Pepper THP
Section V

Table of Contents

TRACTOR-Erosion Hazard Rating

	Soil Series Name	Map Unit
A	Empire loam, 9 to 30 percent slopes	EmE
B	Goldridge fine sandy loam, 15 to 30 percent slopes	GdE
C	Hugo-Josephine complex, 50 to 75 percent slopes	HnG
D	Josephine loam,50 to 75 percent slopes	JoG

A. Soil Texture	Fine	Medium	Coarse	A	B	C	D
Detachability Rating	Low	Moderate	High	17	20	17	17
	1-9	10-18	19-30				
Permeatility Rating	Slow	Moderate	Rapid	3	1	2	2
	5-4	3-2	1				

B. Depth to Restrictive Layer or Bedrock	Shallow	Moderate	Deep	A	B	C	D
Depth	1"-19"	10"-39"	40"-60" (+)	1	1	1	2
Rating	15-9	8-4	3-1				

C. Percent Surface Coarse Fragments (>2mm)	Low	Moderate	High	A	B	C	D
% >2mm	10%-39%	40%-70%	71-100%	4	4	2	6
Rating	10-6	5-3	2-1				

Sub Total	A	B	C	D
	25	26	22	27

II. Slope Factor							A	B	C	D
Slope	5-15%	16-30%	31-40%	41-50%	51-70%	71-80% (+)	4	5	16	16
Rating	1-3	4-6	7-10	11-15	16-25	26-35				

III. Protective Vegetative Cover Remaining After Disturbance	Low	Moderate	High	A	B	C	D
% Coverage	0-40%	41-80%	81-100%	5	5	5	5
Rating	15-8	7-4	3-1				

IV. Two-Year, One-hour Rainfall Intensity (.01)	Low	Moderate	High	Extreme	A	B	C	D
Rainfall	(-) 30-39	40-59	60-69	70-80 (+)	12	12	12	12
Rating	1-3	4-7	8-11	12-15				

Total Sum of Factors	A	B	C	D
	46	48	55	60

Low (L)	Moderate (M)	High (H)	Extreme (E)	A	B	C	D
50	50-65	66-75	>75	L	L	M	M
The Determination is							

CABLE-Erosion Hazard Rating

	Soil Series Name	Map Unit
A	Goldridge fine sandy loam, 15 to 30 percent slopes	GdE
B	Hugo very gravelly loam, 50 to 75 percent slopes	HkG
C	Josephine loam,50 to 75 percent slopes	JoG

A. Soil Texture	Fine	Medium	Coarse	A	B	C
Detachability Rating	Low	Moderate	High	20	17	17
	1-9	10-18	19-30			
Permeatility Rating	Slow	Moderate	Rapid	1	2	2
	5-4	3-2	1			

B. Depth to Restrictive Layer or Bedrock	Shallow	Moderate	Deep	A	B	C
Depth	1"-19"	10"-39"	40"-60" (+)	1	2	2
Rating	15-9	8-4	3-1			

C. Percent Surface Coarse Fragments (>2mm)	Low	Moderate	High	A	B	C
% >2mm	10%-39%	40%-70%	71-100%	4	2	6
Rating	10-6	5-3	2-1			

Sub Total	A	B	C
	26	23	23

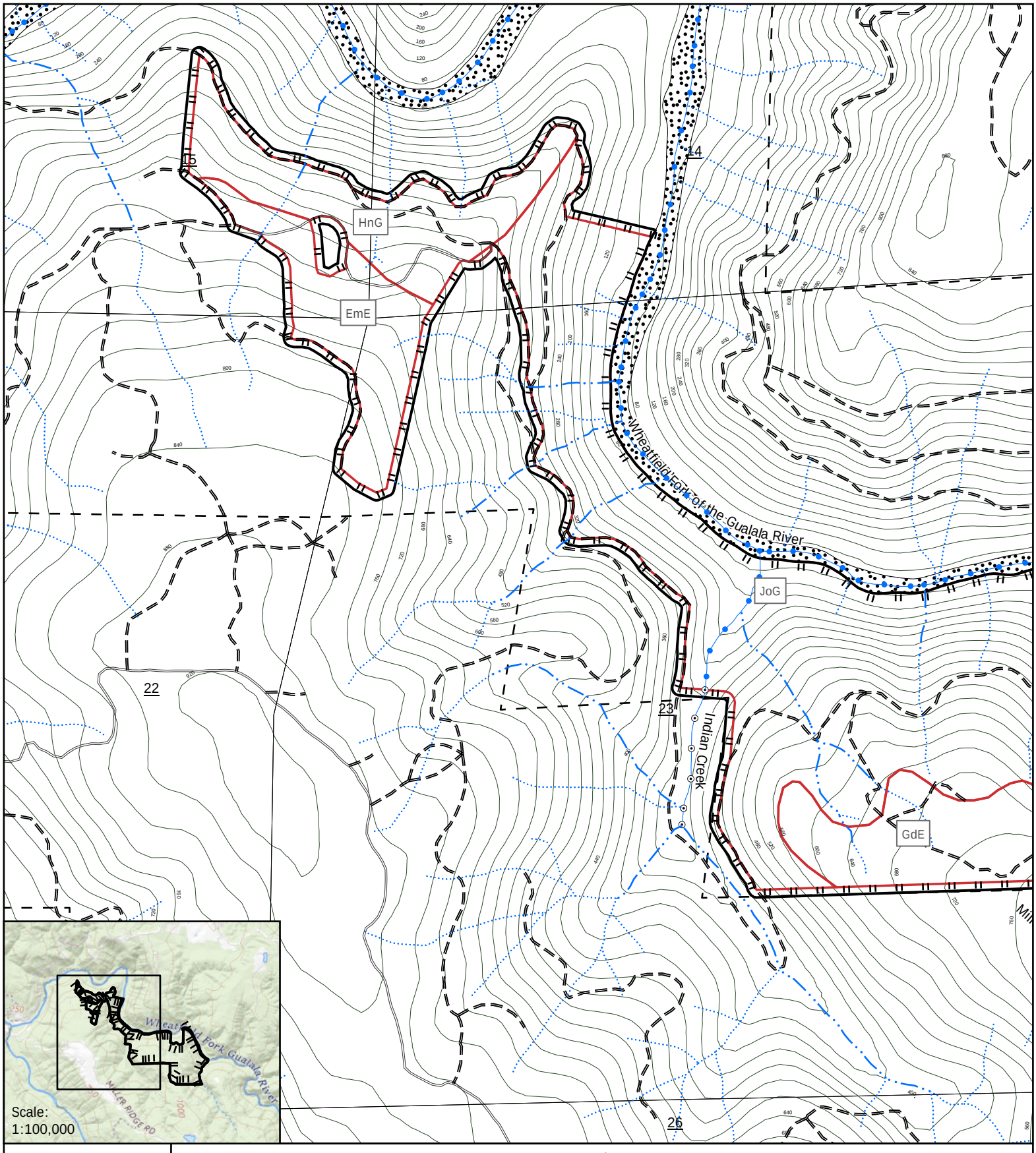
II. Slope Factor							A	B	C
Slope	5-15%	16-30%	31-40%	41-50%	51-70%	1-80% (+	5	16	16
Rating	1-3	4-6	7-10	11-15	16-25	26-35			

III. Protective Vegetative Cover Remaining After Disturbance	Low	Moderate	High	A	B	C
% Coverage	0-40%	41-80%	81-100%	3	3	3
Rating	15-8	7-4	3-1			

IV. Two-Year, One-hour Rainfall Intensity (.01)	Low	Moderate	High	Extreme	A	B	C
Rainfall	(-) 30-39	40-59	60-69	70-80 (+)	12	12	12
ting	1-3	4-7	8-11	12-15			

Total Sum of Factors	A	B	C
	46	54	54

Low (L)	Moderate (M)	High (H)	Extreme (E)	A	B	C
50	50-65	66-75	>75	L	M	M
The Determination is						



Pepper THP

EHR Map

Page 1 of 2

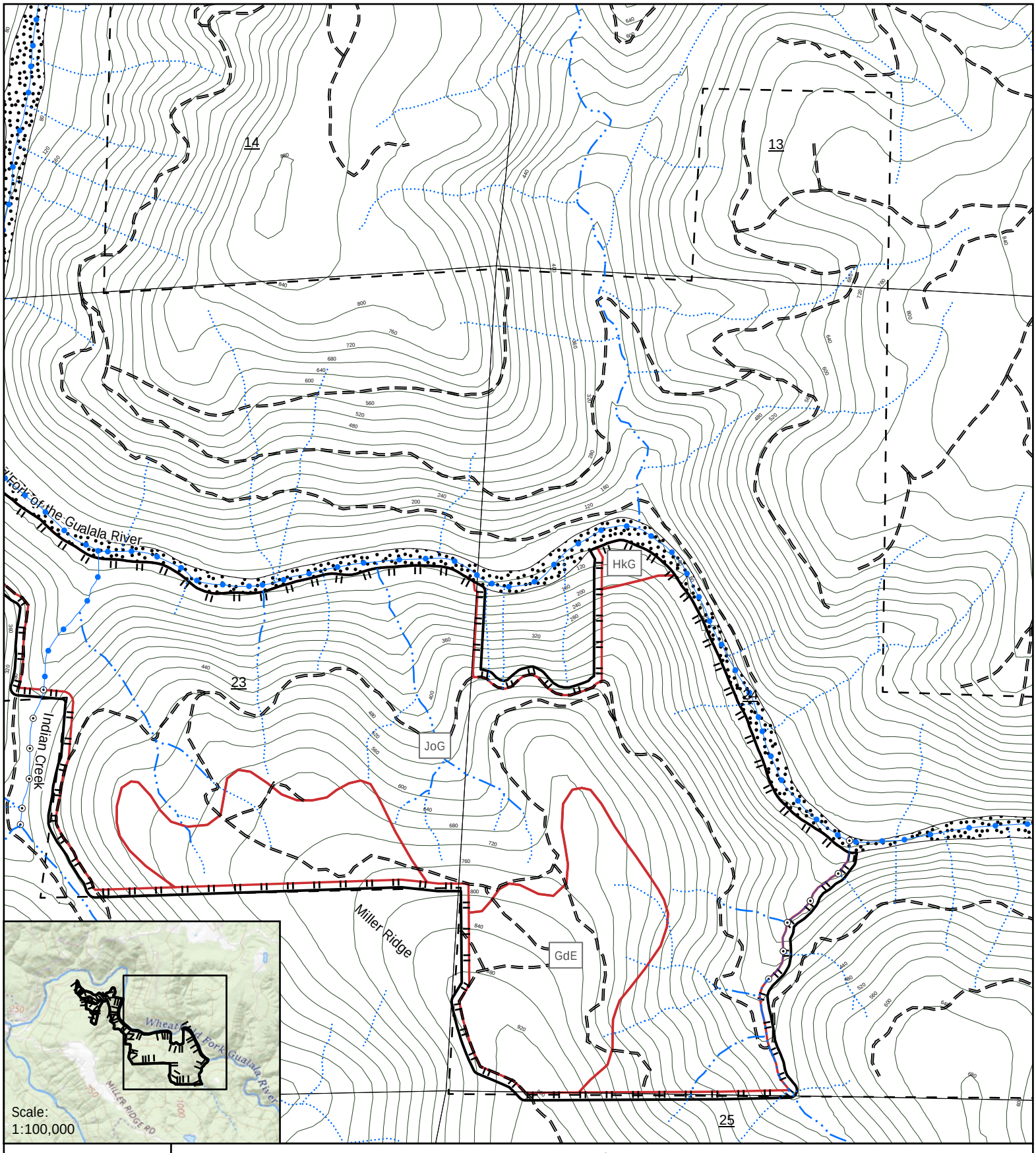
N

Scale: 1:10,000

Contour Interval: 40 ft.

Legend

- GRT Ownership
- THP Boundary
- Gualala River Polygon
- Private Permanent Road
- Private Seasonal Road
- Soil Boundary



Pepper THP

EHR Map

Page 2 of 2

N

Scale: 1:10,000

Contour Interval: 40 ft.

Legend

- GRT Ownership
- THP Boundary
- Gualala River Polygon
- Private Permanent Road
- Private Seasonal Road
- Soil Boundary

Gualala Redwood Timber

Pepper Timber Harvest Plan

EROSION CONTROL PLAN

INTRODUCTION

On June 23, 2004 the North Coast Regional Water Quality Control Board adopted General Waste Discharge Requirements for timber harvest activities on non-federal land (Order #R1-2004-0030). These requirements require technical reports to be developed as a basis for corrective actions undertaken to control sediment, fuel, and other potential waste discharge sources within the project area. These reports include an Erosion Control Plan, a Fuel Management Plan, and an Inspection Plan. The Fuel Management Plan applies to tanks over 1,320 gallons, and no tanks of this size are proposed for use by this project, therefore a Fuel Management Plan is not required. As per Order #R1-2004-0030, Section III C1, the Inspection Plan will be submitted with the Application/Report of Waste Discharge.

The Erosion Control Plan must identify and inventory all controllable sediment discharge sources in the project area, including those roads used for timber harvest activities owned by or under the control of the landowner. The Erosion Control Plan shall be designed to prevent and minimize the discharge or threatened discharge of sediment or other earthen material from controllable sediment discharge sources into waters of the State. Sediment discharge sources include, but are not limited to:

- Failing or failed watercourse crossings
- Road failures
- Road surfaces
- Landslides
- Unstable features discharging to or near watercourses
- Unstable watercourse banks
- Soil stockpiles
- Storage of sediment
- Vehicle and equipment storage and service areas
- Skid trails
- Landings
- Exposed harvest units

INVENTORY METHOD DESCRIPTION

The method used to collect the baseline data inventory and conduct an assessment of unstable areas was a combination of field surveys and office procedures. Roads, landings, and skid trails were evaluated in the field for stability and erosion. Office review of documents included air photos, LiDar and the Geologic and Geomorphic Features Related to Landsliding. The inventory and assessment were inventoried based upon the following definition:

“Controllable sediment discharge sources” is defined as sites or locations, both existing and those created by proposed timber harvest activities, within the project area that meet all the following conditions:

1. is discharging or has the potential to discharge sediment to waters of the State in violation of applicable water quality requirements or other provisions of the General Waste Discharge Requirements (WDRs).

2. was caused or affected by human activity, and

3. may feasibly and reasonably respond to prevention and minimization management measures.

INSPECTION PLAN

The inspection plan is intended to ensure that all required management measures are installed and functioning prior to rain events, that the management measures were effective in controlling sediment discharge sources throughout the winter period, and that no new controllable sediment discharge sources have developed.

Names and contact numbers of the assigned inspection personnel:

John Bennett (707) 894-4245

Project Areas where Timber Harvest Activities Have Not Yet Commenced
No inspections are required.

Project Areas where Timber Harvest Activities Have Commenced and No Winter Period Timber Harvest Activities have Occurred
At a minimum, conduct inspections each year and throughout the duration of the Project while timber harvest activities occur and the Project is covered under General WDRs as follows:

1. By November 15 to assure project areas are secure for the winter; and

2. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and

3. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharge and to determine if any new controllable sediment discharge sources have developed.

Project Areas with Winter Period Timber Harvest Activities
Project areas with timber harvest activities during the winter period shall, at a minimum, conduct inspections of such Project areas while timber harvest activities occur and the Project is covered under General WDRs as follows:

1. Immediately following the cessation of winter period timber harvest activities to assure areas with winter timber harvest activities are secure for the winter;

2. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and

3. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharge and to determine if any new controllable sediment discharge sources have developed.

Inspection reports prepared pursuant to section III.G. (Amendments) shall identify where management measures have been ineffective and when the Discharger will implement repairs or design changes to correct management measure failures.

If any new controllable sediment discharge sources are identified, such sites shall be addressed in accordance with the provisions of section III. B.3.

Equipment, materials, and workers shall be available for rapid response to failures and emergencies, and implement, as feasible, emergency management measures depending upon field conditions and worker safety for access.

PREPARER CERTIFICATION

As required by Section III.F.5. The technical reports, any amendments, and inspections reports shall be signed by the Discharger or their duly authorized representative, pursuant to section IV.R., and shall include the date of initial preparation and the date of each amendment.

M. Pugsley 4/18/2025

By: Mark Pugsley, RPF #3097 Date

REFERENCES

Handbook for Forest and Ranch Roads, The Mendocino County Resource Conservation District, California Department of Forestry and Fire Protection, The USDA Soil Conservation Service. Weaver, W.E. and Hagens, D.K. Revised First Edition April 2015.

Designing Watercourse Crossings for Passage of 100-year Flood Flows, Wood, and Sediment. California Department of Forestry and Fire Protection. Cafferata, Peter; Spittler, Thomas; Wopat, Michael; Bundros, Greg; and Flanagan, Sam. California Forestry Report No. 1. 2004.

Map Point	Type	Description	Treatment	Delivery Risk	Delivery Potential	Total Site	Deliverable Site	Treatment Priority
3	Crossing (Ford)	Temporary Class III Watercourse Crossing with rock armored outlet. Minor erosion occurring at outlet. Functioning	If wet at time of operations install a 4" flex pipe to drain feature and remove after operations. After operations and prior to the winter period remove temporary crossing. Refer to Sec II, Item 38, Typicals.	Low	Low	1 Cu yd	>1 cu yd	L
4	Crossing (Ford)	Class III crossing utilizing 18" metal culvert, rusting through. Class III is diverted 20' down inside ditch prior to crossing.	After operations and prior to the winter period remove 18" culvert and: • Install a 30" minimum culvert crossing. Refer to Sec II, Item 38, Typicals. <u>OR</u> • Install a rock ford utilizing 12" D50 rock. Refer to Sec II, Item 38, Typicals, Rock Ford	Low	Low	2 cu yds	>1 cu yd	L
6	Crossing	Class III Watercourse	Replace with 24" culvert and	Low	Low	5 cu yds	1 cu yd	L

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

		Crossing utilizing 24" metal culvert and downspout. Culvert is rusting through.	install either a downspout or rock energy dissipater. Refer to typicals.D50=12"					
7	Crossing	24" metal culvert with deformed upper half of inlet, does not impact functionality. Culvert is shotgunned.	Deformity to culvert is in the upper half of the inlet and does not impact functionality. Retain culvert. Install rock energy dissipater or downspout below outlet; refer to typicals. D50=12"	Low	Low	1 cu yds	>1 cu yd	L
8	Crossing (Ford)	Class III watercourse that crosses road with no drainage structure in place.	If wet at time of operations install 4" flex pipe to drain feature. After operations and prior to the winter period remove culvert(if installed) and install a rocked ford utilizing 9" D50 rock Refer to Sec II, Item 38, Typicals, Rock Ford.	Low	Low	1 Cu yd	>1 cu yd	L
11	Crossing	48" metal culvert at Class II watercourse crossing, culvert is rusting through and has a shotgunned outlet. Fill failure has occurred above outlet. No	Replace with a 48" minimum culvert and install new culvert to grade. Rock armor inlet. D50=36" OR Remove crossing following operations, refer to Item 38	Medium	Medium	5 cu yds	>5 cu yds	M

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

		evidence of overtopping observed.	Typicals					
12	Crossing	Pulled Class-II crossing, functioning.	Install a Temporary Spittler Stream Crossing or Temporary Straw Bale Crossing. Utilize a 24" minimum culvert for the crossing. Prior to the winter period remove crossing, refer to typicals.	Low	Medium	1 cu yds	>1 cu yds	L
13	Crossing	30" metal culvert with downspout, culvert is rusting through.	Replace with a 36" minimum culvert and install energy dissipater at outlet, refer to typicals. D50=24"	Low	Medium	8 cu yds	>5 cu yds	M
14	Crossing (Ford)	Class III watercourse that crosses road via dip. Functioning.	if wet at time of operations install 4" flex pipe to drain feature. If wet at time of operations install 4" flex pipe to drain feature. After operations and prior to the winter period remove culvert(if installed) and install a rocked ford utilizing 6" D50 rock Refer to Sec II, Item 38, Typicals, Rock Ford.	Low	Low	1 Cu yd	>1 cu yd	L

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

15	Crossing (Ford)	Class III watercourse that crosses road via dip. Functioning.	if wet at time of operations install 4” flex pipe to drain feature. If wet at time of operations install 4” flex pipe to drain feature. After operations and prior to the winter period remove culvert(if installed) and install a rocked ford utilizing 9” D50 rock Refer to Sec II, Item 38, Typicals, Rock Ford.	Low	Low	1 Cu yd	>1 cu yd	L
16	Crossing	36” metal culvert at Class II watercourse crossing with downspout. Culvert is rusting through.	Replace with a 42” minimum culvert and install energy dissipater at outlet, refer to typicals. D50=36"	Low	Medium	6 cu yds	>5 cu yds	M
18	Complex	Feature 1:Class III crossing utilizing a 24” metal culvert, rusting through. Feature 2: Bank slump narrowing road surface to 6’ and minor outboard edge fill failure.	Feature 1: Replace culvert with 24” minimum culvert, refer to typicals. Feature 2: install 2 waterbars east of site(50’ and 100’) to direct surface flows off site. Cut into sloughed material as necessary to regain minimum required operating surface. To	Low	Medium	5 cu yds	>1 cu yd	M

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

			the extent feasible retain submerchantable Douglas-fir immediately below road.					
19	Crossing	36” metal culvert rusting through at inlet.	Replace culvert with a 42” minimum culvert, refer to typicals	Low	Medium	6 cu yds	>5 cu yds	M
41	Crossing	Pulled Class II crossing. Functioning	Install a Temporary Spittler Stream Crossing or Temporary Straw Bale Crossing. After operations and prior to the winter period, remove the temporary crossing. Refer to Sec II, Item 38, Typicals	Low	Low	1 Cu yd	>1 cu yd	L
42	Crossing (Ford)	Class III watercourse that crosses road via dip. Functioning.	if wet at time of operations install a 4” flex pipe to drain feature. After operations and prior to the winter period remove temporary crossing. Refer to Sec II, Item 38, Typicals	Low	Low	1 Cu yd	>1 cu yd	L
49	Tractor Crossing	Existing Class II Tractor Classing. Functioning	IF UTILIZED: install a 24" culvert to drain feature. After operations and prior to the winter period remove tractor crossing and return to grade.	Low	Low	1 Cu yd	>1 cu yd	L

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

			IF NOT UTILIZED: No treatment.					
53	Watercourse Crossing/ Complex	Feature 1: Class III Watercourse crossing utilizing a 24” metal culvert, functioning. ½ round downspout is partial detached. Feature 2: 42 feet north is a minor fill failure, no over steepened fill observed.	Feature 1: Reattach or replace downspout. Remove bay laurel that is impacting downspout if necessary. Feature2: Install waterbar 25’ upslope to direct flows away from site. Do not sidecast materials when grading through site..	Low	Low	1 Cu yd	>1 cu yd	L
57	Complex	Feature 1: An area of settling fill impacting roughly 4 feet of the road surface. Feature 2: Located 300 feet west of Feature 1. Class II crossing utilizing a 30” culvert with a downspout. Inlet is at base of steep rock fall. Culvert inlet has begun to rust through	Refer to CEG Report for more information Feature 1: roadway be ramped into and out of the slump area during operation. If soft subgrade is encountered at the time of operations, geofabric consisting of Mirifi 600X or equivalent may be placed on the roadway and covered with gravel surfacing. Following operations, the	Low	Low	3 cu yd	1.5 Cu Yd	M

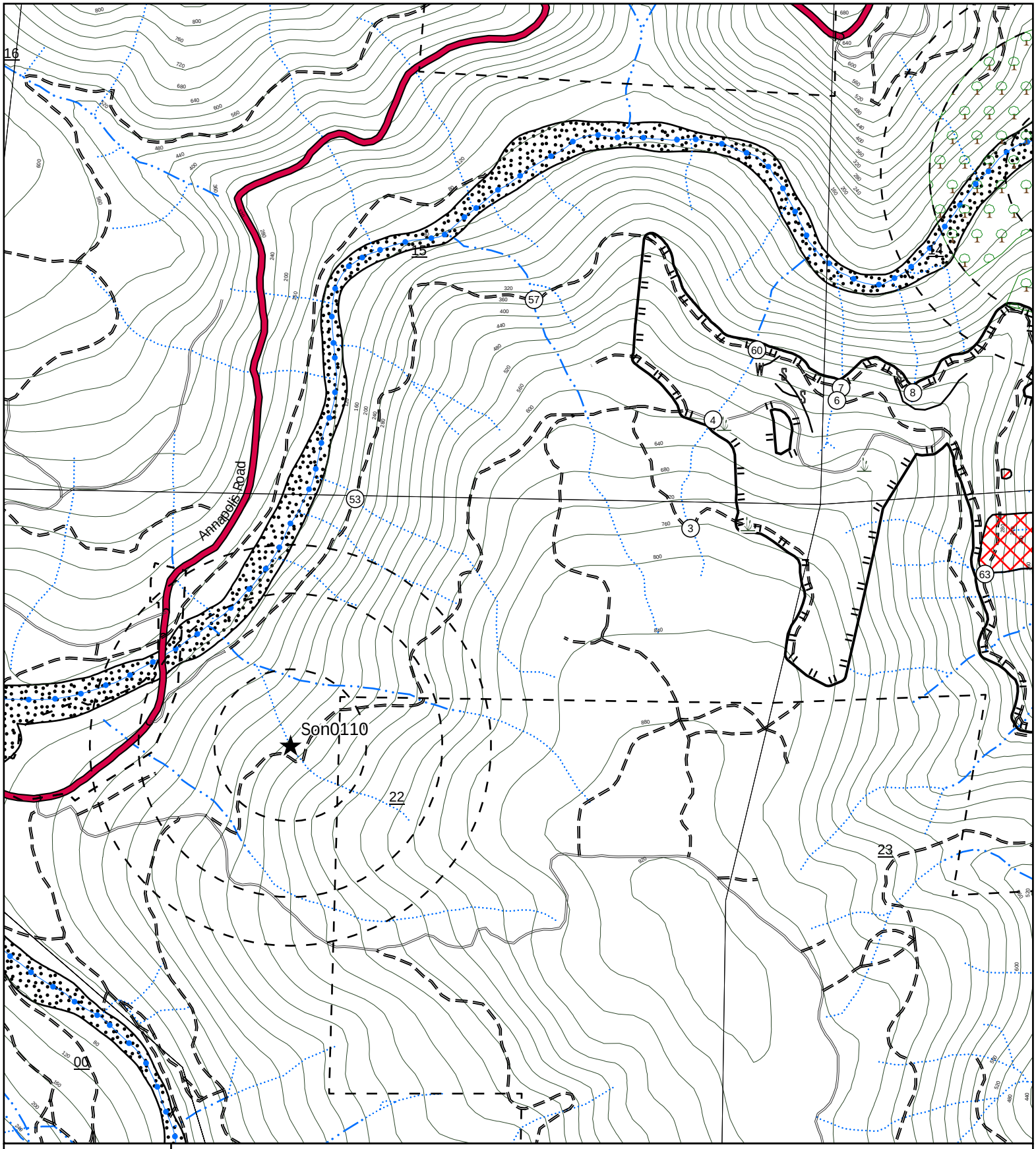
Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

			roadway should be returned to its original conditions and grade and the cracks and slumped area sealed so that positive drainage is maintained and not concentrated in the slump area. We recommend the roadway be maintained with a crown down the center line to encourage sheet flow drainage to both the outboard perimeter and inner v-ditch. The inner earthen v-ditch should be maintained to flow to the existing culvert located to the west. Feature 2: Replace with a 42" culvert. To the extent feasible. Excavations should extend no deeper than is required to install the new culvert and seat it on firm rock or soils. As possible					

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.

			maintain the large alders to the east and west of the culvert replacement. The culvert should be extended utilizing a downspout downslope to discharge onto erosion resistant areas as identified by the RPF in the field with flagging.					
60	Watercourse Crossing	24” metal culvert with downspout. Culvert is functioning, downspout rusting out.	Replace downspout or install rock energy dissipater. D50=12”	Low	Low	1 cu yd	>1 cu yd	L
63	Watercourse Crossing	24” metal culvert. Inlet is buried and outlet is rusting through.	Replace with 36” minimum culvert. refer to typicals	Moderate	Moderate	3 cu yd	>3 cu yd	M
70	Other	Road crosses swale above head of Class III watercourse.	If wet at time of operations install a 4” flex pipe to drain feature and remove after operations. After operations and prior to the winter period establish waterbar 25’ either side of site to direct water off road.	Low	Low	1 cu yd	>1 cu yd	L

Delivery Risk = Probability of sediment delivery. Delivery Potential =What is the rate of delivery in the event of failure Deliverable site volume = What volume of the site is likely to deliver sediment. Treatment priority = High priority sites should be treated first year of ground-based operations at site. Moderate priority sites should be treated by end of 3rd year. Low priority sites should be treated by end of 5th year or completion of timber operations, whichever is first.



Pepper THP
ECP Map
1 of 3

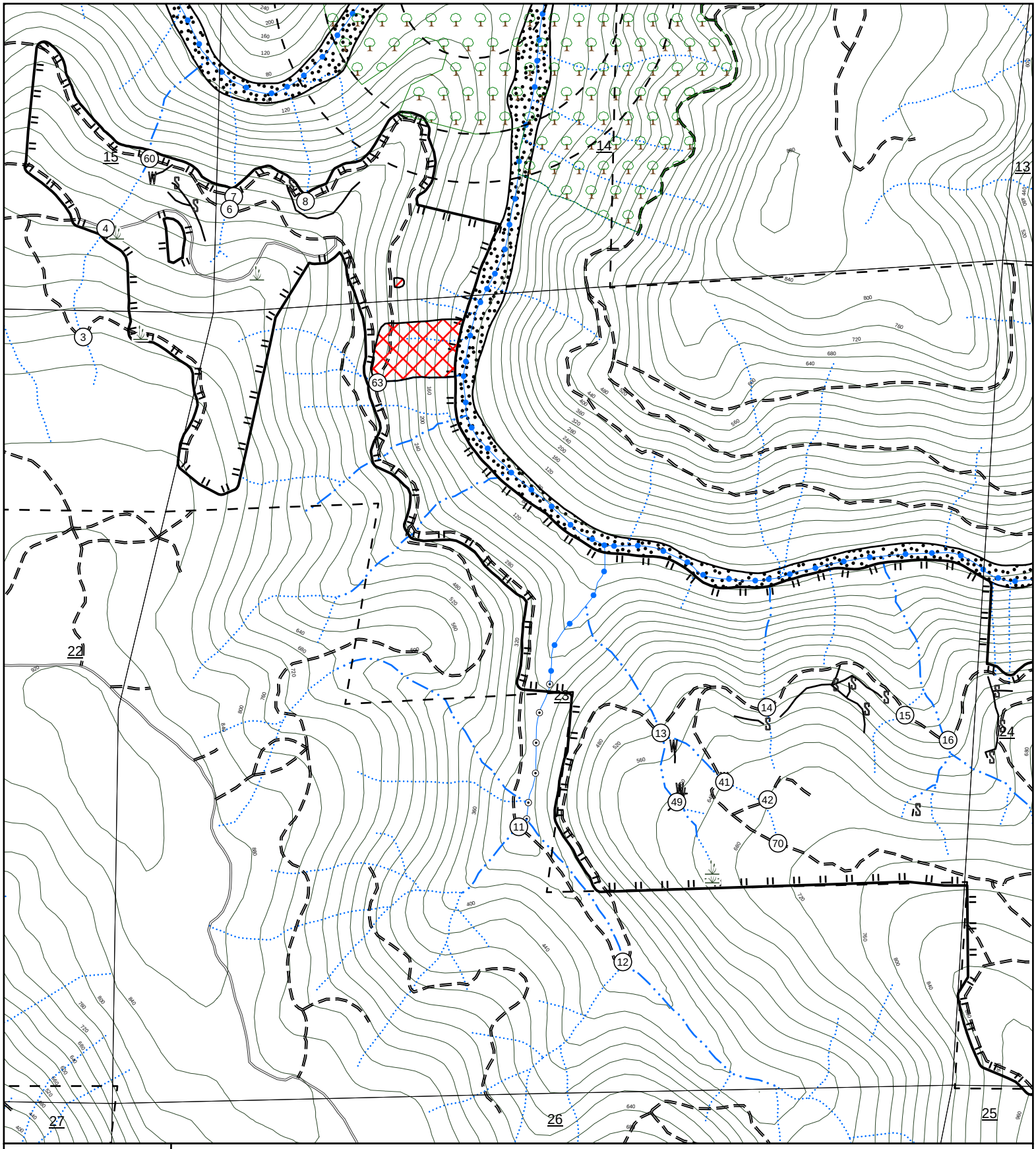
N

Scale: 1:10,000
Contour Interval: 40 ft.

Legend

- THP Boundary
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road
- Public Paved Road
- Steep Slope Skid Trail
- WLPZ Skid Trail
- ECP Site
- 373 Gualala River Polygon
- Wet Area
- GRT Ownership
- No Harvest Area
- NSO Core Area
- NSO Buffers: 500 ft, 1,000 ft and .25 Miles

6/24



Pepper THP
ECP Map
2 of 3

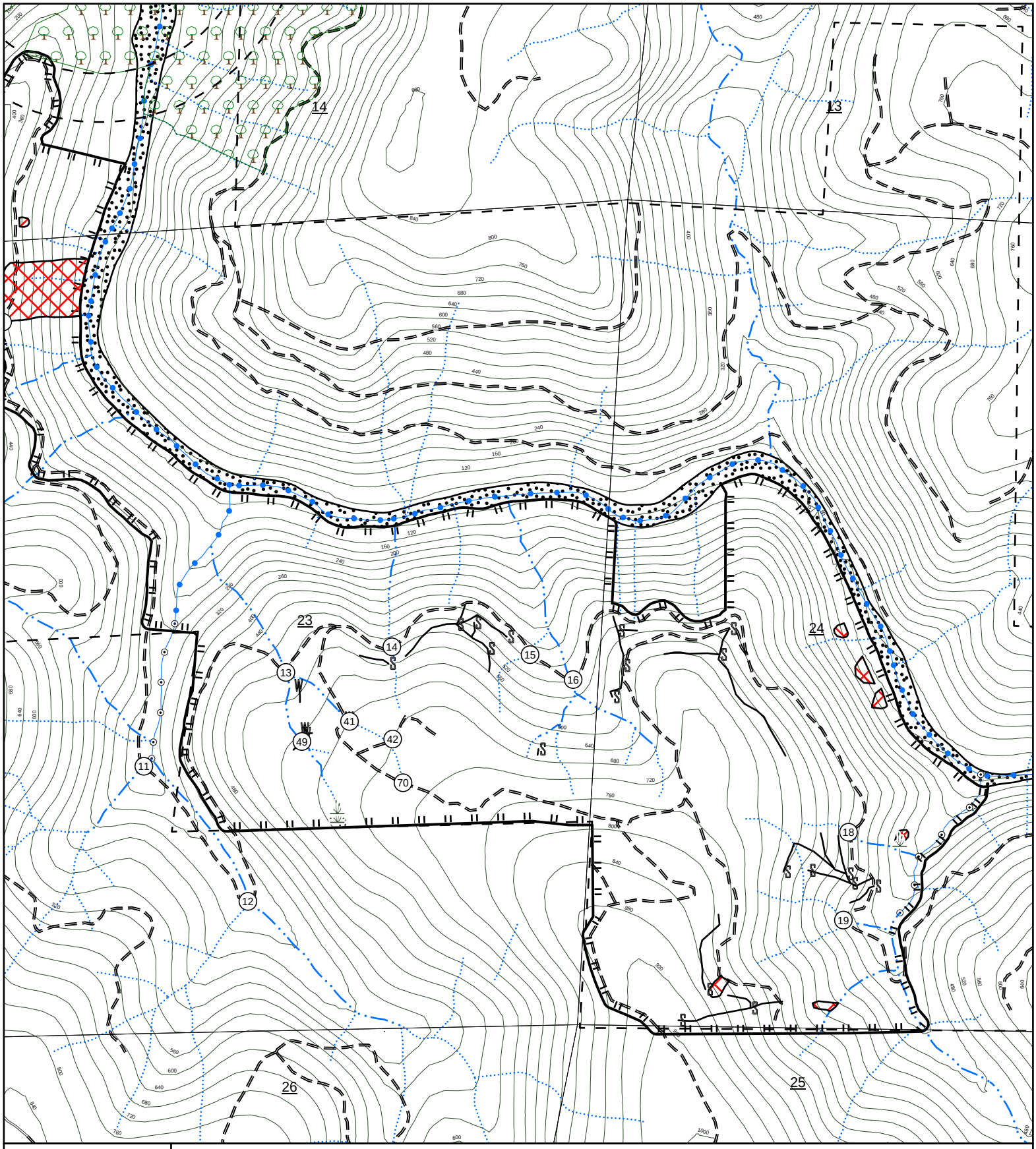
N

Scale: 1:10,000
Contour Interval: 40 ft.

Legend

- THP Boundary
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road
- Public Paved Road
- Steep Slope Skid Trail
- WLPZ Skid Trail
- ECP Site
- 374 Gualala River Polygon
- Wet Area
- GRT Ownership
- No Harvest Area
- NSO Core Area
- NSO Buffers: 500 ft, 1,000 ft and .25 Miles

6/24



Pepper THP
ECP Map
3 of 3

N

Scale: 1:10,000
Contour Interval: 40 ft.

Legend

- THP Boundary
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road
- Public Paved Road
- Steep Slope Skid Trail
- WLPZ Skid Trail
- ECP Site
- 375 Gualala River Polygon
- Wet Area
- GRT Ownership
- No Harvest Area
- NSO Core Area
- NSO Buffers: 500 ft, 1,000 ft and .25 Miles

6/24

Aquatic Assessment

Pepper Timber Harvest Plan

STREAM INVENTORY REPORT

Wheatfield Fork Gualala River

INTRODUCTION

A stream inventory was conducted during the summer of 2001 on Wheatfield Fork Gualala River. The survey began at the confluence with the South Fork Gualala River and extended upstream 20.2 miles.

The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Wheatfield Fork Gualala River Gualala River.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for coho salmon, and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Wheatfield Fork Gualala River is a tributary to the South Fork Gualala River, a tributary to the Gualala River, which drains to the Pacific Ocean. It is located in Mendocino County, California (Map 1). Wheatfield Fork Gualala River's legal description at the confluence with the South Fork Gualala River is T10N R14W S21. Its location is 38.7016 degrees north latitude and 123.4153 degrees west longitude. Wheatfield Fork Gualala River is a fourth order stream and has approximately 28.8 miles of blue line stream according to the USGS Stewarts Point 7.5 minute quadrangle. Wheatfield Fork Gualala River drains a watershed of approximately 111.6 square miles. Elevations range from about 200 feet at the mouth of the creek to 1,500 feet in the headwater areas. Mixed hardwood, mixed conifer forest and grassland dominates the watershed. The watershed is entirely privately owned and is managed for timber production, rangeland and agriculture. Vehicle access exists via Highway 1, south to Annapolis Road, to the mouth of Wheatfield Fork Gualala River.

METHODS

The habitat inventory conducted in Wheatfield Fork Gualala River follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The Pacific States Marine Fisheries Commission (PSMFC) personnel that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Wheatfield Fork Gualala River to record measurements and observations. There are nine components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1985 rev. 1994). This methodology is described in the *California Salmonid Stream Habitat Restoration Manual*. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees Fahrenheit at the middle of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1988). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Wheatfield Fork Gualala River habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's

mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Wheatfield Fork Gualala River, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed not suitable for spawning due to inappropriate substrate particle size, bedrock, or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Wheatfield Fork Gualala River, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densiometers as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Wheatfield Fork Gualala River, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or deciduous trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Wheatfield Fork Gualala River, the dominant composition type and

the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat, a dBASE 4.2 data entry program developed by Tim Curtis, Inland Fisheries Division, California Department of Fish and Game. This program processes and summarizes the data, and produces the following six tables:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Dominant substrates by habitat types
- Mean percent shelter by habitat types

Graphics are produced from the tables using Quattro Pro. Graphics developed for Wheatfield Fork Gualala River include:

- Riffle, flatwater, pool habitats by percent occurrence
- Riffle, flatwater, pool habitats by total length
- Total habitat types by percent occurrence
- Pool types by percent occurrence
- Total pools by maximum depths
- Embeddedness
- Pool cover by cover type
- Dominant substrate in low gradient riffles
- Mean percent canopy
- Bank composition by composition type
- Bank vegetation by vegetation type

HABITAT INVENTORY RESULTS

The habitat inventory of September 27 through November 1, 2001, was conducted by J. Richardson and A. Pothast (PSMFC). The total length of the stream surveyed was 106,877 feet with an additional 10,026 feet of side channel.

Stream flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 2.9 cfs on November 2, 2001.

Wheatfield Fork Gualala River is an F4 channel type for the entire 106,877 feet of the stream surveyed. F4 channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 50 degrees Fahrenheit to 67 degrees Fahrenheit. Air temperatures ranged from 41 degrees Fahrenheit to 82 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 35% pool units, 28% riffle units, and 28% flatwater units (Graph 1). Based on total length of Level II habitat types there were 62% pool units, 21% flatwater units, and 10% riffle units, and (Graph 2).

Sixteen Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were low gradient riffle units, 27%; mid-channel pool units, 25%; and run units, 23% (Graph 3). Based on percent total length, mid-channel pool units made up 47%, run units 15%, and low gradient riffle units 9%.

A total of 441 pools were identified (Table 3). Main channel pools were the most frequently encountered at 72%, and comprised 83% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. One hundred seventy-five of the 441 pools (40%) had a depth of three feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 441 pool tail-outs measured, 58 had a value of 1 (13%); 133 had a value of 2 (30%); 115 had a value of 3 (26%); 69 had a value of 4 (16%); and 66 had a value of 5 (15%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate. The breakdown of dominant substrate composition for the 66 pool tail-outs that had an embeddedness value of 5 were as follows: 35% bedrock, 33% gravel, 30% sand and 1.5% silt/clay.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had a mean shelter rating of 7, flatwater habitat types had a mean shelter rating of 7, and pool habitats had a mean shelter rating of 17(Table 1). Of the pool types, the main channel pools had the highest mean shelter rating at 19. Scour pools had a mean shelter rating of 14 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Wheatfield Fork Gualala River. Graph 7 describes the pool cover in Wheatfield Fork Gualala River. Small woody debris is the dominant pool cover type followed by terrestrial vegetation.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the dominant substrate observed in 79% of pool tail-outs. Small cobble was the next most frequently observed substrate type, at 9%.

