialis (Sunflower family)

Where you will find it: open disturbed sites, more prevalent inland on dry soils

Description: Annual herb, 1-3 ft. tall. Yellow star thistle is a very prickly plant with a deep taproot. Yellow star thistle has deeply-lobed, white-woolly leaves. Solitary yellow flowers are located at the end of the branches and have stiff, lateral inch-long spines.

What it does: Yellow star thistle has devastated many acres of land in interior regions of California. The thistle reduces the forage value of rangeland, and it is poisonous to horses. Yellow star thistle negatively impacts recreation and degrades wildlife habitat.

How to get rid of it: Yellow star thistle reproduces only by seed, however, seed production is prolific and seeds can persist in the soil up to ten years. It is best to treat new infestations early. Established populations are problematic to control, and generally a combination of methods is most effective, including burning, chemical control, and manual or mechanical removal.



Plants that Invade Forest Habitats

Butterfly Bush

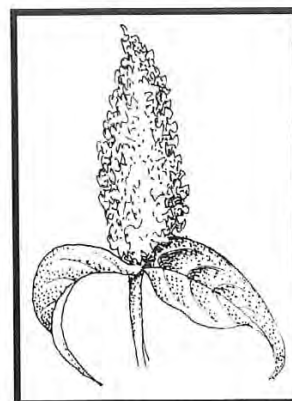
Buddleja davidii (Buddleja family)

Where you will find them: open disturbed sites, woodlands, streambanks

Description: Deciduous or semi-evergreen shrub/tree, 5-15 ft. tall. Butterfly bush has cylindrical heads of purple flowers that resemble lilac, and narrow, pointed leaves. Butterfly bush is planted as an attractive ornamental plant, but it can become a pest in your own garden, your neighbors' gardens, and in nearby wildlands.

What it does: Butterfly bush outcompetes native plants for nutrients and water. It is pollinated by butterflies, and it produces prolific seeds which are dispersed by wind, water, animals, clothing, and vehicles.

How to get rid of it: You'll need to be persistent as this shrub readily resprouts from the base. You can dig out entire plants, including the roots. Alternatively, cut the plants at ground level and treat the stumps chemically or cover with black plastic until they die.



Cotoneaster (Orange Cotoneaster and Silverleaf Cotoneaster)

Cotoneaster franchetii and *C. pannosus* (Rose family)

Where you will find them: forests, shrublands, and grasslands near the coast

Description: Evergreen shrubs 4-10 ft. tall. Orange cotoneaster has green leaves, pink flowers and orange fruits. Silverleaf cotoneaster has deep green leaves with silver undersides, white flowers, and clusters of red fruit. Both species are planted as ornamentals. Birds consume the fruits and contribute to spreading the seed.

What it does: These cotoneaster species have become naturalized in local coastal forests. They are spreading rapidly and are expected to become a major problem as they displace native shrubs.

How to get rid of it: Remove cotoneaster by cutting near the base and pulling up or digging out the roots. Cotoneaster resprouts from the base so grub out as much of the roots as possible. Removing this plant before berries form will limit the spread of new seeds.



English Holly

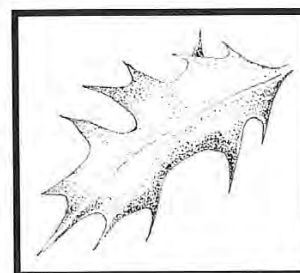
Ilex aquifolium (Holly family)

Where you will find it: moist forested areas

Description: Evergreen shrub or tree, up to 40 ft. tall. English holly is another popular yard tree that is spreading into our local forests. Holly has dark green lobed leaves with a shiny appearance and spiny tips. Holly trees have separate male and female plants. The females produce red berries used in Christmas floral arrangements and wreaths.

What it does: English holly competes with native tree and shrub species. Birds consume the berries and subsequently spread holly seeds.

How to get rid of it: English holly is slow-growing and may be controlled by removing plants before they start producing seed, 5-12 years after germination. Cut near the base and dig out roots or treat the stumps chemically to prevent resprouting.



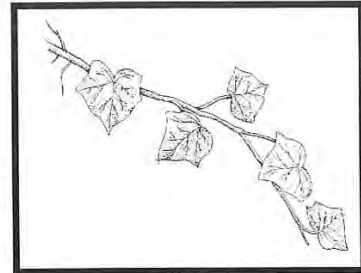
Plants that Invade Forest Habitats

English Ivy

Hedera helix (Ginseng family)

Where you will find it: open forests, streambanks

Description: Perennial woody vine. Most people recognize this common vine with deep green, waxy leaves from its use as an ornamental plant climbing on walls and in other landscaping. English ivy has two growth forms. Vegetative forms have triangular leaves with 3-5 distinct lobes. Reproductive forms have rounder leaves and they produce clusters of small white flowers and dark blue fruits.



What it does: English ivy can form a dense ground cover, smothering other plants. It also climbs trees and can choke the tree by severing the layer of tissue below the bark that transports nutrients. Dense infestations add weight to trees and can make them topple. It may take time, but this popular ivy will kill your spruce and redwoods, so don't delay in removing the vine.

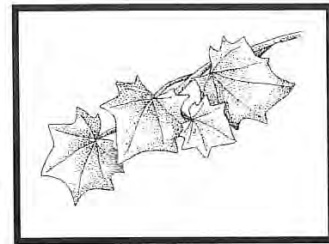
How to get rid of it: Where growing on the ground, you can pull out the vines, making sure to grub out the roots. For tree infestations, cut about a one-foot section out of the ivy stems near the base, taking care not to harm the trunk of the infested tree. The remaining aerial portions of ivy will die and are easier to pull out later.

Cape (German) Ivy

Delairea odorata (Sunflower family)

Where you will find it: coastal forests, streambanks, disturbed shady sites

Description: Perennial vine. Although it's not a true ivy, Cape ivy, also known as "German ivy," is named for its ivy-like, waxy leaves, which are yellow-green and have sharper points than English ivy. Like English ivy, Cape ivy creeps over the ground and climbs trees. It may die back to roots in dry summers. Cape ivy has tiny yellow flowers. Don't confuse it with wild cucumber, a native with somewhat similar leaves but cup-shaped white flowers.



What it does: Cape ivy smothers native plants. It has creeping stems that root at the nodes.

How to get rid of it: Cape ivy is especially problematic because the vines break easily when pulled, and the plants can reproduce from stem fragments containing root nodes. Cover dense infestations with black plastic.

Pittosporum (Victorian Box)

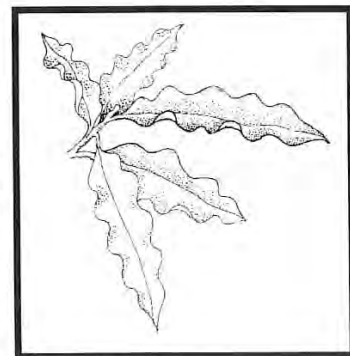
Pittosporum undulatum (Pittosporum family)

Where you will find it: forests, shrublands, streambanks

Description: Evergreen tree up to 45 ft. tall. Pittosporum, also called "Victorian box," is a popular landscaping tree. It has long pale green evergreen leaves with wavy margins and produces fragrant, cream-colored flowers and marble-sized, orange fruit.