The mean percent canopy density for the surveyed length of Wheatfield Fork Gualala River was 44%. The mean percentages of deciduous and coniferous trees were 48% and 52%, respectively. Graph 9 describes the mean percent canopy in Wheatfield Fork Gualala River.

For the stream reach surveyed, the mean percent right bank vegetated was 65.5%. The mean percent left bank vegetated was 66.4%. The dominant elements composing the structure of the stream banks consisted of 51% sand/silt/clay, 34% bedrock, 13% cobble/gravel, and 2% boulders (Graph 10). 62% of the units surveyed had deciduous trees as the dominant vegetation type, and 38% had coniferous trees as the dominant vegetation (Graph 11).

DISCUSSION

Wheatfield Fork Gualala River is an F4 channel type for the entire 106,877 feet of stream surveyed. The suitability of F4 channel types for fish habitat improvement structures is as follows: good for bank placed boulders; fair for plunge weirs, single and opposing wing-deflectors, channel constrictors and log cover; poor for boulder clusters.

The water temperatures recorded on the survey days September 27 to November 1, 2001 ranged from 50 degrees Fahrenheit to 67 degrees Fahrenheit. Air temperatures ranged from 41 degrees Fahrenheit to 83 degrees Fahrenheit. This is a moderate water temperature range for salmonids. To make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 10% of the total length of this survey, riffles 21%, and pools 62%. The pools are relatively deep, with 175 of the 442 (40%) pools having a maximum depth greater than 3 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In third and fourth order streams, a primary pool is defined to have a maximum depth of at least three feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width.

One hundred ninety-one of the 441 pool tail-outs measured had embeddedness ratings of 1 or 2. One hundred eighty-four of the pool tail-outs had embeddedness ratings of 3 or 4. Sixty-six of the pool tail-outs had a rating of 5, which is considered not suitable for spawning. Twenty-three of the 66 were unsuitable for spawning due to the dominant substrate being bedrock. The remainder of pool tail-outs with embeddedness ratings of 5 were dominated by gravel, sand and silt/clay. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. Sediment sources in Wheatfield Fork Gualala River should be mapped and rated according to their potential sediment yields, and control measures should be taken.

Three hundred eighty-eight of the 441 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools was 17. The shelter rating in the flatwater habitats was 7. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by boulders in all habitat types. Additionally, terrestrial vegetation contributes a small amount. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structures provides rearing

fry with protection from predation, rest from water velocity, and also divide territorial units to reduce density related competition.

The mean percent canopy density for the stream was 44%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was moderate at 65.5% and 66.4%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1) Wheatfield Fork Gualala River should be managed as an anadromous, natural production stream.

2) The limited water temperature data available suggest that maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable.

4) Inventory and map sources of stream bank erosion and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

5) Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.

6) Increase the canopy on Wheatfield Fork Gualala River by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this survey section should be inventoried and treated as well, since the water flowing here is effected from upstream. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

Wheatfield Fork Gualala River

COMMENTS AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Position (ft):	Comments:
0'	Start of survey at the confluence with South Fork Gualala River. The channel is an F4 for the entire length of the survey.
1,074'	Annapolis Road bridge crosses over Wheatfield Fork Gualala River. Bridge is 40’ above the channel and measures 36’ wide x 318’ long.
5,071'	Tributary enters on the left bank.
10,001'	An erosion site on the left bank measures approximately 80’ long x 20’ high.
11,242'	An erosion site on the right bank measures approximately 30’ long x 80’ high.
14,690'	High gradient tributary enters on the left bank.
19,570'	An erosion site on the right bank measures approximately 30’ long x 70’ high.
22,753'	Tributary enters on the left bank.
26,424'	Annapolis Falls Creek enters on the left bank.
31,387'	An erosion site on the right bank measures approximately 170’ long x 340’ high.
33,174'	An erosion site on the left bank measures approximately 20’ long x 60’ high.
33,274'	Tributary enters on the left bank.
35,797'	An erosion site on the right bank measures approximately 60’ long x 60’ high.
40,433'	An erosion site on the right bank measures approximately 60’ long by 25’ high.
42,501'	Fuller Creek enters on the right bank.
43,212'	An erosion site on the left bank measures approximately 120’ long x 40’ high.
43,599'	Tributary enters on the left bank.
44,220'	An erosion site on the left bank measures approximately 75’ long x 50’ high.

Wheatfield Fork Gualala River

45,485' High-gradient tributary enters on the right bank.

46,469' High-gradient tributary enters on the left bank.

48,667' Dry left bank tributary.

52,619' Rip-rap on left bank for stabilization of Skagg Springs Road. Skagg Springs Road bridge crosses over Wheatfield Fork Gualala River. The bridge is 20’ above channel and measures 20’ wide x 180’ long.

53,498' Tributary enters on the right bank.

58,058' High-gradient tributary enters on left bank.

61,452' An erosion site on the right bank measures approximately 105’ long x 40’ high.

66,842' Tributary enters on the right bank.

67,776' An erosion site on the left bank measures approximately 140’ long x 180’ high.

68,069' An erosion site on the left bank measures approximately 140’ long x 75’ high.

68,562' An erosion site on the left bank measures approximately 160’ long x 125’ high.

70,078' Recently decommissioned road crossing.

71,686' High gradient tributary enters on the right bank. There is a 6’ high plunge from a concrete culvert at the mouth of the tributary.

73,028' An erosion site on the right bank measures approximately 20’ long x 70’ high.

76,245' High-gradient tributary enters on the right bank. An erosion site on the right bank measures approximately 270’ long x 50’ high.

76,271' An erosion site on the right bank measures approximately 40’ long x 100’ high.

76,590' An erosion site on the right bank measures approximately 300’ long x 65’ high.

79,070' Tributary enters on the left bank.

79,473' An erosion site on the left bank measures approximately 150’ long x 25’ high.

82,157' Tributary enters on the right bank. Start of 7,656’ long unsurveyed section.

89,909' End of unsurveyed section. Tributary enters on the right bank.

Wheatfield Fork Gualala River

98,886' High-gradient tributary enters on the left bank.

106,607' Wolf Creek enters on the left bank.

108,675' An erosion site on the right bank measures approximately 150’ long x 60’ high.

109,141' High-gradient tributary enters on the right bank.

114,270' Tributary enters on the left bank.

116, 878' End of survey.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.

LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE			
Low Gradient Riffle	(LGR)	[1.1]	{ 1}
High Gradient Riffle	(HGR)	[1.2]	{ 2}
CASCADE			
Cascade	(CAS)	[2.1]	{ 3}
Bedrock Sheet	(BRS)	[2.2]	{24}
FLATWATER			
Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}
MAIN CHANNEL POOLS			
Trench Pool	(TRP)	[4.1]	{ 8}
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}
SCOUR POOLS			
Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9}
BACKWATER POOLS			
Secondary Channel Pool	(SCP)	[6.1]	{ 4}
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5}
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6}
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7}
Dammed Pool	(DPL)	[6.5]	{13}
ADDITIONAL UNIT DESIGNATIONS			
Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

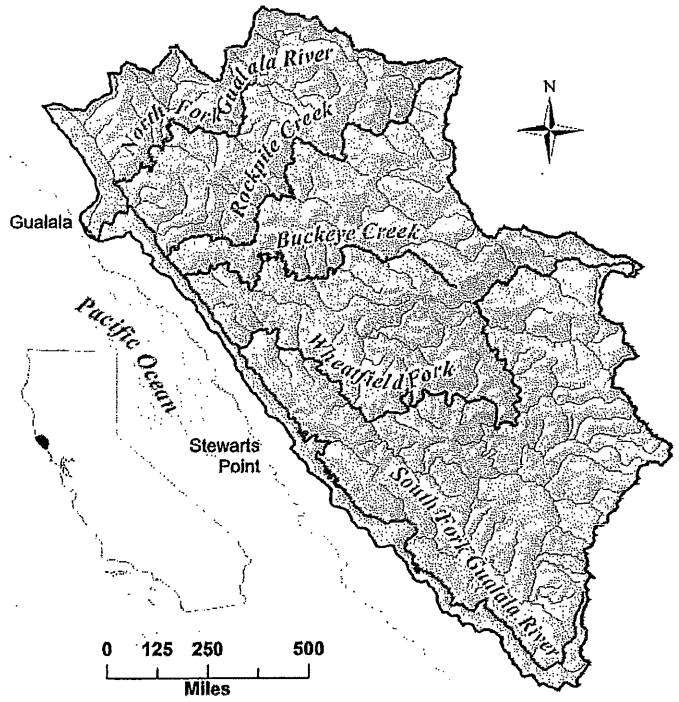
Total Maximum Daily Load Progress Report		Hoopa THP – Gualala Redwood Timber LLC 03/28/2013 Gualala River Sediment TMDL
Regional Water Board:	**North Coast, Region 1**	
Beneficial uses affected:	COLD, COMM, EST, MIGR, RARE, SPWN	**STATUS** ☑ **Conditions Improving** ☐ Data Inconclusive ☐ Improvement Needed ☐ TMDL Achieved/Waterbody Delisted
Pollutant(s) addressed:	Sediment	
Implemented through:	NPS Permits, Stakeholder Efforts	
Approval date:	December 20, 2001	

TMDL Summary

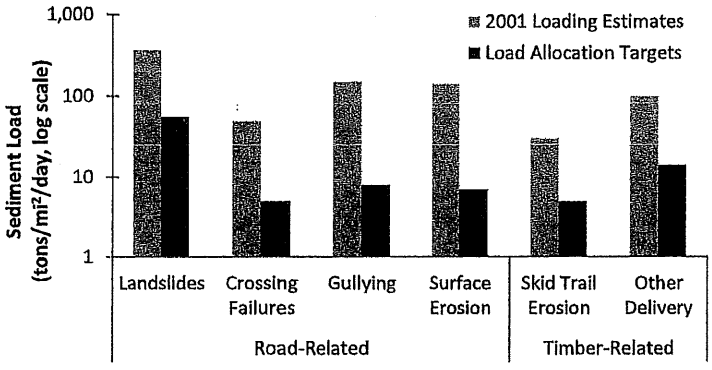
Located along the San Andreas Fault, the Gualala River watershed is comprised of a highly dissected stream network. Unstable geology, steep slopes, and large amounts of precipitation make for high rates of natural erosion and landslides and a sensitivity of the land to practices that promote erosion. The primary sediment delivery sources are road-related processes, timber harvesting, agricultural activities, and rural residential development. Excessive sediment delivery from these sources has impaired instream beneficial uses, specifically those associated with salmonids. To address sediment impairment, U.S. EPA Region 9 developed a TMDL for sediment in Gualala River based on the North Coast Regional Water Board's technical support document. The TMDL was approved by the U.S. EPA in December 2001.

The TMDL established load allocations based on inventory information for six human-related sediment delivery sources. The TMDL calls for sediment discharge reductions from road-related sources by 95% and timber harvest-related sources by 86%. Landscape and instream targets were established to gauge the progress of implementing actions in addressing the sediment delivery categories and to measure stream response.

Gualala River Watershed



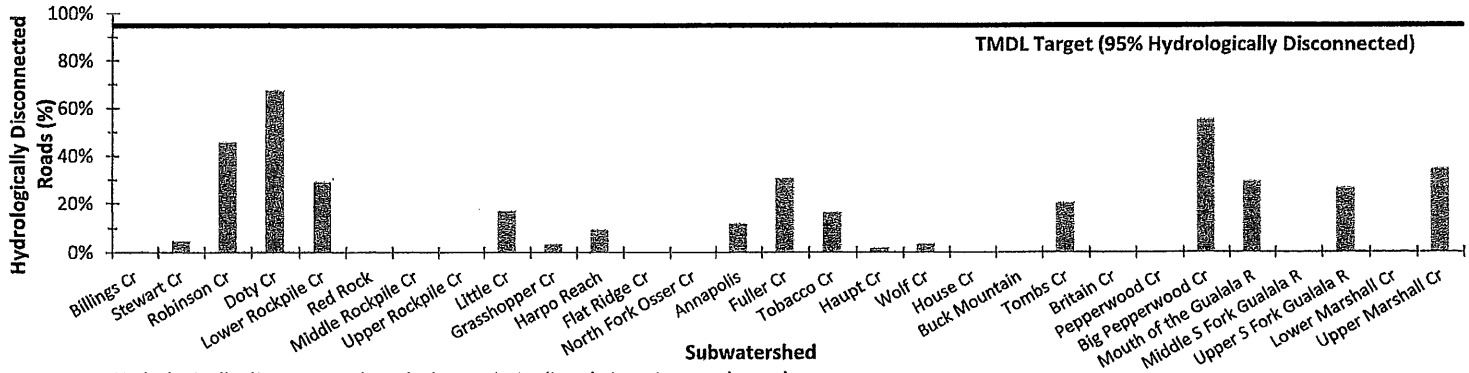
TMDL Load Allocations for Gualala Watershed



Water Quality Monitoring

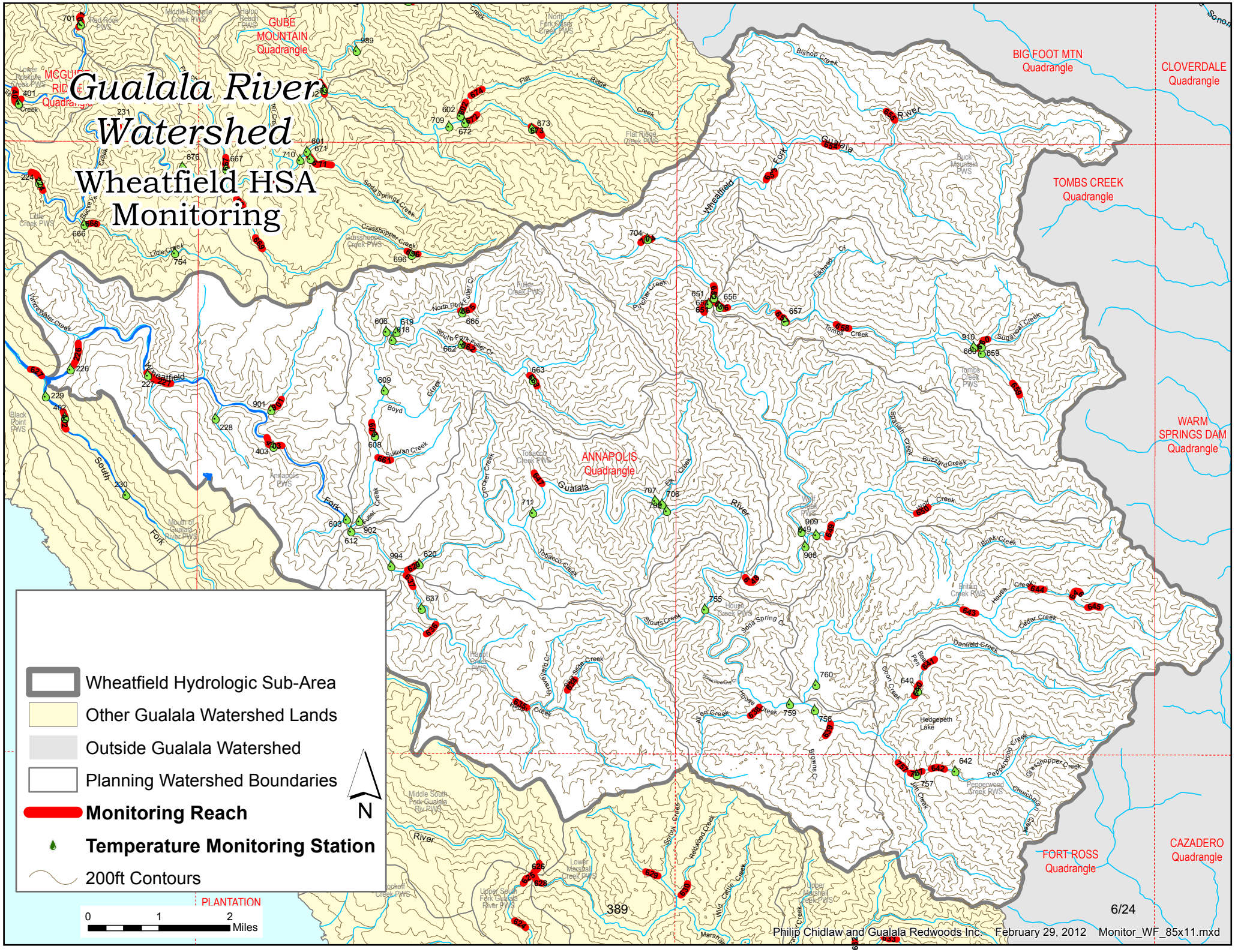
- *The percent of hydrologically disconnected roads has increased; however it is still well below the TMDL target.*
- *Implementation actions have reduced sediment delivery and improved instream conditions and salmonid habitat.*
- *Streambed conditions are improving; 82% of monitoring sites show reduced sediment deposition and 85% of resurveyed monitoring reaches show streambed deepening.*
- *GRWC's "Large Wood in the Stream" program has improved fish habitat by controlling sediment movement and increasing size, depth, and frequency of pools.*
- *Road projects on over 263 miles have reduced sediment input by an estimated 500,000 tons.*

Percentage of Roads in the Gualala River Subwatersheds that are Hydrologically Disconnected



Hydrologically disconnected roads do not drain directly into stream channels.
When the TMDL was adopted in 2001, almost all the roads were hydrologically connected to streams.

Updated September 2013


Gualala River
Watershed
Wheatfield HSA
Monitoring
GUBE MOUNTAIN Quadrangle
BIG FOOT MTN Quadrangle
CLOVERDALE Quadrangle
TOMBS CREEK Quadrangle
WARM SPRINGS DAM Quadrangle
ANNAPOLIS Quadrangle
FORT ROSS Quadrangle
CAZADERO Quadrangle
PLANTATION
Wheatfield Hydrologic Sub-Area
Other Gualala Watershed Lands
Outside Gualala Watershed
Planning Watershed Boundaries
Monitoring Reach
Temperature Monitoring Station
200ft Contours
N
0 1 2 Miles
389
6/24
Philip Chidlaw and Gualala Redwoods Inc. February 29, 2012 Monitor_WF_85x11.mxd

Stream Monitoring Report

Ownerships: All
Visit Purpose: All
Planning Watersheds: All

Station Number	Name	Miles Up Stream	Year	Temperature		LWD Bank Full >6 In & >4 Ft or >10 CuFt		Substrate		Streambed (Thalweg)			Riparian Zone				Fish or Redds per Mile			Aquatic Macroinvertebrates				
				Seasonal Maximum	MWAT	CuFt/ 1000'	Pieces/ 1000'	>0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Cr.	Basal Area	Tallest Tree	Coho	SH (1+)	Redds	Richness	Hilsenhoff Simpson	% Dominant Russian R Index		
Hydrologic Unit				**Wheatfield**																				
Stream				**Wheatfield Fork Gualala River**																				
707	WFG	0.00	2006	24.4	22.0																			
707	WFG	0.00	2008	26.7	22.8																			
707	WFG	0.00	2009	28.7	23.4																			
707	WFG	0.00	2017	27.9	23.7																			
708	WFG	0.00	2006	26.3	24.3																			
708	WFG	0.00	2008	22.9	19.4																			
708	WFG	0.00	2009	29.5	23.4																			
708	WFG	0.00	2011	22.5	19.5																			
708	WFG	0.00	2012	29.1	23.2																			
708	WFG	0.00	2013	23.6	20.5																			
708	WFG	0.00	2017	27.9	23.6																			
711	WFG	0.00	2013	27.1	24.4																			
226	Wfg3	0.42	1995	25.5	20.9																			
226	Wfg3	0.42	1996	23.8	20.3																			
226	Wfg3	0.42	1997	23.1	21.9																			
226	Wfg3	0.42	1998	24.7	21.7												0	981						
226	Wfg3	0.42	2000			1,828	22		27				86%	40%	153	160				32	0.85	4.3	15	32
226	Wfg3	0.42	2001	23.2	20.0																			
226	Wfg3	0.42	2002														0	60						
226	Wfg3	0.42	2003			1,310	18		21	0.1%	21						0	182						
226	Wfg3	0.42	2008	21.0	18.9	1,637	29		16	0.1%	29	0.05	81%	15%			0	137						
226	Wfg3	0.42	2009	22.5	19.0																			
226	Wfg3	0.42	2010	20.8	19.1																			
226	Wfg3	0.42	2011	22.5	19.5																			
226	Wfg3	0.42	2012	21.0	18.6																			
226	Wfg3	0.42	2015	20.2	18.7																			
226	Wfg3	0.42	2016	20.6	18.6																			
226	Wfg3	0.42	2018	21.0	18.3																			

Station Number	Name	Miles Up Stream	Year	Temperature		LWD Bank Full >6 In & >4 Ft or >10 CuFt		Substrate		Streambed (Thalweg)			Riparian Zone			Fish or Redds per Mile			Aquatic Macroinvertebrates		
				Seasonal Maximum	MWAT	CuFt/ 1000'	Pieces/ 1000'	>0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Cr.	Basal Area / Tallest Tree	Coho	SH (1+)	Redds	Richness / Simpson	Hilsenhoff / Russian R Index	% Dominant
226	Wfg3	0.42	2019																		
226	Wfg3	0.42	2020	20.6	18.6																
226	Wfg3	0.42	2021	18.3	16.9																
29	62	0.69	2009							0.2%	22										
29	62	0.69	2012								24	-0.25									
32	WFGr	0.69	2009							0.2%	21										
32	WFGr	0.69	2012							0.1%	25	-0.31									
30	70	0.99	2009							0.1%	19										
30	70	0.99	2012								26	-0.48									
908	108	1.76	2018	27.9	22.1																
908	108	1.76	2019	27.2	22.9																
909	109	1.96	2018	28.8	23.0																
909	109	1.96	2019	27.8	23.4																
227	Wfg2	2.69	1995	26.4	22.0																
227	Wfg2	2.69	1996	24.0	21.2																
227	Wfg2	2.69	1997	25.3	22.2																
227	Wfg2	2.69	1998	24.3	21.5																
227	Wfg2	2.69	2000	25.3	21.2																
227	Wfg2	2.69	2003													0	286				
403	WFG1	5.28	1998	26.4	22.9																
603	WFG	7.29	2002	24.0	21.6																
603	WFG	7.29	2013	24.8	22.4																
891	101	7.46	2013															18			
994	101	7.48	2018	25.6	21.6																
994	101	7.48	2019	25.2	22.7																
994	101	7.48	2020	24.4	21.4																
612	WFG	7.58	2001	25.6	22.4																
612	WFG	7.58	2002	25.6	22.4																
612	WFG	7.58	2013	25.4	22.9																
995	102	8.64	2017													0	133				
620	WFG4	8.90	2000	27.8	23.1																
620	WFG4	8.90	2001	26.0	23.1																
620	WFG4	8.90	2002	26.3	23.0																
620	WFG4	8.90	2004	25.7	21.9																
620	WFG4	8.90	2008	26.3	21.8																

Station Number	Name	Miles Up Stream	Year	Temperature		LWD Bank Full >6 In & >4 Ft or >10 CuFt		Substrate		Streambed (Thalweg)			Riparian Zone				Fish or Redds per Mile			Aquatic Macroinvertebrates				
				Seasonal Maximum	MWAT	CuFt/ 1000'	Pieces/ 1000'	>0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tallest Tree	Coho	SH (1+)	Redds	Richness	Hilsenhoff Simpson	% Dominant Russian R Index		
620	WFG4	8.90	2017	26.7	22.9																			
620	WFG4	8.90	2019	26.3	23.4																			
620	WFG4	8.90	2020	25.6	21.6																			
651	WFG6	22.73	2005																	24	4.0	20		
651	WFG6	22.73	2006	27.0	23.5	10	1	49		0.6%	38		66%	18%	82	70								
651	WFG6	22.73	2009	21.8	19.9																			
651	WFG6	22.73	2017	24.9	20.5																			
652	WFG7	23.11	2005																	29	3.7	24		
652	WFG7	23.11	2006	27.9	25.8	107	1	22		0.6%	26		87%	63%	161	70								
652	WFG7	23.11	2009	25.2	20.9																			
652	WFG7	23.11	2017	24.8	20.7																			
Wheatfield Fork Gualala Riv				**Avg**	**24.9**	**21.6**	**979**	**14**	**27**		**0.2%**	**25**	**-0.2**	**80%**	**34%**	**132**	**100**	**0**	**297**	**18**	**28**	**0.85**	**4.0**	**15**	**25**
Hydrologic Uni	**Wheatfield**			**Avg**	**24.9**	**21.6**	**979**	**14**	**27**		**0.2%**	**25**	**-0.2**	**80%**	**34%**	**132**	**100**	**0**	**297**	**18**	**28**	**0.85**	**4.0**	**15**	**25**

Station Number Name	Miles Up Stream	Year	Temperature		LWD Bank Full >6 In & >4 Ft or >10 CuFt		Substrate		Streambed (Thalweg)			Riparian Zone				Fish or Redds per Mile			Aquatic Macroinvertebrates				
			Seasonal Maximum	MWAT	CuFt/ 1000'	Pieces/ 1000'	>0.85 mm	D50	Slope	VI	A/D	Canopy % WLPZ	Canopy % Cr.	Basal Area	Tallest Tree	Coho	SH (1+)	Redds	Richness	Hilsenhoff Simpson	% Dominant Russian R Index		
		Avg	24.9	21.6	979	14		27	0.2%	25	-0.2	80%	34%	132	100	0	297	18	28	0.85	4.0	15	25
		Min	18.3	16.9	10	1		16	0.1%	19	-0.5	66%	15%	82	70	0	60	18	24	0.85	3.7	15	20
		Max	29.5	25.8	1,828	29		49	0.6%	38	0.05	87%	63%	161	160	0	981	18	32	0.85	4.3	15	32
Old Growth Watersheds (HRSP)			18.5	16.6			21.6%	62											26.2	0.89			
Poor-Normal-Good										>20									26-35	.8-.89	4.6-3.1	12-17	39-15
NCWQCB Target			18.3	16.8			<14%																

Temperature

- Seasonal Maximum – The highest water temperature recorded during the summer.
- Maximum weekly average temperature (MWAT) - The highest average temperature for any seven day rolling average

Large Woody Debris (LWD)

- LWD must be at least 6 inches on the small end and longer than 4 feet.
- Cubic Feet per 1,000 feet – The cubic volume of LWD located between the bankfull lines.
- Pieces per 1,000' – The number of LWD pieces per 1000'

Stream Substrate

- <0.85mm – The percent fines less than 0.85 millimeters in a McNeal sample.
- D50- The pebble size of the median pebble of a 100 pebble sample. Three sample sites on each reach are averaged.

Fish Surveys

- Presence/absence snorkel surveys also estimate fish numbers per mile.
  - Coho – Coho salmon any age.
  - SH (1+) – Steelhead one year old or older.
- Redds - Number of salmon spawning nests found per mile during the season.

Streambed (Thalweg) Survey

- Slope – the slope of the channel
- VI – The variation index is the [(SD of residual depth/bank full depth) *100]. This is a way of quantifying roughness and hence suitability for fish. Greater than 20 is a good indication of recovery.
- A/D – The change in elevation of the channel (aggradation or degradation) relative to the first year of measurement.

Riparian Condition

- Canopy Cover percent as measured with a spherical densiometer. Every 200', canopy percent is measured in the center of the channel. And at bank full and 50' into the riparian zone from bankfull on both sides of the channel. Four measurements are averaged at each point.
- WLPZ (Watercourse and Lake Protection Zone) – The average of all the measurements taken on either side of the channel 50' into the riparial zone.
- Cr. – The average of all the measurements taken in the center of the channel.
- Riparian inventory plots were locate both sides of the channel every 200'
- Basal Area – Is the average basal area in square feet of all the riparian plots
- Tallest Tree – Is the tallest tree measured on the riparian plots.

Macroinvertebrates

- Richness – Total number of Genuses represented.
- Simpson Diversity Index – Measures the evenness of species diversity
- Hilsenhoff – This is a locally modified Hilsenhoff index. It indicates levels of organic pollution
- Russian River Index – A localized index that combines several standard metrics
- Percent Dominant Taxon – this is a species distribution index

Biological Report

Ownerships: All
Visit Purpose: All
Planning Watersheds: Annapolis

Stream	Station Name	#	Year	Distance up Stream (Feet)	Reach Length (Feet)	Purpose	Fish or Redds per Mile				Benthic Macroinvertebrates (BMI)					
							Adult Fish SH	Redds	Coho Fry	Steel-head Parr 1+	Rich-ness	Simp-son	ETP Taxa	% Dom-inant	Russian River Index	North Coast IBI
Watershed: Wheatfield																
Wheatfield	Wfg3	226	1998	2,200	1,400	Fish Reach Dive			0.0	981						
Wheatfield	Wfg3	226	2000	2,200	1,000	Riffle BMI					32	0.85	16	32%	15	
Wheatfield	Wfg3	226	2002	2,200	1,400	Fish Reach Dive			0.0	60						
Wheatfield	Wfg3	226	2003	2,200	4,622	Fish Reach Dive			0.0	182						
Wheatfield	Wfg3	226	2008	2,200	2,000	Fish Reach Dive			0.0	137						
Wheatfield	Wfg2	227	2003	14,200	3,322	Fish Reach Dive			0.0	286						

Total Station Visits: 6

Reach length for "fish pool dives" is only the length of the pools actually snorkel surveyed.
Reach length for "spawner surveys" is the longest survey in that reach during that season.

Stream Classification Assessment: Indian Creek

Introduction

The purpose of this report is to describe the results of a stream classification survey in Indian Creek, a tributary to the Wheatfield Fork of the Gualala River. At the request of the forester for the Pepper THP, I investigated the extent of potential Class I habitat on 12/17/2024.

Stream Overview

Indian Creek is a tributary to the Wheatfield Fork with a catchment area of approximately 625 acres. The stream reaches assessed are in Section 23; T10N; R14W of the Stewarts Point 7.5-minute USGS quadrangle map (Figure 1). Indian Creek can be defined as an A4 channel type with steep, cascading step-pool type habitat (Flosi et al, 2010).

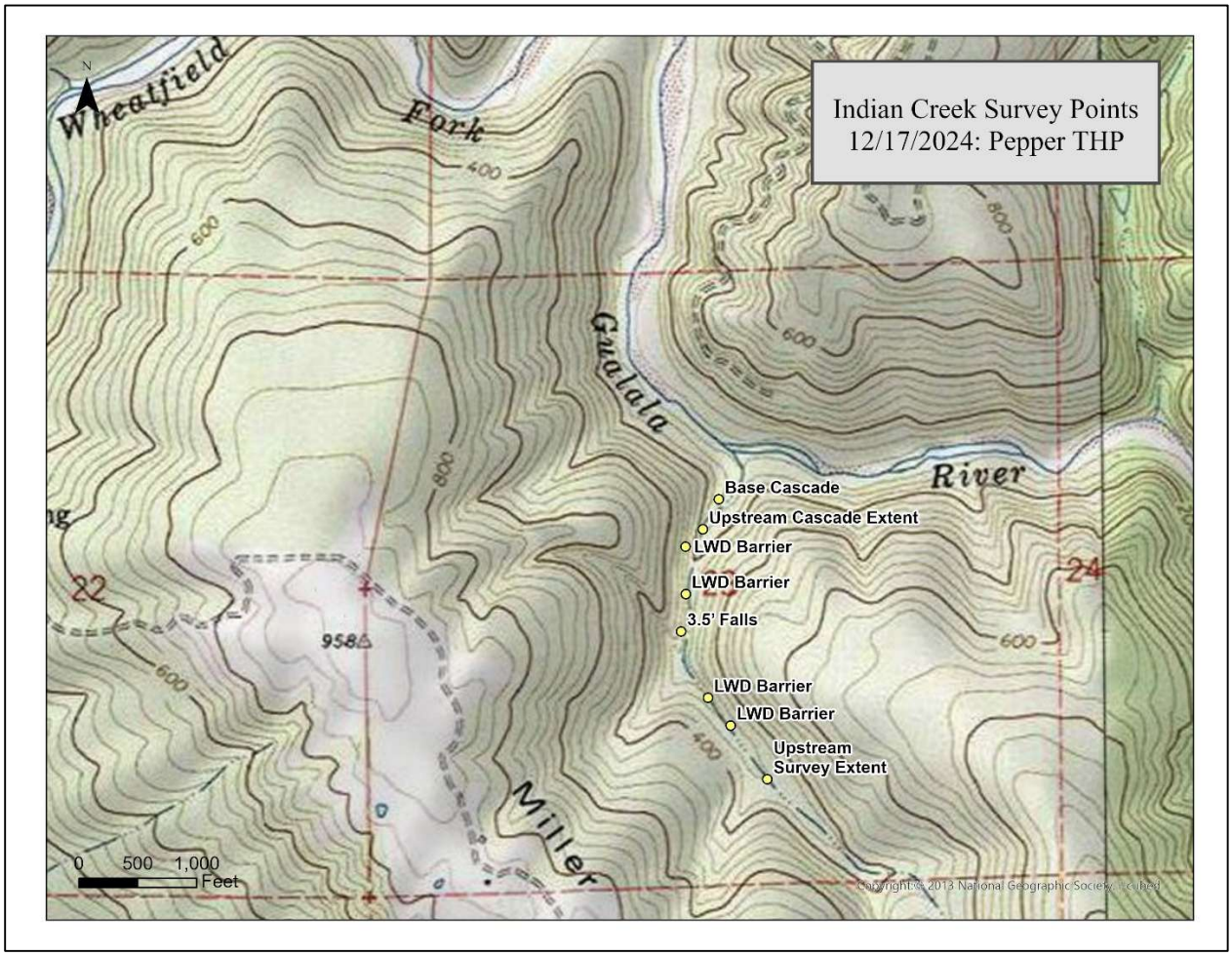


Figure 1: Indian Creek Stream Assessment Extent and Significant Features.

Methods

To assess stream classification in Indian Creek, I used observations of watercourse conditions such as habitat type, channel width, pool depth, availability of spawning gravels and observed flow. Gradient and any potential barriers were measured using a clinometer and hip chain. The survey extended from the confluence with the Wheatfield Fork to approximately 3,200 feet upstream. Significant features and barriers were mapped using the Avenza Maps app (Figure 1).

Results

During the stream classification survey conducted on 12/17/2024, I observed the aquatic habitat conditions to be generally sufficient for salmonids throughout the surveyed area. I visited Indian Creek following a rain event during relatively high winter flows and noted pool tail-outs of sufficient size, depth and substrate for salmonid spawning. Spawning habitat is constrained by channel width and prevalent large wood in the channel. Rearing habitat also appeared adequate, though the frequency and depth of pools decreases concurrently with increasing slope and upstream progress. The gradient is generally moderately steep at a 5-7% slope, though there are a couple of areas with a confined and steeper channel. In the absence of natural barriers, fish colonization of the drainage would be limited by the high volume of large wood in the channel, which forms partial and total barriers to salmonid migration for all life history stages. A 3.5-foot vertical bedrock fall was also detected, with a jump pool to facilitate upstream passage of anadromous adult salmonids (Figure 1).

At approximately 500 feet upstream of the confluence with the Wheatfield Fork, I encountered a natural barrier to salmonids of all life history stages (Figure 1: Base Cascade). The channel steepens abruptly, forming a 325-foot-long cascade with an average slope of 29%. The gradient of the cascade feature ranges from 21 to 40 percent. This reach includes multiple boulder cascades lacking step pools to facilitate fish passage, as well as impassible jumps over boulders, and boulders with large wood.

During the assessment of the barrier, I noted a small landslide on the upstream-most-end, at the site of an accumulation of boulder and large wood (“Logjam” in Figure 2). To determine to what extent this accumulation might be influencing the steep gradient, I performed a longitudinal elevation profile starting at the base of the cascade and extending upstream of it for 300 additional feet. The slope of the channel from the base of the cascade to a point just upstream averages 28% for 385 feet. The cascade/jam is not retaining sediment, and Indian Creek continues steeply at an average of 14% gradient for 300 feet, indicating that this reach would continue to be naturally steep absent the jam (Figure 2).

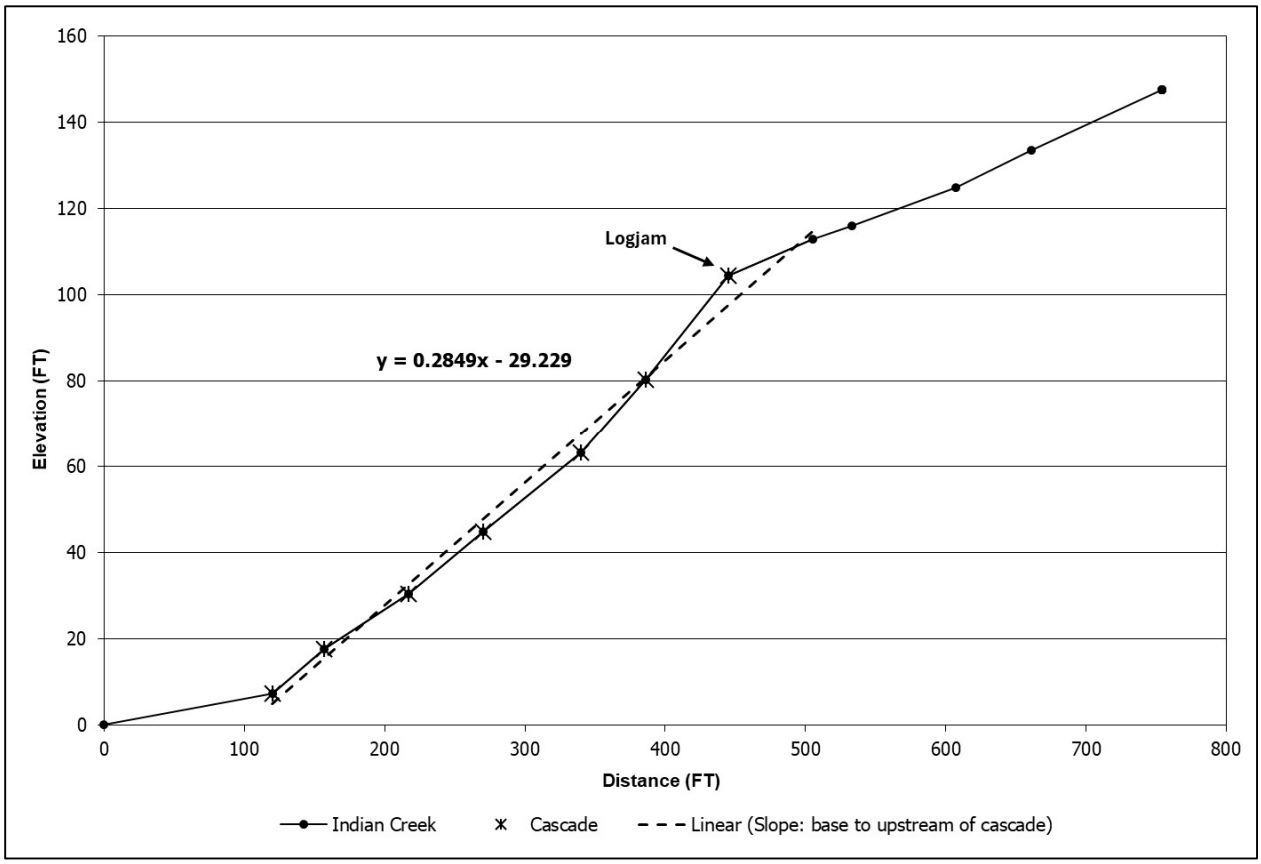


Figure 2: Channel Elevation Profile of the Cascade Barrier in Indian Creek.

Discussion

During the stream classification survey in Indian Creek on 12/17/2024 I encountered a barrier to salmonid migration for all life-history stages at an area of sustained high gradient approximately 500 feet from the confluence with the Wheatfield Fork. The steep slope (21-40%) forms a cascade with velocity and jump barriers to anadromous fish migration. Although LWD is present amongst the boulders in the cascade, an elevation profile reveals consistently high gradient from the base of the feature, to upstream, where boulder/LWD accumulations are absent (average channel slope 28% for 385 feet). Thus, the cascade appears natural; it seems likely to have excluded fish from most of the Indian Creek watershed historically and will probably continue to do so on a long-term timescale.

Because of the availability of habitat upstream, it is possible that non-anadromous fish persist upstream of the barrier. Absent any information on potential fish presence in Indian Creek, I utilized the California Natural Flows Database (Zimmerman et al, 2025) to get an idea of over-summer flow conditions. This web application estimates that Indian Creek has experienced a mean flow of zero ft^3/sec. during the month of September for most years from 1950 to present, including the last 10 years. It also commonly predicts dry conditions in August over the same

period. A forester working on the Pepper THP corroborated this, stating that the watercourse is dry over-summer.

Conclusion

Based on the information gathered from my assessment of potential Class I habitat in Indian Creek, the Class I/II transition point should be placed at the base of the high-gradient cascade barrier located approximately 500 feet upstream of the Wheatfield Fork (Figure 1). The barrier appears to be a permanent, natural obstruction to fish colonization of the watercourse. The aquatic habitat is sufficient for salmonid rearing and spawning both upstream and downstream of the barrier, however, evidence suggests Indian Creek becomes dry over-summer in most years, precluding the possibility of resident fish persisting upstream of the barrier.

References

Flosi, G., et al. *California Salmonid Stream Habitat Restoration Manual.* 2010. California Department of Fish and Wildlife. Inland Fisheries Division.