What it does: This tree has escaped from home gardens into local forests where it is spreading rapidly, displacing native plant species.


How to get rid of it: Simply cutting down this tree will eliminate it, as it isn't known to resprout from roots. Regeneration from seeds may need attention in following years.



Plants that Invade Streambanks

Japanese Knotweed, Himalayan Knotweed, and Giant Knotweed

Fallopia japonica, *Persicaria wallichii*, and *Fallopia sachalinensis*
(Buckwheat family)

 [Call 441-5260 to report new sightings](tel:441-5260)

Where you will find them: streambanks, freshwater wetlands, moist roadsides areas

Description: Perennial herbs. These invasive plants have large, alternate leaves set on hollow, zig-zagging stems, with long creeping roots. Japanese knotweed grows to 9 ft. tall, with stalks of tiny white flowers and oval leaves 1-4 inches long, 2/3 as wide. Himalayan knotweed grows to 6 ft. tall with stalks of small, fragrant, white to pink flowers and lance-shaped leaves up to 8 inches long, less than 1/2 as wide. Giant knotweed grows to 12 ft. tall with stalks of small, greenish white flowers and broad leaves 8 to 16 inches long, 2/3 as wide, with a heart-shaped base.

What it does: Knotweeds suppress native plants with their thick uniform growth.

How to get rid of it: Young infestations of knotweed can be controlled manually with care to remove ALL portions of the plants, especially the roots. Knotweeds are particularly worrisome because they can re-establish from very small amounts of stem or root material. In dense infestations, chemical control has been effective.



Periwinkle

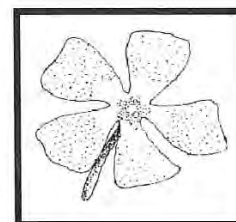
Vinca major (Dogbane family)

Where you will find it: streambanks, coastal forests, and woodlands

Description: Spreading, perennial vine. The bluish-purple, windmill-shaped flowers of this low-growing perennial ornamental are very distinctive. The shiny, dark green leaves are arranged in pairs on the stem.


What it does: The same attributes that make this desirable as a groundcover horticulturally (vigorous spreader that outcompetes garden weeds) make it disastrous where it has escaped from garden plantings into natural areas. It rapidly forms dense mats that smother native plants. Periwinkle can reproduce from fragments of the sprawling stems that root at the nodes. Periwinkle has become a pest especially along streambanks locally, where stem fragments are transported by stream flows.

How to get rid of it: For small infestations, cover with black plastic for one to two growing seasons. You can also pull it up, but be careful to get all fragments, and remember to go back and check for resprouts



Tree of Heaven

Ailanthus altissima (Simarouba family)

 [Call 441-5260 to report new sightings](tel:441-5260)

Where you will find it: disturbed streambanks and woodlands

Description: Deciduous tree, 30-65 ft. tall. This tree has large, compound leaves 1-3 feet long. Mature trees resemble few other species in our region, however, young plants can be confused with the native species Oregon grape. When crushed, tree of heaven foliage has an unpleasant odor. The tree produces clusters of small greenish flowers.

What it does: Tree of heaven spreads prolifically, forming dense thickets that displace native plants.

How to get rid of it: It is best to catch infestations early, when whole plants can be removed. Once mature, cutting promotes extensive suckering, so to be effective, it must be repeated regularly and/or used in combination with chemical control.



Plants that Invade Wetland Habitats

Parrotfeather

Myriophyllum aquaticum (Water-Milfoil family)

Where you will find it: freshwater ponds, ditches, and slow-moving streams

Description: Perennial aquatic herb. Parrotfeather, also known as “water-milfoil,” is used in aquaria. It has feathery leaves that form whorls around the stem. Parrotfeather grows in water, but stems can extend up to a foot above the water surface.

What it does: Parrotfeather spreads aggressively via vegetative propagation, forming dense mats that can clog waterways and impede water flows, making it difficult to boat, swim, or fish. It alters aquatic food webs while creating ideal habitat for mosquito larvae.

How to get rid of it: If you have this in your garden pond, remove it, but be sure you don't dispose of it in any way that it can get into a natural water body.



Purple Loosestrife

Lythrum salicaria (Loosestrife family)



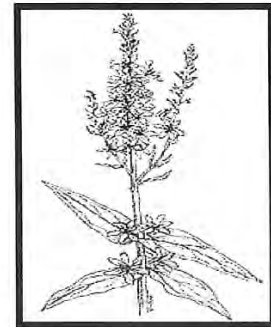
Call 441-5260 to report new sightings

Where you will find it: freshwater wetlands, streambanks

Description: Perennial herb, 1-6 ft. tall. Purple loosestrife has dense spikes of beautiful rose or purple flowers. The whorled 4-inch long leaves are lance-shaped.

What it does: This plant has choked freshwater wetlands across the United States, earning it the nickname “the purple plague.” Seeds mostly sink, but after germination, seedlings float to the water surface and can disperse to new sites.

How to get rid of it: In Humboldt County, purple loosestrife is known to occur on the banks of the Eel River, and it is expected to spread. Report new infestations.



Spartina

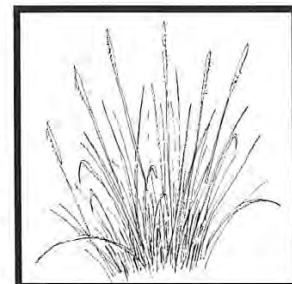
Spartina densiflora (Grass family)

Where you will find it: coastal salt marsh

Description: Perennial grass, 1-5 ft. tall, clumped. Also known as “cordgrass,” there are four species of *Spartina* that are invasive pests in tidal marshes on the coasts of California, Oregon and Washington. A fifth species, *S. foliosa*, is native to salt marshes from Bodega Bay, CA, south. The only species of *Spartina* present in Humboldt County, *S. densiflora*, was introduced from Chile inadvertently in the mid 1800s, and has since become a dominant species. It has displaced the native marsh community that once existed. *S. densiflora* has stiff leaves with flower stalks taller than the leaves.

What it does: *S. densiflora* alters both the physical structure and biological composition of tidal marshes. It is difficult to restore native salt marsh communities locally without intrusion by *S. densiflora*.

How to get rid of it: Recent coast-wide efforts to eradicate all invasive *Spartina* species has drawn attention to the need for a regional eradication plan for *S. densiflora* in Humboldt County. Locally, researchers at the Humboldt Bay National Wildlife Refuge have developed an effective method of eradication that involves repeated cutting using brush-cutters, cutting at the soil surface and slicing into the root of the plant. *S. densiflora* seedlings commonly re-invade treated areas, and they can be controlled by burning with hand-held flamers or by cutting.





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Spotted Knapweed, pg. 8



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Diffuse Knapweed, pg. 8



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Yellow Star Thistle, pg. 8



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Butterfly Bush, pg. 9



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English Ivy, pg. 10



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Cape Ivy, pg. 10



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Japanese Knotweed, pg. 11



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Periwinkle, pg. 11



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Tree of Heaven, pg. 11



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Parrotfeather, pg. 12



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Purple Loosestrife, pg. 12



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Spartina, pg. 12

More photos on inside of front cover

Web Resources

- BugwoodWiki Invasipedia** -
<http://wiki.bugwood.org/invasipedia>
- Bureau of Land Management (BLM)** -
<http://www.blm.gov/weeds>
- CalFlora** - <http://www.calflora.org>
- California Department of Agriculture (CDFA) Encycloweed** - http://www.cdfa.ca.gov/phpps/ipc/encycloweed/encycloweed_hp.htm
- California Invasive Plant Council (CAL-IPC)** -
<http://www.cal-ipc.org>
- California Native Plant Society (CNPS), Northcoast Chapter** - <http://northcoastcnps.org>
- Humboldt County Department of Agriculture** -
<http://co.humboldt.ca.us/ag/>
- Humboldt County Weed Management Area** -
<http://www.cdfa.ca.gov/go/HumboldtWMA>
- Redwood National and State Parks** -
<http://www.nps.gov/redw/naturescience/exotic-vegetation.htm>
- U.S. Fish and Wildlife Service's Plant Guide for Humboldt Bay's Dunes and Wetlands** -
<http://www.fws.gov/HumboldtBay/plants.html>

Books

- Bossard, C., J. Randall & M. Hoshovsky (eds.). 2000. **Invasive Plants of California's Wildlands**. Univ. of Calif. Press.
- DiTomaso, J. 2003. **Aquatic and Riparian Weeds of the West**. Diane Pub. Co.
- DiTomaso, J. 2007. **Weeds of California and other Western States (vols 1 & 2)**. Univ. of Calif. Agriculture and Natural Resources.
- DiTomaso, J. 2013. **Weed Control in Natural Areas in the Western United States**. U.C. Weed Research & Info. Center
- Whitson, T. 2006. **Weeds of the West (9th Edition)**. Diane Pub. Co.



Photo credit: James Sowerwine

HWMA's FREE Lend-A- Wrench Program

The Humboldt County Weed Management Area (HWMA) has Weed Wrenches™ available for free check-out by community members and organizations wishing to control invasive brooms and other woody shrubs.

Eliminate invasive shrubs in three easy steps:

1. Check out a Weed Wrench™ from the HWMA.
2. Pull out your mature shrubs in winter or spring, when the ground is wet, before seed set.
3. Monitor the site and remove seedlings as they occur.

Seeds of some shrub species, such as Scotch broom, can persist in the soil for many years, so diligent follow-up treatment is important to successfully eradicate an infestation. New seedlings are much easier to pull than mature plants.

Weed Wrenches™ are available at:
Bureau of Land Management Arcata Field Office
1695 Heindon Road (off Janes Road) in Arcata.
Call (707) 825-2300 for more information.

Humboldt Weed Management Area



Humboldt County Weed Management Area

Humboldt County Weed Management Area is a consortium of public agencies, non-profit organizations and private citizens dedicated to the goal of reducing the impacts of invasive plants to natural and agricultural lands in Humboldt County.

- ◆ Cover art: Margaret McGee. Sketches: Giant knotweed by Monica Scholey. All others by Andrea Pickart.
- ◆ Scientific nomenclature follows the Jepson Interchange 09/02/09. <http://ucjeps.berkeley.edu/interchange.html>
- ◆ Printed on recycled paper (reprint 2016)
- ◆ Suggested citation: Humboldt County Weed Management Area. 2010. *Invasive Weeds of Humboldt County: A Guide for Concerned Citizens (2nd Edition)*. Arcata, California.
- ◆ An online version of this guide is available at the HWMA's website: <http://www.cdfa.ca.gov/go/HumboldtWMA>

Forest Pest- Disease

Schweinitzii Root and Butt Rot

Red-brown cubical root and butt rot of conifers

Pathogen—Schweinitzii root and butt rot is caused by *Phaeolus schweinitzii*, also known as the velvet-top or cowpie fungus.

Hosts—All conifers are probably susceptible to the disease, but the most common host in the Rocky Mountain Region is Douglas-fir. Infrequent hosts include lodgepole pine and Engelmann spruce.

Signs and Symptoms—Trees infected with *P. schweinitzii* rarely display outward symptoms unless they are in the advanced stages of the disease, so diagnosis often occurs after the tree loses structural support and topples or is windthrown. Possible symptoms may include thinning crowns, poor shoot growth, and/or branch dieback. Wood decay may be visible in openings on the stem or nearby stumps (figs. 1-2). Incipient decay is yellow to red and dry. Advanced decay is red-brown and cubical and sometimes has thin, resinous felts present in the cracks.

Occasionally, fruiting bodies can be seen on the ground emerging from diseased roots of stumps or living trees (figs. 3-5). Infrequently, they emerge directly from the tree's base or stump. Fruiting bodies are annual,

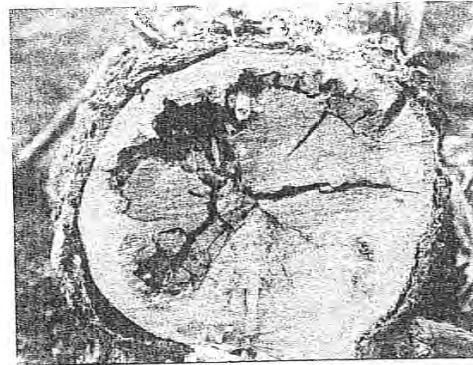


Figure 1. *Phaeolus schweinitzii* decay in a Douglas-fir stem. Photo: Jim Worrall, USDA Forest Service.



Figure 2. Brown cubical rot typical of *Phaeolus schweinitzii*. Photo: Joseph O'Brien, USDA Forest Service, Bugwood.org.

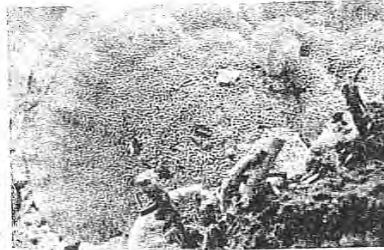


Figure 3. Pore surface of young *Phaeolus schweinitzii* conk. Photo: Jim Worrall, USDA Forest Service.

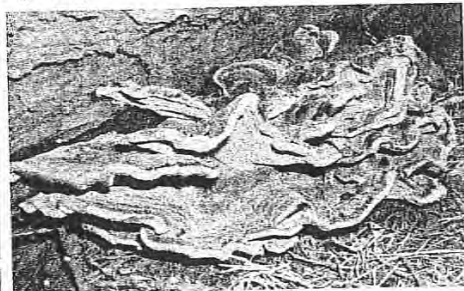


Figure 4. Typical *Phaeolus schweinitzii* conk with brown, velvety surface; yellowish margin; and greenish undersurface. Photo: Jim Worrall, USDA Forest Service.

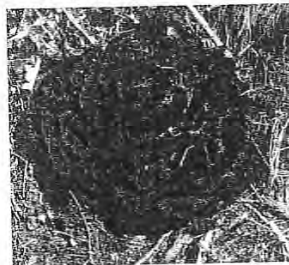


Figure 5. Old *Phaeolus schweinitzii* conk that is entirely brown, dry, and brittle. Photo: USDA Forest Service, Bugwood.org.