Julie K.H. Zimmerman, Daren M. Carlisle, Jason T. May, Kirk R. Klausmeyer, Theodore E. Grantham, Larry R. Brown, Jeanette K. Howard. *California Unimpaired Flows Database v2.1.2*, 2025. The Nature Conservancy. San Francisco CA. https://rivers.codefornature.org/ (Date Accessed)

Prepared by: Emily Lang, Fisheries Biologist, Redwood Timber Company

Completed Road Work

Hydrologic Unit All **Repair type** All
Planning Watershed Annapolis **Priority** All
Road # All **From Mi** All **To Mi** All **Road Class** All
THP All **From Date** 1/1/1980 **To Date** 11/9/2023

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class Old Dia / New Dia	DRCs Ln	Rock	Left D / Right D	Exca. Cat	Truck Labor	Gra. Yds	Cost $/FSD	Total Yds FSD Yds
0	2425	0.000	Haschak	Pehl	04-201	Lotus	Temp. Crossing	THP Non-Road	II	0	0	0	2	0	0	$190	20
Existing Skid	2425	0.000	AL	11/15/2005		1B104201SON	Remove Crossing	THP Low	- -	0		0	0	0	0	$10	20
	Install temporary pipe if wet at time of operations. Pull crossing down to grade and slope back banks to stable repose at close of operations.																
0	2993	0.000	Pehl	Pehl	99-258	Ripple	No Problem	THP Maint Insp	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	2993	0.000	Unk	1/2/2007		ECP Not	No Action	No Action	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems. Several trees across road limited access.																
0	4229	0.000	Pehl	Pehl	99-258	Ripple	No Problem	THP Maint Insp	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	4229	0.000	Unk	5/29/2007		ECP Not	No Action	No Action	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems. Roads outsloped and dipped.																
0	4385	0.000		Pehl	04-201	Lotus	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	4385	0.000	Unk	10/1/2007		1B104201SON	No Action	Medium	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings in the Lotus THP.																
0	4466	0.000	Pehl	Pehl	04-201	Lotus	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	4466	0.000	Unk	1/11/2008		1B104201SON	No Action	Medium	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings in the Lotus THP.																
0	4490	0.000	Pehl	Pehl	04-201	Lotus	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	4490	0.000	Unk	1/24/2008		1B104201SON	No Action	Medium	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings in the Lotus THP with Jim Burke of the NCRWQCB. Issues with ECP Point 34 (GIS Map #2425).																
0	4884	0.000	Pehl	Pehl	04-201	Lotus	No Problem	THP Maint Insp	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	4884	0.000	Unk	11/4/2008		ECP Not	No Action	No Action	- -	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems.																
0	5910	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	5910	0.000	Unk	2/13/2013		GWDR 1-09-069 SO	No Action	Medium	- -	0		0	0	0	0	$0	0
	No operations to date. Inspected roads for Northern Spotted Owl Survey Access. No access problems.																
0	5909	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	5909	0.000	Unk	2/15/2013		1B109041SON	No Action	Medium	- -	0		0	0	0	0	$0	0
	No operations on this plan. Inspected roads for Northern Spotted Owl Survey access. No problems for access.																
0	5945	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	5945	0.000	Unk	5/8/2013		GWDR 1-09-069 SO	No Action	Medium	- -	0		0	0	0	0	$0	0
	Logging operations begun in early April. Very dry weather. No problems.																
0	5947	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A	0	0	0	0	0	0	$0	0
Private Seasonal	5947	0.000	Unk	5/8/2013		1B109041SON	No Action	Medium	- -	0		0	0	0	0	$0	0
	No operations to date. Logging planned to begin in June 2013.																

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
0	5217	0.000	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP App. Rd.	Swale		0	0	0	0	0	0	$0	0
THP Proposed	5217	0.000	Unk	5/8/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out crossing of swale down to upstream grade prior to first winter period after first year of use. Place a layer of straw or filter fabric in channel prior to fill placement in order to help relocate channel bottom when channel is being pulled.																	
0	4736	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4736	0.000	Unk	10/13/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Temporary class III skid trail xing. At close of operations remove any loose soil in channel. Keep excavation to a minimum.																	
0	5209	0.000	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP App. Rd.	Swale		0	0	0	0	0	0	$0	0
THP Proposed	5209	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out crossing of swale down to upstream grade prior to first winter period after first year of use. Place a layer of straw or filter fabric in channel prior to fill placement in order to help relocate channel bottom when channel is being pulled																	
0	4735	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4735	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Temporary class III skid trail xing. At close of operations remove any loose soil in channel. Keep excavation to a minimum.																	
0	5208	0.000	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	5208	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install 4" or larger pipe adequate to handle flow if wet at time of operations. Place a layer of straw or filter fabric in channel prior to fill placement in order to help relocate channel bottom when channel is being pulled. Dip out to grade at close of operations.																	
0	4905	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4905	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Top of class III. Dip out at close or go around it.																	
0	5210	0.000	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP Non-Road	II		0	0	0	0	0	0	$0	0
Existing Skid	5210	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install 4" or larger spring drain pipe if water is present at time of operations. Any spoils placed upon the settled fill at Map Point 22 will be removed upon completion of crossing use (note this settled fill is located on the south side of the class II and on the east side of the skid trail). To identify the original ground surface on both the settled fill and in the crossing, a minimum of four (4) inches of straw shall be spread on the fill and along the channel prior to the placement of temporary fill or spoils. Any fill or spoils in these areas shall be removed down to this straw layer upon completion of operations. Any large woody debris that is already in the channel shall be left in the channel.																	
0	4904	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4904	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out at close.																	
0	4902	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4902	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out at close.																	
0	4900	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4900	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out at close.																	
0	4896	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4896	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Class III xing. Dip out at close of operations.																	

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class / Old Dia	/ New Dia	DRCs / Ln	Rock	Left D / Right D	Exca. / Cat	Truck / Labor	Gra. / Yds	Cost / $/FSD	Total Yds / FSD Yds
0	4895	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4895	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Dip out at close and mound on both sides so that watercourse doesn't go down skid trail.																	
0	4734	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	III		0	0	0	0	0	0	$0	0
Existing Skid	4734	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Temporary class III skid trail xing. At close of operations remove any loose soil in channel and mound on west side of the watercourse. Keep excavation to a minimum.																	
0	4906	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP Non-Road	Swale		0	0	0	0	0	0	$0	0
Existing Skid	4906	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Above end of class III. Dip out any loose soil but minimum excavation.																	
0	6034	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6034	0.000	Unk	10/17/2013		GWDR 1-09-069 SO	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected Roads, watercourse crossings, and recent work. No problems.																	
0	6035	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6035	0.000	Unk	10/17/2013		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems. THP Clean Up in progress.																	
0	6041	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6041	0.000	Unk	11/8/2013		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems. THP Clean Up and Erosion Control work finished. Road work finished.																	
0	6121	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6121	0.000	Unk	2/25/2014		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. Some minor rutting on recent roadwork. No problems.																	
0	6120	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6120	0.000	Unk	2/25/2014		GWDR 1-09-069 SO	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected Roads, watercourse crossings. No problems.																	
0	6124	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6124	0.000	Unk	6/3/2014		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems.																	
0	6123	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6123	0.000	Unk	6/3/2014		GWDR 1-09-069 SO	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected Roads, watercourse crossings. No problems.																	
0	6127	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6127	0.000	Unk	10/15/2014		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems.																	
0	6126	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6126	0.000	Unk	10/15/2014		GWDR 1-09-069 SO	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected Roads, watercourse crossings.. No problems.																	
0	6130	0.000	Pehl	Pehl	09-041	Cedar	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6130	0.000	Unk	10/29/2014		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. Two minor cut bank slumps on Wheatfield road (Do not block road, or drainage). Minor rutting from recent traffic (tried to drain with shovel). No problems.																	

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class / Old Dia	/ New Dia	DRCs / Ln	Rock	Left D / Right D	Exca. / Cat	Truck / Labor	Gra. / Yds	Cost / $/FSD	Total Yds / FSD Yds
0	6129	0.000	Pehl	Pehl	09-069	Aspen	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6129	0.000	Unk	1/29/2015		GWDR 1-09-069 SO	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected Roads, watercourse crossings.. No problems.																	
0	6385	0.000	Alden	Alden	09-041	Cedar	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	6385	0.000	Unk	9/23/2015		1B109041SON	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Inspected roads and watercourse crossings. No problems. Removed two fence post trash racks.																	
40.120203	2003	0.120	Haschak	Pehl	02-174	Huckleberry	Temp. Crossing	THP Mitigation	II		0	0	0	0	0	0	$0	0
Existing Skid	2003	0.000	Unk	10/15/2003		ECP Not	Temp. Crossing	THP High	-	-	0		0	0	0	0	$0	0
	1. Single season use. 2. Use when channel is dry only. 3. Heavy water bar use. The RPF indicated with paint, the location of three waterbars on the east side approach. They are approximately 25' apart. 4. Brow log. At the toe of the eastside approach, the skid trail makes a slight turn. A brow log should be placed here to reduce the opportunity for logs to enter the channel. 5. Nick Point. The crossing should be located between the two large existing rocks in the channel.These two rocks act as nick points for the channel and should not be moved. They control the stability of the channel in this area. 6. Straw bales. The channel of the crossing location should be protected by straw bales. These bales will be used to define the channel bottom and then covered with a layer of soil for crossing. Upon completion, the soil will be removed by equipment down to the straw layer. 7. Slash packing. Upon completion, the skid trail will be heavily packed with slash. This slash material will be compacted by tractor to achieve tight contact with the ground. 8. Any exposed soil will be seeded and mulched. 9. Remove fill and place in stable location prior to winter period, at least fifty feet from water course.																	
40.120211	1358	0.000	Bennett	Reynold	19-051	Hazel	Culv.	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	6780	0.000	R&S	10/2/2020		GWDR-1-19-00051	Remove Crossing	THP Low	24"	-	0		0	0	0	0	$0	0
	Remove existing 24" culvert and fill to original channel grade. Lay back sides to stable repose. Spoils may be incorporated into road. Install waterbars both sides of crossing.																	
40.16	2105	0.000	Alden	Alden	96-421	Wheatfield East	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2105	4.800	Unk	11/1/2002		ECP Not	No Action	Medium	-	-	0		0	0	0	0	$0	0
40.16	2106	0.000	Alden	Alden	95-477	Wheatfield Southeast	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2106	4.800	Unk	11/1/2002		ECP Not	No Action	Medium	-	-	0		0	0	0	0	$0	0
40.16	2659	0.000	Pehl	Pehl	03-008	miller ridge	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2659	3.300	Unk	12/20/2005		ECP Not	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather road inspection.																	
40.16	2658	0.000	Pehl	Pehl	04-201	Lotus	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2658	3.300	Unk	12/20/2005		1B104201SON	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather road inspection. Removed partial blockage on 3 culvert inlets. Scrapped 2 dip axis to improve drainage.																	
40.16	2713	0.000	Pehl	Pehl	04-201	Lotus	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2713	3.300	Unk	1/3/2006		1B104201SON	No Action	No Action	-	-	0		0	0	0	0	$0	0
	Wet weather road inspection. Removed partial blockage on 3 culvert inlets. Scrapped 2 dip axis to improve drainage. First watercourse crossing inside gate has some outlet erosion. Bank slumps in 3 spots.																	
40.16	2759	0.000	Pehl	Pehl	Maintena	Maintenance	Culv.	Maintenance	N/A		0	0	0	22	13	0	$7,068	0
Private Seasonal	2759	0.150	R&S	7/25/2006		ECP Not	Culv. Replace	Medium	36"	54"	60		0	16	9	0	$0	0
	Culvert set too high (shotgunned). Downspouts have failed. Large amount of stored sediment above inlet.																	
	Replace culvert. Excavate stored/trapped sediment from above inlet. Set new culvert at stream grade. Use large rip rap below outlet.																	
40.16	5711	0.000	Chidlaw	Chidlaw	Maintena	Maintenance	Other	Maintenance	N/A		0	0	0	0	0	0	$680	0
Private Seasonal	5711	1.300		8/1/2011		ECP Not	Herbicides	Medium	-	-	0		0	0	19	0	$0	0

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class / Old Dia	/ New Dia	DRCs / Ln	Rock	Left D / Right D	Exca. / Cat	Truck / Labor	Gra. / Yds	Cost / $/FSD	Total Yds / FSD Yds
40.16	127	0.010	Kelly	Kelly	98-269	Wheatfield 98	Surface Drainage	THP... Not	N/A		0	0	0	0	0	11	$1,299	0
Private Seasonal	127	1.500	RB	1/6/1999		ECP Not	Ditch - Clean	Medium	-	-	0		0	0	3	0	$0	0
	Preperation for winter hauling																	
40.16	1120	0.010	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1120	0.000	Unk	12/5/2000		ECP Not	Gate	Low	-	-	0		0	0	0	0	$0	0
40.16	2394	0.500	Haschak	Pehl	04-201	Lotus	Cut Bank Failure	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2394	0.500	R&S	7/25/2006		ECP Not	Excavate Soil	THP Med	-	-	0		0	0	0	0	$0	0
	Cut bank failure. Spread on road or remove to stable location.																	
40.16	4907	0.560	Haschak	Pehl	09-041	Cedar	Culv.	THP App. Rd.	III		0	0	0	22	0	0	$6,057	104
Private Perm.	4907	0.000	Unk	10/28/2013		1B109041SON	Culv. Replace	Medium	18"	30"	40		0	21	6	0	$58	104
	Undersized culvert. Replace with 30" or larger.																	
40.16	6042	0.580	Pehl	Pehl	Maintena	Maintenance	Culv.-Ditch Relief	Maintenance	N/A		0	0	0	0	0	0	$472	0
Private Seasonal	6042	0.000	R&S	10/15/2013		ECP Not	Culv. Replace	Medium	12"	18"	40		0	0	0	0	$0	0
	Hole in the road above old cross drain culvert. Replaced cross drain.																	
40.16	4893	0.870	Haschak	Pehl	09-041	Cedar	Culv.	THP App. Rd.	III		0	0	0	12	0	0	$3,855	104
Private Perm.	4893	0.000	Unk	10/24/2013		1B109041SON	Culv. Replace	Medium	12"	24"	60		0	12	1	0	$37	104
	Replace undersized culvert (12") with 24" culvert.																	
40.16	4894	0.880	Haschak	Pehl	09-041	Cedar	Other	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Perm.	4894	0.000	Unk	10/15/2013		ECP Not	Other	Medium	-	-	0		0	0	0	0	$0	0
	An existing landing falls into the EEZ of a class III watercourse. Place earth berm on western edge of landing and seed and mulch landing to item 18 standards at close of operations.																	
40.16	2351	1.950	Haschak	Pehl	04-201	Lotus	Culv.-Plug	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	2351	1.950	R&S	7/25/2006		1B104201SON	Culv. Maintenance	First year THP Ops.	-	-	0		0	0	0	0	$0	0
	The LTO will install a substantial rock armored critical dip on the road surface above the culvert at map point 3. In addition, in order to insure adequate drainage the LTO will install waterbars along the section of road between map point 3 and switchback north of map point 3 to meet High EHR standards or shall outslope the road.																	
40.16	301	2.000	McCanl	McCanl	Maintena	Maintenance	Culv.	Weather Damage	III		0	0	0	4	0	0	$680	203
Private Seasonal	301	0.000	RB	4/27/1999		ECP Not	Remove Crossing	High	-	Pull	0		0	4	0	407	$3	203
	Remove cmp possible humboldt below , remove all logs and spoil , lay sides back 2 to 1 store spoil at landing to right. Seed and mulch all bare soil.																	
40.16	6043	2.030	Pehl	Pehl	Maintena	Maintenance	Culv.	Maintenance	N/A		0	0	0	0	0	0	$1,105	0
Private Seasonal	6043	0.000	R&S	10/15/2013		ECP Not	Culv. Replace	Medium	24"	24"	60		0	0	0	0	$0	0
	Culvert destroyed by logger. Replaced.																	
40.16	171	2.100	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.-HDP-Plug	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	171	0.000	ME	8/28/2000		ECP Not	Culv. Maintenance	Medium	30"	-	0		0	0	0	0	$0	0
	Clear culvert. Install downspout or energy dissipator. Outslope road where possible. Install critical dip and waterbars when done.																	
40.16	171	2.100	McCanl	Borcich	Storm Pro	Storm Proofing	Culv.-HDP-Plug	Storm Proofing	III		0	0	0	18	22	0	$8,405	630
Private Seasonal	305	0.000	Unk	11/8/2023		ECP Not	Culv. Replace	Medium	-	36"	60		0	16	2	1,200	$13	630
	cmp was partially plugged and needed downspout, this has been done. There is no critical dip , this is what caused road fill failure to right of cmp. Possible humboldt below cmp excavate humboldt remove all woody debris install 36" cmp at grade install critical dip																	
40.16	306	2.120	McCanl	McCanl	Storm Pro	Storm Proofing	Fill - Road	Storm Proofing	N/A		0	0	0	1	0	0	$48	40
Private Seasonal	306	0.000	RB	4/29/1999		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	40	$3	16
	road fill failure caused from diversion from site A1 remove remaining potential from top of failure store against cutbank																	

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.16	2352	2.180	Haschak	Pehl	04-201	Lotus	Fill - Road	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2352	2.180	R&S	7/25/2006		1B104201SON	Excavate Soil	First year THP Ops.	-	-	30		0	0	0	0	$0	0
	A waterbar is discharging on erodible fill material. The waterbar shall be moved up the road to a location where it will discharge onto less erodible material (approximately 15 feet north of the fill failure). The oversteepened, perched fill material shall be pulled back and stabilized to the extent feasible to minimize the potential for it to discharge to the watercourse below. The section of road may be widened by cutting into bank as needed to provide safe log truck passage. Material shall be used to eliminate inside ditch.																	
40.16	172	2.200	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.-HDP-Plug	THP App. Rd.	III		0	0	0	13	0	0	$6,106	900
Private Seasonal	172	0.000	RB	8/28/2000		ECP Not	Culv. Replace	Medium	-	36"	70		0	15	28	1,200	$7	900
	Clean culvert, or replace with 36" culvert. Install downspout or energy dissipator. Critical Dip.Old humb. Under cmp , excavate humb. Install cmp at grade making sure to remove all organics , install critcal dip, rip-rap around inlet and outlet area , cmp has come appart at joint and road has a sink hole .																	
40.16	2354	2.350	Haschak	Pehl	04-201	Lotus	Cut Bank Failure	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2354	2.350	R&S	7/25/2006		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	Medium size cut bank failure. Spread on road.																	
40.16	308	2.400	McCanl	McCanl	Storm Pro	Storm Proofing	Fill - Road	Storm Proofing	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	308	0.000	Unk	4/29/1999		ECP Not	No Action	High	-	-	0		0	0	0	0	$0	0
	past road fill failure no treatment																	
40.16	173	2.500	Grunden	Pehl	95-477	Wheatfield Southeast	Fill - Road	THP App. Rd.	N/A		0	0	0	17	16	0	$3,245	0
Private Seasonal	173	0.000	RB	8/28/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	11	0	0	$0	0
	Remove sloughed material along cut bank. Berm outside of road. Drain the water away form slide area.																	
40.16	2439	2.510	Bennett	Alden	Easement	Easement	No Problem	Other Owner	N/A		0	0	0	0	0	0	$0	0
Easement	2439	3.000	Unk	8/2/1984		ECP Not	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Easement across MRC																	
40.16	2356	2.650	Haschak	Pehl	04-201	Lotus	Inside ditch	Storm Proofing	III		0	0	0	10	0	0	$1,886	190
Private Seasonal	2356	2.650	R&S	7/25/2006		1B104201SON	Culv. Install	First year THP Ops.	-	24"	40		0	10	0	0	$10	190
	Install culvert with outlet at the same location as the culvert that is just to the north of this point. Rock or large woody debris will be placed in the watercourse channel below the outlets of where both the existing culvert and where the new culvert will be installed below the road at map point 7.																	
40.16	2357	2.700	Haschak	Pehl	04-201	Lotus	Culv.-Plug	THP App. Rd.	II		0	0	0	0	0	0	$0	0
Private Seasonal	2357	2.700	Unk	7/25/2006		ECP Not	Culv. Maintenance	Medium	-	-	0		0	0	0	0	$0	0
	Clean head of culvert.																	
40.16	2357	2.700	McCanl	McCanl	Maintena	Maintenance	Culv.-Plug	Maintenance	II		0	0	0	2	4	0	$610	0
Private Seasonal	312	0.000	Unk	7/25/2006		ECP Not	Culv. Maintenance	High	-	-	0		0	0	0	0	$0	0
	A 36"cmp that is currently 95% plugged cmp shows evidence of over-topping past winter and eroding around outlet area clean inlet install large rip-rap at inlet to prevent further plugging , slope banks around outlet and place rip-rap above and below cmp outlet																	
40.16	164	2.750	Grunden	Pehl	95-477	Wheatfield Southeast	No Problem	THP App. Rd.	II		0	0	0	4	0	0	$852	0
Private Seasonal	164	0.000	WL	9/29/2000		ECP Not	Temp. Crossing	Medium	-	18"	40		0	0	0	0	$0	0
40.16	1390	2.900	Alden	Alden	Maintena	Maintenance	Surface Drainage	THP Recon.	N/A		0	0	0	0	0	0	$0	1,736
Deactivated	1390	6.450	ME	8/25/2000		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	1,736
40.16	174	2.900	Grunden	Pehl	95-477	Wheatfield Southeast	Fill - Road	THP App. Rd.	N/A		0	0	0	0	0	1	$75	0
Private Seasonal	174	0.000	WL	9/29/2000		ECP Not	Other	Medium	-	-	0		0	0	0	0	$0	0
	Berm and water breaks to direct water away from fill.																	

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.16	164	2.900	Haschak	Pehl	04-201	Lotus	Temp. Crossing	THP App. Rd.	II		0	0	0	0	0	0	$0	0
Private Seasonal	2358	2.900	R&S	7/25/2006		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install a temporary crossing large enough to handle flow if any. A cable wrapped log crossing (Spittler Crossing)can be used as an option to reduce fill material needed.																	
	Reshape the streambanks on both sides of the crossing after operations so the streambanks are on a 11/2 to 1 ratio slope. Seed and mulch as per item 18.																	
40.16	2390	3.000	Haschak	Pehl	04-201	Lotus	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	2390	3.000	R&S	7/25/2006		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install spring drain or rocked rolling dip if water present at time of operations.																	
40.16	174	3.050	Haschak	Pehl	04-201	Lotus	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	2360	3.050	R&S	7/25/2006		ECP Not	Culv. Install	THP Low	-	-	0		0	0	0	0	$0	0
	Install spring drain pipe or rocked dip if wet at time of operations.																	
40.16	165	3.100	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.	THP App. Rd.	II		0	0	0	8	0	0	$825	0
Private Seasonal	165	0.000	ME	8/28/2000		ECP Not	Dip Critical	Medium	30"	-	0		0	0	0	0	$0	0
	Install downspout or energy dissipator. Berm and water breaks to direct water away from fill.																	
40.16	2422	3.150	Haschak	Pehl	04-201	Lotus	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	2422	3.150	R&S	7/25/2006		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Install spring drain or rocked dip if wet at time of operations.																	
40.16	2423	3.180	Haschak	Pehl	04-201	Lotus	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	2423	3.180	R&S	7/25/2006		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Install spring drain or rocked dip if wet at time of operations.																	
40.16	2361	3.200	Haschak	Pehl	04-201	Lotus	Slide - Shallow	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2361	3.200	R&S	7/25/2006		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	If road needs widening keep excavation to a minimum and do not side cast material onto debris slide.																	
40.16	2424	3.210	Haschak	Pehl	04-201	Lotus	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	2424	3.210	R&S	7/25/2006		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Install spring drain or rocked dip if wet at time of operations.																	
40.16	175	3.300	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP App. Rd.	N/A		0	0	0	20	7	0	$3,126	0
Private Seasonal	175	0.000	RB	8/28/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	10	6	0	$0	0
	This is a cut bank failure 75' long and 4-6 feet deep. Remove redwood clump and endhaul bank failure material that has been ramped over. Endhaul to disposal site. Outsloped where possible and install water breaks.																	
40.16	176	3.600	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	21	44	0	$4,666	0
Private Seasonal	176	3.620	RB	8/28/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	1	6	0	$0	0
	This is a series of bank slumps covering about 100' of road. The operator will widen the road about 2-3' to allow safe equipment passage. The additional width will be gained by taking the road into the bank. The outer edge berm will be maintained and the road will be drained away from the area.																	
40.16	166	3.750	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.	THP Recon.	II		0	0	0	2	0	0	$295	0
Private Seasonal	166	0.000	ME	9/28/2000		ECP Not	Dip Critical	Medium	30"	-	0		0	1	0	0	$0	0
	Install downspout or energy dissipator. Berm and water breaks to direct water away from fill.																	
40.16	167	4.200	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.	THP Recon.	III		0	0	0	12	6	0	$3,439	0
Private Seasonal	167	0.000	ME	7/1/1999		ECP Not	Culv. Install	Medium	-	30"	40		0	9	6	0	$0	0
	Install downspout or energy dissipator. Berm and water breaks to direct water away from fill. No side-cast. Critical Dip. Repair washou and rebuild the approach, compacting in one foot lifts.																	

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.16	167	4.200	Alden	Alden	Maintena	Maintenance	Culv.	Weather Damage	III		0	0	0	12	2	0	$2,669	0
Private Seasonal	906	0.000	WL	6/12/2000		ECP Not	Culv. Maintenance	Medium	30"	30"	60		0	0	0	0	$0	0
Springs caused fill failure. Fill replaced.																		
40.16	177	4.250	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	4	4	0	$960	0
Private Seasonal	177	4.290	ME	8/28/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	4	0	0	$0	0
This is a series of bank slumps covering about 250' of road. The LTO will remove the slumps to allow for safe passage. The road will be drained away from the area.																		
40.16	168	4.400	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.	THP Recon.	II		0	0	0	4	0	0	$2,390	0
Private Seasonal	168	0.000	ME	8/28/2000		ECP Not	Culv. Install	Medium	-	36"	40		0	4	0	0	$0	0
Install downspout or energy dissipator. Berm and water breaks to direct water away from fill. Critical Dip.																		
40.16	178	4.410	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	8	0	0	$1,280	0
Private Seasonal	178	4.490	ME	8/28/2000		ECP Not	Full Bench	Medium	-	-	0		0	5	1	0	$0	0
This is a series of major bank slumps, old road washed and outer edge road failures over 500'. The LTO will remove blockages to allow for safe equipment passage. Full bench and endhaul will be used through the area. The road will be drained at RPF flagged points.																		
40.16	169	4.460	Grunden	Pehl	95-477	Wheatfield Southeast	Culv.	THP Recon.	II		0	0	0	0	6	0	$1,291	0
Private Seasonal	169	0.000	ME	8/28/2000		ECP Not	Culv. Install	Medium	-	24"	40		0	3	0	0	$0	0
Install downspout or energy dissipator. Berm and water breaks to direct water away from fill. Critical Dip.																		
40.16	170	4.500	Grunden	Pehl	95-477	Wheatfield Southeast	Humboldt	THP Recon.	II		0	0	0	20	3	0	$1,980	0
Private Seasonal	170	0.000	WL	9/26/2000		ECP Not	Temp. Crossing	Medium	-	-	0		0	1	0	0	$0	0
Temporary crossing. Remove and rip rap banks.																		
40.16	179	4.570	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	6	6	1	$1,065	0
Private Seasonal	179	4.580	ME	9/30/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	1	0	0	$0	0
This bank slump has buried 30-80% of the road 4-10' deep in bank material for about 120'. The LTO will remove the material with an excavator to allow for safe passage. Any additional width will be gained by taking the road into the bank. The road will be outsloped where possible and have close waterbar spacing.																		
40.16	180	4.700	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	2	0	0	$370	0
Private Seasonal	180	4.710	ME	9/29/2000		ECP Not	Full Bench	Medium	-	-	0		0	2	0	0	$0	0
This bank slump has buried 90-100% of the road 5-12' deep in bank material for about 150'. The LTO will remove the material with an excavator to allow for safe passage. Any additional width will be gained by taking the road into the bank. The road will be outsloped where possible and have close waterbar spacing at RPF flag points.																		
40.16	181	4.800	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	16	22	0	$3,298	0
Private Seasonal	181	4.810	WL	9/25/2000		ECP Not	Full Bench	Medium	-	-	0		0	10	5	0	$0	0
This bank slump has buried or removed 80-100% of the road for about 150'. The LTO will reopen the road with an excavator to allow for safe passage. The road through the area will be full benched. Endhauling will be required. The road will be outsloped where possible and have close waterbar spacing at RPF flag points. Road edge cribbed to widen and pulled after logging by Webb logging.																		
40.16	182	5.100	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	2	0	1	$370	0
Private Seasonal	182	0.000	ME	8/28/2000		ECP Not	Other	Medium	-	-	0		0	2	0	0	$0	0
Outslope where possible and have close waterbar spacing																		
40.16	183	5.200	Grunden	Pehl	95-477	Wheatfield Southeast	Slide - Shallow	THP Recon.	N/A		0	0	0	3	1	1	$405	0
Private Seasonal	183	0.000	ME	8/28/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	1	0	0	$0	0
This slide effects outer edge of road for 50'. Move road into bank to get necessary width.																		

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.16	189	5.320	Grunden	Pehl	96-421	Wheatfield East	Surface Drainage	THP Recon.	III		0	0	0	0	0	1	$188	0
Private Seasonal	189	0.000	ME	9/28/2000		ECP Not	Dip Critical	Medium	-	-	0		0	3	0	0	$0	0
The small gully will be filled and prevented by installing a critical dip. Temporary Crossing.																		
40.16	190	5.380	Grunden	Pehl	96-421	Wheatfield East	Surface Drainage	THP Recon.	III		0	0	0	7	0	1	$1,070	0
Private Seasonal	190	0.000	ME	9/28/2000		ECP Not	Dip Critical	Medium	-	-	0		0	2	6	0	$0	0
The small gully will be filled and prevented by installing a critical dip. Temporary Crossing.																		
40.16	191	5.420	Grunden	Pehl	96-421	Wheatfield East	Cut Bank Failure	THP Recon.	N/A		0	0	0	1	0	0	$185	0
Private Seasonal	191	5.620	ME	8/25/2000		ECP Not	Other	Medium	-	-	0		0	1	0	0	$0	0
Approximately 200' of existing road with cutbank sloughing covering 1/4 to 1/2 the road bed with 1 to 3 feet of debris. Slopes are 50 to 60%. When reopening this section, the exces soil will be drifted along the road and incorporated into the road base or deposited in a stable location. Sidecase will be minimized.																		
40.16	192	5.500	Grunden	Pehl	96-421	Wheatfield East	Cut Bank Failure	THP Recon.	N/A		0	0	0	1	0	1	$310	0
Private Seasonal	192	5.560	ME	8/25/2000		ECP Not	Other	Medium	-	-	0		0	2	2	0	$0	0
Approximately 300' of existing road with cutbank sloughing covering 1/4 to 1/2 the road bed. Slopes are 50 to 60%. When reopening this section, the exces soil will be drifted along the road and incorporated into the road base or deposited in a stable location.																		
40.16	193	5.580	Grunden	Pehl	96-421	Wheatfield East	Other	THP Recon.	III		0	0	0	11	0	0	$1,045	0
Private Seasonal	193	0.000	RB	9/28/2000		ECP Not	Other	Medium	-	-	0		0	0	0	0	$0	0
See write up and map in THP. This is a constructed ford requiring company supervision.																		
40.16	194	5.590	Grunden	Pehl	96-421	Wheatfield East	Other	THP Recon.	N/A		0	0	0	3	0	0	$580	0
Private Seasonal	194	0.000	ME	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	2	4	0	$0	0
Temporary crossing																		
40.16	195	5.680	Grunden	Pehl	96-421	Wheatfield East	Cut Bank Failure	THP Recon.	N/A		0	0	0	1	0	0	$185	0
Private Seasonal	195	0.000	ME	8/25/2000		ECP Not	Other	Medium	-	-	0		0	1	0	0	$0	0
Spread slump and ramp over.																		
40.16	196	5.740	Grunden	Pehl	96-421	Wheatfield East	Other	THP Recon.	III		0	0	0	3	0	0	$555	0
Private Seasonal	196	0.000	ME	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	3	0	0	$0	0
Temporary crossing. See THP write up. Two class threes and a cut bank failure. Drift fialure to landing and dip out crossings																		
40.16	197	5.800	Grunden	Pehl	96-421	Wheatfield East	Other	THP Recon.	III		0	0	0	15	13	2	$3,348	0
Private Seasonal	197	5.880	ME	8/25/2000		ECP Not	Other	Medium	-	-	0		0	13	4	0	$0	0
Multiple problems in a creek crossing. See expaination and map in THP.																		
40.16	198	6.000	Grunden	Pehl	96-421	Wheatfield East	No Problem	THP Recon.	N/A		0	0	0	3	0	0	$530	0
Existing Skid	198	0.000	ME	9/28/2000		ECP Not	No Action	Medium	-	-	0		0	2	2	0	$0	0
This is a skid trail to be used to swing logs from a yarder setting to an existing landing. No work needed prior to logging.																		
40.1616	5712	0.000	Chidlaw	Chidlaw	Maintena	Maintenance	Other	Maintenance	N/A		0	0	0	0	0	0	$339	0
Private Seasonal	5712	0.650		8/1/2011		ECP Not	Herbicides	Medium	-	-	0		0	0	9	0	$0	0
40.1616	1828	0.480	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1828	0.000	Unk	10/15/2001		ECP Not	Rock Pit	Low	-	-	0		0	0	0	0	$0	0
good rock																		
40.1616	4732	0.950	Haschak	Pehl	09-041	Cedar	Culv.-Plug	THP App. Rd.	N/A		0	0	0	2	0	0	$273	0
Private Perm.	4732	0.000	Unk	10/17/2013		ECP Not	Culv. Maintenance	Medium	-	-	0		0	0	0	0	$0	0
The head of a 18" ditch relief culvert is starting to fill up. Excavate the material.																		

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40.1616	4733	1.050	Haschak	Pehl	09-041	Cedar	Culv.	THP App. Rd.	III		0	0	0	15	0	0	$3,982	91
Private Perm.	4733	0.000	Unk	10/15/2013		1B109041SON	Culv. Replace	Medium	18"	30"	40		0	11	1	0	$44	91
	ECP point- Under sized culvert (18") should be replaced with a 30" culvert at grade or the crossing should be pulled to grade with banks sloped back to stable repose. "Pulled"																	
40.1616	4737	1.160	Haschak	Pehl	09-041	Cedar	Fill - Road	THP App. Rd.	N/A		0	0	0	6	0	0	$1,350	0
Private Perm.	4737	0.000	Unk	10/16/2013		ECP Not	Tip and Dip	Medium	-	-	0		0	6	0	0	$0	0
	Road fill has settled but it doesn't appear that the downslope area is moving so this is probably just fill that wasn't properly compacted and drained. Recompact fill and outslope road.																	
40.1616	4738	1.200	Haschak	Pehl	09-041	Cedar	Fill - Road	THP App. Rd.	N/A		0	0	0	13	0	0	$2,525	0
Private Perm.	4738	0.000	Unk	10/16/2013		ECP Not	Other	Medium	-	-	0		0	8	2	0	$0	0
	Road fill failure. Reconstruct road by removing bank and realigning road away from the edge. If necessary add log at edge of road for safety. Place a rolling dip above this point so water doesn't drain over edge of road here.																	
40.1616	2419	1.400	Haschak	Pehl	04-201	Lotus	Cut Bank Failure	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2419	1.400	R&S	7/25/2006		ECP Not	Excavate Soil	THP Med	-	-	0		0	0	0	0	$0	0
	Cut bank failure. Spread on road or remove to stable location.																	
40.16161916	4745	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	10
Private Seasonal	4745	0.000	Unk	10/15/2013		1B109041SON	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	10
	Road has diverted minor class III. Inslope road from inlet to outlet so that watercourse stays in inside ditch. Dip out crossing and place large mound on downhill side of road so that water crosses road.																	
40.16161916	4897	0.000	Haschak	Pehl	09-041	Cedar	Other	THP Non-Road	III		0	0	0	0	0	0	$0	10
Existing Skid	4897	0.000	Unk	10/15/2013		1B109041SON	Other	Medium	-	-	0		0	0	0	0	$0	10
	See diagram on supplemental map for this point. There are several issues here but I will describe them all and refer to supplemental map. In the past this swale was used for skidding and there has been some erosion of the skid trail so that now it looks like a class III (although the connectivity is questionable) and will be treated as a class III. Two skid trails parallel the class III within the EEZ and these will be needed. See explanation in section III. Where the class III hits the road the watercourse path has been diverted down the road. At close of operations the entire area where the skid trail, watercourse and road meet will be recontoured and a large mound will be placed on the downhill side of the road so that the watercourse is directed straight across the road into the swale below the road. Slash pack skid trail where it is inside of EEZ (upslope of this point)																	
40.16161916	4744	0.000	Haschak	Pehl	09-041	Cedar	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	4744	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install temporary 12" pipe if wet at time of operations. Remove pipe at close and make rolling dip. Don't change outlet from present location.																	
40.161655	5691	0.000		Alden	03-008	miller ridge	Surface Drainage	THP Recon.	N/A		0	0	0	0	0	0	$0	235
Storm Proofed	5691	0.480	GE	9/15/2004		ECP Not	Waterbar	Medium	-	-	0		0	0	0	0	$0	235
40.161655	2134	0.250		Pehl	03-008	miller ridge	Channel Scour	THP Mitigation	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	2134	0.000	Unk	9/15/2004		ECP Not	Other	THP Low	-	-	0		0	0	0	0	$0	0
	The outlet of 6 inch plastic pipe will be rock armored or the culvert removed and the discharge area will be rock armored, as deemed appropriate by the landowner at the time of operations.																	
40.1626	172	0.010	Haschak	Pehl	04-201	Lotus	Temp. Crossing	THP App. Rd.	II		0	0	0	0	0	0	$200	0
Private Seasonal	2353	0.000	R&S	7/25/2006		1B104201SON	Temp. Crossing	First year THP Ops.	-	12"	40		0	0	0	0	$0	0
	Install the temporary crossing at map point 5 with a temporary pipe placed along with a cable wrapped log crossing (Spittler Crossing). A cap of soil will be placed on top of this temporary pipe and cable log crossing to provide an adequate running surface for log trucks to safely drive over. Reshape the streambanks on both sides of the crossing after operations so the streambanks are on a 1 1/2 to 1 ratio slope. All spoils shall be placed in a location where earthen material will not discharge to a watercourse. See diagram for this site at end of road database. Pull and reshape the fill material on the north side of this crossing so that the pulled fill drains away from the channel and so that the fill cannot be transported into the watercourse channel. Seed and mulch as per item 18.																	

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40.1648	2363	0.150	Haschak	Pehl	04-201	Lotus	Humboldt	THP App. Rd.	III		0	0	0	8	0	0	$920	220
Private Seasonal	2363	0.150	R&S	7/25/2006		1B104201SON	Excavate Soil	THP Low	-	24"	0		0	0	0	0	$4	220
Appears to be a humboldt. Use as is. Pull crossing and reshape the streambanks to a 1 1/2 to 1 ratio slope. Seed and mulch as per item 18.																		
40.1648	2392	0.250	Haschak	Pehl	04-201	Lotus	Temp. Crossing	Maintenance	III		0	0	0	0	0	0	$0	0
Private Seasonal	2392	0.250	R&S	7/25/2006		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
Dip out at close of operations.																		
40.1689	204	0.040	Grunden	Pehl	96-421	Wheatfield East	Humboldt	THP Recon.	III		0	0	0	0	0	0	$200	0
Private Seasonal	204	0.000	Unk	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	2	0	0	$0	0
40.1689	203	0.100	Grunden	Pehl	96-421	Wheatfield East	Humboldt	THP Recon.	III		0	0	0	0	0	0	$0	0
Private Seasonal	203	0.000	Unk	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	0	0	0	$0	0
Repair road damage and restore original channel. Temporary crossing.																		
40.1689	207	0.125	Grunden	Pehl	96-421	Wheatfield East	Surface Drainage	THP Recon.	III		0	0	0	0	0	0	$100	0
Private Seasonal	207	0.000	Unk	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	1	0	0	$0	0
Temporary drain of a seep may be necessary.																		
40.1689	202	0.150	Grunden	Pehl	96-421	Wheatfield East	Surface Drainage	THP Recon.	III		0	0	0	0	0	0	$100	0
Private Seasonal	202	0.000	Unk	8/25/2000		ECP Not	Dip Critical	Medium	-	-	0		0	1	0	0	$0	0
40.1689	201	0.200	Grunden	Pehl	96-421	Wheatfield East	Surface Drainage	THP Recon.	N/A		0	0	0	0	0	0	$100	0
Private Seasonal	201	0.000	Unk	8/25/2000		ECP Not	Dip Rolling	Medium	-	-	0		0	1	0	0	$0	0
Dip above class III																		
40.1689	200	0.250	Grunden	Pehl	96-421	Wheatfield East	Humboldt	THP Recon.	II		0	0	0	3	0	0	$475	0
Private Seasonal	200	0.000	Unk	8/25/2000		ECP Not	Temp. Crossing	Medium	-	-	0		0	1	0	0	$0	0
after operations rebuild original chanel with 2:1 banks, seeded and mulched.																		
40.1689	199	0.400	Grunden	Pehl	96-421	Wheatfield East	Humboldt	THP Recon.	II		0	0	0	4	1	0	$1,190	0
Private Seasonal	199	0.000	Unk	8/25/2000		ECP Not	Temp. Crossing	Medium	-	-	0		0	4	4	0	$0	0
Temporary crossing to be dipped out and mulched after operations																		
40.169	208	0.250	Grunden	Pehl	96-421	Wheatfield East	Other	THP Recon.	N/A		0	0	0	12	12	0	$2,580	0
Private Seasonal	208	0.000	Unk	9/28/2000		ECP Not	Full Bench	Medium	-	-	0		0	0	0	0	$0	0
Outslope with good drainage.																		
40.1694	205	0.030	Grunden	Pehl	96-421	Wheatfield East	Cut Bank Failure	THP Recon.	N/A		0	0	0	2	2	0	$530	0
Private Seasonal	205	0.000	Unk	8/25/2000		ECP Not	Excavate Soil	Medium	-	-	0		0	1	0	0	$0	0
Excavate and stabalize soil																		
40.1694	206	0.060	Grunden	Pehl	96-421	Wheatfield East	Gully	THP Recon.	N/A		0	0	0	10	10	1	$3,445	0
Private Seasonal	206	0.000	Unk	8/25/2000		ECP Not	Other	Medium	-	-	0		0	10	4	0	$0	0
Reconstruct road with proper compaction. Provide for proper drainage. See THP.																		
40.19	2662	0.000	Pehl	Pehl	03-008	miller ridge	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2662	3.750	Unk	12/21/2005		ECP Not	No Action	See Comments	-	-	0		0	0	0	0	$0	0
Wet weather inspection. No problems.																		

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40.19	2663	0.000	Pehl	Pehl	04-275	Redbud	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2663	3.750	Unk	12/21/2005		Redbud	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.19	2732	0.000	Pehl	Pehl	04-275	Redbud	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2732	3.750	Unk	1/6/2006		Redbud	No Action	No Action	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. Unplugged all culverts except one which will need a backhoe. Removed shallow cut bank failure at 2nd gate.																	
40.1903	2961	0.000	Alden	Alden	Maintena	Maintenance	Surface Drainage	Storm Proofing	N/A		0	0	0	10	0	0	$2,250	430
Storm Proofed	2961	0.880	Unk	10/2/2006		ECP Not	Tip and Dip	Medium	-	-	0		0	0	20	0	$5	430
	Bed Rock fixed the road.																	
40.1903	6061	0.000	Haschak	Borcich	15-042	Dogwood	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	6061	0.000	Unk	10/15/2021		ECP Not	Armored Ford	THP Med	-	-	0		0	0	0	0	$0	0
	Existing ford needs to be smoothed out to allow truck passage. The surface will need additional rock in that case but the outside edge is already well armored. Width of rock armored rolling dip should at least equal watercourse width and road level should be at least as high as watercourse banks.																	
40.1903	6073	0.000	Haschak	Borcich	15-042	Dogwood	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	6073	0.000	Unk	10/15/2021		ECP Not	Temp. Crossing	THP Low	-	-	0		0	0	0	0	$0	0
	Maintain existing class III ford. If you need to smooth it out for operations then dip out at close of operations.																	
40.1903	1121	0.200	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1121	0.000	Unk	12/5/2000		ECP Not	Gate	Low	-	-	0		0	0	0	0	$0	0
40.1903	2960	0.680	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	II		0	0	0	0	0	0	$0	0
Private Seasonal	2960	0.000	Unk	6/1/1994		ECP Not	No Action	Medium	.ogBr	-	0		0	0	0	0	$0	0
40.1908	2665	0.000	Pehl	Pehl	04-275	Redbud	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2665	0.600	Unk	12/21/2005		Redbud	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.1908	2664	0.000	Pehl	Pehl	03-008	miller ridge	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2664	0.600	Unk	12/21/2005		ECP Not	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.1908	2731	0.000	Pehl	Pehl	04-275	Redbud	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2731	0.600	Unk	1/6/2006		Redbud	No Action	No Action	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.1908	829	0.800	McCanl	Pehl	Maintena	Maintenance	Culv.-Ditch Relief	Maintenance	N/A		0	0	0	1	0	0	$120	0
Private Seasonal	829	0.000	ME	4/29/2002		ECP Not	Culv. Maintenance	Medium	18"	-	0		0	0	0	0	$0	0
	18" DRC with small gully leading to class 3 swale , clean outlet area and rock armour , rock located to left 50' , in pile dumped at OBR.																	
40.1908	2068	0.800		Pehl	03-008	miller ridge	Surface Drainage	THP Mitigation	N/A		0	0	0	2	0	0	$250	0
Private Seasonal	2068	0.900	Unk	11/15/2003		ECP Not	Dip Rolling	THP Low	-	-	0		0	0	0	0	$0	0
	Appurtenant road, between units 4 and 5, and unrocked portion of road between rocked segments of road. Drain road at top of pitch in road, and rock road to intersection with other rocked road. The section of road between the 18" relief ditch culvert and the top of RP3 will be rocked. Waterbars and rolling dips will be installed across this section of road where they are flagged.																	
40.1908	1827	1.200	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1827	0.000	Unk	10/15/2001		ECP Not	Rock Pit	Low	-	-	0		0	0	0	0	$0	0
	Shepards opening hole pit																	

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class / Old Dia	/ New Dia	DRCs / Ln	Rock	Left D / Right D	Exca. / Cat	Truck / Labor	Gra. / Yds	Cost / $/FSD	Total Yds / FSD Yds
40.190808	2023	0.000	Pehl	Pehl	Maintena	Maintenance	Surface Drainage	Maintenance	N/A		0	0	0	7	0	0	$1,300	152
Upgraded	2023	0.310	ME	5/18/2002		ECP Not	Dip Rolling	Medium	-	-	0		0	7	0	0	$9	152
	Road through the grass. Outsloped and dipped. Time includes site 826, 1938, 1939. Work wasn't quite good enough to call stormproofed. Crossings need to be pulled deeper and rock armored.																	
40.190808	1939	0.000	Hovland	Borcich	20-00144	Shep's	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	6946	0.000	Unk	10/15/2023		ECP Not	Temp. Crossing	THP Low	-	-	0		0	0	0	0	$0	0
	Install temporary crossing on Class III watercourse along temporary road in the smaller unit. If water is present use a 12" culvert to pass the flow. Remove the culvert by October 15th and slope the approach back to a 2:1 slope.																	
40.190808	1938	0.000	Hovland	Borcich	20-00144	Shep's	Spring	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	6945	0.000	Unk	10/15/2023		ECP Not	Temp. Crossing	THP Low	-	-	0		0	0	0	0	$0	0
	Water is running out of the road cut bank and onto road surface. The road surface is wet and covered with horsetail (Equisetum) for a length of about 30 ft. Install a temporary drain pipe to drain the water across the road. Do not place fill at this location.																	
40.190808	2490	0.010	Pehl	Pehl	04-275	Redbud	Surface Drainage	THP App. Rd.	N/A		0	30	0	0	0	0	$0	0
Private Seasonal	2490	0.000	R&S	10/13/2006		ECP Not	Dip Rolling	THP Low	-	-	0		0	0	0	0	$0	0
	Cross-drain under road above discharges onto this road at an existing rocked dip. If necessary, cross drain with a temporary 5" pipe. Prior to completion or October 15th of any year of use, reshape existing rocked dip to ensure proper function and add more rock, if necessary.																	
40.190808	826	0.100	McCanl	Pehl	Maintena	Maintenance	Humboldt	Storm Proofing	III		0	0	0	8	0	0	$1,650	207
Private Seasonal	826	0.000	ME	5/18/2002		ECP Not	Excavate Soil	High	-	-	0		0	8	2	570	$8	207
	A fill crossing on a class 3 stream. Partial flow diverting down road to right for 171' were it exits over OBF. Minor surface erosion , no delivery. Some flow flowing over OBF of crossing minor erosion , past flow to right down road , joining with spring flow from cutbank. Treat: decom. Crossing store spoils to left and right on road, add several waterbars to road either side of crossing (Diversion eliminated, but Not fully pulled down to grade.)																	
40.190808	826	0.100	Pehl	Pehl	04-275	Redbud	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	2491	0.000	R&S	10/13/2006		ECP Not	Temp. Crossing	THP Low	-	-	0		0	0	0	0	$0	0
	If water present at time of operations install with pipe adequate to handle flow. Upon completion or October 15th of any year of crossing use, remove any temporary pipes, rip-rap outside edge of crossing and pull any crossing fill down to top of rip rap or excavate channel to stream grade, stabilize as per THP Item 18. Outslope road through meadow at close of operations.																	
40.190808	1938	0.200	Pehl	Pehl	Maintena	Maintenance	Spring	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1938	0.000	ME	5/18/2002		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Water from cut bank seep runs down road. Cross drain with rolling dip.																	
40.190808	1938	0.200	Pehl	Pehl	04-275	Redbud	Dip Rolling	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	2492	0.000	R&S	10/13/2006		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Existing rolling dip cross-drains bank seeps. Maintain existing dip.																	
40.190808	1939	0.270	Pehl	Pehl	Maintena	Maintenance	Temp. Crossing	Storm Proofing	III		0	0	0	0	0	0	$0	0
Private Seasonal	1939	0.000	Unk	5/18/2002		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	Class III crosses road surface. Road edge is eroding. Pull loose road edge and armor with local boulders. Install dip/waterbar 50' upgrade and 25' downgrade from crossing to disconnect road drainage and prevent diversion. (Not pulled all the way down to grade, No waterbars upgrade.)																	
40.190808	1939	0.270	Pehl	Pehl	04-275	Redbud	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	2493	0.000	R&S	10/13/2006		ECP Not	Temp. Crossing	THP Low	-	-	0		0	0	0	0	$0	0
	If possible use road as is if crossing is dry at time of operations or as an alternative install rocked ford. If rocked ford is installed do not excavate outside edge of road deeper than level of stabilizing outboard rip-rap that currently exists. Construction at this location shall be done while water is not flowing in the watercourse. As an alternative, if construction at this location will be performed during the time water is flowing, the project proponent shall notify DFG for an SAA pursuant to Section 1600 et seq. of the Fish and Game Code.																	

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.190812	6924	0.000	Hovland	Borcich	20-00144	Shep's	Worn Out Culvert	THP App. Rd.	III		0	0	0	0	0	0	$736	0
Private Seasonal	6924	0.000	Unk	10/15/2023		ECP Not	Culv. Replace	THP Low	24"	24"	40		0	0	0	0	$0	0
	Replace existing, rusted 24" culvert with a 24"x40' culvert. Rock armor outlet with a D50 of 20". Q100 is 8 cfs.																	
40.190812	1816	0.300	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1816	0.000	Unk	10/15/2001		ECP Not	Rock Pit	Low	-	-	0		0	0	0	0	$0	0
40.190817	2667	0.000	Pehl	Pehl	02-174	Huckleberry	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2667	0.750	Unk	12/21/2005		ECP Not	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.190817	2666	0.000	Pehl	Pehl	03-008	miller ridge	No Problem	THP Maint Insp	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2666	0.750	Unk	12/21/2005		ECP Not	No Action	See Comments	-	-	0		0	0	0	0	$0	0
	Wet weather inspection. No problems.																	
40.190817	2733	0.000	Pehl	Pehl	04-275	Redbud	No Problem	THP ECP	N/A		0	0	0	0	0	0	$0	0
Private Perm.	2733	1.300	Unk	1/6/2006		Redbud	No Action	No Action	-	-	0		0	0	0	0	$0	0
	Wet weather inspection.																	
40.190824	2015	0.000	Pehl	Pehl	Maintena	Maintenance	Surface Drainage	Maintenance	N/A		0	0	0	0	0	0	$0	122
Storm Proofed	2015	0.250	Unk	5/5/2002		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	122
	Road segment outsloped and dipped.																	
40.190824	1940	0.100	Pehl	Pehl	Maintena	Maintenance	Surface Drainage	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1940	0.000	ME	4/29/2002		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Seeping cut bank. Road ruts easily. Install rocked rolling dips at 75' spacing.																	
40.190824	1941	0.280	Haschak	Pehl	09-069	Aspen	Culv.	THP App. Rd.	II		0	40	0	17	0	0	$4,675	600
Private Seasonal	1941	0.000	Unk	10/15/2013		GWDR 1-09-069 SO	Remove Crossing	THP Low	36"	Pull	0		0	21	9	0	$8	600
	Pipe removed.																	
	Undersized culvert. Replace for storm proofed standard. Dip approaches on both sides. Incorporate spoils into road system or if excessive haul to stable location outside of WLPZ. Culvert shall be installed about two (2) feet below the channel bed on upstream end to reduce the volume of fill required to cover the pipe																	
40.190824	1942	0.320	Pehl	Pehl	Maintena	Maintenance	Fill - Road	Storm Proofing	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1942	0.000	ME	10/15/2002		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	Fill slope failure. Excavate loose/deliverable material. Trim cutbank. Install new brow log, but do not bury. May be necessary to use a brow log.																	
40.190824	1944	0.500	Pehl	Pehl	Maintena	Maintenance	Slide - Deep	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1944	0.000	ME	4/29/2002		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	Cut bank has slid onto road. Road bench appears usable. Ramp over or end haul to make passable.																	
40.190824	1944	0.520	Haschak	Pehl	09-069	Aspen	Cut Bank Failure	THP App. Rd.	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	5212	0.000	Unk	10/15/2013		ECP Not	Excavate Soil	Medium	-	-	0		0	0	0	0	$0	0
	Road not used due to NSO. Work not completed.																	
	Cut bank has slid onto road. Ramp over or end haul to make passable. Outslope road for better drainage. Make sure that any spoils that are generated are incorporated into road system in such a way that the road will drain adequately,																	
40.190824	5218	0.830	Haschak	Pehl	09-069	Aspen	Surface Drainage	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	5218	0.000	Unk	5/8/2013		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Road not used due to NSO circle.																	
	Very minor class III that extends to just above road should have a rolling dip placed at this location.																	

Road # / Road Class	GIS# / ID#	Mile / End	Plan / Crew	Final / Done	THP# / Rd Pt	THP Name / ECP Number	Problem / Solution	Repair Type / Priority/Shedule	Cr. Class / Old Dia	/ New Dia	DRCs / Ln	Rock	Left D / Right D	Exca. / Cat	Truck / Labor	Gra. / Yds	Cost / $/FSD	Total Yds / FSD Yds
40.190824	1947	1.050	Pehl	Pehl	Maintena	Maintenance	No Problem	Storm Proofing	III		0	0	0	0	0	0	$0	0
Private Seasonal	1947	0.000	Unk	4/4/2002		ECP Not	Remove Crossing	No Action	-	-	0		0	0	0	0	$0	0
	Watercourse crossing abandoned. Several years prior to inspection.																	
40.190824	1948	1.180	Pehl	Pehl	Maintena	Maintenance	No Problem	Storm Proofing	II		0	0	0	0	0	0	$0	0
Private Seasonal	1948	0.000	Unk	4/4/2002		ECP Not	Remove Crossing	No Action	-	-	0		0	0	0	0	$0	0
	Watercourse crossing abandoned. Several years prior to inspection.																	
40.190824	1949	1.190	Pehl	Pehl	Maintena	Maintenance	No Problem	Storm Proofing	III		0	0	0	0	0	0	$0	0
Private Seasonal	1949	0.000	Unk	4/4/2002		ECP Not	Remove Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Watercourse crossing abandoned. Several years prior to inspection.																	
40.190824	1950	1.300	Pehl	Pehl	Maintena	Maintenance	Slide - Deep	Not Rd. Upslope	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1950	0.000	Unk	4/4/2002		ECP Not	No Action	Medium	-	-	0		0	0	0	0	$0	0
	Road formerly crossed unstable area. Several years prior to inspection, area re-activated and delivered to the watercourse to the north.																	
40.190824	1951	1.320	Pehl	Pehl	Maintena	Maintenance	No Problem	Storm Proofing	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1951	0.000	Unk	4/4/2002		ECP Not	Remove Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Watercourse crossing abandoned. Several years prior to inspection.																	
40.190868	5207	0.200	Haschak	Pehl	09-069	Aspen	Dip Rolling	THP App. Rd.	Swale		0	0	0	0	0	0	$0	0
Private Seasonal	5207	0.000	Unk	10/15/2013		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Maintain and enhance rolling dip at swale.																	
40.190868	5206	0.320	Haschak	Pehl	09-069	Aspen	Culv.-Plug	THP App. Rd.	Swale		0	0	0	0	0	0	$0	0
Private Seasonal	5206	0.000	Unk	10/15/2013		GWDR 1-09-069 SO	Culv. Maintenance	Medium	-	-	0		0	0	0	0	$0	0
	Unplug head of 24" culvert on swale. If unable to unplug culvert then pull xing down to grade at close of operations or alternatively pull crossing down to grade at upper end and rock armor outlet end slope sufficiently keep from downcutting.																	
40.190868	5205	0.330	Haschak	Pehl	09-069	Aspen	Surface Drainage	THP App. Rd.	Swale		0	0	0	0	0	0	$0	0
Private Seasonal	5205	0.000	Unk	10/15/2013		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$0	0
	Preserve existing low spot for swale drainage.																	
40.190868	5204	0.340	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP App. Rd.	Spr.		0	0	0	0	0	0	$0	0
Private Seasonal	5204	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install 4" or larger spring drain pipe if water is present at time of operations. Spring drain should be left in functioning condition at close of operations or pulled prior to the winter period. If crossing is pulled the operator should make sure that the spring is draining and that water will not be saturating road.																	
40.4	1123	0.020	Alden	Alden	Maintena	Maintenance	No Problem	Maintenance	N/A		0	0	0	0	0	0	$0	0
Private Seasonal	1123	0.000	Unk	12/5/1995		ECP Not	Gate	Low	-	-	0		0	0	0	0	$0	0
	John Bennett and Frank Leweki installed this gate in 1995. The gate and installation was paid for by GRI. GRI has continuously used this road. GRI has had a lock on the gate since we installed it in 1995. **On 9-4-14 Leonard Spencer asked Henry Alden to cut the chain and insert GRI's lock into the gate. Spencer also thanked Henry for taking good care of the road.**																	
40.4	4185	1.800	McCanl	Alden	Storm Pro	Storm Proofing	Other	Storm Proofing	N/A		0	0	0	0	0	0	$0	0
Abandoned Lega	4185	2.340	Unk	4/28/2000		ECP Not	No Action	Medium	-	-	0		0	0	0	0	$0	0
40.4055	566	0.000	Kelly	Kelly	96-437	Wheatfield North	Surface Drainage	THP Clean Up	N/A		0	0	0	54	0	4	$5,358	636
Deactivated	566	1.300	WL	10/30/1999		ECP Not	Dip Rolling	Medium	-	-	0		0	0	10	0	$8	636

Road #	GIS#	Mile	Plan	Final	THP#	THP Name	Problem	Repair Type	Cr. Class		DRCs	Rock	Left D	Exca.	Truck	Gra.	Cost	Total Yds
Road Class	ID#	End	Crew	Done	Rd Pt	ECP Number	Solution	Priority/Shedule	Old Dia	New Dia	Ln		Right D	Cat	Labor	Yds	$/FSD	FSD Yds
40.415561	350	0.100	Haschak	Pehl	99-354	Bertha	Temp. Crossing	THP Recon.	III		0	0	0	0	0	0	$0	0
Private Seasonal	350	0.000	WL	8/23/2000		ECP Not	Temp. Crossing	THP High	-	-	0		0	0	0	0	$0	0
	outside edge of crossing is eroding. Install 6" spring drain pipe if water is present at time of operations. Temporary crossing shall be removed to the standards of 923.3d prior to the winter period. As an alternative you can fill nick point (outside edge of crossing) with large rock up to the surface of the road and create rolling dip so that water stays in channel.																	
40.4165	5468	0.450	Haschak	Alden	09-069	Aspen	No Problem	THP... Not	Pond		0	0	0	0	0	0	$0	0
Water Rights	5468	0.000	Unk	6/1/2009		ECP Not	Water Hole	No Action	-	-	0		0	0	0	0	$0	0
	S018660																	
	Noce Pond-5468 S018660 (054131) Toad Pond on Upper Noce. The water is used for logging dust abatement. There is no electricity at the site. Usage is infrequent. Estimates are base on water truck loads per day converted into gallons.																	
40.4165	358	0.500	Haschak	Pehl	99-354	Bertha	Temp. Crossing	THP Recon.	III		0	0	0	0	0	0	$0	0
Private Seasonal	358	0.000	WL	8/23/2000		ECP Not	Temp. Crossing	THP High	-	-	0		0	0	0	0	$0	0
	maintain existing rolling dip																	
40.4165	354	1.300	Haschak	Pehl	99-354	Bertha	Temp. Crossing	THP Recon.	Spr.		0	0	0	0	0	0	$0	0
Existing Skid	354	0.000	WL	7/28/2000		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	install 6" spring drain pipe if water is present at time of operations. Temporary crossing shall be removed to the standards of 923.3d prior to the winter period.																	
40.4165	5276	1.375	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP App. Rd.	II		0	0	0	0	0	0	$0	0
Private Seasonal	5276	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install temporary pipe large enough to handle flow. Place a layer of straw or filter fabric in channel prior to fill placement in order to help relocate channel bottom when channel is being pulled. Pull down to straw or fabric at close of operations. It is not necessary to excavate down to the grade that is below the road since this is just a spring at the top of what is being very conservatively called a class II and no significant flow is present even in the winter.																	
40.4165	5277	1.380	Haschak	Pehl	09-069	Aspen	Temp. Crossing	THP App. Rd.	III		0	0	0	0	0	0	$0	0
Private Seasonal	5277	0.000	Unk	10/15/2013		ECP Not	Temp. Crossing	Medium	-	-	0		0	0	0	0	$0	0
	Install temporary pipe large enough to handle flow if any water is present. Place a layer of straw or filter fabric in channel prior to fill placement in order to help relocate channel bottom when channel is being pulled. Pull down to straw or fabric at close of operations. It is not necessary to excavate down to the grade that is below the road since this is a very minor class III and doesn't have significant flow.																	
40.6052	567	0.400	Kelly	Kelly	96-437	Wheatfield North	Surface Drainage	THP Recon.	N/A		0	0	0	50	0	0	$4,703	391
Deactivated	567	1.200	WL	10/30/1999		ECP Not	Dip Rolling	Medium	-	-	0		0	0	0	0	$12	391
40.6052	360	1.000	Woolsey	Kelly	96-437	Wheatfield North	Humboldt	THP Recon.	III		0	0	0	35	50	0	$6,763	0
Private Seasonal	360	0.000	WL	6/30/1999		ECP Not	Culv. Install	Medium	-	-	0		0	13	0	0	$0	0
Grand Total All Sites		185										70	0	565	243	24	$125,167	7,030
													0	280	169	3,417		7,006

Road Work

- Road # – This is unique road ID number for each road segment on the property.
- Road Class – This is the type of road.
    a. Upgraded – Outsloped and dipped
    b. Storm proofed – Outsloped, dipped and culverts repaired.
    c. Deactivation – Outsloped, dipped, culverts pulled, and the road will be reused.
    d. Abandoned Fixed – Outsloped, dipped, culverts removed and the road will not be reused.
    e. Abandoned Legacy – It will do more damage than good to work on the road. The road will not be reused.
- GIS# - Each existing site in the field (like a culvert) has a unique GIS number, usually the first visit ID#. It appears on the road maps. A new visit to an existing site will reference the GIS#. You can look up the history of visits to a particular site by calling up all the records with the same GIS#.
- ID# - Each "new" road site visit has a unique ID number. It is generated when the record is entered into the database.
- Mile – Each numbered road has mileage ticks from 0 to the end of the road. "Mile" is the distance out the road to the site.
- End – If the site is along a length of road, like tipping and dipping, there is a start point (Mile) and "end" mileage.
- Insp. – The name of the inspector that identified the site and made the prescription is listed here. The inspectors are trained to identify potential sediment sources and make prescriptions in accordance with the Handbook for Forest and Ranch Roads, Weaver and Hagans, 1992. Estimates of sediment production and delivery are made by the inspector.
- Crew – These are the initials of contractor that did the work.
- Planned – Date of site identification.
- Done – Date site work was completed.
- THP# - THP Number
- Rd Pt - This is the working number (THP road point) created by the inspector in the field. It is often found on field flagging.
- THP Name – The THP or program the work is associated with.
- ECP Name – The Erosion Control Plan the site is associated with.
- Problem – The type of problem.
- Solution – The type of solution.
- Repair type – Why was the work done.
- Priority – This reflects the urgency of the problem. A high priority site is one that is likely to deliver a significant amount of sediment during the next 5 year storm event. Medium and low priority sites need upgrading, but are unlikely to deliver significant amounts of sediment in the next several years. High priority sites will be scheduled for completion prior to a low or medium priority site.
- Stream Class – As per the Forest Practice Rules
- Old Dia – The diameter of the old culvert.
- New Dia Ln – The diameter and length of the new culvert if any.
- DRCs – Number of ditch relief culverts needed for the site.
- Rock – Yards of rock needed at the site – rip rap, rock surface, etc.
- Right and Left Ditch – Feet of road to the right and left of the site that is connected and needs treatment.
- Equipment Hours
    a. Exca. – Excavator
    b. Cat – Caterpillar tractor
    c. Labor – Hand labor
    d. Truck – Dump truck or water truck
    e. Gra. – Grader
- Yds - This is the total yardage of soil that must be moved at the site.
- Cost – All the equipment costs, other costs and culvert costs. This does not include administration or logistic costs.
- $/FSD – This is the total cost divided by the yards of soil prevented form delivery (FSD) to the watercourses.
- Total Yds – This is the estimate of yardage that will be mobilized in a failure if the work is not done.
    - FSD (Future Sediment Delivery) – This is the amount of soil that will be prevented from being delivered into the watercourses if the project is completed. It is the relative potential for sediment delivery (RPSD). This yardage only appears if the inspector has been trained to estimate this.

Independent Coast Observer

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(707) 884-1710 fax
www.mendonoma.com

Proof of Publication of
NOTICE OF TIMBER HARVEST PLAN

I, the undersigned say:
That I am over the age of eighteen and am not a party to or interested in the above entitled matter of proceeding; and am, and at all times embraced in the publication herein mentioned, was the principal clerk of the editor and publisher of the INDEPENDENT COAST OBSERVER, a weekly newspaper printed, published and circulated in the County of Mendocino, and adjudged a newspaper of general circulation by the Superior Court of California, Proceeding #15294, that the

above NOTICE OF TIMBER HARVEST PLAN of which is annexed a true printed copy, was printed in type not smaller than nonpareil and published in said newspaper on the following date(s), to wit: March 21, 2025.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.
Executed and dated at Gualala, California, this March 20, 2025

Signature _____

(ICO Ad number 8099)

Public Notice

NOTICE OF TIMBER HARVEST PLAN

Gualala Redwood Timber is in the process of submitting a Timber Harvest Plan (THP) within the Annapolis Watershed. The proposed project is located within portions of Township 10N, Range 14W, Section 14, 15, 22, 23, and 24, MDBM. Watercourses interior to the plan flow into the Wheatfield Fork of the Gualala River. If you have knowledge of any domestic water supplies, whose source is the before mentioned watercourse or whose source may be affected by the proposed operations, please contact the following person in writing within ten (10) days of the date of this notice, at the following address: Mark Pugsley, Gualala Redwood Timber, P.O. Box 156, Cloverdale, CA 95425.

(8099) March 21, 2025

Botanical Survey Report for the Pepper Timber Harvesting Plan

Prepared by:

Laura Moreno, Botanist
NCRM, Inc.
2501 North State Street
Ukiah, California 95482

Prepared for:

Gualala Redwood Timber

July 2023

1. INTRODUCTION

Gualala Redwood Timber (GRT) is preparing a Timber Harvesting Plan (THP) referred to as the Pepper THP, which is located approximately 3 miles northeast of Stewarts Point in Sonoma County, California (Appendix B, Vicinity Map).

GRT hired NCRM, Inc. (NCRM) to conduct seasonally appropriate surveys and habitat assessments for special status species potentially occurring within the THP area and along appurtenant roads. The goal was to determine if the project would have any significant adverse environmental impacts on special-status plant species and/or natural communities located within the THP boundary.

2. PROJECT AREA DESCRIPTION

2.1 Location

The project area for the Pepper THP covers roughly 560 acres within the Stewarts Point and Annapolis USGS 7.5' Quadrangles (quads). The THP unit is situated in sections 14, 15, 22, 23, 24, 25 of T10N R14W, and section 30 of T10N R13W, Mount Diablo Base and Meridian, and access can be obtained via Annapolis Road, east of Highway 1.

2.2 Topography

The Pepper THP encompasses slopes that face various aspects. Elevation within the THP ranges from about 95 to 820 feet above sea level, and slopes range from 0 to 60%.

2.3 Soils

The Soil Survey Report for Sonoma County classifies the soils in the THP as Josephine loam, 50 to 75 percent slopes; Hugo very gravelly loam, 50 to 75 percent slopes; Goldridge fine sandy loam, 15 to 50 percent slopes; Hugo-Josephine complex, 50 to 75 percent slopes; and Empire loam, 9 to 30 percent slopes.

3. SURVEY METHODOLOGY

In accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), meandering, floristic surveys were conducted within the project area on April 4, 2023, and June 8, 2023, by NCRM Botanist, Laura Moreno, and Botany Technician, Lhasa Summers, totaling 32 survey hours. Early and late-season surveys were performed following California Department of Fish and Wildlife (CDFW) procedures, with emphasis placed on identifying special-status plant species and all plant communities. Survey efforts involved walking throughout the project area, targeting suitable habitats, including truck roads, skid trails, landings, springs, watercourses, meadows, ponds, and areas of unique topography and microclimate. Plants and habitats of questionable importance were revisited to ensure accurate detection and eliminate doubt. Field notes were recorded, and samples were taken to aid plant species identification.

Due to unusually long and cold winter weather during the 2023 survey season, false negative results were possible, as plants were less likely to have bloomed as promptly as indicated by scoping lists. All plant species found during surveys were identified to the lowest taxonomic level necessary to determine the presence of special-status plant species using *The Jepson Manual: Vascular Plants of California* (Baldwin 2012) and the *Jepson eFlora* (Jepson Flora Project 2023)

for taxonomic nomenclature. Appendix A, Table 2 provides a complete list of plant species observed during the botanical surveys. Plant communities are classified and described using *A Manual of California Vegetation, Online Edition* (MCV) (CNPS 2023). The botanical report for this THP was prepared by Laura Moreno.

3.1 Special Status Scoping

In April 2023, a scoping list of special-status plant species and communities was created to guide botanical surveys. The list was based on the California Native Plant Society's (CNPS) *Rare Plant Inventory* database and the California Natural Diversity Database (CNDDB), using a 9-quad search parameter, and was revised prior to each survey. The electronic search encompassed Stewarts Point, Annapolis, McGuire Ridge, Gube Mountain, Big Foot Mountain, Tombs Creek, Fort Ross, Plantation, and Gualala 7.5' USGS quads. Of the 71 special status plant species listed, 31 were identified as potentially present within the project area, based on elevation and habitat type. Of the four special status communities listed, none were determined to have the potential to exist within the project area. Appendix A, Table 1 contains this project's special status scoping list.

3.2 Reference Populations

The CNDDB *Rare Find* tool was utilized to locate previously reported rare plant populations in or near the Pepper THP project area. Reference sites were used to observe important plant characteristics and to identify the potential for flower characteristics at the time of the survey. To increase the chances of detecting rare plants in THP areas, reference populations near the THP were visited for species that could potentially occur within the THP. The botanist utilized all available resources and experience to determine the most likely species to occur.

4. RESULTS

Based on the Keeler-Wolf classification system, the primary community present in the Pepper THP most closely resembles the Douglas fir (*Psedotsuga menziesii*) Forest and Woodland Alliance (G4, S4), Douglas fir - tanoak - madrone (*Pseudotsuga menziesii - Notholithocarpus densiflorus - Arbutus menziesii*) Forest and Woodland Alliance (G4, S4), Tanoak (*Notholithocarpus densiflorus*) Forest Alliance (S3.2, G4), and the Redwood (*Sequoia sempervirens*) Forest and Woodland Alliance (G3, S3.2). Definitions of global and state ranking status for plant species and communities are listed in Appendix A.

Douglas fir (*Psedotsuga menziesii*) Forest and Woodland Alliance

Pseudotsuga menziesii is dominant or co-dominant with hardwoods in the tree canopy with *Abies concolor, Acer macrophyllum, Alnus rhombifolia, Arbutus menziesii, Calocedrus decurrens, Chamaecyparis lawsoniana, Chrysolepis chrysophylla, Cornus nuttallii, Pinus contorta, Pinus jeffreyi, Pinus lambertiana, Quercus agrifolia, Quercus chrysolepis, Quercus garryana, Quercus kelloggii* and *Sequoia sempervirens*.

Douglas fir - tanoak - madrone (*Pseudotsuga menziesii - Notholithocarpus densiflorus - Arbutus menziesii*) Forest and Woodland Alliance

Pseudotsuga menziesii is dominant to co-dominant with evergreen hardwoods such as *Notholithocarpus densiflorus* and *Arbutus menziesii*. Other hardwoods that may co-dominate include *Quercus chrysolepis/Quercus kelloggii* and *Umbellularia californica*. Other trees in the canopy may include *Acer macrophyllum, Calocedrus decurrens, Chamaecyparis lawsoniana, Pinus lambertiana, Pinus ponderosa* and *Taxus brevifolia*.

Tanoak (*Notholithocarpus densiflorus*) Forest Alliance
Notholithocarpus densiflorus is dominant or co-dominant in the tree canopy with *Acer macrophyllum, Alnus rubra, Arbutus menziesii, Calocedrus decurrens, Chamaecyparis lawsoniana, Chrysolepis chrysophylla, Cornus nuttallii, Pinus coulteri, Pinus lambertiana, Pseudotsuga menziesii, Quercus agrifolia, Quercus chrysolepis, Quercus kelloggii, Sequoia sempervirens, Torreya californica, Tsuga heterophylla* and *Umbellularia californica*.

Redwood (*Sequoia sempervirens*) Forest and Woodland Alliance
Sequoia sempervirens is dominant or co-dominant in the tree canopy with *Abies grandis, Acer macrophyllum, Alnus rubra, Arbutus menziesii, Chrysolepis chrysophylla, Notholithocarpus densiflorus, Picea sitchensis, Pseudotsuga menziesii, Tsuga heterophylla*, and *Umbellularia californica*.

The midstory layer is primarily composed of huckleberry (*Vaccinium ovatum*), manzanita (*Arctostaphylos columbiana*), blue blossom (*Ceanothus thyrsiflorus*), and tanoak/Douglas fir regeneration.

The understory is generally suppressed throughout the plan as a large majority of the overstory/midstory stands are dense. Common understory species include sword fern (*Polystichum munitum*), poison oak (*Toxicodendron diversilobum*), iris (*Iris* sp.), and modesty (*Whipplea modesta*). Most of the understory diversity that was recorded for this THP was found near canopy breaks and roads.

No special status plant species were observed. A complete list of identified plant species can be found in Appendix A, Table 2.

5. REFERENCES

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6. CREDITS

Lhasa Summers, Botany Technician
Lhasa has been assisting with botany surveys at NCRM since April 2022, after receiving her degree from the University of California, Berkeley. As a local of Mendocino County, she has spent the last 15 years botanizing in the area and has also supported NCRM with land stewardship projects, carbon and timber inventories, hazard mitigation efforts, and water quality assessments.

Laura Moreno, Botanist
NCRM Botanist, Laura Moreno received her B.S. in Wildlife Biology from Texas State University in 2016. She spent 5 years as a botany field technician before moving to California to work for NCRM in March of 2022. Her experience includes botanical assessments/surveys, the use of GIS software to make maps and analyze spatial data, report writing, plant species identification, invasive plant management, and land health assessments. Ms. Moreno has provided numerous botanical assessments that comply with the California Environmental Quality Act (CEQA) for various projects, ranging from small to large timber harvesting plans, fuel reduction projects, and proposed development permits.

APPENDIX A

Definitions For Plant Species and Communities Ranking Status

TABLE 1-Special Status Plant Species and Communities Scoping List

TABLE 2-Plant Species Identified During Botanical Surveys

DEFINITIONS FOR PLANT SPECIES AND COMMUNITIES RANKING STATUS

This rare plant assessment addresses the rare native vascular plants of California with known occurrence and distribution in the assessment area. These plants are cataloged on the following lists:
Federally listed or proposed threatened or endangered plants; California State listed or proposed rare, threatened, or endangered plants; California Native Plant Society's (CNPS) Rare Plant Rank 1A: Plants presumed extinct in California and either rare or extinct elsewhere.

The CNPS Rare Plant Ranks:
CNPS Rare Plant Rank **1B**: Plants rare, threatened, or endangered in California and elsewhere.
CNPS Rare Plant Rank **2A**: Plants presumed extirpated in California, but more common elsewhere)
CNPS Rare Plant Rank **2B**: Plants rare, threatened, or endangered in California, but more common elsewhere.
CNPS Rare Plant Rank **3**: Plants for which more information is needed.
CNPS Rare Plant Rank **4**: Plants if limited distribution (watch list).

The CNPS ranks 3 and 4 plants have little or no protection under CEQA but are included in an effort to help clarify the status of these plants. The classification system, created by the California Native Plant Society, helps distinguish between rarity, endangerment, and distribution.

CNPS Threat Ranks:
0.1 – Seriously threatened in California.
0.2 – moderately threatened in California.
0.3 – the threat ranks do not designate a change of environmental protections.

Global Ranking:
The global rank (G-rank) reflects the overall status of an element throughout its global range. Both Global and subnational ranks are represented by a letter + number score that reflects a combination of rarity, threat, and trend factors with weighting being heavier on rarity than the other two.

Species or Natural Community Level
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 due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = **Vulnerable**—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), 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 = **Demonstrably Secure**—Common; widespread and abundant.
Subspecies Level

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of the subspecies or variety.

State Ranking
The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank:

S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = No current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = No current threats known
S3 = 21-80 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = No current threats known
S4 = Apparently secure within California; this rank is clearly lower than S3, but factors exist to cause some concern (i.e., there is some threat or somewhat rare habitat)

NO THREAT RANK
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

Table 1 – Special Status Plant Species and Communities Scoping List

June 2023 Stewarts Point, Annapolis, McGuire Ridge, Gube Mountain, Big Foot Mountain, Tombs Creek, Fort Ross, Plantation, and Gualala 7.5' Quadrangle Maps.