Schweinitzii Root and Butt Rot - page 2

spongy, and mushroom-like with large, irregular pores on the undersurface. Caps are red-brown and velvety, margins are yellowish brown, and undersides are green when fresh, becoming brown with age. As they dry, they become entirely brown and brittle and resemble cow pies. Caps are usually 5-10 inches (13-25 cm) in diameter with short stems.

Disease Cycle—Spread of *P. schweinitzii* occurs primarily by means of wind-dispersed spores produced in conks. Root-to-root infection may occur, but it appears to be very uncommon. Therefore, diseased trees are dispersed in stands rather than in discrete disease centers. The fungus gains entry through basal wounds, particularly fire scars or damaged roots. Conks are produced annually from decaying wood. The fungus can persist for many years in stumps and dead trees.

Impact—Schweinitzii root and butt rot is a major disease of mature Douglas-fir. Decay is generally confined to the heartwood and is found in the roots and lower 10 ft (3 m) of the stem. Wood loses its structural integrity rapidly as decay progresses, and susceptibility to breakage and windthrow increases. Infected trees may become more susceptible to Douglas-fir beetle or Armillaria root disease.

Management—Butt rot can be detected by sounding the lower stem with an ax and coring wood. Management strategies include avoiding wounding, removing infected trees, and harvesting on shorter rotations. Remove trees showing evidence of schweinitzii root and butt rot in recreation areas and other developed sites.

-
1. Barrett, D.K.; Uscuplic, M. 1971. The field distribution of interacting strains of *Polyporus schweinitzii* and their origin. *New Phytologist* 70:581-598.
 2. Sinclair, W.A.; Lyon, H.H.; Johnson, W.T. 1987. *Diseases of trees and shrubs*. Ithaca, NY: Cornell University Press. 574 p.



Black Stain Root Disease

Mortality centers in pinyon

Pathogen—Black stain root disease is caused by the fungus *Leptographium wageneri* var. *wageneri*. This variety infects only pinyons, including two-needle as well as singleleaf pinyon in other Regions.

Hosts—The disease causes expanding patches of mortality in many pinyon stands of the western slope of the southern and middle Rocky Mountains as far north as Idaho (figs. 1-2). It has not been found east of the Continental Divide. Two other varieties do not occur in this Region: *L. wageneri* var. *ponderosum* infects lodgepole, Jeffrey, and ponderosa pine; and *L. wageneri* var. *pseudotsugae* infects Douglas-fir. Both those varieties occur primarily in the northern Rocky Mountains, British Columbia, and Pacific coast states.

Signs and Symptoms—In advanced disease, foliage is sparse and sometimes chlorotic (yellow). A mortality center is often evident, with old snags near the center, recent mortality farther out, and symptomatic, live trees at the edge (fig. 1).



Figure 1. Dead and dying pinyon near the edge of a mortality center caused by black stain root disease. The smaller trees in the foreground may not be affected yet because their smaller root systems are not yet contacting infected roots. Photo: Jim Worrall, USDA Forest Service.

An intense black stain can be found in wood of the roots, root collar, and often the lower stem. Unlike the pattern of blue stain, which progresses radially along the rays to the inner sapwood, black stain progresses longitudinally and somewhat tangentially. Longitudinally, it forms long streaks following the wood grain (fig. 3). In cross section, it appears as arcs following short segments of annual rings (fig. 4).

Disease Cycle—Unlike blue-stain fungi, which colonize rays, this pathogen colonizes the tracheids (water-conducting and structural elements) of the sapwood and causes a wilt disease. It aggressively invades living wood of the roots, root collar, and lower stem until trees are killed. It does not decay wood.

Where roots grow closely together, the fungus can grow from tree to tree. In this way, mortality centers expand. Rate of radial expansion of disease centers in pinyon is about 3.3-6.6 ft (1-2 m) per year, but they do not expand indefinitely. It is not clear why expansion eventually ceases.

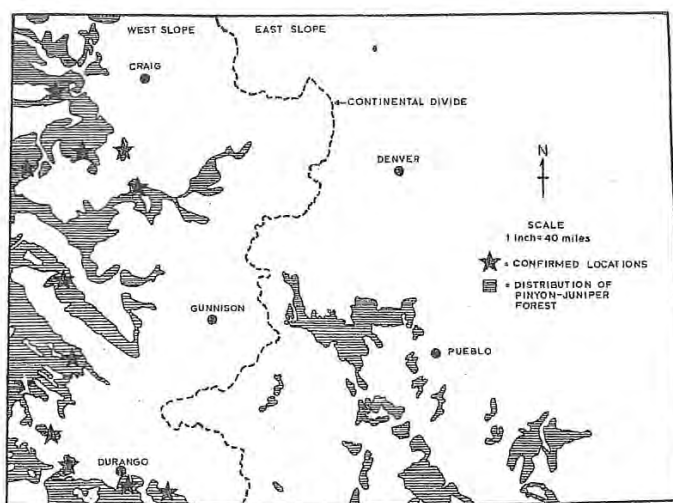


Figure 2. Distribution of black stain root disease in Colorado (from Landis and Helburg 1976)

Black Stain Root Disease - page 2

Other varieties of the pathogen are transmitted long distances by insect vectors, primarily root weevils and bark beetles. The vectors are attracted to dying roots, so the disease is associated with stand disturbance, especially thinning and road construction. As the insects burrow into the soil looking for those roots, they tend to graze on intermingled roots of other trees, thereby inoculating the pathogen. A vector has not been identified in pinyon, but it is strongly suspected that there is one and that the relationship to stand disturbance is similar to that of the disease caused by the other varieties.

Fruiting of the fungus is almost microscopic and difficult to observe in the field. Minute black stalks are formed in cavities under the bark, such as insect galleries. Sticky masses of spores are produced on the stalks. Insects that contact the fruiting structures are readily coated with spores.

Impact—In Colorado, disease frequency is clearly associated with soil depth, precipitation, site quality, and tree size and density. Stands with large or dense trees may facilitate root-to-root spread of the pathogen because of more frequent root contacts. However, rate of disease expansion was not related to density in one study. Because the pathogen is restricted to pinyon, mixed stands inhibit tree-to-tree spread of the disease.

In the Rocky Mountains, the disease is most active in southwestern Colorado, especially in the Four Corners area, but it occurs all along the Western Slope (fig. 2). Over the long term, black stain is an important disturbance agent in regulating structure and composition of pinyon-juniper stands. It creates structural heterogeneity in the forest, with openings that provide habitat diversity for other plants and animals. In this sense, the disease promotes old-growth characteristics of pinyon-juniper stands.

The pathogen dies quickly after host tissue dies and after a stand replacing fire. Disease incidence then increases with time since regeneration. Just as fire makes the disease less likely, the disease makes fire more likely. One of the major impacts of the disease is an increase in dead fuels. Thus, a fire-disease feedback loop can be envisioned that contributes to disease reduction and forest regeneration. The pinyon engraver commonly attacks trees with black stain. Under endemic beetle populations, black-stain centers are probably a major source of beetles.

Management—No control approach has been effective in pinyon. Cutting and burning killed or symptomatic trees does nothing to stop the disease, but because pinyon engraver often invades diseased trees before death, sanitation may be effective in preventing beetle outbreaks. Any replanting should be with species other than pinyon. Trenching around a disease center to sever all media through which the pathogen may grow has been attempted but was unsuccessful, probably because the pathogen is often in at least two trees beyond the last symptomatic one.