Scientific Name **Common Name**	**Fed List**	**State List**	**Global Rank**	**State Rank**	**CA Rare Plant Rank**	**Associated Habitat**	**Bloom Period**	**Habitat in Plan Area?**
Agrostis blasdalei Blasdale's bent grass	None	None	G2G3	S2	1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie. 0 - 150 meters in elevation.	May-Jul	No
Allium peninsulare subsp. *franciscanum* Franciscan onion	None	None	G5T2	S2	1B.2	Cismontane woodland, Valley and foothill grassland. Clay, Serpentinite (often), Volcanic. 52 - 305 meters in elevation.	(Apr) May-Jun	No
Amorpha californica subsp. *napensis* Napa false indigo	None	None	G4T2	S2	1B.2	Broadleafed upland forest (openings), Chaparral, Cismontane woodland. 50 - 2000 meters in elevation.	Apr-Jul	Yes
Arctostaphylos bakeri subsp. *sublaevis* Cedars manzanita	None	CR	G2T2	S2	1B.2	Chaparral, Closed-cone coniferous forest. Seeps, Serpentinite. 185 - 760 meters in elevation.	Feb-May	No
Arctostaphylos hispidula Howell's manzanita	None	None	G4	S3	4.2	Chaparral (sandstone, serpentinite). 120 - 1250 meters in elevation.	Mar-Apr	No
Asclepias solanoana serpentine milkweed	None	None	G3	S3	4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest. Serpentinite. 230 - 1860 meters in elevation.	May-Jul (Aug)	No
Astragalus agnicidus Humboldt County milk-vetch	None	CE	G2	S2	1B.1	Broadleafed upland forest, North Coast coniferous forest. Disturbed areas, Openings, Roadsides (sometimes). 120 - 800 meters in elevation.	Apr-Sep	Yes

Astragalus rattanii subsp. *rattanii* Rattan's milk-vetch	None	None	G4T4	S4	4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest. Gravelly, Streambanks. 30 - 825 meters in elevation.	Apr-Jul	Yes
Brasenia schreberi watershield	None	None	G5	S3	2B.3	Marshes and swamps (freshwater). 0 - 2200 meters in elevation.	Jun-Sep	No
Calamagrostis bolanderi Bolander's reed grass	None	None	G4	S4	4.2	Bogs and fens, Broadleafed upland forest, Closed-cone coniferous forest, Coastal scrub, Marshes and swamps (freshwater), Meadows and seeps (mesic), North Coast coniferous forest. Mesic. 0 - 455 meters in elevation.	May-Aug	Yes
Calamagrostis ophitidis serpentine reed grass	None	None	G3	S3	4.3	Chaparral (openings, often north-facing slopes), Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland. Rocky, Serpentinite. 90 - 1065 meters in elevation.	Apr-Jul	Yes
Calochortus raichei Cedar's fairy-lantern	None	None	G2	S2	1B.2	Chaparral, Closed-cone coniferous forest. Serpentinite. 200 - 490 meters in elevation.	May-Aug	No
Calochortus uniflorus pink star-tulip	None	None	G4	S4	4.2	Coastal prairie, Coastal scrub, Meadows and seeps, North Coast coniferous forest. 10 - 1070 meters in elevation.	Apr-Jun	Yes
Calystegia collina subsp. *oxyphylla* Mt. Saint Helena morning-glory	None	None	G4T3	S3	4.2	Chaparral, Lower montane coniferous forest, Valley and foothill grassland. Serpentinite. 279 - 1010 meters in elevation.	Apr-Jun	No

Calystegia purpurata subsp. *saxicola* coastal bluff morning-glory	None	None	G4T2 T3	S2S3	1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, North Coast coniferous forest. 0 - 105 meters in elevation.	(Mar) Apr-Sep	Yes
Carex californica California sedge	None	None	G5	S2	2B.2	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Marshes and swamps (margins), Meadows and seeps. 90 - 335 meters in elevation.	May-Aug	No
Carex saliniformis deceiving sedge	None	None	G2	S2	1B.2	Coastal prairie, Coastal scrub, Marshes and swamps (coastal salt), Meadows and seeps. Mesic. 3 - 230 meters in elevation.	(May) Jun (Jul)	No
Castilleja ambigua subsp. *ambigua* johnny-nip	None	None	G4T4	S3S4	4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools (margins). 0 - 435 meters in elevation.	Mar-Aug	No
Castilleja latifolia Monterey Coast paintbrush	None	None	G4	S4	4.3	Cismontane woodland (openings), Closed-cone coniferous forest, Coastal dunes, Coastal scrub. Sandy. 0 - 185 meters in elevation.	Feb-Sep	No
Castilleja mendocinensis Mendocino Coast paintbrush	None	None	G2	S2	1B.2	Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub. 0 - 160 meters in elevation.	Apr-Aug	No
Ceanothus gloriosus subsp. *exaltatus* glory brush	None	None	G4T4	S4	4.3	Chaparral. 30 - 610 meters in elevation.	Mar-Jun (Aug)	No
Ceanothus gloriosus subsp. *gloriosus* Point Reyes ceanothus	None	None	G4T4	S4	4.3	Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal scrub. Sandy. 5 - 520 meters in elevation.	Mar-May	No

Ceanothus purpureus holly-leaved ceanothus	None	None	G2	S2	1B.2	Chaparral, Cismontane woodland. Rocky, Volcanic. 120 - 640 meters in elevation.	Feb-Jun	No
Chorizanthe cuspidata subsp. *villosa* woolly-headed spineflower	None	None	G2T2	S2	1B.2	Coastal dunes, Coastal prairie, Coastal scrub. Sandy. 3 - 60 meters in elevation.	May-Jul (Aug)	No
Chorizanthe valida Sonoma spineflower	FE	CE	G1	S1	1B.1	Coastal prairie (sandy). 10 - 305 meters in elevation.	Jun-Aug	No
Cuscuta pacifica subsp. *papillata* Mendocino dodder	None	None	G5T1	S1	1B.2	Coastal dunes (interdune depressions). 0 - 50 meters in elevation.	(Jun) Jul-Oct	No
Cypripedium californicum California lady's-slipper	None	None	G3	S4	4.2	Bogs and fens, Lower montane coniferous forest. Seeps, Serpentinite (usually), Streambanks. 30 - 2750 meters in elevation.	Apr-Aug (Sep)	Yes
Eastwoodiella californica swamp harebell	None	None	G3	S3	1B.2	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Marshes and swamps (freshwater), Meadows and seeps, North Coast coniferous forest. Mesic. 1 - 405 meters in elevation.	Jun-Oct	Yes
Erigeron biolettii streamside daisy	None	None	G3?	S3?	3	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest. Mesic, Rocky. 30 - 1100 meters in elevation.	Jun-Oct	Yes
Erigeron serpentinus serpentine daisy	None	None	G2	S2	1B.3	Chaparral (seeps, serpentinite). 60 - 670 meters in elevation.	May-Aug	No

Erigeron supplex supple daisy	None	None	G2	S2	1B.2	Coastal bluff scrub, Coastal prairie. 10 - 50 meters in elevation.	May-Jul	No
Eriogonum cedrorum Cedar's buckwheat	None	None	G1	S1	1B.3	Closed-cone coniferous forest. Serpentinite. 365 - 550 meters in elevation.	Jun-Sep	No
Eriogonum ternatum ternate buckwheat	None	None	G4	S4	4.3	Lower montane coniferous forest (serpentinite). 305 - 2225 meters in elevation.	Jun-Aug	No
Erysimum concinnum bluff wallflower	None	None	G3	S2	1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie. 0 - 185 meters in elevation.	Feb-Jul	No
Fritillaria roderickii Roderick's fritillary	None	CE	G1Q	S1	1B.1	Coastal bluff scrub, Coastal prairie, Valley and foothill grassland. 15 - 400 meters in elevation.	Mar-May	No
Gilia capitata subsp. *pacifica* Pacific gilia	None	None	G5T3	S2	1B.2	Chaparral (openings), Coastal bluff scrub, Coastal prairie, Valley and foothill grassland. 5 - 1665 meters in elevation.	Apr-Aug	No
Gilia capitata subsp. *tomentosa* woolly-headed gilia	None	None	G5T2	S2	1B.1	Coastal bluff scrub, Valley and foothill grassland. Outcrops. Rocky, Serpentinite. 10 - 220 meters in elevation.	May-Jul	No
Glehnia littoralis subsp. *leiocarpa* American glehnia	None	None	G5T5	S2S3	4.2	Coastal dunes. 0 - 20 meters in elevation.	May-Aug	No
Hesperevax sparsiflora subsp. *brevifolia* short-leaved evax	None	None	G4T3	S3	1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie. 0 - 215 meters in elevation.	Mar-Jun	No
Hesperocyparis pygmaea pygmy cypress	None	None	G1	S1	1B.2	Closed-cone coniferous forest (usually podzol-like soil). 30 - 600 meters in elevation.	NA	Yes

Horkelia marinensis Point Reyes horkelia	None	None	G2	S2	1B.2	Coastal dunes, Coastal prairie, Coastal scrub. Sandy. 5 - 755 meters in elevation.	May-Sep	No
Horkelia tenuiloba thin-lobed horkelia	None	None	G2	S2	1B.2	Broadleafed upland forest, Chaparral, Valley and foothill grassland. Mesic, Openings, Sandy. 50 - 500 meters in elevation.	May-Jul (Aug)	Yes
Hosackia gracilis harlequin lotus	None	None	G3G4	S3	4.2	Broadleafed upland forest, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Meadows and seeps, North Coast coniferous forest, Valley and foothill grassland. Wetlands. Roadsides. 0 - 700 meters in elevation.	Mar-Jul	Yes
Iris longipetala coast iris	None	None	G3	S3	4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps. Mesic. 0 - 600 meters in elevation.	Mar-May (Jun)	Yes
Kopsiopsis hookeri small groundcone	None	None	G4?	S1S2	2B.3	North Coast coniferous forest. 90 - 885 meters in elevation.	Apr-Aug	Yes
Lasthenia californica subsp. *bakeri* Baker's goldfields	None	None	G3T1	S1	1B.2	Closed-cone coniferous forest (openings), Coastal scrub, Marshes and swamps, Meadows and seeps. 60 - 520 meters in elevation.	Apr-Oct	Yes
Lasthenia californica subsp. *macrantha* perennial goldfields	None	None	G3T2	S2	1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub. 5 - 520 meters in elevation.	Jan-Nov	No
Lathyrus palustris marsh pea	None	None	G5	S2	2B.2	Bogs and fens, Coastal prairie, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, North Coast	Mar-Aug	Yes

						coniferous forest. Mesic. 1 - 100 meters in elevation.		
Leptosiphon aureus bristly leptosiphon	None	None	G4?	S4?	4.2	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland. 55 - 1500 meters in elevation.	Apr-Jul	Yes
Leptosiphon latisectus broad-lobed leptosiphon	None	None	G4	S4	4.3	Broadleafed upland forest, Cismontane woodland. 170 - 1500 meters in elevation.	Apr-Jun	Yes
Leptosiphon rosaceus rose leptosiphon	None	None	G1	S1	1B.1	Coastal bluff scrub. 0 - 100 meters in elevation.	Apr-Jul	No
Lilium maritimum coast lily	None	None	G2	S2	1B.1	Broadleafed upland forest, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest. Roadsides (sometimes). 5 - 475 meters in elevation.	May-Aug	Yes
Lupinus sericatus Cobb Mountain lupine	None	None	G2?	S2?	1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest. 275 - 1525 meters in elevation.	Mar-Jun	No
Lycopodium clavatum running-pine	None	None	G5	S3	4.1	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic). Edges (often), Openings, Roadsides. 45 - 1225 meters in elevation.	Jun-Aug (Sep)	Yes
Monardella viridis green monardella	None	None	G3	S3	4.3	Broadleafed upland forest, Chaparral, Cismontane woodland. 100 - 1010 meters in elevation.	Jun-Sep	No

Perideridia gairdneri subsp. *gairdneri* Gairdner's yampah	None	None	G5T3 T4	S3S4	4.2	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools. Vernally Mesic. 0 - 610 meters in elevation.	Jun-Oct	No
Piperia candida white-flowered rein orchid	None	None	G3?	S3	1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest. Serpentinite (sometimes). 30 - 1310 meters in elevation.	(Mar-Apr) May-Sep	Yes
Piperia leptopetala narrow-petaled rein orchid	None	None	G4	S4	4.3	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest. 380 - 2225 meters in elevation.	May-Jul	No
Pleuropogon hooverianus North Coast semaphore grass	None	Threatened	G2	S2	1B.1	Broadleafed upland forest, Meadows and seeps, North Coast coniferous forest. Mesic and openings. 10-671 meters in elevation.	Apr-Jun	Yes
Ramalina thrausta angel's hair lichen	None	None	G5?	S2S3	2B.1	North Coast coniferous forest. On dead twigs and other lichens. 75 - 430 meters in elevation.	NA	Yes
Sidalcea calycosa subsp. *rhizomata* Point Reyes checkerbloom	None	None	G5T2	S2	1B.2	Marshes and swamps (freshwater, near coast). 3 - 75 meters in elevation.	Apr-Sep	No
Sidalcea malachroides maple-leaved checkerbloom	None	None	G3	S3	4.2	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland. Disturbed areas (often). 0 - 730 meters in elevation.	(Mar) Apr-Aug	Yes
Sidalcea malviflora subsp. *purpurea* purple-stemmed checkerbloom	None	None	G5T1	S1	1B.2	Broadleafed upland forest, Coastal prairie. 15 - 85 meters in elevation.	May-Jun	Yes

Streptanthus barbiger bearded jewelflower	None	None	G3	S3	4.2	Chaparral (serpentinite). 150 - 1070 meters in elevation.	May-Jul	No
Streptanthus glandulosus subsp. *hoffmanii* Hoffman's bristly jewelflower	None	None	G4T2	S2	1B.3	Chaparral, Cismontane woodland, Valley and foothill grassland (often serpentinite). Rocky. 120 - 475 meters in elevation.	Mar-Jul	Yes
Streptanthus morrisonii subsp. *morrisonii* Morrison's jewelflower	None	None	G2T1 ?	S1?	1B.2	Chaparral (rocky, serpentinite, talus). 120 - 585 meters in elevation.	May-Sep	No
Sulcaria spiralifera twisted horsehair lichen	None	None	G3G4	S2	1B.2	Coastal dunes (SLO Co.), North Coast coniferous forest (immediate coast). Usually on conifers. 0 - 90 meters in elevation.	NA	Yes
Tracyina rostrata beaked tracyina	None	None	G2	S2	1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland. 90 - 1270 meters in elevation.	May-Jun	Yes
Trichostema ovatum San Joaquin bluecurls	None	None	G3	S3	4.2	Chenopod scrub, Valley and foothill grassland. 65 - 320 meters in elevation.	(Apr-Jun) Jul-Oct	No
Trifolium buckwestiorum Santa Cruz clover	None	None	G2	S2	1B.1	Broadleafed upland forest, Cismontane woodland, Coastal prairie. Margins. Gravelly. 35 - 610 meters in elevation.	Apr-Oct	Yes
Usnea longissima Methuselah's beard lichen	None	None	G4	S4	4.2	Broadleafed upland forest, North Coast coniferous forest. On tree branches; usually on old growth hardwoods and conifers. 50 - 1460 meters in elevation.	NA	Yes
Veratrum fimbriatum fringed false-hellebore	None	None	G3	S3	4.3	Bogs and fens, Coastal scrub, Meadows and seeps, North Coast coniferous forest. Mesic. 3 - 300 meters in elevation.	Jul-Sep	Yes

Table 2 – Plant Species Identified During Botanical Surveys

Family	Scientific Name	Common Name
Blechnaceae - Deer Fern Family		
	Struthiopteris spicant (Blechnum s.)	deer fern
	Woodwardia fimbriata	giant chain fern
Dennstaedtiaceae - Bracken Fern Family		
	Pteridium aquilinum subsp. *pubescens*	bracken fern
Dryopteridaceae -Wood Fern Family		
	Dryopteris arguta	California wood fern
	Polystichum munitum	western swordf fern
Equisetaceae - Horsetail Family		
	Equisetum hyemale subsp. *affine*	common scouring rush
	Equisetum telmateia subsp. *braunii*	giant horsetail
	Pilularia americana	American pillwort
Polypodiaceae - Polypody Family		
	Polypodium calirhiza	nested polypody
Pteridaceae - Brake Fern Family		
	Adiantum aleuticum	five-finger fern
	Pentagramma triangularis	goldenback fern
GYMNOSPERMS		
Cupressaceae - Cypress Family		
	Sequoia sempervirens	coast redwood
Pinaceae - Pine Family		
	Abies grandis	grand fir
	Pseudotsuga menziesii	Douglas fir
Taxaceae - Yew Family		
	Torreya californica	California nut-meg
MAGNOLIIDS		
Aristolochiaceae - Pipevine Family		
	Asarum caudatum	wild-ginger
Lauraceae - Laurel Family		
	Umbellularia californica	California bay
EUDICOTS		
Anacardiaceae - Sumac Family		
	Toxicodendron diversilobum	poison oak
Apiaceae - Carrot Family		
	Conium maculatum	poison hemlock
	Daucus pusillus	rattlesnake weed
	Osmorhiza berteroi (O. chilensis)	sweet cicley
	Sanicula crassicaulis	gamble weed
	Torilis arvensis	japanese hedge parsley
Araliaceae - Ginsing Family		

	Aralia californica	elk clover
Asteraceae - Aster Family		
	Adenocaulon bicolor	trail plant, silver arrow
	Anisocarpus madioides (Madia madioides)	woodland tarweed
	Baccharis pilularis	coyote brush
	Bellis perennis	English daisy
	Carduus pycnocephalus	italian thistle
	Cirsium brevistylum	
	Cirsium vulgare	bull thistle
	Gamochaeta ustulata (Gnaphalium purpureum)	featherweed
	Hieracium albiflorum	hawkweed
	Hypochaeris glabra	smooth cat's ear
	Hypochaeris radicata	hairy cat's ear
	Logfia gallica (Filago gallica)	
	Madia gracilis	slender tarweed
	Petasites frigidus subsp. *palmatus*	coltsfoot
	Senecio minimus (Erechtites minima)	coastal burnweed
	Taraxacum officinale	common dandelion
Berberidaceae - Barberry Family		
	Achlys californica	vanilla leaf
	Vancouveria planipetala	redwood ivy
Betulaceae - Birch Family		
	Alnus rubra	red alder
Boraginaceae - Borage Family		
	Adelinia grande (Cynglossum grande)	hound's tongue
	Myosotis discolor	blue scorpion grass
Brassicaceae - Mustard Family		
	Cardamine californica	milk maids
	Cardamine oligosperma	
Caprifoliaceae - Honeysuckle Family		
	Lonicera hispidula	honeysuckle
Caryophyllaceae - Pink Family		
	Cerastium glomeratum	mouse-ear chickweed
Cucurbitaceae - Gourd Family		
	Marah oreganus	coast manroot
Ericaceae - Heath Family		
	Gaultheria shallon	salal
	Pyrola picta	white-veined wintergreen
	Vaccinium ovatum	California huckleberry
	Vaccinium parvifolium	red huckleberry
Fabaceae - Pea Family		
	Genista monspessulana	french broom
	Hosackia rosea	

	Lathyrus latifolius	
	Lathyrus hirsutus	Caley pea
	Lathyrus vestitus subsp. *vestitus*	hillside pea
	Trifolium dubium	little hop clover
	Trifolium microcephalum	maiden clover
	Trifolium repens	white clover
	Trifolium subterraneum	subterranean clover
	Vicia hirsuta	
	Vicia sativa subsp. *sativa*	spring vetch
Fagaceae - Beech Family		
	Notholithocarpus densiflorus	tan oak
Geraniaceae - Geranium Family		
	Geranium molle	dove-foot geranium
Grossulariaceae - Gooseberry Family		
	Ribes sanguineum subsp. *glutinosum*	red-flowering currant
Hydrophyllaceae - Waterleaf Family		
	Nemophila parviflora	
	Phacelia sp.	
Lamiaceae - Mint Family		
	Clinopodium douglasii (Satureja d.)	yerba buena
	Stachys ajugoides	hedge nettle
	Stachys rigida subsp. *quercetorum*	hedge nettle
Linaceae - Flax Family		
	Linum bienne	common flax
Montiaceae - Montia Family		
	Claytonia parviflora	streamside spring beauty
	Claytonia perfoliata	miner's lettuce
Myricaceae - Wax Mytrle Family		
	Morella californica (Myrica California)	California wax myrtle
Myrsinaceae - Myrsine Family		
	Lysimachia arvensis (Anagallis a.)	scarlet pimpernel
	Lysimachia latifolia (Trientalis l.)	star flower
Onagraceae - Evening Primrose Family		
	Epilobium brachycarpum	
Oxalidaceae - Oxalis Family		
	Oxalis oregana	redwood sorrel
Philadelphaceae - Mock Orange Family		
	Whipplea modesta	yerba de selva, modesty
Phrymaceae - Lopseed Family		
	Diplacus aurantiacus	sticky monkey-flower
Plantaginaceae - Plantain Family		
	Digitalis purpurea	foxglove
	Plantago lanceolata	English plantain
Polemoniaceae - Phlox Family		

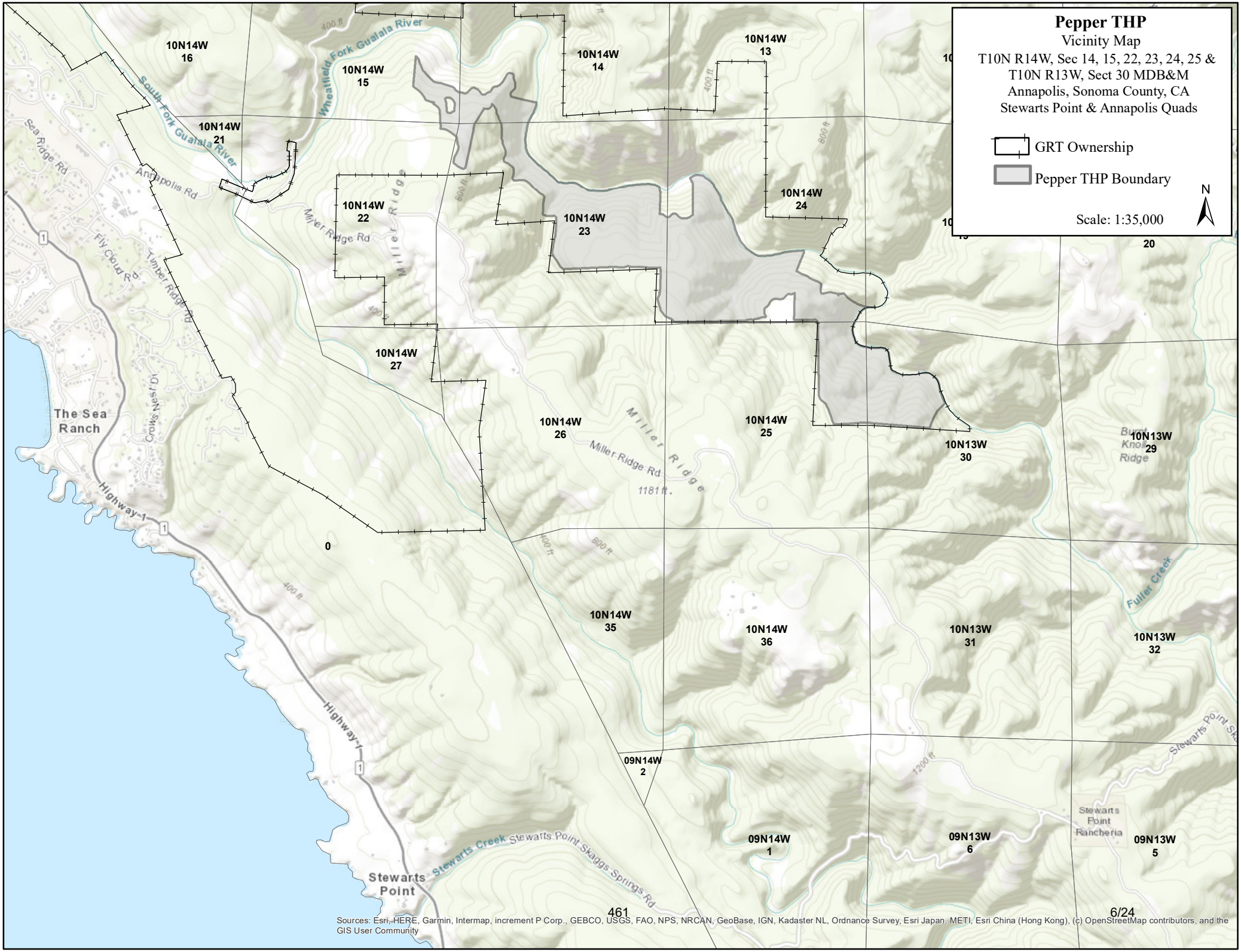
	Collomia heterophylla	subsp.ied-leaf collomia
	Leptosiphon minimus	
Polygalaceae - Milkwort Family		
	Polygala californica	California milkwort
Polygonaceae - Buckwheat Family		
	Rumex acetosella	sheep sorrel
	Rumex sp.	curly dock
Ranunculaceae - Buttercup Family		
	Ranunculus uncinatus	
Rhamnaceae - Buckthorn Family		
	Frangula californica	California coffeeberry
Rosaceae - Rose Family		
	Fragaria vesca	wood strawberry
	Heteromeles arbutifolia	toyon
	Rosa gymnocarpa	wood rose
	Rubus armeniacus (R. discolor)	himalayan blackberry
	Rubus leucodermis	western raspberry
	Rubus parviflorus	thimbleberry
	Rubus ursinus	California blackberry
Rubiaceae - Madder Family		
	Galium aparine	goose grass
Sapindaceae - Soapberry Family		
	Acer macrophyllum	big leaf maple
Saxifragaceae - Saxifrage Family		
	Tellima grandiflora	fringe cups
	Tiarella trifoliata subsp. *unifoliata*	lace flower
Solanaceae - Nightshade Family		
	Solanum xanti	nightshade
	Urtica dioica subsp. *gracilis*	american stinging nettle
Violaceae - Violet Family		
	Viola sempervirens	evergreen violet
MONOCOTS		
Cyperaceae - Sedge Family		
	Carex pellita	
	Cyperus eragrostis	nutsedge
	Scirpus microcarpus	
Iridaceae - Iris Family		
	Iris douglasiana	douglas iris
	Sisyrinchium bellum	blue-eyed grass
Juncaceae - Rush Family		
	Juncus effusus	
	Juncus patens	common rush
	Luzula comosa subsp. *laxa*	wood rush
Liliaceae - Lily Family		
	Clintonia andrewsiana	clintonia

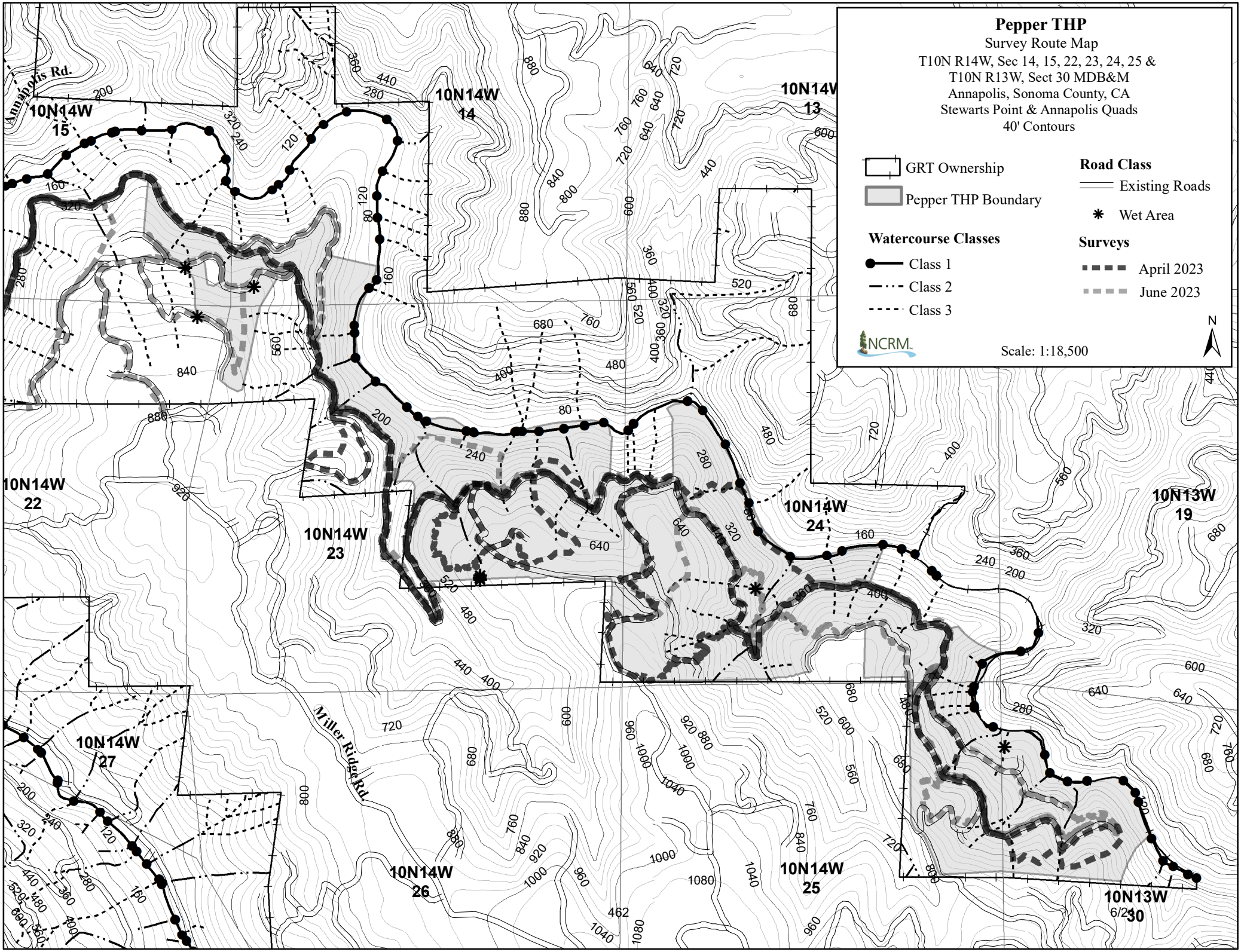
	Prosartes hookeri (Disporum h.)	hooker's fairybell
	Scoliopus bigelovii	fetid adders tongue
Melanthiaceae - False-Hellebore Family		
	Trillium ovatum	western trillium
Orchidaceae - Orchid family		
	Calypso bulbosa subsp. *occidentalis*	calypso orchid
	Corallorhiza mertensiana	western coralroot
Poaceae - Grass Family		
	Aira caryophyllea	silver european hairgrass
	Anthoxanthum occidentale	sweet grass
	Anthoxanthum ordoratum	sweet vernal grass
	Bromus catharticus subsp. *elatus*	California brome
	Bromus sitchensis subsp. *carinatus*	California brome
	Cortaderia jubata	jubata grass
	Cynosurus echinatus	hedgehog dogtail
	Deschampsia elongata	slender hairgrass
	Elymus glaucus subsp. *glaucus*	blue wildrye
	Festuca bromoides	brome fescue
	Holcus lanatus	common velvet grass
Ruscaceae - Buthcher's-Broom Family		
	Maianthemum racemosum	branched false solomon's seal

APPENDIX B

THP VICINITY MAP

SURVEY ROUTE MAP




Pepper THP
Survey Route Map
T10N R14W, Sec 14, 15, 22, 23, 24, 25 &
T10N R13W, Sect 30 MDB&M
Annapolis, Sonoma County, CA
Stewarts Point & Annapolis Quads
40' Contours
GRT Ownership
Pepper THP Boundary
Watercourse Classes
Class 1
Class 2
Class 3
Road Class
Existing Roads
Wet Area
Surveys
April 2023
June 2023
NCRM
Scale: 1:18,500
N
Annapolis Rd.
Miller Ridge Rd.
10N14W 15
10N14W 14
10N14W 13
10N14W 22
10N14W 23
10N14W 24
10N13W 19
10N14W 27
10N14W 26
10N14W 25
10N13W 30
6/23

Mendocino Redwood Company

Attn: Chris Hayter

PO Box 996

Ukiah, CA 95482

Chris,

I am writing this letter pursuant to PRC 4582 regarding the Pepper Timber Harvest Plant, which is being submitted by Gualala Redwood Timber LLC(GRT) on and adjacent to the Mendocino Redwood Co.(MRC) property near Annapolis, CA. The legal description is T10N R14W Sec 23. As we have discussed, GRT will be utilizing a portion of haul road that crosses MRC lands over which GRT has a deeded easement. Timber operations will be limited to road work at watercourse crossing sites and road maintenance over the easement portion of the road. Pursuant to the Forest Practice Rules, I am required to notify the timberland owner of the Forest Practice Rules. Along with the use of the easement portion of the truck road, there is a maintenance period that is prescribed by CALFIRE following the completion of operations. GRT is assuming responsibility for all erosion control installation and maintenance requirements along the easement portion of truck road that we use from the time of commencement of operations through the prescribed maintenance period, or until the landowner, Mendocino Redwood Co., files a notice of commencement on a THP that covers the easement road, whichever comes first.

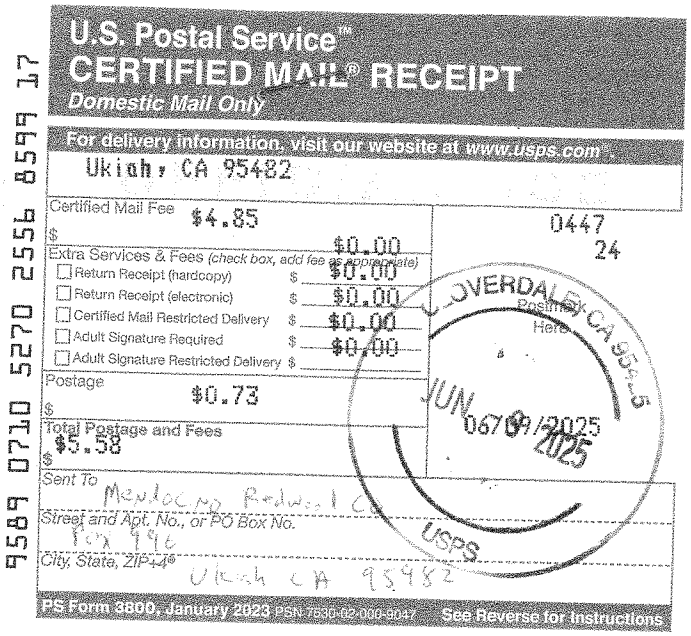
Please let me know if you have any questions.

Sincerely,

Mark Puglsey, RPF

Redwood Empire Sawmill

mpugsley@resawmill.com



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Kilgore Consulting-Engineering Geological Services
Joshua N. Kilgore, CEG
653 Southwood Drive, Santa Rosa, CA 95407

707.321.3539 - jnorvalk100@gmail.com

March 10, 2024

Mark Pugsley, RPF
Redwood Empire Sawmill
P.O. Box 156
Cloverdale, CA 95425

RE: FOCUSED ENGINEERING GEOLOGIC ASSESSMENT
PEPPER TIMBER HARVESTING PLAN (THP)
WHEATFIELD FORK GUALALA RIVER WATERSHED, MENDOCINO COUNTY, CA

INTRODUCTION

This report presents the results of a focused engineering geologic assessment of the proposed Pepper Timber Harvest Plan THP 1-23-001171 SON within the drainage of the Wheatfield Fork of the Gualala River located approximately 2 miles southwest of the town of Annapolis, CA. The project is located within portions of Sections 14,15,22,23,and 24of Township 10N, Range 14W, within the Annapolis and Stewarts Point USGS 7.5 Minute Quadrangle. Access to the property is via a gravel and earthen access road which extends east from Annapolis Road. This assessment has been conducted at the request of the RPF to address questions posed by the California Geological Survey (CGS) in their 1st Review of THP: 1-23-00171 SON , dated December 14, 2023. It is our understanding that the THP was initially submitted to CalFire in December 2023 and has been updated for resubmittal.

The purpose of this investigation was to qualitatively evaluate the slope stability concerns within and adjacent to the proposed timber harvest operations. Discussions with the RPF and our review of available mapping indicates that there are no domestic water supplies, public buildings, roads, or houses that could be adversely affected by landsliding associated with the proposed operations, therefore primary goal of this assessment was to address the effect of the proposed THP on accelerating the natural rate of landsliding and sediment transport, which could degrade the quality of water in watercourses, and adversely affect listed aquatic species or their habitats.

This geologic assessment is limited to areas of concern identified by the

Registered Professional Forester (RPF) and those areas identified in the field by Mr Kilgore (CEG) and the RPF during the onsite geologic assessment. Though focused in scope, this report has been completed according to guidelines presented in the California Geological Survey Note 45 (CGS, 2013).

The methods of this investigation included discussions and field review with Mark Pugsley (RPF); review of pertinent portions of the proposed timber harvest plan; review of available geologic maps and literature; review of six sets of aerial photographs; review of LiDAR imagery; Pre-Consultation focused field review with Kevin Doherty (CGS); analysis of the data; and preparation of this report.

REGIONAL SETTING

The THP consists of a 356-acre harvest plan in the Annapolis Planning Watershed in northern Sonoma County. The THP is located within predominantly north facing slopes above the Class I Wheatfield Fork of the Gualala River and lower gradient area near the ridge tops. The area is incised by many north-south to east-west trending drainages consisting of Class II and Class III watercourses. Elevation within the THP area ranges from approximately 40 feet above sea level along the Wheatfield Fork of the Gualala River, to approximately 900 feet along Miller Ridge and the upper boundary of the THP. The climate in the region is typical of a Mediterranean climate, with cool wet winters, and warm dry summers. A majority of the precipitation is generated from October to April. The area is typically well vegetated with dense coniferous forests and minor grass and brush covered areas near the ridgetops and in previously disturbed areas.

Geology

Geologic mapping conducted in the region indicates the THP area is underlain by the Cretaceous aged Coastal Belt Franciscan formation (Fuller, 2002; Blake et al, 2002, Huffman et al, 1980). (Figure 1 through 4) The bedrock is described as consisting of massive to thin bedded graywacke sandstone and shale which is relatively intact to pervasively sheared. Minor deposits of Pliocene-age Ohlson Ranch Formation are mapped near the southern and western perimeters of the THP. These deposits are generally located near the ridgetops and are described as consisting of poorly consolidated, fine-grained sandstones (Fuller, 2002; Blake et al, 2002, Huffman et al, 1980). Regional geologic structure is chaotic and complex and largely controlled by the adjacent San Andreas Fault Zone. Field observations of road cuts, outcrops, and stream channels noted predominantly gray to brown sandstones and shales which appeared sheared and highly weathered. Minor deposits of massive and resistant sandstone were observed.

Minor surficial alluvial deposits were noted along the stream channels and minor fluvial terrace deposits were noted adjacent to the Wheatfield Fork of the Gualala River. These deposits typically consist of unconsolidated sand, silt, and gravel.

Regional mapping (Fuller, 2002) has mapped areas of inner gorge geomorphology along the Wheatfield fork of the Gualala River (WFG) and within

a north-south trending Class II watershed located near the center of the THP.

Soils

Available Soil mapping describes the soils underlying the THP area consist of predominantly: [EmE] Empire Loam, [GdE] and [GdF] Goldridge fine sandy loam, [HkG] Hugo very gravelly loam, [HnG] Hugo-Josephine complex, [JoG] Josephine loam. In general steeper gradients are blanketed by HnG,HkG and JoG, moderate gradient terrain (generally near the ridge) is blanketed by EmE, GdE and GdF. Thickness of the overlying soil was highly variable as observed in the THP area. The site soils are described as low to moderate erosion risk

Seismicity

The THP is located between one and two miles northeast of the North Coast Section of the San Andreas Fault Zone. The San Andreas Fault is described as a right lateral strike slip fault with the potential for renewed movement and significant ground shaking with a recurrence interval between 200 and 400 years. (Bryant et al, 2002). The mostrecent documented surface rupture in the North Coast Section occurred in 1906. It is expected that the site will be subject to strong ground shaking during future, large magnitude earthquakes. The intensity of ground shaking at the site will depend on the distance to the causative earthquake epicenter, the magnitude of the shock and the response of the underlying earthquake materials. Strong seismic events, especially occurring during periods of high groundwater can trigger landslides and earth movement.

Geomorphology

The Wheatfield Fork of the Gualala River (WFG) and its tributaries are typically deeply incised into the surrounding terrain. In general gradients in the THP consist of low gradient ridge crests (<30%), moderate gradient upper-mid slopes (30-50%) and relatively steep streamside slopes (50-75%+) descending directly to the valley bottom. Regional mapping (Fuller, 2002) has mapped inner gorge features within the THP (Figure 2). The inner gorge features noted in the field were variable in expression and dimension depending on site specific geologic conditions and stream hydrology. Field observations noted inner gorge features in these areas forming a relatively consistent break in slope which extends between 50- and 300-feet upslope of the stream channels. Geomorphic features within the inner gorge were variable, consisting of coalescing translational and rotational landsliding and debris slides and flows. Field observations observed a predominance of debris slide and flow features within the inner gorge areas. These appear to consist of recent/active slide areas and areas of historic movement which have been revegetated. The inner gorge areas were complicated by translational and rotational landsliding features. These features were noted within soil and bedrock and many of the observed translational and rotational features appeared to be related to failure of historic skid trails created during past logging activities within the inner gorge. These failures were noted within areas of over steepened cut slopes or within cast-off fill prisms on the downslopes of historic skid trails. Observations indicate periods of rapid movement (debris flows and landsliding) and gradual movement (soil creep).

Landslides within the THP area consist of large slow moving deep-seated rockslides and earthflows; smaller translational and rotational landslides within surface soils, bedrock and within areas previously graded during historic logging activities; rapid moving shallow-seated debris slides, debris flows; and channel bank failures. Landslides on and adjacent to the THP were identified on available geologic maps (Fuller, 2002; Huffman, 1980; Best, 2024), and subsequently mapped from LiDAR imagery, and field reconnaissance of the subject property.

Past Land Use

Historically, the property has been utilized for timber production since the late 1800's. Management practices at that time included clear cutting, and broadcast burning to remove the slash. Yarding was done over ground, initially by a bull team, and later by steam donkey and tractor. Logs were skidded downhill to stream channels and moved to areas accessible for removal. These processes caused significant channel and hillslope disturbance.

Information provided by the RFP and our review of available literature and imagery indicates that a majority of the plan area was last harvested in the late 1980s and early 1990s under 1-85-420SON, 1-85- 068 SON,1-85SON-008SON, 1-95-477 SON, 1-96-421 SON. Additionally, some areas of this project have been entered in the 2000's under 1-03-008 SON and 1-04-201 SON.

PROPOSED PROJECT

Operations reviewed during this assessment include road construction, timber harvesting, cable and ground based yarding on slopes above the WFG and its tributaries. This assessment focuses only on the areas specifically outlined in this report.

Generally, the existing truck roads reviewed during this assessment are in good condition requiring only minor road maintenance under this THP.

It is our understanding that only existing stable truck roads will be utilized to facilitate logging. The existing skid trail network is generally sufficient to enable logging in areas designated for tractor logging. The creation of new skid trails is expected to be minimal; no creation of new skid trails is proposed on slopes over 50% or within the WLPZ. During site inspection, areas of existing skid trails that are proposed to be utilized were observed.

In general, the skid trails proposed for use and reviewed in the field appeared stable and suitable for the proposed use. These existing skid trails will require rehabilitation (removal of debris) and minor grading to facilitate the planned operations. Discrete locations of instability along skid trails and access roads were reported by the RPF and reviewed in the field during this assessment; these areas are discussed in the Site Specific Observation portion of this report. It is anticipated that the skid trail rehabilitation and subsequent installation of erosion control measures following operations will enhance overall stability of the skid trails and surrounding slopes, and reduce sediment delivery to watercourses within the THP.

Our review of the harvest methods provided by the RFP indicates the project will consist of one 356 acre harvest unit. Proposed harvesting consists of predominantly group selection and transitions, with minor areas of no harvest and single tree selection within areas of instability,inner gorge, and WLPZ.

Watercourse protections are described in the THP and include additional restrictions on harvesting to ensure that a greater component of the streamside canopy is retained within the watercourse and lake protection zones (WLPZ). Refer to the THP for a complete description of the proposed silvicultural units, watercourse protections, and pre-and post-harvest basal area estimates.

The yarding method proposed is cable yarding from existing and proposed roads high on the slope, and tractor yarding along existing roads and skid trails and site-specific locations where cable yarding is not practical. Refer to the THP for a complete map and description of the yarding methods.

Field observations of the THP area were limited to those areas identified by the RFP, and those areas traversed to access those areas. During the course of our observations, we observed existing roads and skid trails, hillslopes and upslope areas, and watercourses. Specifically, observations were made of features which may be indicative of active, historic or ancient instability and included landslide features, tilted trees, hummocky topography, gullies, changes in vegetation. The location of these features are indicated on attached Site Observations Maps (Figure 5 through Figure 9).

General Observations

Deep-Seated Slides

Regional mapping has indicated that areas in and around the THP area are underlain by large rockslides/earthflow complexes that extend from the ridge to the valley bottom Their approximate location has been identified on (Figures 1 through 4). The slides were identified on the available geologic and geomorphic maps (Fuller, Huffman). Mapping by Huffman indicates a large landslide complex adjacent to and within the western extent of the THP. This feature is mapped as extending north from the ridge to the WFG and includes two nested landslide features with the same northerly movement. The larger landslide feature mapped by Huffman is queried and described as a possible landslide. The two nested landslide features are not queried indicating they were identified with more certainty. These features seem to correlate to several landslide features mapped by Fuller, which are identified as rock slides and earthflows. Review of lidar imagery and site observations noted the presence of a large deep seated instability in the general area of the westernmost rock slide as identified by Fuller which was indicated by benched and irregular terrain, changed vegetation patterns and gullying. This feature appears to be located outside of the THP, however the main access haul road will traverse this feature. In general, this feature appeared inactive, however active earth flow and slumping was noted within the haul road at the eastern perimeter of the mapped feature. This

instability has resulted in tension cracks and minor slumping along the outboard side of the haul road. It is our opinion that this recent instability is largely a result of roadway construction which changed drainage conditions and increased loads through the placement of cast off fills and represents a relatively shallow rotational slump within the larger historic rockslide feature. Leaning and "pistol butted" growth of the conifers above and below the road indicate the area may be prone to soil creep during periods of seasonal moisture variations. Based on the site topography, the slide plane of the larger rock slide as mapped may extend hundreds of feet below the ground surface. The resultant slide mass consists of pervasively sheared sandstone and shales within a matrix of clay soils and weathered rocks as indicated by road cut exposures in the area.

Two earthflow landslide features were mapped by Fuller and are indicated in the mapping by Huffman. They seem to correlate to distinct bowl-shaped features noted during our review of the available lidar imagery. The more central of these earthflow features is located generally below the existing haul road and largely outside of the THP. The easternmost earth flow appears to be located largely within the THP. Our site review of these features noted rolling smooth topography, relatively straight growth patterns of the conifers and that they are traversed by intact roads and skid trails suggesting no significant movement in historic time.