Figure 3. Black stain in the lower stem of diseased pinyon. Stem with the wood exposed in tangential view. Photo: Jim Worrall, USDA Forest Service.



Figure 4. Black stain in the lower stem of diseased pinyon. Stem with the wood exposed in transverse view. Photo: Jim Worrall, USDA Forest Service.

Black Stain Root Disease - page 3

Another approach is removing all pinyon from in and around disease centers, waiting four years, and replanting pinyon. This could be effective because the pathogen does not survive long in roots once they are dead. If implemented, at least three healthy-looking trees beyond the center should be removed.

Any discretionary pinyon cutting would best be done in the fall or winter. Vectors of the other forms of black stain root disease, which are attracted to fresh cuts, are active in spring and early summer; presumably, the same is true of the pinyon form.

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1. Hessburg, P.F.; Goheen, D.J.; Bega, R.V. 1995. Black stain root disease of conifers. Forest Insect and Disease Leaflet 145 (revised). Washington, DC: U.S. Department of Agriculture, Forest Service. 9 p. Online: <http://www.fs.fed.us/r6/nr/fid/fidls/fidl-145.pdf>.
 2. James, R.L.; Lister, C.K. 1978. Insect and disease conditions of pinyon pine and Utah juniper in Mesa Verde National Park, Colorado. Biological Evaluation R2-78-4. Lakewood, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Region, Forest Insect and Disease Management.
 3. Kearns, H.S.J.; Jacobi, W.R. 2005. Impacts of black stain root disease in recently formed mortality centers in the piñon-juniper woodlands of southwestern Colorado. Canadian Journal of Forest Research 35:461-471.
 4. Landis, T.D.; Helburg, L.B. 1976. Black stain root disease of pinyon pine in Colorado. Plant Disease Reporter 60:713-717.
 5. Witcosky, J.J.; Schowalter, T.D.; Hansen, E.M. 1986. *Hylastes nigrinus* (Coleoptera: Scolytidae), *Pissodes fasciatus*, and *Steremnius carinatus* (Colcoptera: Curculionidae) as vectors of black stain root disease of Douglas-fir. Environmental Entomology (15):1090-1095.



Red Ring Rot

White pocket rot of conifers

Pathogen—Red ring rot is a wood-decay disease of the inner wood of stems of living conifers. It is caused by the fungus *Porodaedalea (Phellinus) pini*.

Hosts—Most conifers in the Rocky Mountain Region can be infected. Engelmann spruce, lodgepole pine, subalpine fir, and Douglas fir are commonly infected in some areas of the Region.

Signs and Symptoms—The fruiting body is a conk (shelf fungus), but it occurs less commonly on infected trees than *Phellinus tremulae* does on aspen. It usually occurs at branch stubs or knots (fig. 1). The upper surface is reddish brown to blackish, concentrically furrowed, and somewhat hairy near the margin. The lower surface is usually sloped, yellowish brown, and covered with circular to irregular-shaped pores. The overall texture is tough and corky. In some hosts, punk knots, which are also definite indicators of the disease, occur more commonly than conks. Punk knots are swollen or sometimes sunken knots that are resinous and do not callus over normally (figs. 2-3). They are filled with fungal tissue. To investigate a suspicious knot, shave it with a hatchet or stout knife to see if it has the characteristic reddish brown fungal tissue in it, perhaps soaked partly with resin.

Decay caused by *Porodaedalea pini* is also fairly unique and diagnostic. In early stages, infected rings may become reddish to purple in tangential arcs, giving the disease its name. Later, a white pocket rot develops (figs. 4-5). The defect is sometimes called white speck. Pockets are mostly hollow but are delignified and contain white residual cellulose. There may also be black specks in the pockets; these are chemical by-products of delignification. Borders between the pockets may be relatively undecayed. In some cases, the wood may also have distinct black zone lines throughout; this decay may be caused by a closely related species that has yet to be described. *Phellopilus nigrolimitatus* causes a similar decay that may be confused with red ring rot, but the pockets tend to be larger.

Disease Cycle—Spores produced in conks are disseminated by wind. Large wounds are apparently not the usual site of infection as is true of some fungi. Spores that land on a suitable small wound or twig stub may infect and grow into the inner wood. When decay is sufficient to provide enough resources, a new conk may be produced. Time from infection to conk production may be 10-20 years or more.



Figure 1. Conk of *Porodaedalea (Phellinus) pini* on Engelmann spruce beneath a branch stub. Many infected trees do not have conks. Photo: Jim Worrall, USDA Forest Service.

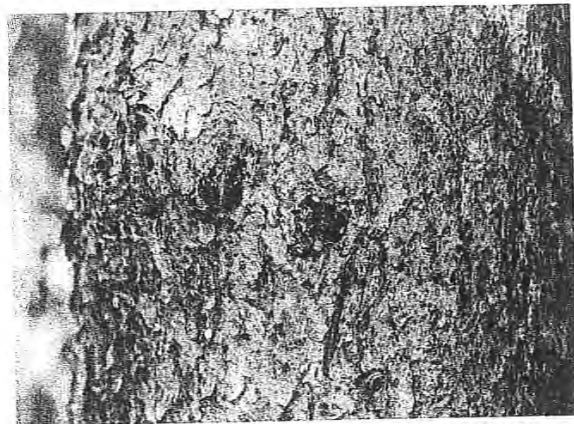


Figure 2. Punk knots and decay caused by *Porodaedalea (Phellinus) pini*. A slightly swollen, resinous knot in oblique view. Photo: Jim Worrall, USDA Forest Service.

Red Ring Rot - page 2



Figure 3. Front view of punk knot of *Porodaedalea* (*Phellinus*) *pini* after shaving, revealing resin and reddish, golden brown fungal tissue that has replaced the branch trace. Photo: Jim Worrall, USDA Forest Service.

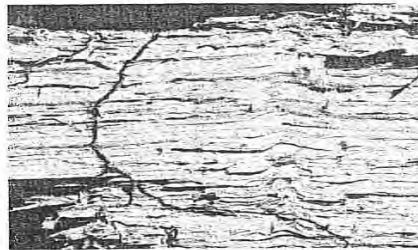


Figure 5. Very advanced white pocket rot of *Porodaedalea* (*Phellinus*) *pini* with black zone lines. Photo: Jim Worrall, USDA Forest Service.

1 and 2. Besides conks and punk knots, indicators include forks and dead rust brooms. If decay is frequent, consider reducing rotation age to minimize losses. Prevent injuries to trees during logging to prevent new infections of decay fungi.

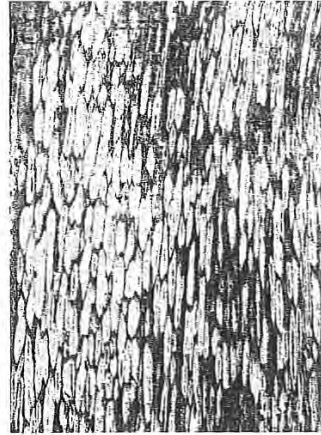


Figure 4. Typical white pocket rot of *Porodaedalea* (*Phellinus*) *pini* with white pockets bordered by reddish, relatively undecayed wood. Photo: Jim Worrall, USDA Forest Service.

Impact—Red ring rot is the most common decay in Engelmann spruce and causes the largest decay columns. It is also important in lodgepole pine and is the second most important decay in subalpine fir. In a study of those three species, *Porodaedalea pini* caused 64% of all defect, including non-decay defects. It causes extensive cull, especially in old stands. Decay may extend 4 ft (1.2 m) above and 5 ft (1.5 m) below conks or punk knots. Decay tends to occur in the lower stem and may even develop into the large roots. It is not restricted to the heartwood and may develop outward into the sapwood. It sometimes leads

to mechanical failure of live trees, causing hazard in recreation sites.

Decayed trees may provide nesting, denning, or hiding habitat for animals. Although most cavity nesting by birds in this Region is apparently in aspen, various animals may take advantage of advanced decay to excavate the inner wood. Old dead and downed trees may still be useful for such purposes. Dead trees usually decay from the outside-in and often do not provide such habitat.

Management—Where emphasis is on timber management, trees with indicators should be removed during any entry. Indicators and the amount of decay and cull associated with them were studied in refs.

1. Hinds, T.E.; Hawksworth, F.G. 1966. Indicators and associated decay of Engelmann spruce in Colorado. Res. Pap. RM-25. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 15 p.
2. Hornibook, E.M. 1950. Estimating defect in mature and over-mature stands of three Rocky Mountain conifers. *Journal of Forestry* 48:408-417.
3. Worrall, J.J.; Nakasone, K.K. 2009. Decays of Engelmann spruce and subalpine fir in the Rocky Mountains. *Forest Insect and Disease Leaflet* 150. Washington, DC: U.S. Department of Agriculture, Forest Service. 12 p.

Pholiota aurivella

Scientific name: *Pholiota aurivella* (Batsch) P. Kumm.

Derivation of name: *Aure-* means "gold" or "golden" and *vell-* means "fleece." *Aurivella*, then, means "golden fleece."

Synonyms: *Agaricus aurivellus* Batsch

Common name(s): Golden Pholiota.

Phylum: Basidiomycota

Order: Agaricales

Family: Strophariaceae

Occurrence on wood substrate: Saprobic/parasitic; typically in clusters on dead or living deciduous or conifer wood; July through November.

Dimensions: Caps 4-15 cm wide; stipes 5-7.5 cm long and 5-15 mm thick.

Cap: Sticky to slippery/slimy; yellow to yellowish-orange; surface covered with large, flattened, wine-red scales.

Gills: Attached; yellowish at first, becoming rusty-brown.

Spore print: Brownish.

Stipe: Dry; colored like the cap or paler; scaly below the ring, whitish above the ring.

Veil: Fibrous, whitish, partial veil leaving an evanescent ring or zone of fibers on the upper stalk.

Edibility: Although some people eat it, it is not recommended as there are reports of gastric upset following ingestion.

Comments: Michael Kuo makes the point in the website below that there is usually enough uncertainty due to age, variable and overlapping traits, and weather conditions, that microscopic analysis may be required to confirm identifications for this and most *Pholiota* species. For example, *Pholiota aurivella* is similar in every way to *Pholiota limonella* except for smaller spores.

More information at MushroomExpert.com:

More information at RogersMushrooms.com:

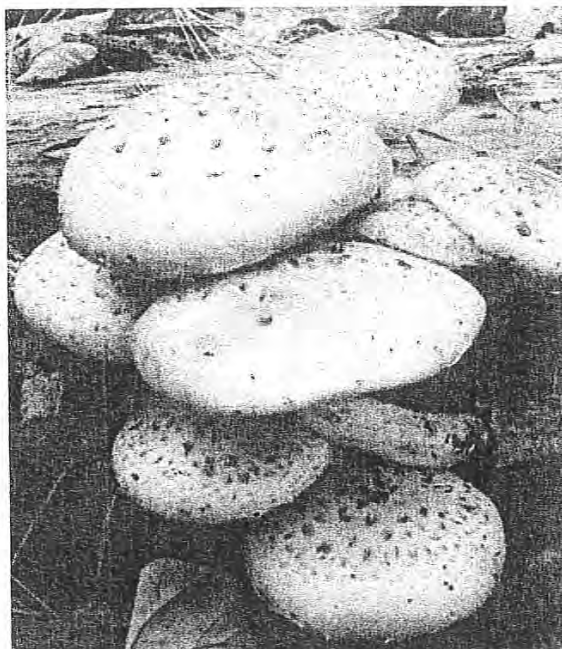


Figure 2. Mature specimens with conspicuous, flattened, wine-red scales. The cap surface is just slightly sticky. Photo © Michael Emberger.

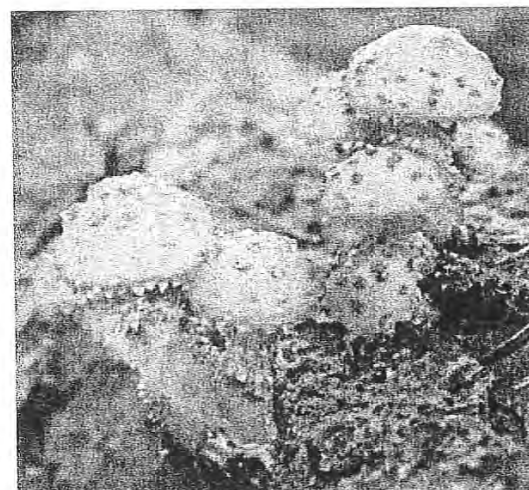


Figure 3. The viscid, slimy cap surface is quite evident in these young specimens. Photo © David Work.



Figure 1. Three clusters of *Pholiota aurivella* growing on a log from a deciduous tree. Photo © Michael Emberger.

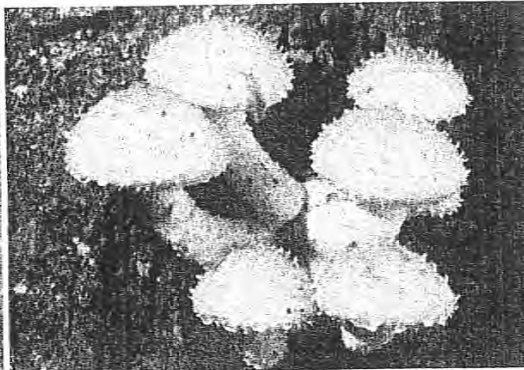


Figure 4. Note that the scales may not be completely flattened. Also, scales can be washed off by rain which can complicate the identification process. Photo © William Roody.

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Forest Pest- Insects

Douglas-Fir Beetle

Attacks and kills Douglas-fir trees

Name and Description—*Dendroctonus pseudotsugae* Hopkins [Coleoptera: Curculionidae: Scolytinae]

The Douglas-fir beetle is a common bark beetle that kills Douglas-fir trees. Adult beetles are cylindrically-shaped and about a 1/4 inch (6 mm) long. The head and thorax are black, and wing covers are reddish brown. Eggs are white and very small (1/25 inch [1 mm] long). Larvae are legless and white with light brown heads. Larvae can grow up to 1/4 inch (6 mm) long. Pupae are white, and some adult features are often present.