Mapping by Fuller indicates the presence of a smaller rockslide area within the eastern extent of the larger queried landslide complex mapped by Huffman. This feature is generally located outside of the THP and has been designated as Inner Gorge for the purposes of this report.

In general, the deep-seated landslides appeared dormant and lacked the geomorphic features indicating recent movement such as fresh ground cracking, sharp topography, bare ground and toppled trees. The proposed timber harvesting is not expected to have an adverse impact on the dormant deep-seated landslides in the THP area. Provided accepted timber harvest practices are followed, no additional recommendations appear warranted on the larger deep seated slide areas. Specific recommendations for the area of active instability within and adjacent to the haul road as described above, can be found in the Site-Specific Observations portion of this report.

Shallow-Seated Slides

Geologic and geomorphic mapping of the area (Fuller 2002, Best 2024) identifies debris slide slopes and small landslide areas within the THP area. Debris slide slopes are generally steep (>65%) geomorphic features in which slopes have been sculpted over geologic time by repeated debris slides and shallow-seated landslides. Our observations of these mapped areas appeared consistent with the description of debris slide slopes and small landslides, however, nearly all

the mapped shallow-seated landslides in the THP were attributed to cuts and fills along roads and skid trails constructed during previous timber harvest activities.

The steepest slopes within the THP area (most prone to shallow-seated landslides) are proposed for overhead cable yarding under this THP which is expected to significantly decrease the likelihood of slope instability by reducing ground disturbance. In additions the proposed silvicultures(Group Selection and Transition) have dispersed basal area retention requirements, the designations of no cut areas around areas of observed instability, increased watercourse protection areas and adherence to the Forest Practice Rules and implementation of proposed soil stabilization methods (both during and post-harvest), will further minimize the risk of increased sediment delivery from shallow landsliding as a result of the proposed harvest.

Inner Gorge Areas

Regional mapping (Fuller 2002, Best 2024) has mapped areas of inner gorge geomorphology along the WFG and within a north-south trending Class II watershed located near the center of the THP. A discussion on the features indicative of Inner Gorge areas has been provided in the Geomorphology discussion above. In general, our review of the areas of mapped Inner gorge is consistent with those provided in California Geological Note 50 (CGS, 2013). As noted in our previous discussion, the geomorphic features and extent of the Inner gorge areas were highly variable across the THP, however, in general our site observations concurred with those areas delineated by Fuller. In addition, our site observations have delineated additional areas which show features consistent with inner gorge geomorphology, specifically, coalescing scars originating from landsliding and erosional processes caused by active stream erosion with slopes generally over 65 percent. These additionally delineated areas appear consistent with small slides mapped by Best which are described as within inner gorge slopes and were noted adjacent to the base of debris slopes and large mapped rockslide complexes mapped by Fuller near the eastern extent of the THP.

Mitigation Measures

This harvest plan is located in steep mountainous terrain where naturally occurring landslides have and continue to shape the landscape. While an integral part of the geomorphological development of the area, landsliding and subsequent sediment delivery to the stream systems can be accelerated within areas of timber harvest due to the removal of sources the large woody debris; reduced cohesive strength of the soil due to reduced root strength within the near surface soils and rock; and increased moisture content of the soils due to changes in evapotranspiration rates, concentrated surface water flows and the disruption of shallow groundwater flows. The quantification of these factors is beyond the scope of this report, however, modern timber harvest practices and mitigations within unstable and sensitive areas can reduce the potential for

timber harvest to accelerate or exacerbate the potential for landsliding and increased sediment delivery within the THP. Brief discussion of the mitigation measures proposed within the THP has been provided below.

Watercourse Lake Protection zones and Inner Gorge areas

The establishment of Watercourse Lake Protection Zones (WLPZ) protects sensitive riparian habitat; helps maintain stability along erodible stream banks; and is part of establishing the variable and complex hydrologic conditions necessary for sediment retention and regulated transport. Steep and erodible terrain within the THP complicates the delineation of WLPZ. Actively downcutting streams traversing steep terrain and areas of deep-seated landslides create Inner Gorge areas which are defined as geomorphic features formed by coalescing scars originating from landsliding and erosional processes caused by active stream erosion (CGS., 2013). These sensitive areas are naturally prone to landslides and erosion, conditions which may be accelerated or increased due to changed conditions during timber harvest (roadway and landing construction, removal of vegetation and changed hydrogeologic conditions). It is our opinion that the existing requirements within WLPZ(14 CCR 916.6) provide suitable mitigation for timber harvest activities within stable Inner Gorge areas. Within the THP, areas designated as WLPZ and their associated operational protection measures should be extended to the upslope limits of those areas designated as Inner Gorge. The increased protection will mitigate the potential for increased landslides within Inner Gorge terrain through increased post-harvest stock, post-harvest canopy cover, retention of large diameter trees (Class I and Class II-L), no harvest within the inner core zones, directionally falling of trees away from watercourse, and other operational limitations. In addition, site observations and available mapping indicate that failed skid trails represent a significant portion of the landsliding observed within the Inner Gorge.No road construction or utilization of skid trails is proposed within the mapped Inner Gorge features.

Mitigation of Reduced Cohesive Strength of the Near surface Soils Due to Root Loss

Root deterioration following harvest could lead to a loss of cohesive strength within the near surface soils. To mitigate the potential for the loss of cohesive strength within near surface soils and rock, we recommend the increased retention of conifer and hardwood within potentially unstable areas. Specifically, we recommend that areas designated as Inner Gorge be subject to the increased retention requirements set forth in the WLPZ appropriate to the subject watercourse. Within areas designated as special treatment zones (STZ), we recommend that a minimum of 100 square foot per acre basal area (conifer and hardwood) be maintained, evenly spaced with no new group openings created.

Mitigation of Increased soil moisture

Increased soil moisture and the resultant increases in pore pressure is one of the

driving forces in landslide activation. Seasonal moisture variations contribute to the activation and initiation of landsliding. Likewise, changed conditions such as the removal of vegetation and the disruption of near surface groundwater flow by grading can result in localized increases in soil moisture and increased potential for instability. This potential can be reduced by the increased retention in areas designated as potentially unstable. (Inner Gorge,STZ's). In addition modern timber harvest practices such as overhead cable yarding can limit the construction of roads, landings, and skid trails within potentially unstable areas and help maintain the existing shallow groundwater conditions.

Yarding Methods

Portions of the THP that were historically harvested by tractor yarding are proposed to be harvested utilizing overhead cable which will significantly decrease the amount of ground disturbance. Tractor yarding is proposed in lower gradient portions of the THP utilizing existing skid trails. This yarding method is not expected to significantly increase the potential for landsliding and sediment delivery. The RPF proposes to use existing stable skid trails within sensitive areas. Following operations the skid trails will be winterized to minimize concentrating run-off. Slash will be placed on disturbed areas to further minimize the potential for increased sediment delivery.

General Recommendations

The recommendations provided below are intended to provide guidance to the RPF for common road rehabilitation and repair conditions which are likely to be encountered during operations.

Wet Road Surface Conditions

If the RPF, or his designee, determines prior to operations that the road surface is too wet for hauling, the road can be stabilized by surfacing the road with a minimum of 6 inches of durable coarse rock; if needed separate rock from native material by a woven geotextile fabric (e.g. Mirafi® 600X). A dip graded across the road with a 4"-6" drain pipe in the axis of the dip, beneath the rock, may be needed if considerable seepage water is encountered, provided it does not concentrate flows in unstable areas.

Unstable Fills

Cracking or slumping fills that have the potential to deliver sediment to a watercourse should be stabilized by excavating the cracking material, sloping the remaining fill at 1.5H:1V, and either using the spoils to outslope the road, or stabilizing as described below.

Spoils Disposal

Spoils generated during road work should be placed in a manner that minimizes soil erosion and instability. Unless otherwise specified, disposal sites should be away from any WLPZ or unstable areas. Spoils should be inclined no steeper than 1.5H:1V. If spoils are placed in a location where there is a risk for sediment delivery (e.g. on the margin of a WLPZ), stabilize by mulching or seeding to prevent surface erosion until vegetation becomes established.

Cut Slope Failures

Slope failures where road access is partially blocked by debris from the cutslope should be left on the road surface, avoid sidecasting debris. The road should be reopened by removing any large organic material from the debris and working with the failed material to create a ramp in the road grade. This will allow for road access while minimizing the amount of grading needed on the slide body

Site-Specific Observations

The following are pertinent site-specific observations on portions of the THP that were reviewed as part of this assessment. Applicable mitigation measures and general recommendations are referenced as needed.

Slide Features

Map#838 - Slump/instability below roadway. Evidence of historic grading. Designate no-cut with 25' setbacks from edge of unstable area. Refer to RPF discussion attached to this report.

S2/Map#464 - Slump failure of historic skid trail within an area of hummocky topograph. The slump failure of the skid trail was mapped by Best and the surrounding area appears unstable and subject to soil creep. RPF has designated this feature and the surrounding area as no harvest. Refer to RPF discussion attached to this report.

S3 - Failure of outboard edge of roadway. Failure appears to be related to debris slide slope below which extends to the Class II tributary downslope. Inner Gorge designation will be extended upslope to the outboard edge of the roadway.

Map#427,Map#433, Map#558 - Small landslide failures associated with

historic skid trails. Slide features appear dormant. Best has classified as within Inner Gorge areas.
Refer to RPF discussion attached to this report.

Map#560,Map#561, Map#524 - Small landslide failures associated with historic skid trails. Slide features appear dormant. Best has classified as within Inner Gorge areas.
Additional information is provided in the RPF discussion attached to this report.

Map#928 - Small landslide failure associated with historic skid trails. Slide features appear dormant.
Additional information is provided in the RPF discussion attached to this report.

Map#949 and Map#1039 - Small landslide failures associated with historic skid trails. .
Additional information is provided in the RPF discussion attached to this report.

Map#467 - Small landslide failures associated with historic skid trails. Slide features appear dormant. Best has classified as within Inner Gorge areas.
Additional information is provided in the RPF discussion attached to this report.

S14/ Map Point 44 - Large slump upslope of skid trail. Translational rockslide which has blocked the skid trail and includes much large woody debris. It appears that the failure originated at a legacy skid trail. The slump debris has blocked the truck road. Remove debris to a suitable location for stabilization and ramp up and over remaining debris. As possible, retain large stumps and woody debris within the slump to improve stability. Retain 1.5 horizontal to 1 vertical cut slopes within debris.

Roadway Features

Map Point 57 - large slump extending approximately 50 feet along outboard roadway fills. Appears to be a result of underlying unstable materials activated by roadway construction and changed drainage features. Cracking and minor slumping of approximately 1 vertical foot were observed within the roadway. The feature is mapped within a large landslide complex mapped by Fuller and Huffman. Based on site topography, the failure plane appears located 5-10'

below the surface. Site stability is likely being maintained by the presence of abundant large woody debris and slash which has been placed along the outboard edge of the roadway which is buttressing the roadway fills. Fuller and Huffman have mapped the site as underlain by a large landslide complex. It is impractical to repair the slide area and excavation may increase instability of the site. The site is further complicated by the presence of oversteep and potentially unstable cut slopes above. It is recommended that the roadway be ramped into and out of the slump area during operation. If soft subgrade is encountered at the time of operations, geofabric consisting of Mirifi 600X or equivalent may be placed on the roadway and covered with gravel surfacing. Following operations, the roadway should be returned to its original conditions and grade and the cracks and slumped area sealed so that positive drainage is maintained and not concentrated in the slump area. We recommend the roadway be maintained with a crown down the center line to encourage sheet flow drainage to both the outboard perimeter and inner v-ditch. The inner earthen v-ditch should be maintained to flow to the existing culvert located to the west.

Map Point 57 - Culvert replacement. Per RPF the culvert is to be replaced with a 42" diameter pipe. This culvert will be constructed within a potentially unstable area which has been mapped as within a large landslide complex. Minimal excavation and grading should be completed during culvert replacement. We recommend that excavations extend no deeper than is required to install the new culvert and seat it on firm rock or soils. As possible maintain the large alders to the east and west of the culvert replacement. The culvert should be extended utilizing a downspout downslope to discharge onto erosion resistant areas as identified by the RPF in the field with flagging.

Map Point 9 - Tension cracks and settlement of fill due to instability located below the roadway. Per RPF, the roadway will not be used beyond this point. Water bars should be used to establish drainage away from fill failure.

Map Point 10 - Failure of outboard edge of roadway. Appears to be a fill failure located at the upper extent of a debris slide slope. The roadway is ~10' wide. If wider roadway is needed for operations, gain width by benching into cut-slope. Do not side cast spoils. Spoils should be removed to an appropriate location and stabilized.

Map Point 73a - Fill failure on the outboard side of the road. If too narrow for operations, gain width by benching into cut-slope. Do not side cast spoils. Spoils should be removed to an appropriate location and stabilized.

Map Point 73b - Slump onto the roadway. Ramp up and over cut slope failure. If not practical, remove spoils to a suitable location and stabilize.

Map Point 74 - Slump failure within outboard fill within low gradient slopes. Likely related to underlying unstable materials activated by the placement of fill. Appears to be minimal risk of sediment delivery if activated. Ramp in and out of

the failure area. Install water bars during winterization to minimize water intrusion in the slump area.

Map Point 68 - Cut slope and fill failure. Ramp up and over cut slope failure. If not practical, remove spoils to a suitable location and stabilize.

Map Point 44 - Large slump blocking roadway. Remove debris to a suitable location for stabilization and ramp up and over remaining debris. As possible, retain large stumps and woody debris within the slump to improve stability. Retain 1.5 horizontal to 1 vertical cut slopes within debris.

R11 - Existing skid trail in an area designated as Special Treatment Zone. RPF proposes to use during operations to provide access for tractor yarding. Skid trail appears stable and suitable for use. Multiple slumps and downed trees were observed within the skid trail. Debris should not be sidecast. Spoils may be spread on the roadway to improve the roadbed and improve drainage. Prior to use the skid trail should be outsloped to provide positive drainage by sheet flow to the outboard perimeter. Slash may be placed on the outboard slopes to improve stability and minimize sediment transport.

Special Treatment Zones.

STZ1 - Steep slopes above Class II and Class III watercourses. Observed abundant downed trees upslope (conifer and hardwood), and wood choked drainages. Within the STZ, retain a minimum 100 square foot per acre basal area (conifer and hardwood), dispersed post-harvest. No new group opening permitted. Ground based tractor yarding to be limited to existing stable skid trails as designated by the RPF. Feature encompasses Map #123.

STZ2 - Steep slopes with some evidence of soil creep. (areas of hummocky topography, pistol butted trees). Within the STZ, retain a minimum 100 square foot per acre basal area (conifer and hardwood), dispersed post-harvest. No new group openings permitted. Ground based tractor yarding to be limited to existing stable skid trails as designated by the RPF. Retain trees upslope of the roadway located at the base of the STZ to improve stability. RPF to mark trees to be retained with orange paint and harvest trees with blue paint.

Conclusions

Based on available literature and site mapping, site review, and review of the silviculture methods with the RPF it is my opinion that the proposed timber operations will not result in a significant increase in landsliding and/or sediment delivery to WFG and its tributaries, provided in the THP and the mitigation measures and general recommendations proposed in this assessment, are properly implemented.

Current harvesting techniques and watercourse protection measures, such as the designation of no-cut areas and special treatment zones within sensitive areas, will considerably decrease the likelihood of sediment delivery to a watercourse as a result of the proposed operations.

REFERENCES

Aerial Photographs

Google Earth Imagry 1985, 1993, 2004, 2005, 2006, 2009, 2010, 2012, 2013, 2015, 2017, 2018,2019, 2021, 2022, 2023, 2024. Flight AV4473, Frames 8 10 and 8 8, B &W, 1:15,840 1993, Flight CSH-9K, Frames 36 and 37. 1953, GRI Frames1-271,1-273,1-275,2010,1:16,000;Flight AV-325, Frames 07 13 and 08 11,1959, frames 07 14 and 07 06, 1965,1:15,000, ; Flight AV 3375, Frames 7 4 and 7 3, 1988, 1:1580

LiDAR

Sonoma County Veg Map LiDAR, https://gis-sonomacounty.hub.arcgis.com Accessed 1/2025

Published Literature

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Geologic and Geomorphic Features Related to Landsliding, Gualala River Watershed, Sonoma and Mendocino Counties, Fuller et al, California Department of Conservation, California Geological Survey, 2002

Guidelines for Engineering Geologic Reports for Timber Harvesting Plans, California geologic survey, Note 45, January 2013

Landslide Database Prepared for GRI Timberlands, By Tim Best and others. Provided by RPF 2024
Special Report 120, California Division of Mines and Geology, Plate 2A and 3A, 1980

Letter, 1st Review THP: 1-23-00171, by Kevin Doherty, California Geological Survey, Dated December 14, 2023

Memorandum, Focused Engineering Geologic Pre-Consultation of Pepper TImver Harvesting Plan, Wheatfield Fork Gualala River Watershed, CA, by Kevin Doherty, California Geological Survey, Dated November 20,2024,

Quaternary Fault and Fold Database of the United States, San Andreas Fault Zone, North Coast Section, Bryant et al, compiled by the California Geological survey , 2002

Disclaimer

This investigation has been conducted in accord with generally accepted professional practices for this type of work. Subsurface geotechnical exploration was beyond the scope of this report. Additionally, identification of landslide features can be obscured by dense vegetation and/or prolonged weathering of the slide scar and body, therefore, older features may exist that were not observed on the aerial photographs or identified during the field reconnaissance.

The proposed timber harvest recommendations are based on generally accepted mitigations for minimizing landslide related impacts in the region;

however, this does not imply the hillslopes within the THP will not be subjected to rainfall, seismic shaking, or ground failure so intense that drainage structures and/or road segments are severely damaged or destroyed regardless of timber harvest and/or road related mitigations proposed herein.

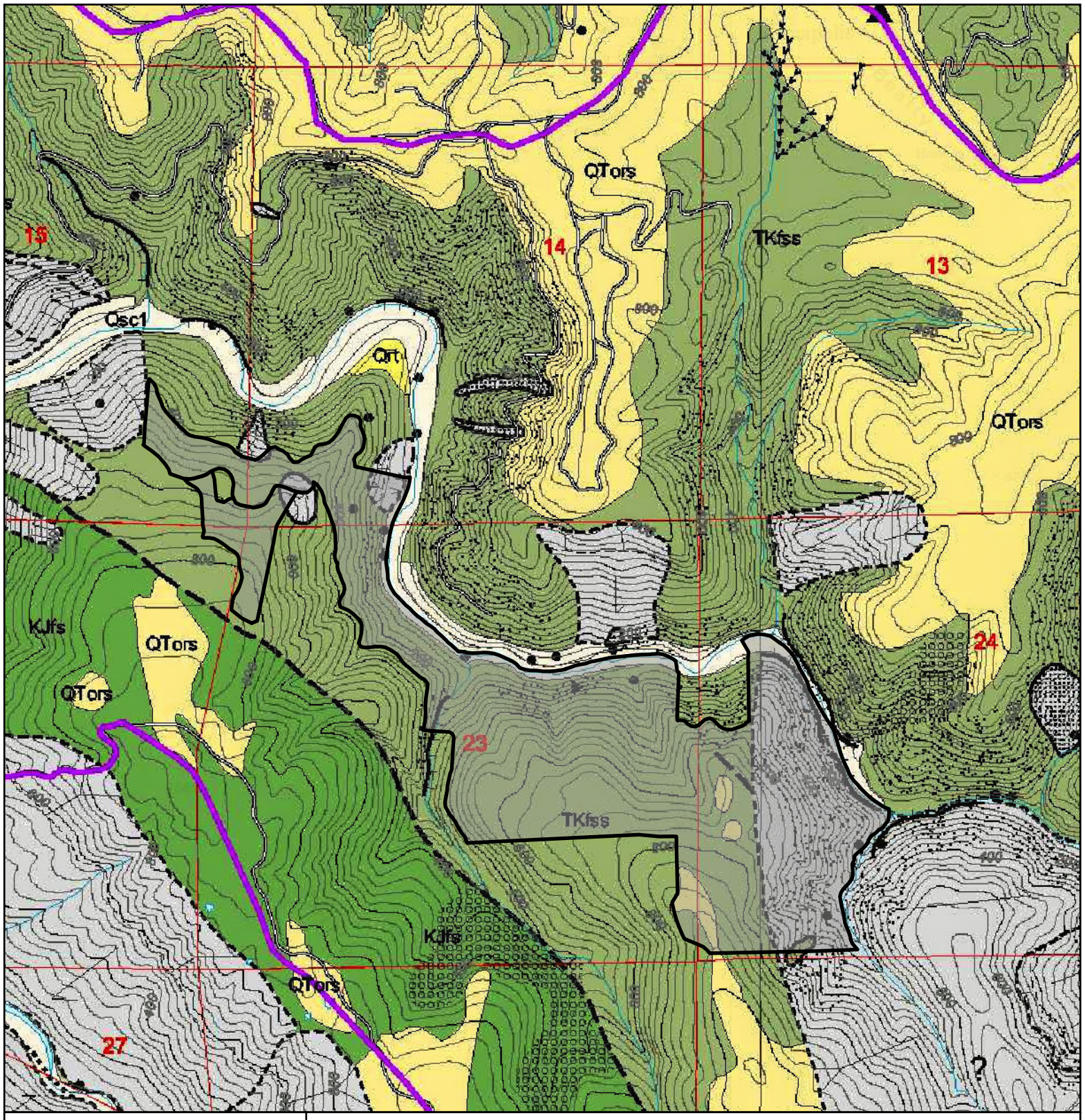
It is the responsibility of the RPF, or his designee, to ensure that the information contained in this report is brought to the attention of the contractor in enough detail that the recommendations get properly implemented. In the event that conditions change in the THP area between the time of this report and the time the THP is implemented, a field visit and supplemental report shall be prepared to document such changes and revise the recommendations.

Please call at 707-321-3539 if you have any questions.

Joshua N. Kilgore
Certified Engineering Geologist #2667

List of Attachments

Figure 1: Approximate Location of Landslide Features Identified by Huffman/SR-120
Figure 2: Approximate Location of Landslide Features Identified by Fuller/CGS
Figure 3-6: Site Observation Maps



Pepper THP
Regional Geology and
Landslide Map

Scale: 1:24,000

Feet
0 600

Explanation

THP Boundary

Additional Symbology on following page

Source: Fuller, M., et al. (2002). Geologic and Geomorphic Features Related to Landsliding Gualala River Watershed, Sonoma, and Mendocino Counties, California Plate 1, sheet 2 of 3. CGS. Scale 1:24000.

Figure:					
1	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CEG 6/24	Date: 4/7/2024

Pepper THP Regional Geology and Landslide Map

Additional Map Symbology

Surficial Deposits (Holocene-Pleistocene)

- Qbs — **Beach sand**- marine-laid deposits of fine-to coarse-grained sand and gravel; may migrate seasonally.
- Qf — **Alluvial fan**- characteristic fan-cone shapes at the mouths of eroding stream canyons; includes debris fans.
- Qmt — **Marine terrace deposits**
- Qscu — **Undifferentiated stream channel deposits**- unconsolidated sediments in active channels and flood plains.
- Qsc1 — **Stream channel deposits**- stage/return period 5 years or less
- Qrt — **River terrace deposits**
- Qoal — **Older alluvium**

Overlap (Quaternary-Tertiary)

- QTors — **Ohlson Ranch Formation**- siltstone.
- QTorc — **Ohlson Ranch Formation**- conglomerate.
- QTor — **Ohlson Ranch Formation**- undifferentiated Marine sandstone and conglomerate.

Gualala Block (Tertiary-Cretaceous)

- TKu — **Undifferentiated strata of German Rancho, Anchor Bay and Stewarts Point**- sandstone, siltstone, claystone and conglomerate.
- Tg — **German Rancho Formation**- marine sandstone and mudstone.
- Tsm — **Monterey Group**- marine sandstone and shale.
- Ka — **Gualala Formation, Anchor Bay Member**- sandstone, mudstone and conglomerate.
- Ks — **Gualala Formation, Stewarts Point Member**- sandstone, conglomerate and mudstone.
- Ksb — **Black Point Spilite**

Undifferentiated Franciscan Complex (Cretaceous)

- Kfgs — **Greenstone**
- Kfss — **Sandstone**
- sp — **Serpentinite**
- m — **Metamorphic**

Coastal Belt Franciscan, includes Coastal Terrane (Eocene-Early Cretaceous)

- TKfss — **Coastal Belt Franciscan**- marine sandstone.
- TKfs — **Coastal Belt Franciscan**- marine siltstone.

Central Belt Franciscan, includes Central Terrane (Cretaceous)

- KJfs — **Undifferentiated Central Belt Franciscan**- siltstone.

Eastern Belt Franciscan, includes Yolla Bolly and Pickett Peak Terranes (Early Cretaceous-Late Jurassic)

- Jfmg — **Melange**
- KJfm — **Central Belt Franciscan**- melange: includes chert- ch, greenstone- gs, greywacke- gwy and sandstone- ss.

Great Valley Complex (Cretaceous)

- KJgvs — **Sandstone and claystone**

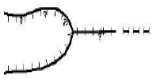

Rock Slide


Disrupted Ground


Earthflow


Debris Slide Slope/ Source Area


Debris Slide


Inner Gorge

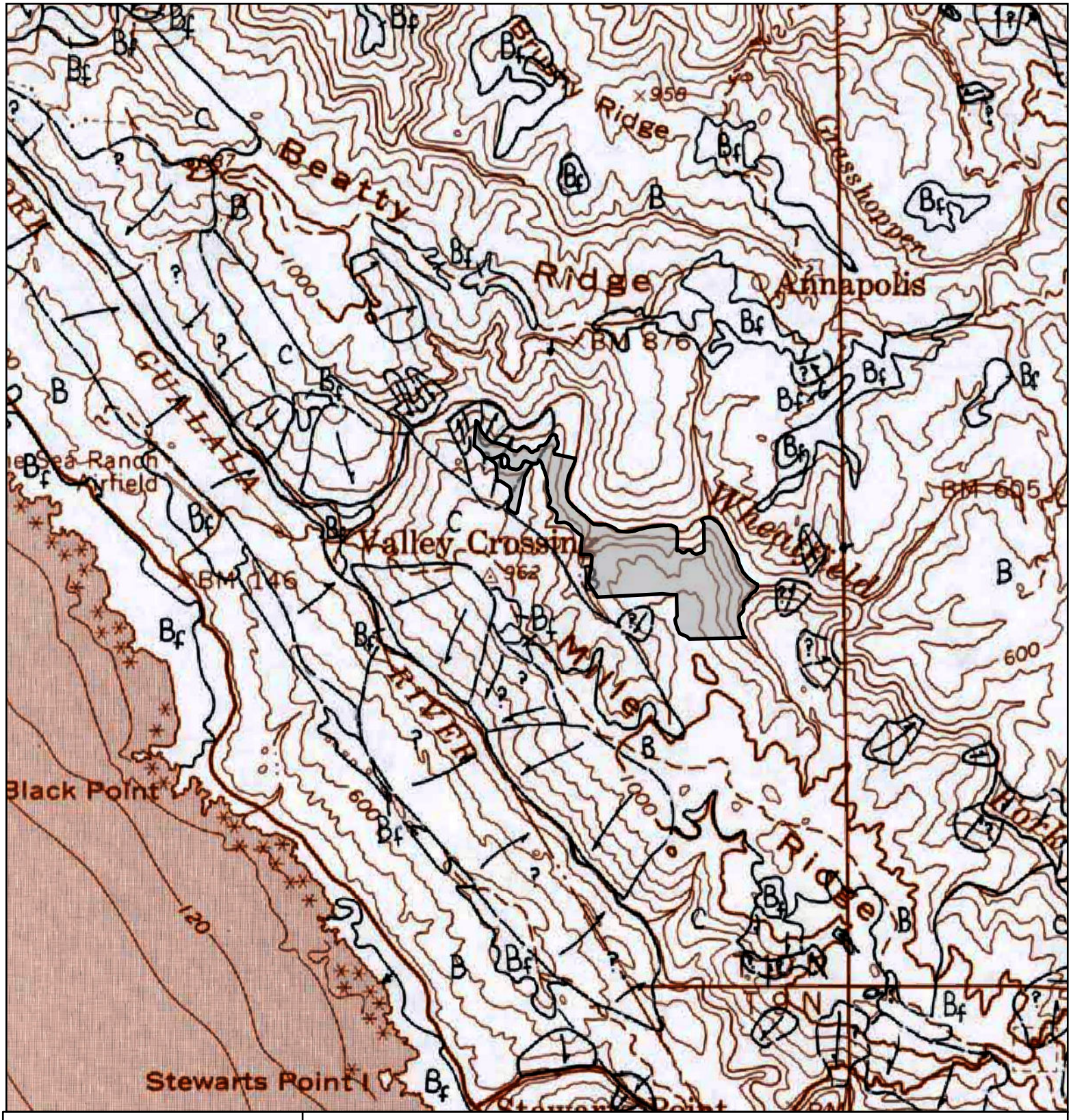

Debris Flow

Small Landslide


Gully

* Not all symbology may be present

Figure: 2



Pepper THP
Landslide and Relative Stability

Scale: 1:62,500

Miles
0 0.25 0.5 1 1.5

Explanation

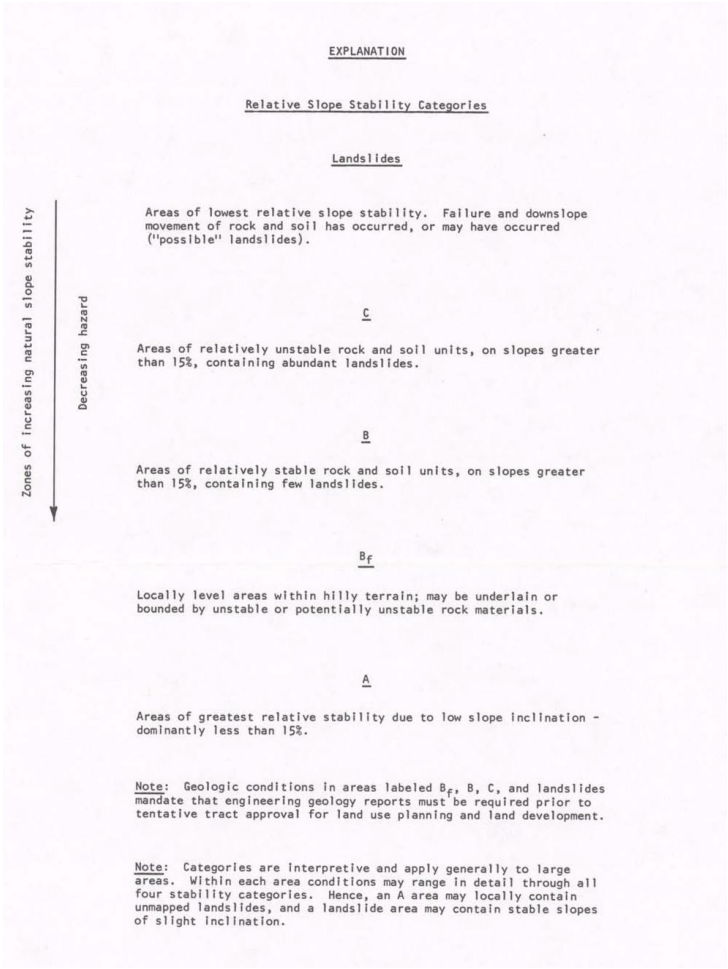
THP Boundary

Additional Symbology on following page

Source: Huffman, M (1980).Landslide and Relative Stability-Northern Sonoma County. CGS. Scale 1:62500

Figure:					
3	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CEG 6/24	Date: 4/7/2024

Landslide and Relative Stability
Additional Symbology



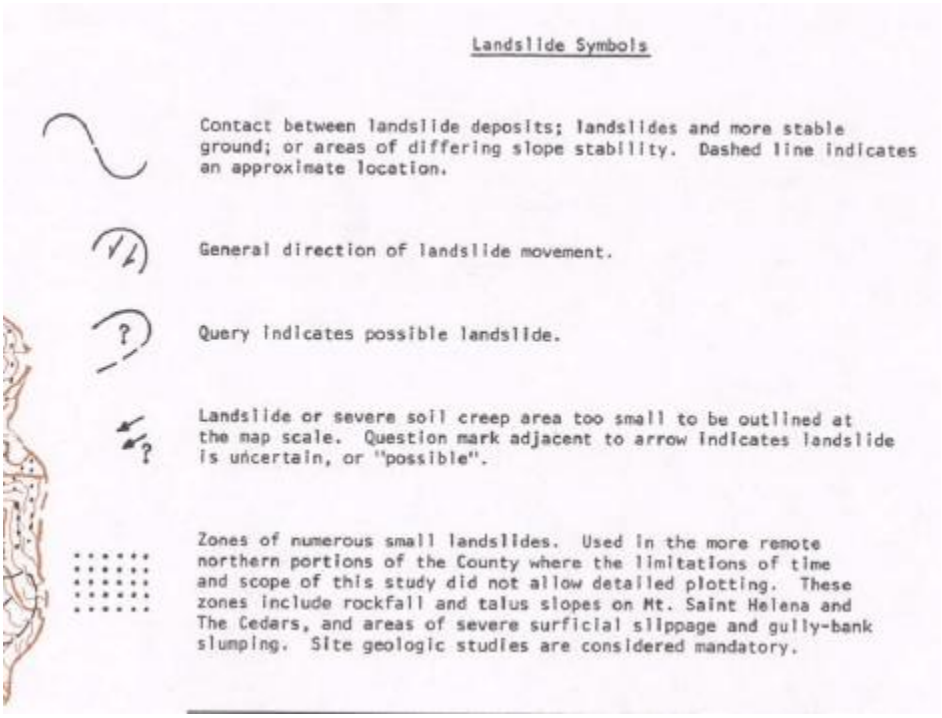
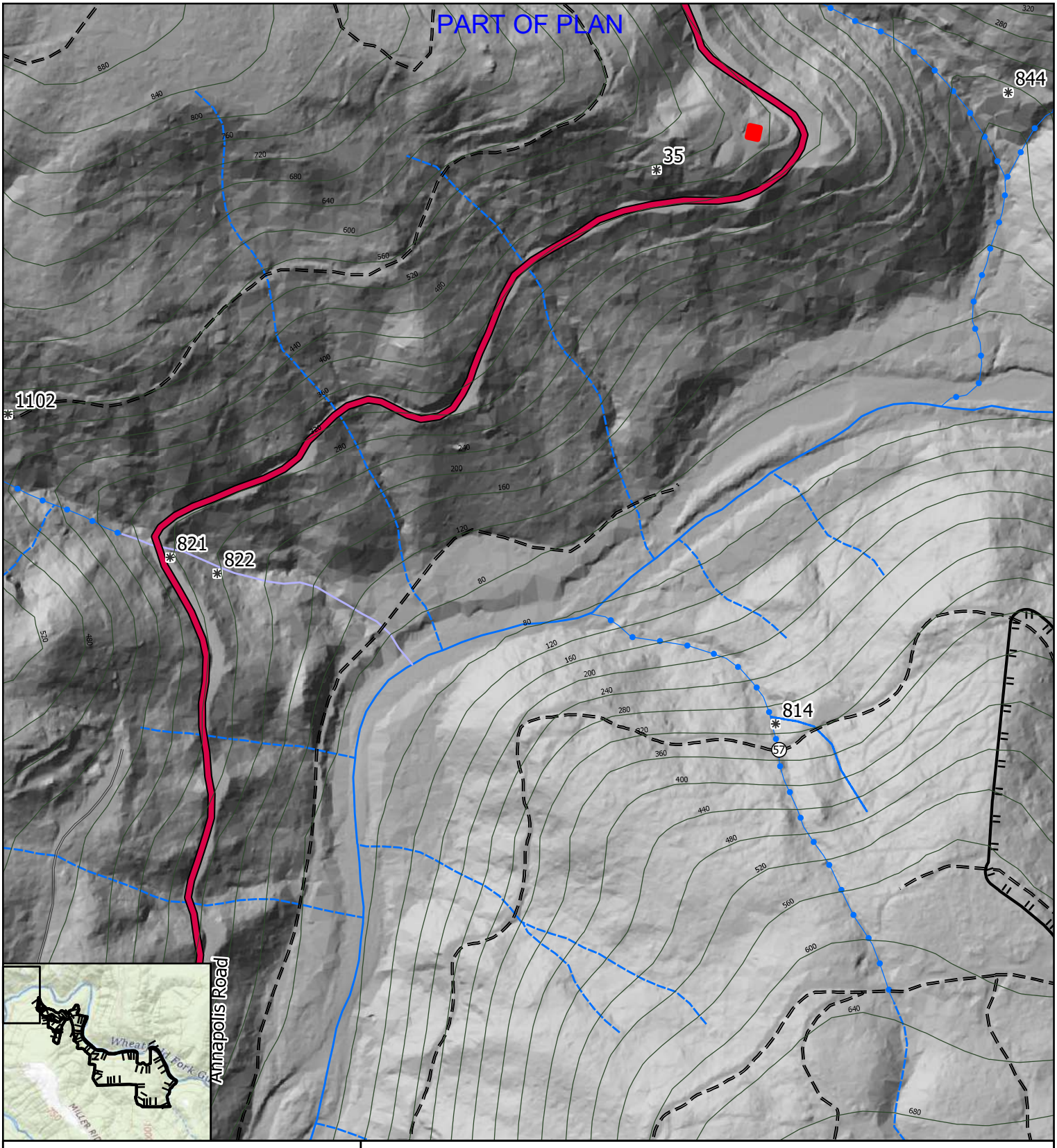


Figure:
4



Pepper THP Site Observation Map

N

Elevation Source:
Sonoma Veg Map,2013

Scale: 1:5,000

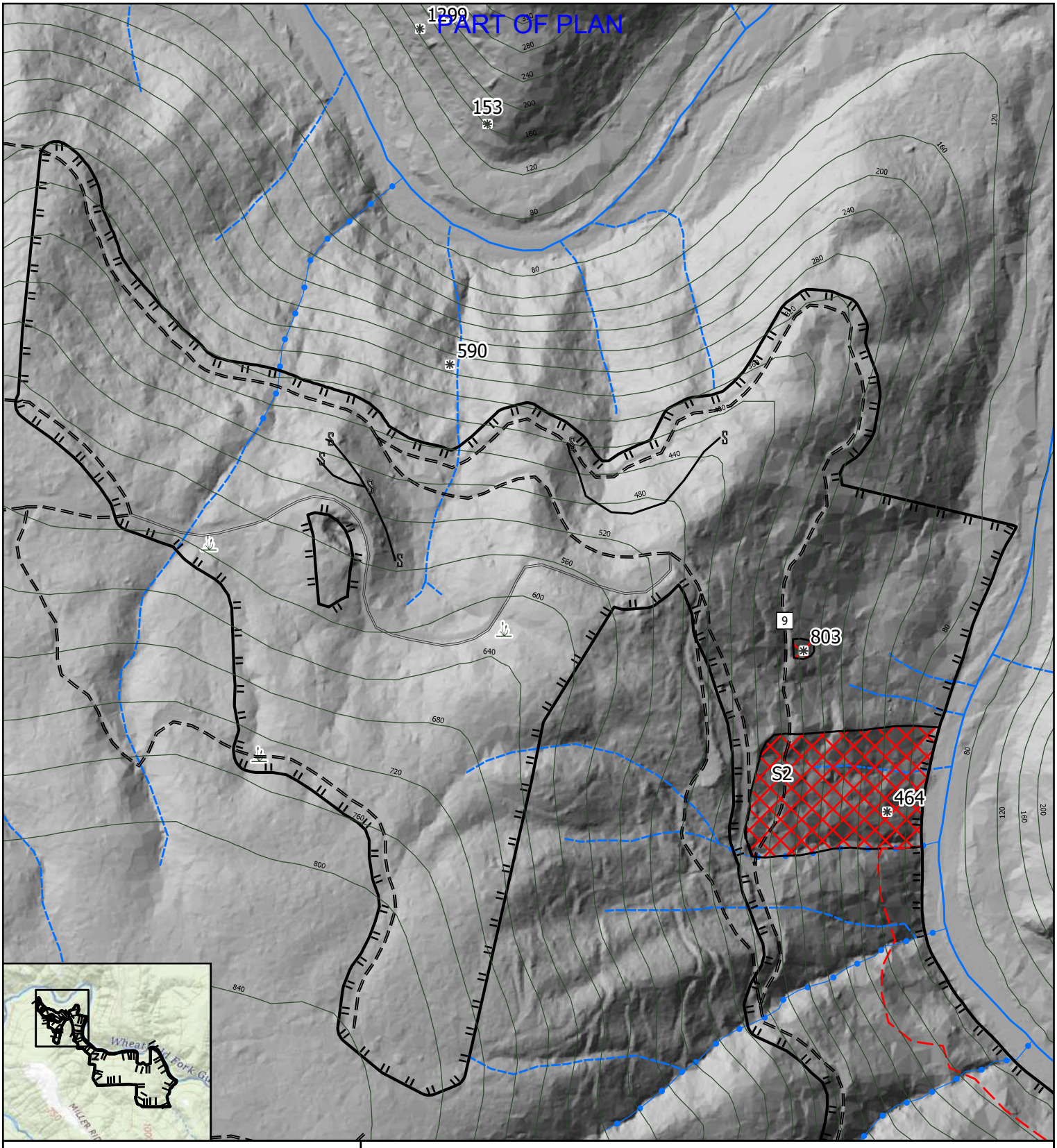
0 600 Feet

Contour Interval:40'

Explanation

- Public Paved Road
- STZ
- Other Map Point
- Wet Areas
- 1600 Site
- Steep Slope Skid Trail
- THP Boundary
- Inner Gorge
- GRT Slide Inventory Point
- No Harvest Area
- Sonoma Structures
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road

Figure:					
5	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CEG	Date: 3/27/2024