Hosts—Douglas-fir

Life Cycle—Douglas-fir beetles have a 1-year life cycle and overwinter as adults or larvae. Beetles usually emerge mid to late spring, when the temperature is 60° F and above. However, a small portion of beetles emerge later in midsummer. Some adults that make early spring attacks can reemerge and make a second attack from late June to August. Distinctive vertical egg galleries (5-12 inches [13-30 cm] long) are constructed by the female in the phloem layer (fig. 1). Eggs are laid in groups, alternating along opposite sides of the gallery. Eggs hatch in 1-3 weeks, and newly hatched larvae mine out at right angles from the egg gallery. Mature larvae construct a pupal chamber at the end of their mines.

Damage—The larvae feed under the bark in the phloem layer, introducing fungi, yeasts, and other organisms, and lead to tree death. The first sign of attack is reddish orange frass in bark crevices that is expelled by attacking beetles (fig. 2). However, frass can wash away and attacks may be above eye-level, making it difficult to locate attacked trees. Pitch-tubes are not usually present, but many trees will have pitch streaming (clear resin) down the tree bole from the top of the beetle-colonized area. Tree foliage discolors several months to a year later, transitioning from green to reddish brown in that time.

Douglas-fir beetles prefer to attack trees that are injured by fire scorch, defoliation, windthrown, or root disease. When low beetle populations are present, individual or small groups of trees will be attacked. Once populations build up, large outbreaks can occur that kill thousands of trees. Stand conditions and weather can also strongly influence Douglas-fir beetle populations.

Management—The best management is to promote stand vigor by thinning. Prompt removal of windthrown, severely fire-damaged trees or trees damaged by other stand disturbances is also recommended. Because Douglas-fir beetles preferentially attack burned trees, removing fuels from beneath large-diameter Douglas-fir trees before a prescribed burn can reduce tree scorch and, consequently, the tree's susceptibility to attack by Douglas-fir beetle. Attacks are most severe in unmanaged stands, on trees that are largest in diameter, and in dense stands. If direct



Figure 1. Douglas-fir beetle egg and larval galleries. Photo: Kenneth Gibson, USDA Forest Service, Bugwood.org.



Figure 2. Reddish orange frass from Douglas-fir beetle attack. Photo: Sandy Kegley, USDA Forest Service, Bugwood.org.

Douglas-Fir Beetle - page 2

control is deemed necessary, trees can be protected using the anti-aggregation pheromone methylcyclohexanone (MCH), which disrupts beetle aggregation. Combining MCH with salvage of infested trees has been successful at reducing subsequent tree mortality. However, under condition of intense or long-lived outbreaks, even MCH has sometimes failed to protect trees. Direct control is usually implemented in small, high-value areas.

1. Furniss, R.L.; Carolin, V.M. 1977. Western forest insects. Misc. Publ. 1339. Washington, DC: U.S. Department of Agriculture, Forest Service. 654 p.
2. Schmitz, R.F.; Gibson, K.E. 1996. Douglas-fir beetle. Forest Insect and Disease Leaflet 5. Washington, DC: U.S. Department of Agriculture, Forest Service. 8 p.





Fir Engraver Beetle (*Scolytus ventralis*)

Hosts:

Grand fir, white fir, red fir, noble fir, Douglas-fir, and Engelmann spruce.

Importance:

The fir engraver beetle is a significant pest of mature and pole-sized true fir. Since the 1990's, two fir engraver outbreaks have occurred that affected over 300,000 forest acres in eastern Oregon. Long-term losses to the fir engraver may be greater since attacks not causing tree mortality provide entrance points for decay organisms. True firs weakened by disease and stand disturbance, such as drought, defoliator outbreaks, and logging activity, are particularly susceptible to beetle attacks. Outbreaks in Oregon are often associated with drought events.

Trees under attack display reddish-brown or white boring dust in bark crevices.

Look For:

June – August

Trees under attack display reddish-brown or white boring dust in bark crevices. An attack site favored by this beetle is the branch collar, the junction of a branch and the trunk. Frequently streams of clear pitch flow down the bark from the point of beetle attack. Trees with more than ten pitch streams on the main bole have a high probability of dying.

September – June

Individual branches or the entire crown of trees under attack turn yellow-green and eventually red. A portion of recently attacked trees may fade in the fall; the remainder fade the next spring. Fir engraver attacks on dead trees can be confirmed by removing patches of bark and finding the beetle (Figure 1) or its distinctive gallery (Figure 2).

Infestation Characteristics:

The fir engraver beetle has one generation per year and attacks host trees from June–September with the most activity occurring from July - August. Unlike other bark beetles, the fir engraver needs only to kill a strip of cambium near its



Photo: Don Owen, CDF, Bugwood.org

Figure 1: The fir engraver beetle is a shiny black color, has a "sawed-off" appearance and is approximately 4mm in length.

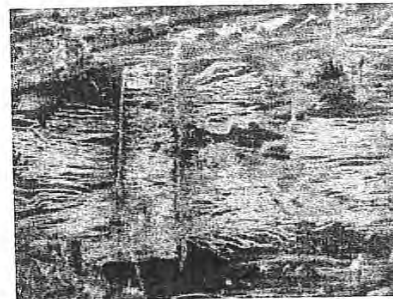


Photo: USDA FS Archives, Bugwood.org

Figure 2: The fir engraver beetle gallery is etched into the sapwood across the wood grain and is 4- to 12-inches in length.

gallery to successfully reproduce. Because it doesn't necessarily kill the tree, fir engraver attacks result in a variety of tree symptoms: (1) dead branches, (2) top kill, and (3) complete tree mortality (Figure 3).



Photo: Ken Gibson, USDA FS, Bugwood.org



Figure 3: Top and branch kill from fir engraver attacks in white fir.

Endemic fir engraver populations maintain themselves by attacking trees weakened by root disease or killing patches of bark on otherwise healthy trees. Beetle outbreaks often occur in the years following a period of subnormal precipitation or logging activity (Figure 4).

Logging operations can contribute to outbreaks in two ways: (1) fresh slash with a diameter >4 inches provides breeding material for the beetles, and (2) the shock of

opening the stand can temporarily lower the vigor of crop trees. Outbreaks of defoliating insects such as the western spruce budworm and Douglas-fir tussock moth may be

Photo: Dave Overhuser, ODF

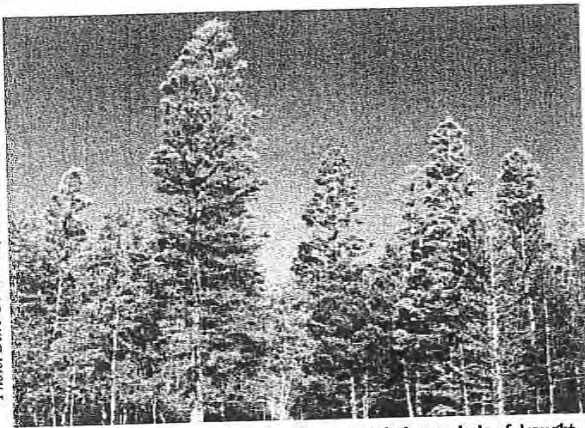


Figure 4: Fir engraver outbreaks often occur during periods of drought or following defoliation events.

Photo: Don Owens, CDF, Bugwood.org

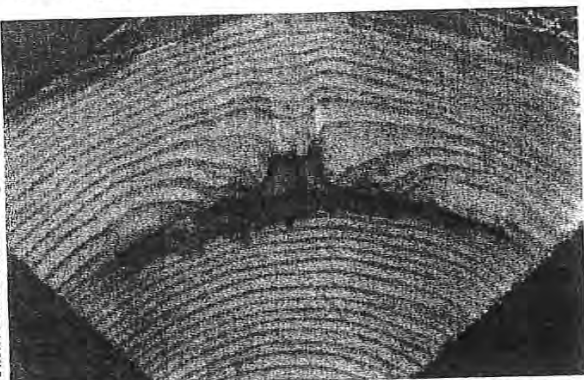


Figure 5: Non-lethal fir engraver attacks (patch kill) can allow decay organisms to enter the wood.

followed by fir engraver beetle outbreaks that peak one to three years later. A sustained drought event, such as the one that affected parts of eastern Oregon in the late 1980s and early 1990s, can result in entire fir stands being killed by the fir engraver beetle rather than a few individual trees.

Fir engraver attacks that do not produce tree mortality cause scars clearly visible on the outer bark. Various defects such as stain, ring-shake, and decay are associated with old attack scars (Figure 5). These defects can reduce the value of true fir for solid wood markets.

Management:

Salvage

Beetle populations can be reduced by removing recently killed trees, those still holding yellow or red needles, from the stand before the beetle flight in June.

Remove injured or decadent true fir that might provide breeding material for the fir engraver beetle. Poor crown condition and live crown ratios have been associated with susceptibility to engraver beetle attack in white fir and red fir. These declining trees should be harvested whenever possible.

Silvicultural

If fir engraver attacks are associated with a root disease pocket, the best strategy is to follow root disease management guidelines.

The fir engraver beetle can breed in fresh slash with a diameter >4 inches. Avoid creating large pieces of true fir slash from January - July.

Overstocked fir stands should be thinned to reduce competition and increase tree vigor.

For further information about the Oregon Department of Forestry's Forest Health Program,

Call or write to:

Rob Flowers, Forest Entomologist
(503)945-7396
rflowers@odf.state.or.us

Alan Kanaskie, Forest Pathologist
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www.oregon.gov/ODF/PRIVATE_FORESTS/fh.shtml



Flatheaded Fir Borer (*Melanophila drummondi*)

Hosts:

Douglas-fir, true fir, western larch, spruce, and western hemlock.

Importance:

Flatheaded fir borers commonly breed in felled trees or those weakened by fire, defoliation, drought, or other types of disturbance. Trees infested are usually pole size or larger. Beetles can infest the entire tree or attacks can be confined to the upper crown and result in topkill. Flatheaded fir borers are considered less aggressive in their attacks on living trees than bark beetles.

This beetle is particularly aggressive in southwest Oregon where it attacks Douglas-fir growing on the edge of stands or scattered patches of trees on dry sites (Figure 1). In eastern Oregon, the flatheaded fir borer is also one of the few insects that attacks and kills western larch.



Photo: Rob Flowers, ODF

Figure 1: Douglas-fir mortality from flatheaded fir borer attacks in southwest Oregon.

Look For:

Detection of flatheaded fir borer attacks prior to the yellowing of the tree's crown is difficult. Unlike bark beetles, there are no external indicators of attack such as boring dust or pitch streams on the bark. For this reason, infestations are rarely diagnosed before the damage has already occurred. However, it is sometimes possible to identify infested green trees during the fall and winter months from the patches of bark removed by woodpeckers searching for beetle larvae. By the time the infested tree's foliage turns red, usually in the late spring or early summer in the year after attack, beetles have already left the tree.

The only way to confirm a beetle attack is to remove a piece of bark and look for its distinctive gallery pattern (Figure 2). Larvae construct wide, winding galleries that increase in width as larvae grow. Galleries are filled with a brown dust

packed in concentric lines (Figure 3). The removal of bark from the tree's lower bole does not guarantee detection of a flatheaded

borer attack, since sometimes attacks are confined to the upper crown.

Biology:

Although called a borer, the larvae of this large beetle feed and develop in the phloem/cambium interface, much like bark beetle larvae, and never bore into the tree's sapwood. The life cycle of the flatheaded fir borer normally requires one year. Adults emerge in the spring and feed on

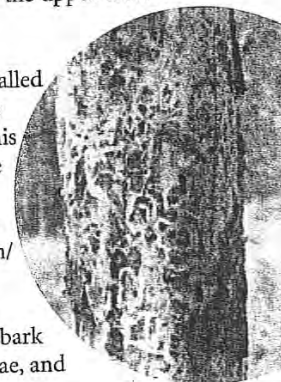


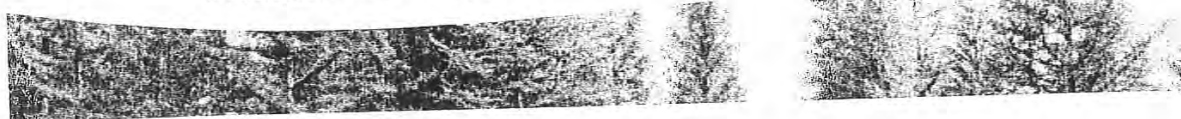
Photo: Dave Overhulser, ODF

Figure 2: Bark removed to show flatheaded fir borer galleries.



Photo: Dave Ewells, USDA FS, Bugwood

Figure 3: Flatheaded fir borer larvae have an enlarged head and distinct body segments. Galleries are extremely flat and packed with layers of sawdust like pellets.



conifer needles before flying to a suitable host tree. Adult beetles can sometimes be seen resting on tree bark exposed to direct sunlight (Figure 4). Eggs are laid in bark crevices and upon hatching, larvae immediately bore into the inner bark. Larvae feed in the inner bark without boring into the sapwood. Late in the summer or early fall, larvae construct pupal cells in the outer bark. Winter is spent in the outer bark and adult beetles emerge the following spring.

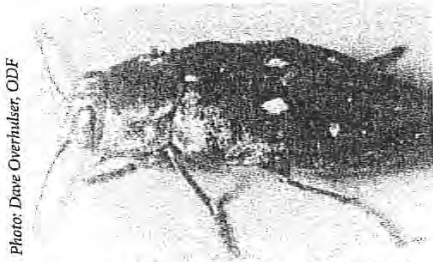


Photo: Dave Overhulser, ODF

Figure 4: Adult beetles have a metallic bronze or black body color. Yellow spots of varying size are sometimes present.

Control:

Silvicultural

Procedures to maintain stand vigor, such as sanitation cuttings and thinning, are thought to be helpful in reducing tree susceptibility to flatheaded borers. On harsh sites in southwest Oregon, regenerating or favoring pine during thinning rather than Douglas-fir will reduce future flatheaded borer problems.

Avoid practices detrimental to trees including backfilling over roots, soil compaction in the root zone, and road cuts through well-established stands.

Flatheaded fir borer commonly attack damaged Douglas-fir. Trees with more than 50% of the crown or 25% of the cambium damaged by fire has a high probability of attack and should be removed to prevent a build-up of borer populations.

For further information about the Oregon Department of Forestry's Forest Health Program,

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