Pepper THP Site Observation Map

N

Elevation Source:
Sonoma Veg Map,2013

Scale: 1:5,000

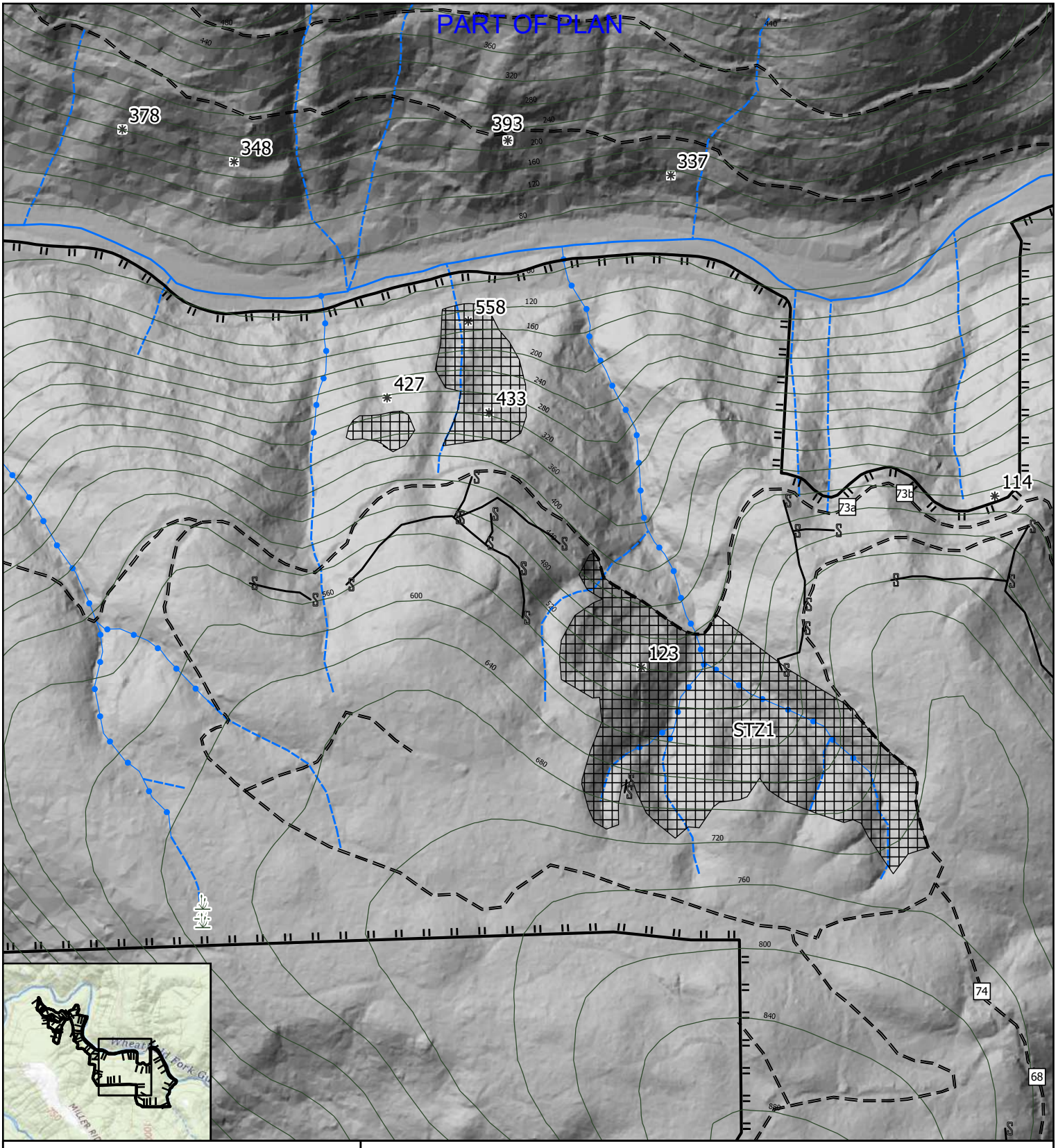
0 600 Feet

Contour Interval:40'

Explanation

- Public Paved Road
- STZ
- Other Map Point
- Wet Areas
- 1600 Site
- THP Boundary
- Inner Gorge
- GRT Slide Inventory Point
- No Harvest Area
- Sonoma Structures
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road

Figure:					
6	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CFG	Date: 3/27/2024



Pepper THP Site Observation Map

N

Elevation Source:
Sonoma Veg Map,2013

Scale: 1:5,000

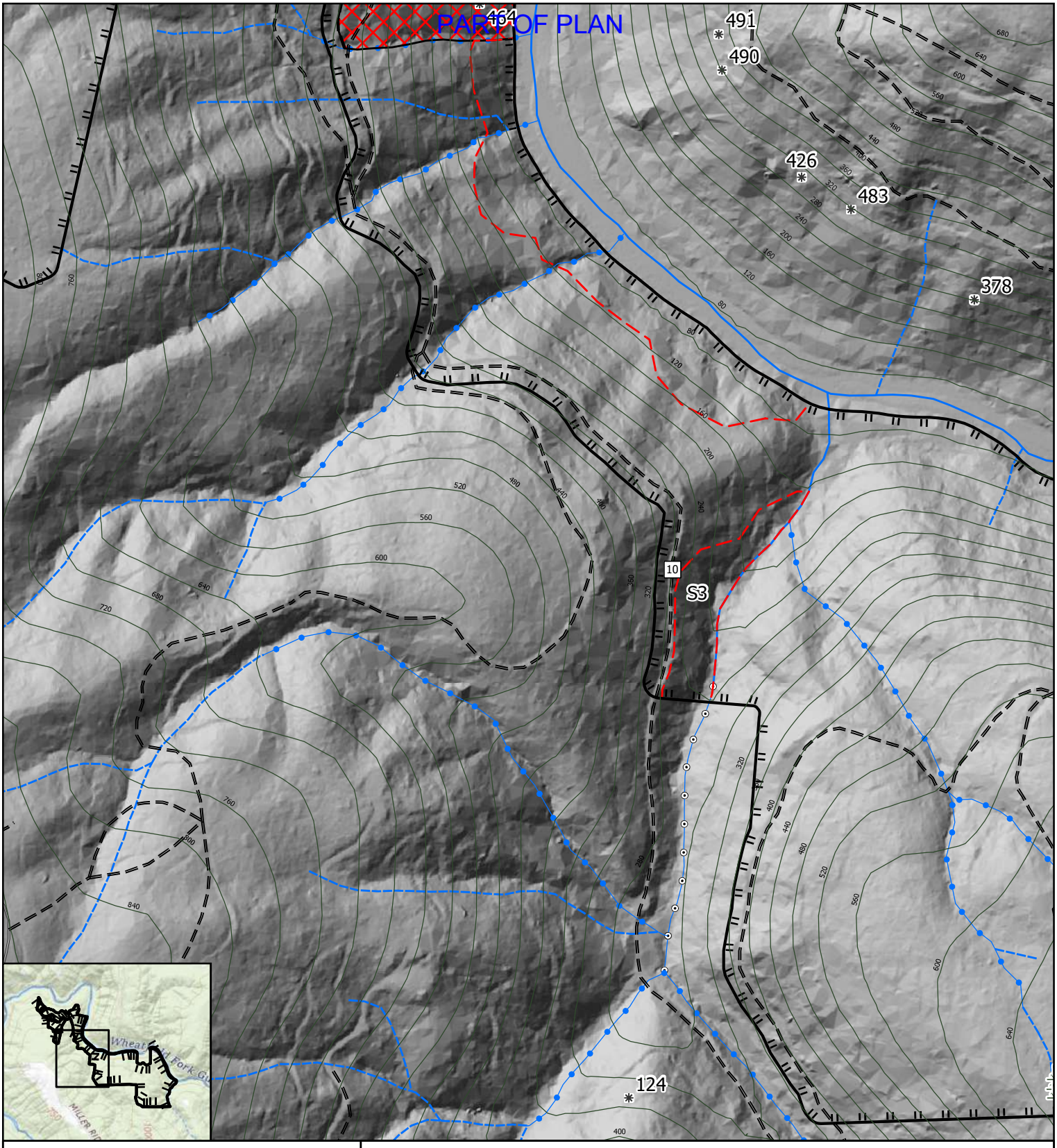
0 600 Feet

Contour Interval:40'

Explanation

- Public Paved Road
- STZ
- Other Map Point
- Wet Areas
- 1600 Site
- Steep Slope Skid Trail
- THP Boundary
- Inner Gorge
- GRT Slide Inventory Point
- No Harvest Area
- Sonoma Structures
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road

Figure:				
7	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CFG	Date: 3/27/2024



Pepper THP Site Observation Map

N

Elevation Source:
Sonoma Veg Map,2013

Scale: 1:5,000

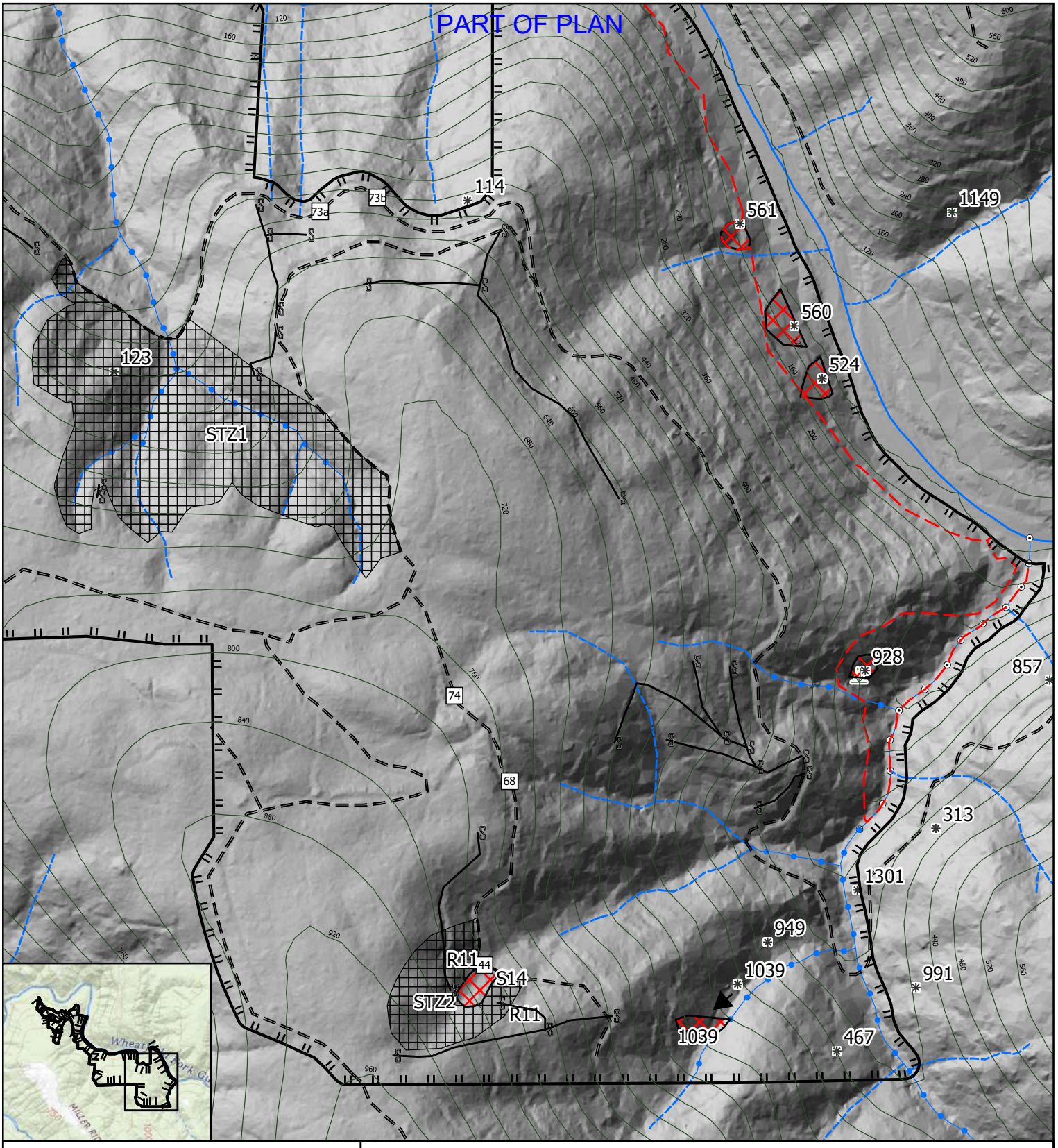
0 600 Feet

Contour Interval:40'

Explanation

- Public Paved Road
- STZ
- Other Map Point
- Wet Areas
- 1600 Site
- Steep Slope Skid Trail
- THP Boundary
- Inner Gorge
- GRT Slide Inventory Point
- No Harvest Area
- Sonoma Structures
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road

Figure:				
8	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CFG	Date: 3/27/2024



Pepper THP Site Observation Map

N

Elevation Source:
Sonoma Veg Map,2013

Scale: 1:5,000

0 600 Feet

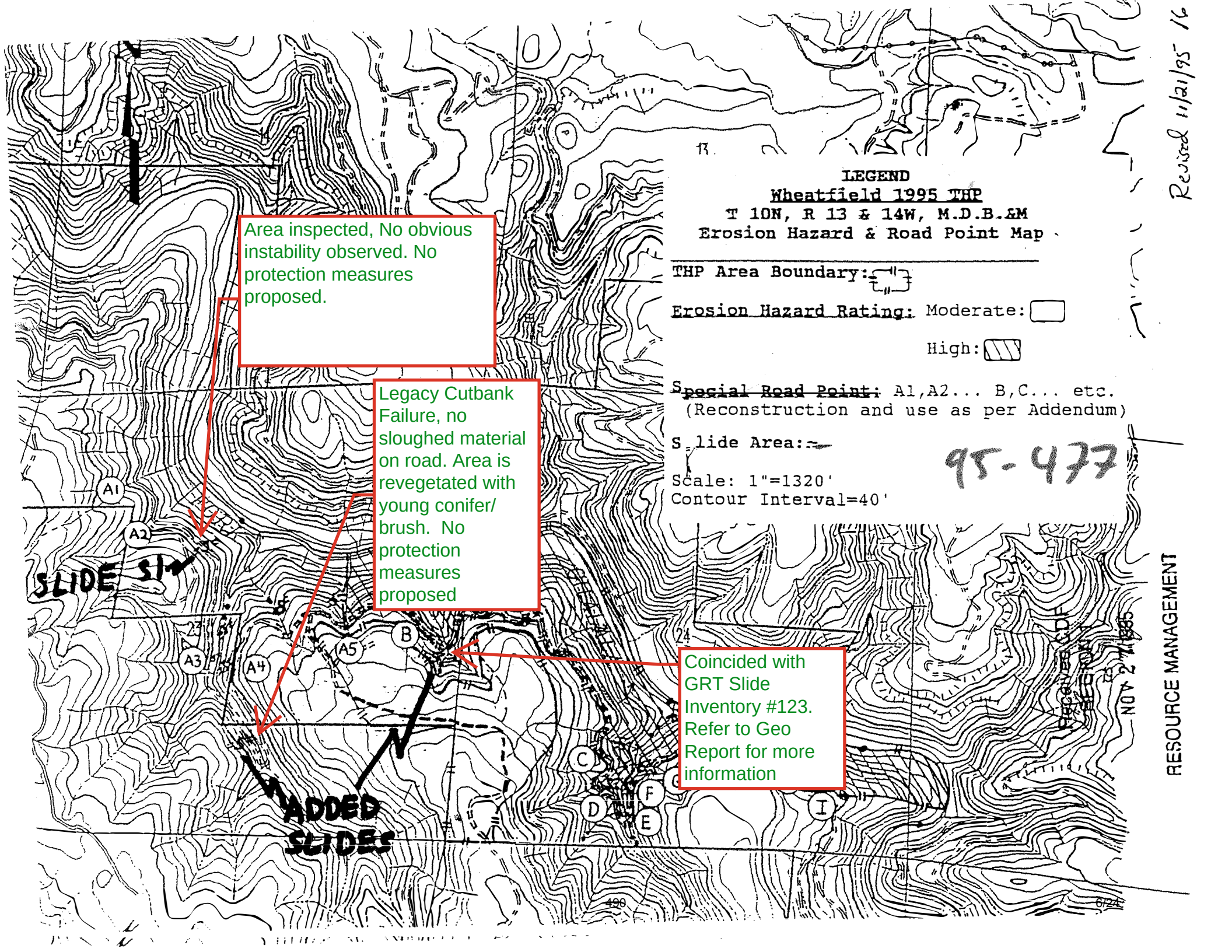
Contour Interval:40'

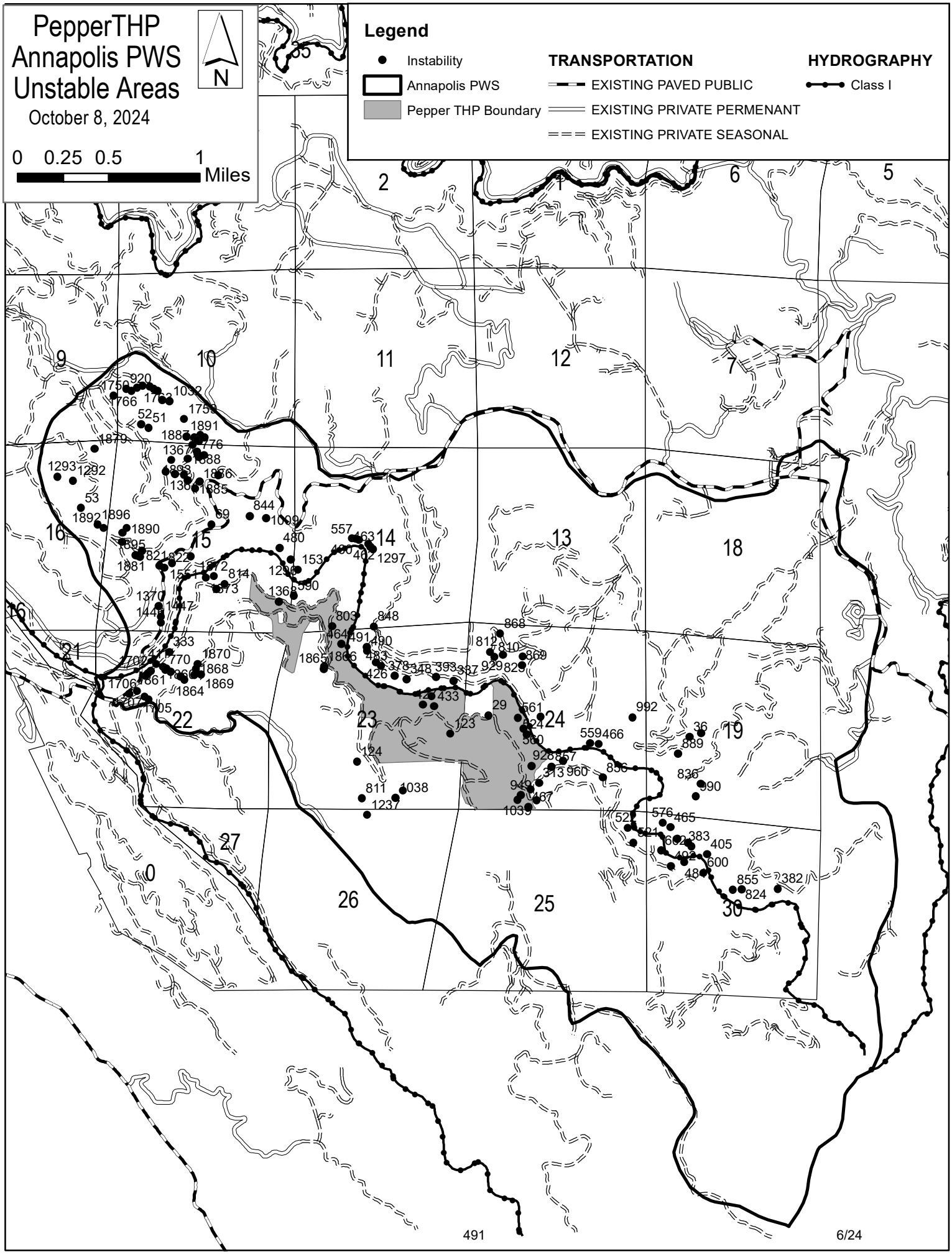
Explanation

- Public Paved Road
- STZ
- Other Map Point
- Wet Areas
- 1600 Site
- Steep Slope Skid Trail
- THP Boundary
- Inner Gorge
- GRT Slide Inventory Point
- No Harvest Area
- Sonoma Structures
- Class I Watercourse
- Class II-L Watercourse
- Class II-S Watercourse
- Class III Watercourse
- Private Seasonal Road
- Private Permanent Road

Figure:					
9	T10N R14W Sec 14,15,22 23, and 24	Portions of Stewarts Point and Annapolis 7.5' USGS Topo Quad	Prepared For: Gualala Redwood Timber	Prepared By: J. Kilgore, CEG	Date: 3/27/2024

The following figure is from 1-95-477-SON and maps several slide features within the proposed project's footprint. The map includes descriptions of the site added by the RPF.


LEGEND
Wheatfield 1995 THP
T 10N, R 13 & 14W, M.D.B.&M
Erosion Hazard & Road Point Map
THP Area Boundary:
Erosion Hazard Rating: Moderate:
High:
Special Road Point: A1,A2... B,C... etc.
(Reconstruction and use as per Addendum)
Slide Area:
Scale: 1"=1320'
Contour Interval=40'
95-477
Revised 11/21/95
RESOURCE MANAGEMENT
NOV 27 1995
Area inspected, No obvious instability observed. No protection measures proposed.
Legacy Cutbank Failure, no sloughed material on road. Area is revegetated with young conifer/ brush. No protection measures proposed
Coincided with GRT Slide Inventory #123. Refer to Geo Report for more information
A1
A2
A3
A4
A5
B
C
D
E
F
G
I
SLIDE
ADDED SLIDES
490
6/24


PepperTHP
Annapolis PWS
Unstable Areas
October 8, 2024
0 0.25 0.5 1
Miles
N
Legend
Instability
Annapolis PWS
Pepper THP Boundary
TRANSPORTATION
EXISTING PAVED PUBLIC
EXISTING PRIVATE PERMENANT
EXISTING PRIVATE SEASONAL
HYDROGRAPHY
Class I
491
6/24

Landslides*

Planning Watershed *Annapolis*

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
29	29	Best CEG	1984	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	65-74	NA	1,481	370
36	36	Best CEG	1984	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate		NA	648	324
51	51	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Convergent	Natural		NA	222	166
52	52	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Convergent	Natural		NA	370	277
53	53	Best CEG	1998	Photos	Stream Bank Failure		Convergent	Natural		NA	6,519	3,259
69	69	Best CEG	1959	Photos	Road	Headwall Swale	Convergent	Mgt. Relate	50-64	NA	648	162
123	123	Best CEG	1984	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	85+	NA	389	97
124	124	Best CEG	1984	Photos	Skid Trail	Headwall Swale	Convergent	Mgt. Relate	30-49	NA	67	33
153	153	Best CEG	1998	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	65-74	NA	389	97
313	313	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	85+	NA	222	166
333	333	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	222	166
337	337	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	65-74	Ukn	389	292
348	348	Best CEG	1984	Photos	Road	Inner Gorge	Convergent	Mgt. Relate	65-74	NA	1,481	370
378	378	Best CEG	1984	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	389	194
382	382	Best CEG	1984	Photos	Road	Inner Gorge	Divergent	Mgt. Relate		NA	648	162
383	383	Best CEG	1984	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	30-49	Ukn	1,481	740
384	384	Best CEG	1984	Photos	Road	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	2,370	1,185
393	393	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	889	444
405	405	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	50-64	NA	222	111
411	411	Best CEG	1984	Photos	Road	Inner Gorge	Plannar	Mgt. Relate	0-29	Ukn	648	324
426	426	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	NA	389	194
427	427	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	NA	222	166
433	433	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	65-74	NA	648	162
460	460	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	222	166
461	461	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	65-74	Ukn	222	166
462	462	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	Ukn	389	292
463	463	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	Ukn	389	292
464	464	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	65-74	NA	389	194
465	465	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	NA	389	97
466	466	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	Ukn	889	667
467	467	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	85+	NA	222	55
480	480	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	75-84	NA	1,481	740
483	483	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	NA	1,481	740
484	484	Best CEG	1998	Photos	Skid Trail	Inner Gorge	Convergent	Mgt. Relate	50-64	Ukn	370	277
490	490	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	389	97
491	491	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	NA	389	97
492	492	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	75-84	Ukn	389	292
521	521	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	65-74	Ukn	389	97
522	522	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	389	194
523	523	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate		Ukn	389	292
524	524	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Divergent	Mgt. Relate	50-64	Ukn	222	111
557	557	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	Ukn	222	166
558	558	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	30-49	NA	389	97
559	559	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	85+	Ukn	389	292
560	560	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	Ukn	222	111
561	561	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	Ukn	389	194
576	576	Best CEG	1984	Photos	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	75-84	NA	1,481	370
590	590	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Convergent	Natural	30-49	NA	648	162
600	600	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Divergent	Natural	75-84	Ukn	67	33

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
602	602	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Divergent	Natural	50-64	Ukn	222	166
770	770	Best CEG	1959	Photos	Hill Slope		Convergent	Natural	0-29	NA	222	55
776	776	Best CEG	1959	Photos	Hill Slope		Convergent	Natural	30-49	NA	648	324
803	803	Best CEG	1998	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	NA	222	55
810	810	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	75-84	NA	222	111
811	811	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	30-49	NA	222	111
812	812	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	85+	NA	222	111
814	814	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	50-64	NA	648	162
821	821	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	30-49	NA	222	55
822	822	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	0-29	NA	222	55
823	823	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	0-29	NA	889	222
824	824	Best CEG	1984	Photos	Road		Convergent	Mgt. Relate	50-64	NA	389	97
836	836	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	222	55
837	837	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	370	92
844	844	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	222	55
848	848	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	85+	NA	889	222
855	855	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	50-64	NA	1,481	740
856	856	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	30-49	NA	1,481	370
857	857	Best CEG	1984	Photos	Road		Divergent	Mgt. Relate	65-74	NA	1,481	370
868	868	Best CEG	1984	Photos	Road		Plannar	Mgt. Relate	50-64	NA	389	292
869	869	Best CEG	1998	Photos	Road		Plannar	Mgt. Relate	75-84	NA	389	97
889	889	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	75-84	NA	222	111
920	920	Best CEG	1970	Photos	Skid Trail		Convergent	Mgt. Relate	75-84	NA	389	194
928	928	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	65-74	NA	389	292
929	929	Best CEG	1998	Photos	Skid Trail		Convergent	Mgt. Relate	85+	NA	222	55
949	949	Best CEG	1984	Photos	Skid Trail		Convergent	Mgt. Relate	75-84	NA	1,481	740
960	960	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	85+	NA	222	55
990	990	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	75-84	NA	389	97
991	991	Best CEG	1984	Photos	Skid Trail		Divergent	Mgt. Relate	85+	NA	222	111
992	992	Best CEG	1998	Photos	Skid Trail		Divergent	Mgt. Relate	75-84	NA	222	55
1009	1009	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	85+	NA	222	55
1032	1032	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	50-64	NA	222	166
1038	1038	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	65-74	NA	389	194
1039	1039	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	65-74	NA	389	97
1048	1048	Best CEG	1984	Photos	Skid Trail		Plannar	Mgt. Relate	50-64	NA	648	324
1102	1102	Best CEG	1998	Photos	Road		Divergent	Mgt. Relate	65-74	II	4,167	2,083
1149	1149	Best CEG	1998	Photos	Hill Slope		Divergent	Natural	85+	NA	222	111
1163	1163	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	178,137	0
1234	1234	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	326,384	0
1237	1237	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	254,742	0
1292	1292	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	1,037	259
1293	1293	Best CEG	1998	Photos	Stream Bank Failure	Inner Gorge	Plannar	Natural		NA	1,037	518
1296	1296	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	33	8
1297	1297	Best CEG	1998	Photos	Road	Inner Gorge	Convergent	Mgt. Relate		NA	370	185
1298	1298	Best CEG	1998	Photos	Hill Slope	Inner Gorge	Plannar	Natural		NA	370	277
1364	1364	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	648	162
1365	1365	Best CEG	1998	Photos	Stream Bank Failure	Headwall Swale	Convergent	Natural		NA	5,704	4,278
1366	1366	Best CEG	1998	Photos	Stream Bank Failure		Convergent	Natural		NA	389	38
1367	1367	Best CEG	1998	Photos	Skid Trail		Plannar	Mgt. Relate		NA	222	22
1368	1368	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	12,456,431	0
1369	1369	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	3,911,515	0
1370	1370	Best CEG	1900	Photos	Translational Slide		N/A	Natural		NA	3,378,924	0
1385	1385	Haschak	1984	Field	Hill Slope	Inner Gorge	Plannar	Natural	50-64	II	69	69
1386	1386	Haschak	1984	Field	Hill Slope	Inner Gorge	Plannar	Natural	50-64	II	69	69

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1387	1387	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	100	10
1388	1388	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	100	10
1389	1389	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	100	10
1390	1390	Haschak	1984	Field	Road	Inner Gorge	Plannar	Mgt. Relate	30-49	II	100	75
1391	1391	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64		1,250	125
1446	1446	Haschak	1984	Field	Road		Plannar	Mgt. Relate	50-64	NA	139	0
1447	1447	Haschak	1900	Field	Road		Plannar	Mgt. Relate	50-64	NA	333	166
1551	1551	Best CEG	1998	Photos	Hill Slope		Convergent	Natural			256	63
1702	1702		0		THP Site, no data			No Info.			0	0
1703	1703		0		THP Site, no data			No Info.			0	0
1704	1704		0		THP Site, no data			No Info.			0	0
1705	1705		0		THP Site, no data			No Info.			0	0
1706	1706		0		THP Site, no data			No Info.			0	0
1707	1707		0		THP Site, no data			No Info.			0	0
1708	1708		0		THP Site, no data			No Info.			0	0
1750	1750		0		THP Site, no data			No Info.			0	0
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1759	1759		0		THP Site, no data			No Info.			0	0
1760	1760		0		THP Site, no data			No Info.			0	0
1761	1761		0		THP Site, no data			No Info.			0	0
1762	1762		0		THP Site, no data			No Info.			0	0
1763	1763		0		THP Site, no data			No Info.			0	0
1764	1764		0		THP Site, no data			No Info.			0	0
1765	1765		0		THP Site, no data			No Info.			0	0
1766	1766		0		THP Site, no data			No Info.			0	0
1860	1860	Haschak	1901	Field	Hill Slope		Plannar	Natural	50-64	II	250	250
1861	1861	Haschak	1901	Field	Hill Slope	Inner Gorge	Plannar	Natural	65-74	II	1,852	1,389
1862	1862	Haschak	1984	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	II	178	160
1863	1863	Haschak	1998	Field	Hill Slope		Plannar	Natural	50-64	II	222	178
1864	1864	Haschak	1959	Field	Road	Inner Gorge	Plannar	Mgt. Relate	65-74	II	2,778	2,778
1865	1865	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	II	56	56
1866	1866	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	50-64	II	278	278
1867	1867	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	II	78	78
1869	1869	Haschak	1984	Field	Road		Convergent	Mgt. Relate	30-49	II	833	583
1871	1871	Haschak	1901	Field	Hill Slope		Plannar	Natural	50-64	NA	1,111	0
1872	1872	Haschak	1901	Field	Hill Slope		Plannar	Natural	65-74	I	833	0
1873	1873	Haschak	1984	Field	Hill Slope		Plannar	Natural	50-64	II	89	0
1879	1879	Haschak	1984	Field	Hill Slope		Convergent	Natural	30-49	NA	222	0
1880	1880	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	II	556	556
1881	1881	Haschak	1970	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	II	278	278
1882	1882	Haschak	1970	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	II	444	444
1883	1883	Haschak	1970	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	75-84	II	89	89
1885	1885	Haschak	1998	Field	Road		Plannar	Mgt. Relate	50-64	II	1,852	0
1886	1886	Haschak	1984	Field	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	65-74	II	222	222
1887	1887	Haschak	1998	Field	Stream Bank Failure	Inner Gorge	Plannar	Natural	65-74	II	278	83
1888	1888	Haschak	1998	Field	Road		Plannar	Mgt. Relate	75-84	II	1,111	0
1889	1889	Haschak	1901	Field	Hill Slope			Natural	65-74	III	292	0
1890	1890	Haschak	1930	Field	Hill Slope		Plannar	Natural	50-64	NA	333	0

Map#	ID #	Inspector	Year**	Source	Slide Type	Slope Type	Slope Form	Association	Slope	Stream	Total Yds	Delivered
1891	1891	Haschak	1970	Field	Translational Slide	Headwall Swale	Convergent	Natural	65-74	II	4,167	2,083
1892	1892	Haschak	1970	Field	Skid Trail	Inner Gorge	Plannar	Mgt. Relate	50-64	II	1,481	1,333
1893	1893	Haschak	1930	Field	Translational Slide	Headwall Swale	Convergent	Natural	30-49	III	1,389	694
1895	1895	Haschak	1959	Field	Skid Trail		Plannar	Mgt. Relate	50-64	NA	167	0
1896	1896	Haschak	1947	Field	Unknown	Inner Gorge	Plannar	Natural	50-64	II	625	500

Summary for 'PW Name' = Annapolis (162 detail records)

Delivery **Avg** *264* **Min** *0* **Max** *4,278* **Sum** *42,698*

*Landslide information for this report comes from two main sources, aerial photo analysis or field observations. Information about a landslide is entered into a database and the Slide ID number is entered into GIS and appears on the maps. Information about landslides entered by professionals other than a licensed geologist should be considered as informational until reviewed by a licensed geologist.

**Tim Best, CEG analyzed six sets of aerial photos to identify landslides (1947, 1959, 1970, 1984, 1998 and 2004). The year in this report is usually the year of the photos on which the slide was first observed. If the year is 1900 it means the slide is ancient. If the year is 1930 means the slide was old in the 1947 photos. If the year is 2010 it means the slide occurred after the most recent photos in 2004.

MEMORANDUM

DATE: November 25, 2024

TO: Mark Pugsley, RPF
Redwood Timber LLC.
P.O. Box 156
Cloverdale, CA 95425

FROM: Kevin Doherty
Department of Conservation
California Geological Survey
135 Ridgway Avenue
Santa Rosa, California 95401

SUBJECT: Focused Engineering Geologic Pre-Consultation of Pepper Timber Harvesting Plan, Wheatfield Fork Gualala River Watershed, CA.

Background and Purpose: As per your October 3, 2024 email request, CGS has conducted a pre-consultation of the proposed Pepper Timber Harvest Plan (THP) that you are preparing. The Pepper THP was previously submitted to CalFire for approval in December 2023, but was returned and is being updated for resubmittal. We inspected a portion of the proposed THP area with your project geologist, Josh Kilgore, on November 13, 2024. The THP area is located in the Annapolis (1113.840303) Planning Watershed which drains to the South Fork Gualala River, and ultimately the Pacific Ocean. The purpose of this review is to assist you in identifying geologic issues that should be included and addressed in the THP, specifically confirming the presence of areas of inner gorge geomorphology identified in regional geologic mapping (Fuller and others, 2002). The area reviewed is within the Stewarts Point and Annapolis 7.5 Minute quadrangles and is located in Sections 14, 15, 22, 23, and 24 of T10N, R14W, MDBL&M. Our inspection was limited to evaluation of mapped inner gorge slopes along the Wheatfield Fork Gualala River and a mapped Class II tributary (Fuller and others, 2002). While several other unstable areas mapped by the RPF within the proposed THP boundary were observed, it is our understanding that evaluation of the proposed operations within the mapped features and applicable mitigation measures are being developed by the project geologist. We also conducted a review of available regional geologic mapping (Fuller and others, 2002, Figure 1), previously approved THP's (THP's 1-98-269 SON, 1-03-008 SON, 1-04-201 SON, 1-09-041 SON), and lidar imagery (USGS, 2013) of the area within and adjacent to the proposed THP boundary. It is not the intent of this letter to disclose or evaluate proposed operations on all on-site unstable, landslide, and/or erosion areas. This letter only pertains to observations in areas identified by you within the proposed plan area and discussed during our site visit, particularly the mapped areas of inner gorge geomorphology (Fuller and others, 2002).

Regional geologic mapping by Fuller and others (2002, Figure 1) identifies Tertiary to Cretaceous-age Coastal Belt Franciscan Formation as underlying proposed Timber Harvest Plan. The Franciscan Formation is described as massive to locally thin bedded, severely sheared to intact graywacke sandstone and shale, with minor greenstone, conglomerate, chert, and limestone (Fuller and others, 2002). The Franciscan is mantled by the Pliocene-age Ohlson Ranch Formation within the proposed southern THP boundary (Fuller and others, 2002). It is characterized by deeply weathered, poorly consolidated, fine-grained marine sandstone (Fuller and others, 2002). Field observations of weathered bedrock exposed in road cuts generally consisted of weathered fine-grained gray to brown sandstone.

The active trace of the San Andreas Fault Zone is mapped by Jennings and Bryant (2010) approximately 1-mile to the southwest of the proposed western THP boundary. High ground acceleration associated with fault movement along the San Andreas Fault System is likely a contributing factor for movement of mapped landslides in Sonoma County.

Observations and Discussion:

Regionally Mapped Inner Gorge Slopes: Regional geologic mapping (Fuller and others, 2002, Figure 1) maps areas of inner gorge geomorphology along the Wheatfield Fork Gualala River and a mapped Class II watercourse within and downslope of the proposed THP boundary. Field observations of defined coalescing debris slide scarps which appear to form a consistent break in slope approximately 50 to 200-feet upslope of the mapped watercourses appear to confirm mapping by Fuller and others (2002). The greater than 70-percent slopes below the break appear benched and hummocky and were observed to support pistol-butted and swept second growth conifers. The running surfaces of existing skid trails and an existing seasonal road which cross through or directly upslope of the inner gorge slopes generally appear intact, but failures were noted in the outer fill prisms suggesting that historic movement has occurred. It is our understanding that the proposed timber operations within the areas of inner gorge geomorphology will be evaluated by the project geologist, consistent with the provisions of California's Forest Practice Rules. The geologic evaluation and any associated mitigation measures provided by the project geologist should be included with the proposed THP upon resubmittal for approval to Cal Fire.

References:

California Geological Survey, 1999 (Revised), Factors Affecting Landslides in Forested Terrain, California Geological Survey (formerly Division of Mines and Geology) Note 50, 5p.

California Geological Survey (CGS), 2003, Engineering Geologic Review of Timber Harvesting Plan 1-03-008 SON, Memorandum to Ross Johnson, Deputy Director, California Department of Forestry and Fire Protection, 135 Ridgway Avenue, Santa Rosa, CA 95401, prepared by C. Michael Huyette, dated March 12, 2003.

California Geological Survey (CGS), 2004, Engineering Geologic Review of Timber Harvesting Plan 1-04-201 SON, Memorandum to William E. Snyder, Deputy Director, California Department of Forestry and Fire Protection, 135 Ridgway Avenue, Santa Rosa, CA 95401, prepared by C. Michael Huyette, dated November 19, 2004.

Fuller, M.S., Haydon, W.D., Purcell, M.G., and Custis, K. 2002, Geologic and Geomorphic Features Related to Landsliding, Gualala River Watershed, Sonoma and Mendocino Counties, California: California Department of Conservation, California Geological Survey, Map Set 5, Plate 1, Sheet 2 of 3 (Central Portion), CGS CD 2002-08, map scale 1:24,000.

Gualala Redwoods Inc. (GRI), 2004/undated, Landslide database, Engineering Geologic report and database prepared for GRI timberlands; compiled from aerial photo analysis (1947, 1959, 1970, 1984, 1998, 2004) by Tim Best, CEG and field observation by foresters; most recent update date unknown.

Jennings, C.W., Bryant, W.A., 2010, Fault Activity Map of California, Geological Data Map No.6, California Geological Survey, Scale 1:750,000.

Keaton, J.R., and DeGraff, J.V., 1996, Surface Observation and Geologic Mapping, *in* Turner, A.K. and Schuster, R.L., *editors*, Landslides, Investigation and Mitigation, Transportation Research Board, National Research Council Special Report 247.

Aerial Photographs Inspected:

WAC Inc., 1984 Black and white photographs, Flight WAC-84C, Roll 15, Frames 129, 130, 131; nominal scale 1:31,680.

WAC Corporation, 1999, Color photographs, Flight WAC-C-99CA, Roll 10, Frames 35, 36, 37; nominal scale 1:24,000.

Google earth images: 38°41'53.13"N and 123°23'12.71"W. Google Earth., 7/11/1993; 6/30/2004; 4/24/2010; 4/20/2013; 3/27/2015; Accessed November, 2024.

LiDAR Data:

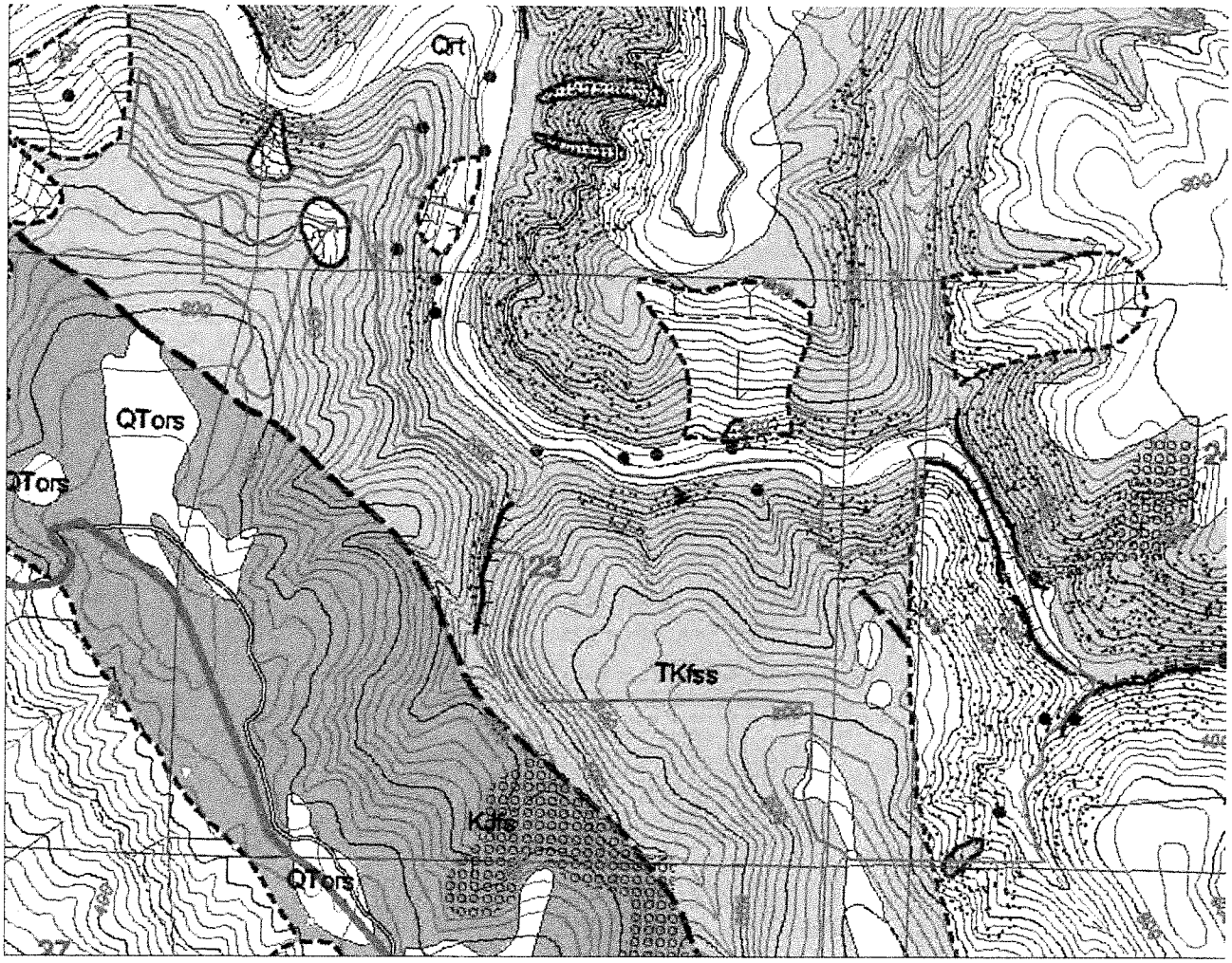
US Geological Survey (2013), USGS one meter x46y429 CA_Sonoma_A1_2013, accessed December 2023 and November 2024, access link: https://apps.nationalmap.gov/downloader/#/

DocuSigned by:
Kevin Doherty
61308A96B6D7486...
Kevin F. Doherty, CEG # 2666
Engineering Geologist

Concur: DocuSigned by: David Longstreth 11/25/2024
34F8C8D3098D441...

Date, David Longstreth, CEG # 2068
Senior Engineering Geologist

Attachments: 1 and 2



Explanation

TKfs	Coastal Belt Franciscan Formation
Kjfs	Central Belt Franciscan Formation
Qtors	Ohlson Ranch Formation
Qrt	River terrace deposits

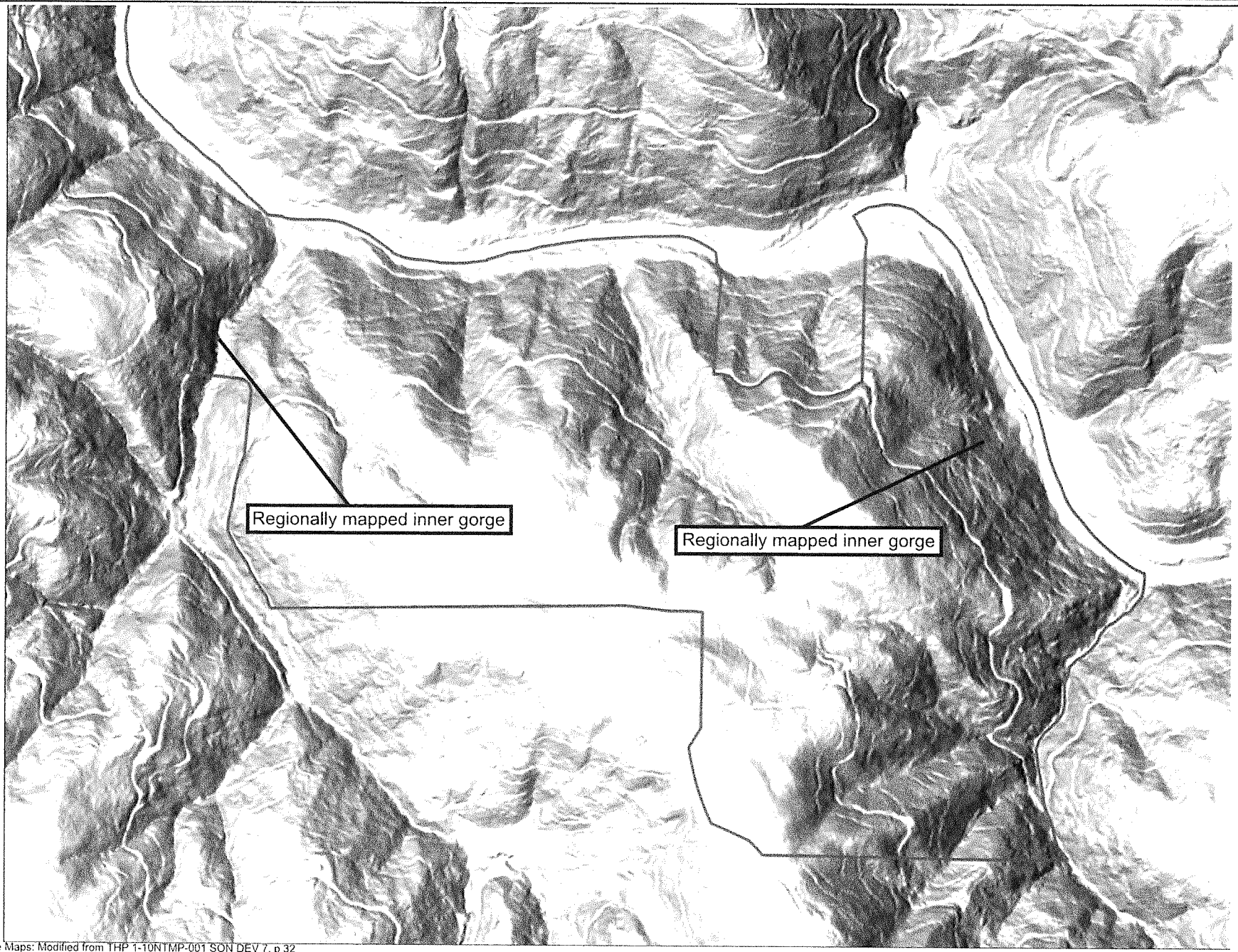
N

0 750' 1500'

Base Map: Modified from Fuller, M.S., Haydon, W.D., Purcell, M.G., and Custis, K. 2002, Geologic and Geomorphic Features Related to Landsliding, Gualala River Watershed, Sonoma and Mendocino Counties, California: California Department of Conservation, California Geological Survey, Map Set 5, Plate 1, Sheet 2 of 3 (Central Portion). CGS CD 2002-08, map scale 1:24,000.

- Geologic contact, dashed where approximately located
- Rotational/Translational Landslide
- Earthflow
- Debris Slide
- Debris Flow/Torrent Track
- Debris Slide Amphitheater/ Slope
- Inner gorge
- Active Landslide (too small to show at map scale)
- Disrupted ground
- Slopes >70 percent
- 75 Strike and dip of bedding
- Shaded area represents estimated limits of proposed ownership.

Date: Nov 2024	Regional Geologic Map	Figure:
Scale: 1" = 1500'	To Accompany	1
Approved By: CGS	Engineering Geologic Preconsultation of THP 1-23-001171 SON	



Base Maps: Modified from THP 1-10NTMP-001 SON DEV 7, p 32

Lidar Imagery To Accompany
Engineering Geologic Preconsultation of THP 1-23-00171 SON

Figure: 2

Pepper THP

NSO Package

PEPPER THP
NSO WITHIN 0.7 MILES

June 20, 2025

N

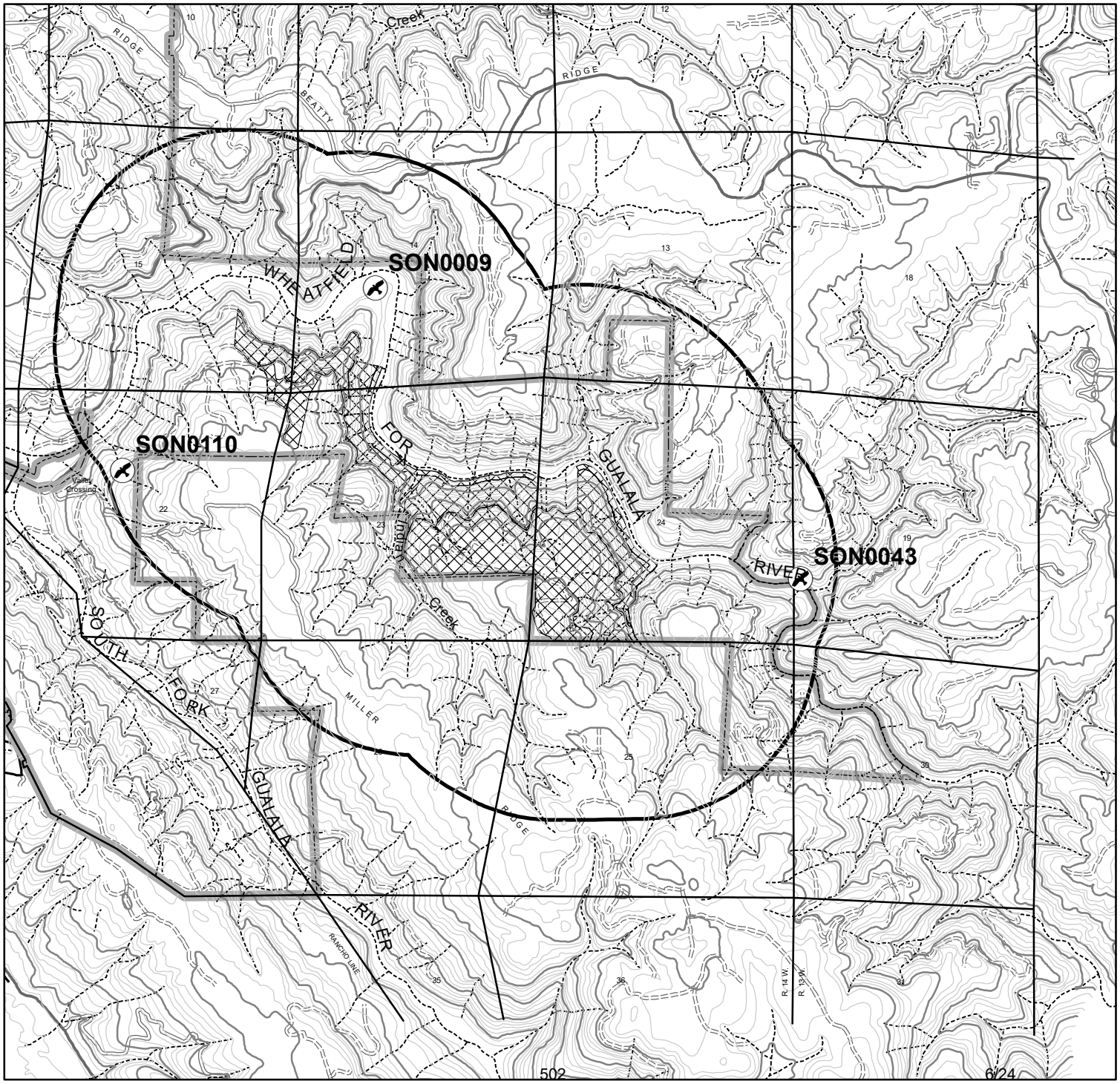
1:35,237

Legend

- NSO Within 0.7 Miles
- Watercourses
- Pepper THP Boundary
- 0.7 Mile Buffer
- Property Boundary

Road Class

- Paved Public
- Paved Private
- Unpaved Public
- Private Permanent
- Private Seasonal



PEPPER THP
NSO SURVEY STATIONS

N

1:27,573

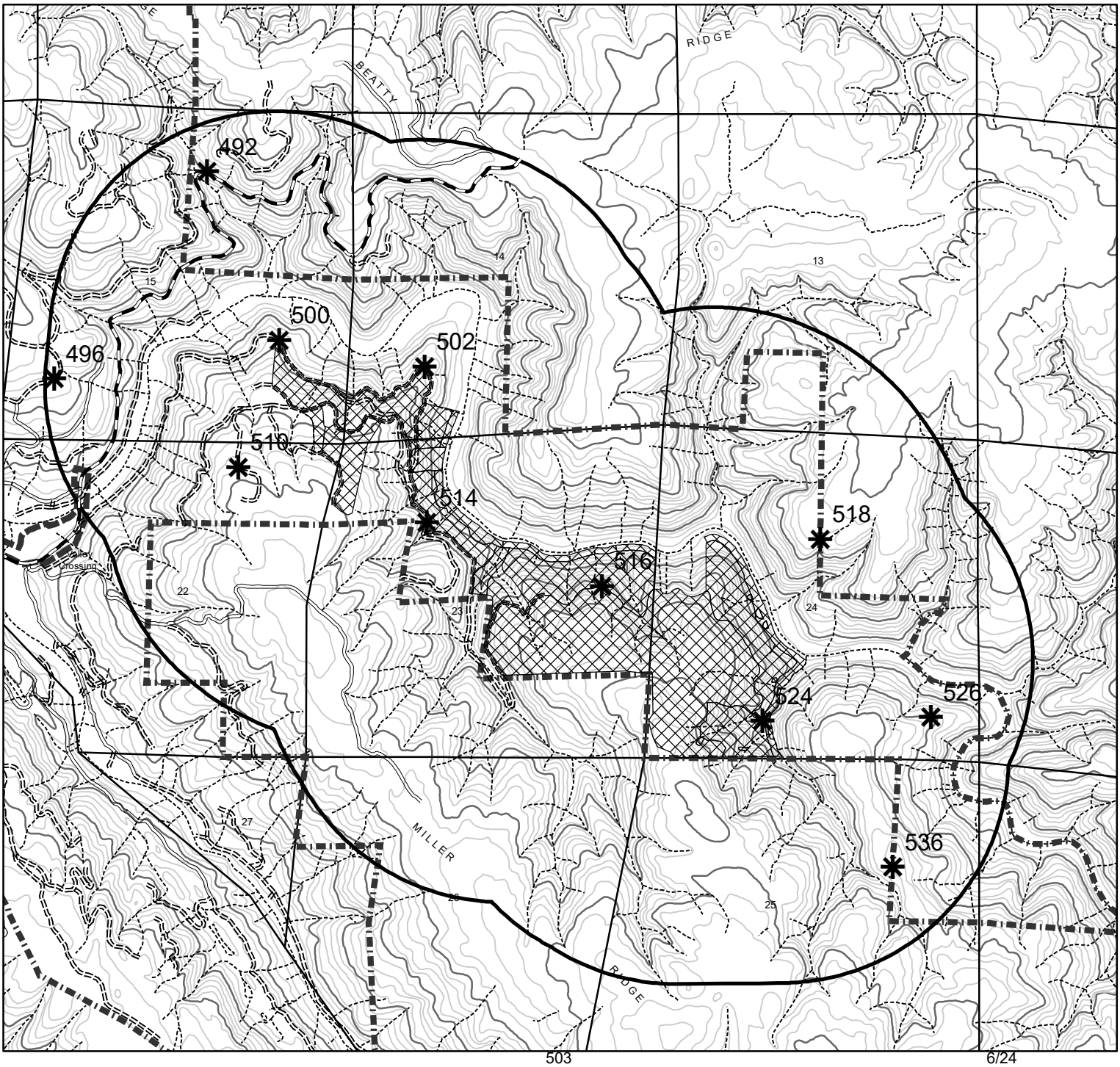
Legend

- NSO SURVEY STATIONS
- 0.7 MILE BUFFER
- PEPPER THP BOUNDARY
- PROPERTY BOUNDARY
- WATERCOURSES

Transportation

- Existing Paved Public
- Existing Private Permanent
- Existing Private Seasonal

June 20, 2025



6/24

PEPPER THP
PRE HARVEST NSO HABITAT WITHIN 0.7 MILES

June 20, 2025

N

1:27,245

Legend

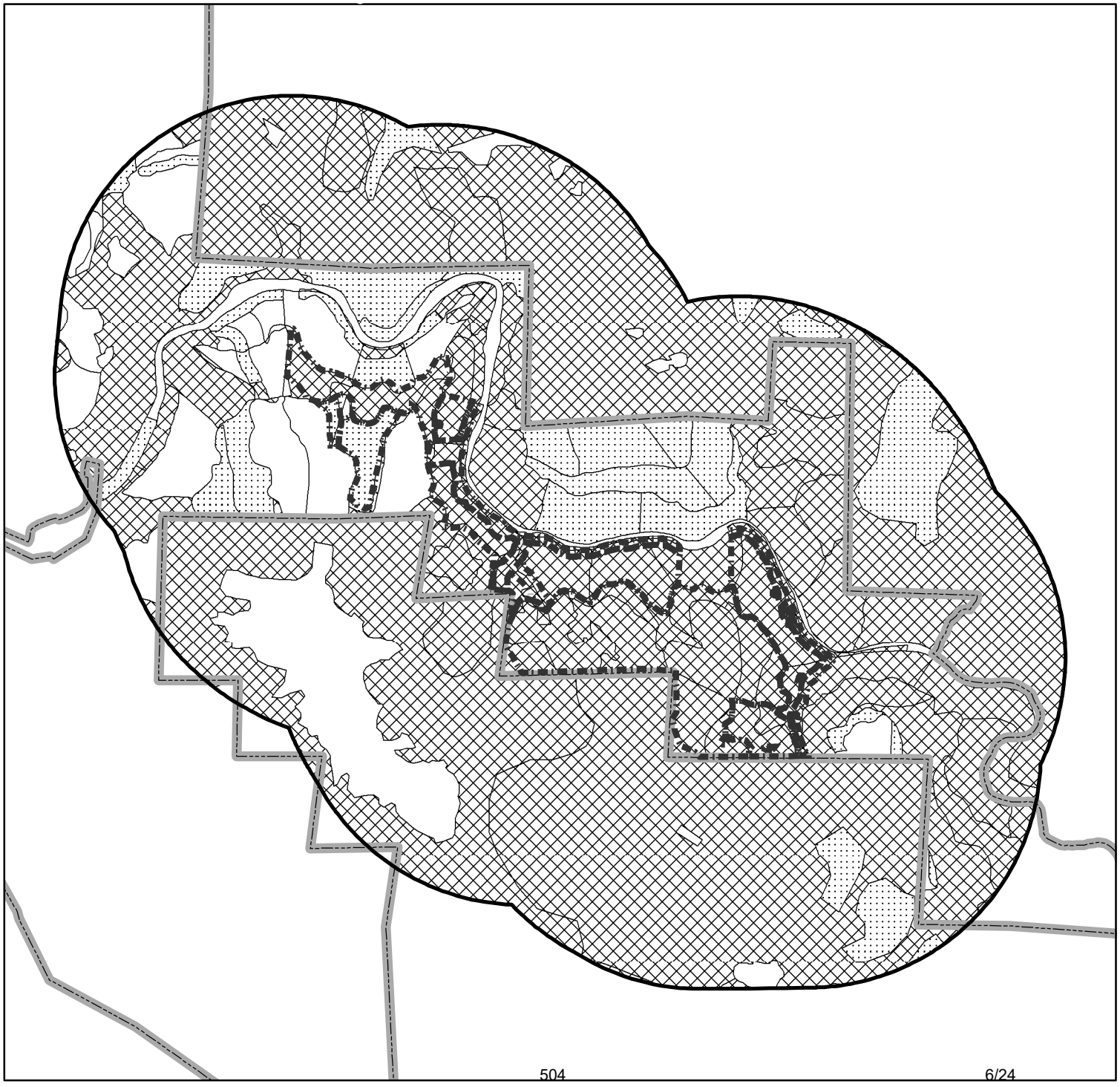
- 0.7 MILE BUFFER
- PEPPER THP BOUNDARY
- Property Boundary

Habitat Type

- Nest/Roost
- Forage
- Unsuitable

PRE HARVEST HABITAT

NEST/ROOST	2,693 ACRES
FORAGE	414 ACRES
UNSUITABLE	504 ACRES



504

6/24

PEPPER THP
PRE HARVEST NSO HABITAT WITHIN 0.7 MILES

June 20, 2025

N

1:27,245

Legend

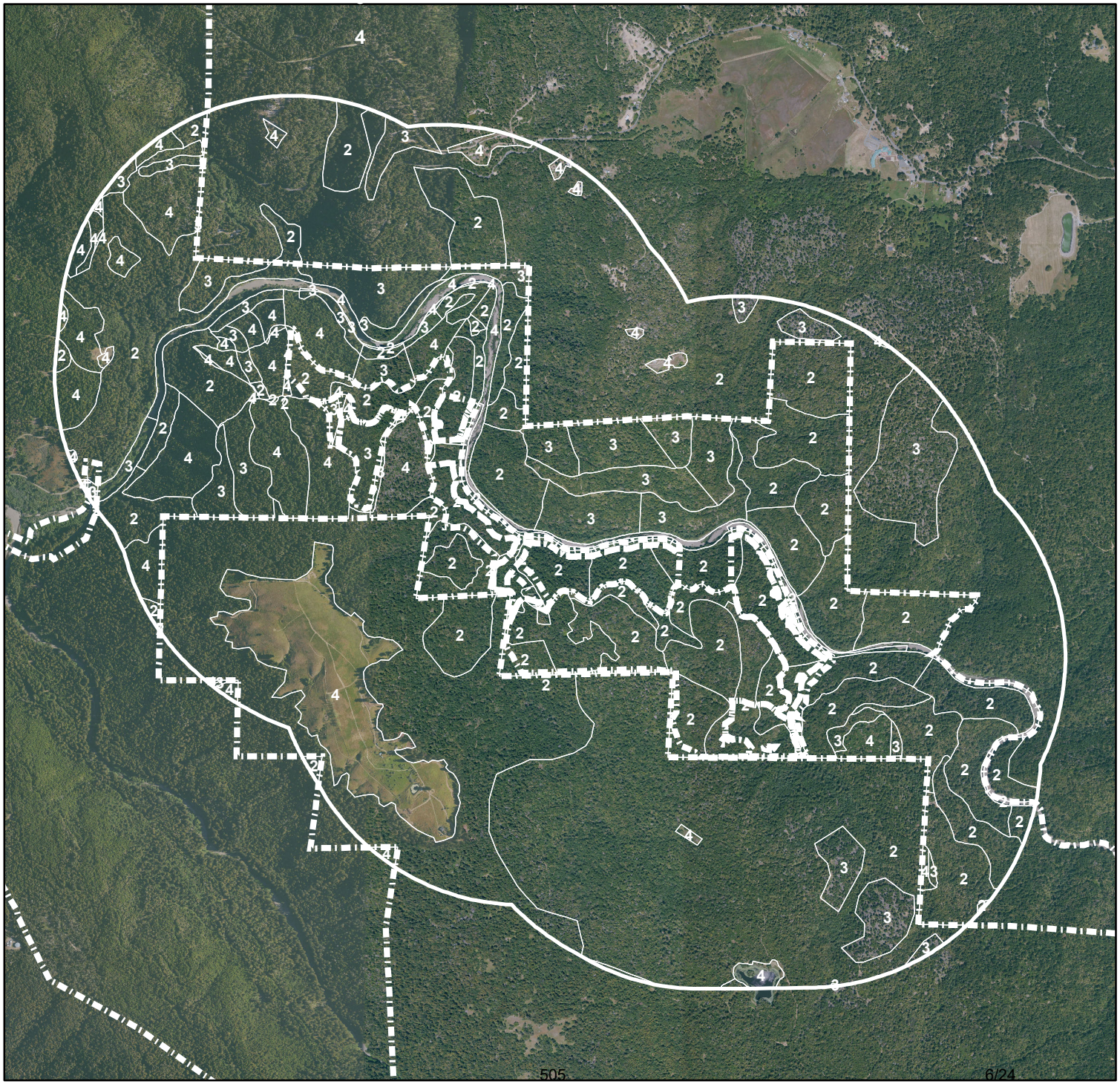
- 0.7 MILE BUFFER
- PEPPER THP BOUNDARY
- Property Boundary 2

Habitat Type

2 = Nest/Roost
3 = Forage
4 = Unsuitable

PRE HARVEST HABITAT

NEST/ROOST	2,693	ACRES
FORAGE	414	ACRES
UNSUITABLE	504	ACRES



PEPPER THP
POST HARVEST NSO HABITAT WITHIN 0.7 MILES

June 20, 2025

N

1:27,245

Legend

PEPPER THP BOUNDARY

0.7 MILE BUFFER

Property Boundary

Habitat Type

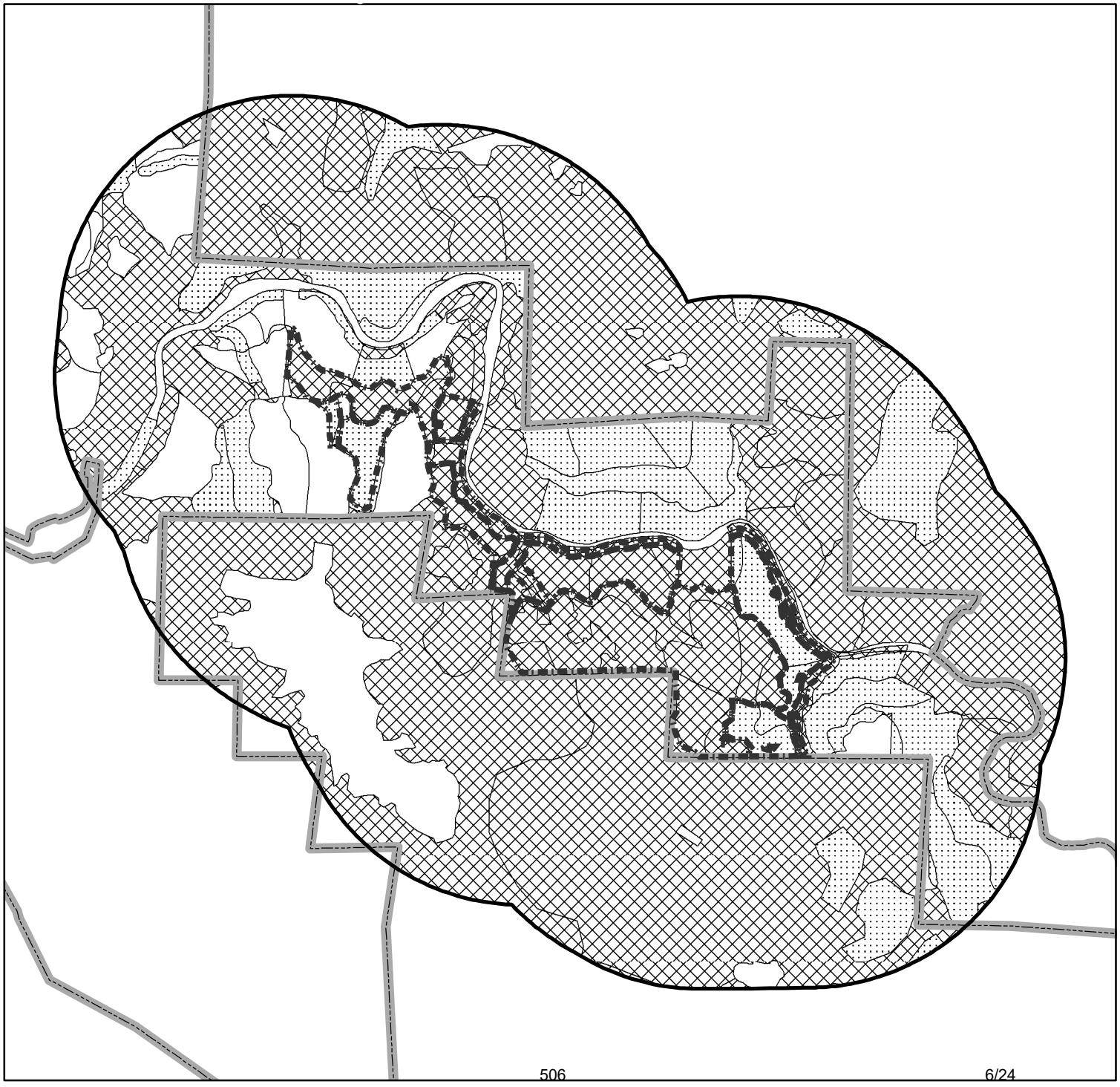
Nest/Roost

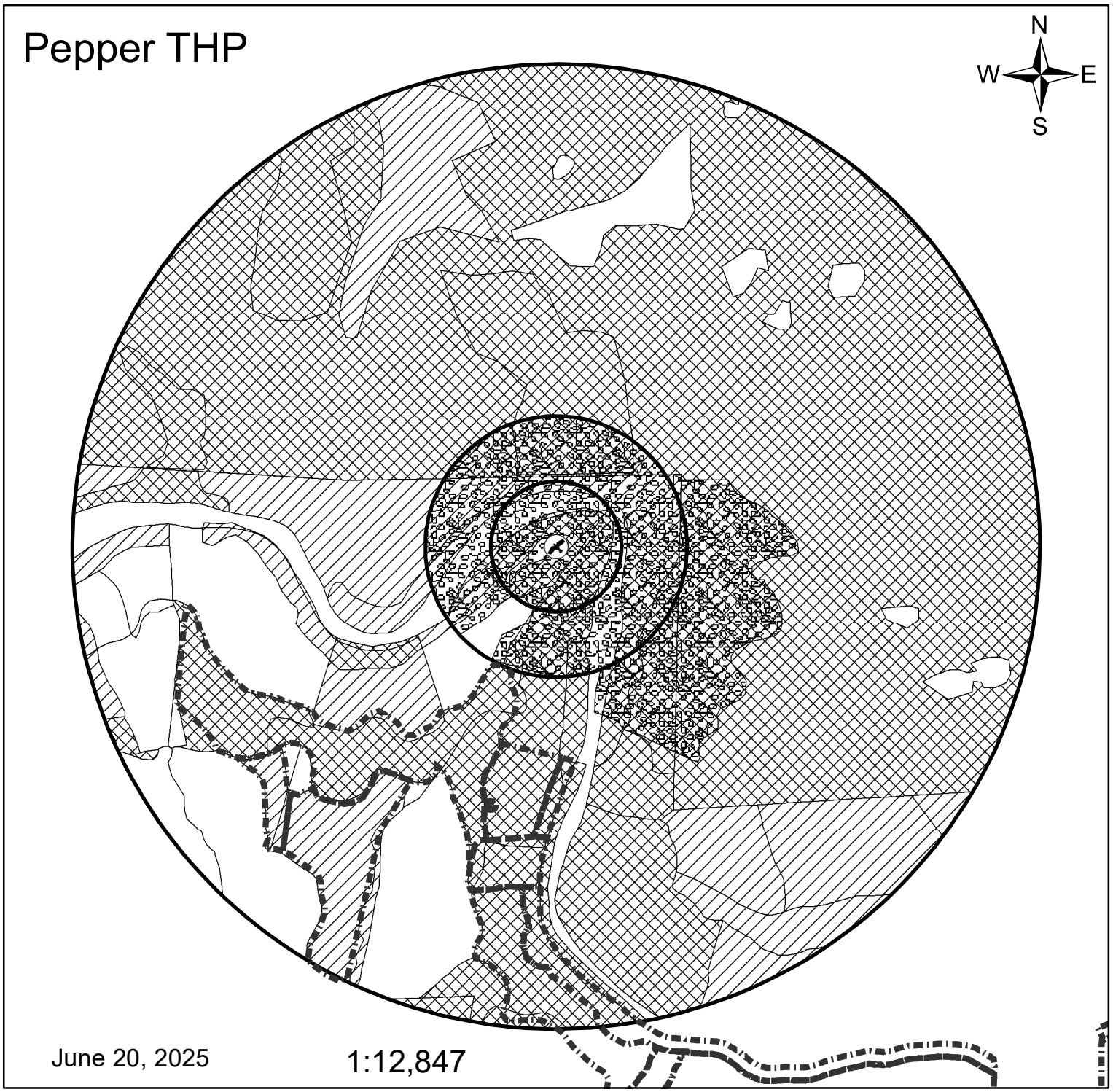
Forage

Unsuitable

POST HARVEST HABITAT

NEST/ROOST	2,540	ACRES
FORAGE	568	ACRES
UNSUITABLE	504	ACRES





SON0009 PRE HARVEST HABITAT MAP

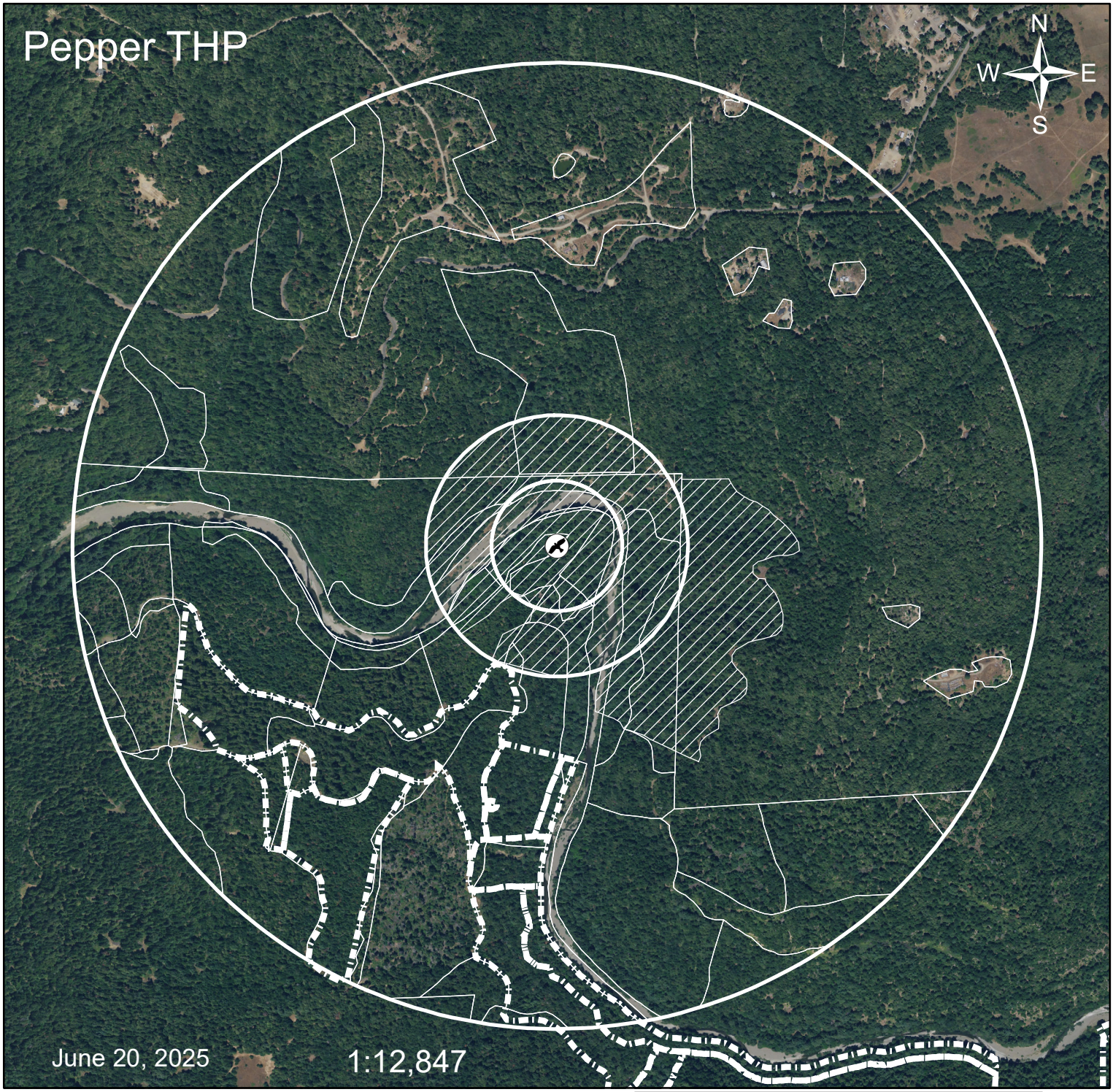
HABITAT TOTALS

NEST/ROOST	670 ac.
FORAGE	161 ac.
UNSUITABLE	154 ac.

TOTAL ACRES 985 ac.
CORE AREA = 106 ac Nest/Roost.

LEGEND

- SON0009 LOCATION
- PEPPER THP BOUNDARY
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- CORE AREA
- NEST/ROOST
- FORAGE
- UNSUITABLE



SON0009 PRE HARVEST HABITAT MAP

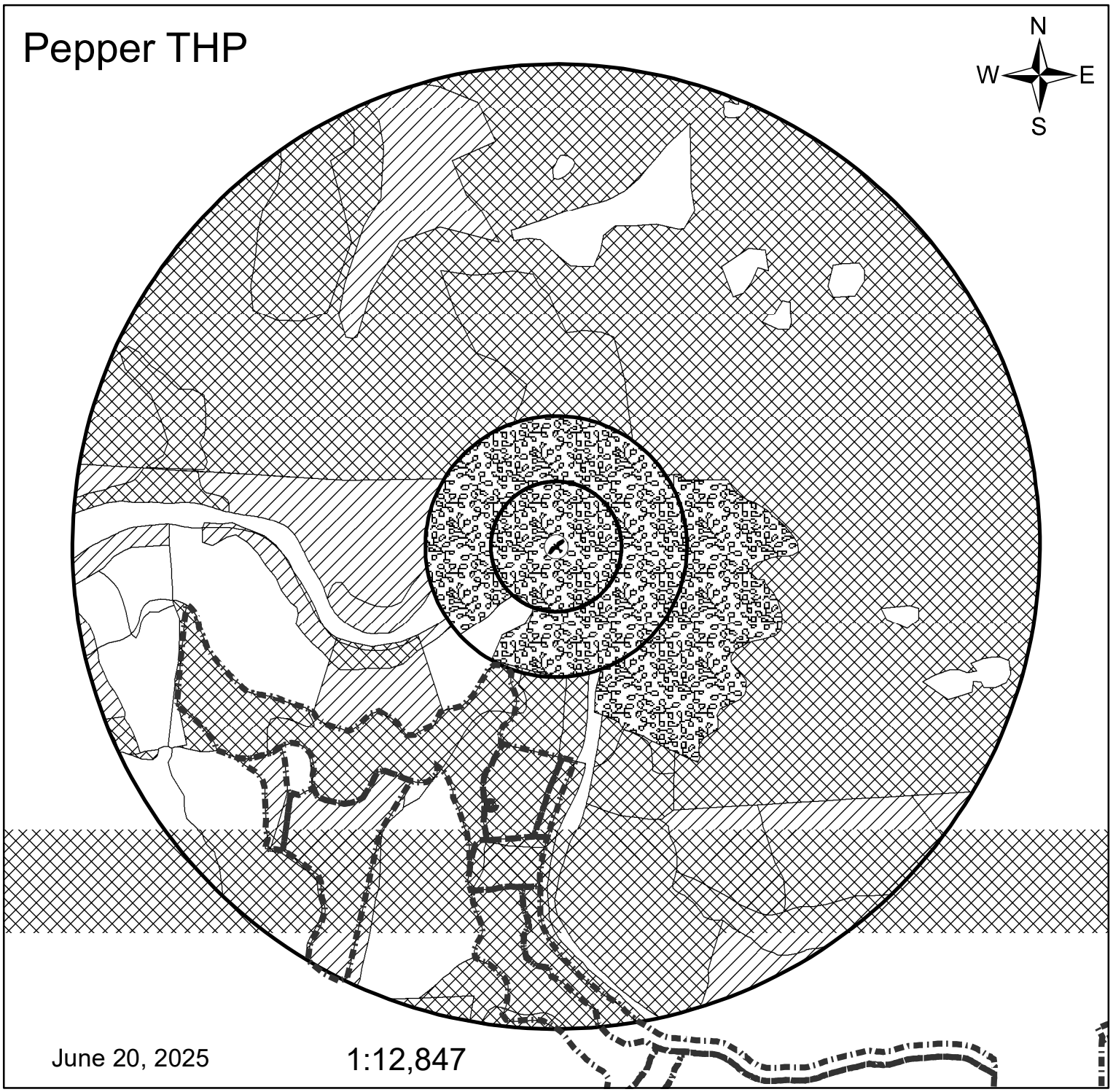
HABITAT TOTALS

NEST/ROOST	670 ac.
FORAGE	161 ac.
UNSUITABLE	154 ac.

TOTAL ACRES 985 ac.
CORE AREA = 106 ac Nest/Roost.

LEGEND

- SON0009 LOCATION
- PEPPER THP BOUNDARY
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- CORE AREA
- NEST/ROOST
- FORAGE
- UNSUITABLE



SON0009 POST HARVEST HABITAT MAP

HABITAT TOTALS

NEST/ROOST	670 ac.
FORAGE	160 ac.
UNSUITABLE	155 ac.

TOTAL ACRES 985 ac.
CORE AREA = 106 ac. Nest/Roost

LEGEND

- SON0009 LOCATION
- PEPPER THP BOUNDARY
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- CORE AREA

habitat

- Nest/Roost
- Forage
- Unsuitable

Pepper THP

SON0009
SEASONAL AND PERMANENT NSO RESTRICTIONS

June 20, 2025

PERMANENT RESTRICTIONS:
No harvesting within 500 feet of NSO without amendment.
Maintain nest/roost habitat between 500-1,000 ft.

SEASONAL RESTRICTIONS:
Seasonal restrictions may apply within 0.25 miles of active NSO. Generally no timber operations (except use of permanent roads) until after July 31.
(See USFWS Attachment A, revised 11/1/2019)

Legend

- SON 0009 LOCATION
- CORE AREA
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.25 MILE BUFFER
- PEPPER THP BOUNDARY
- WATERCOURSES

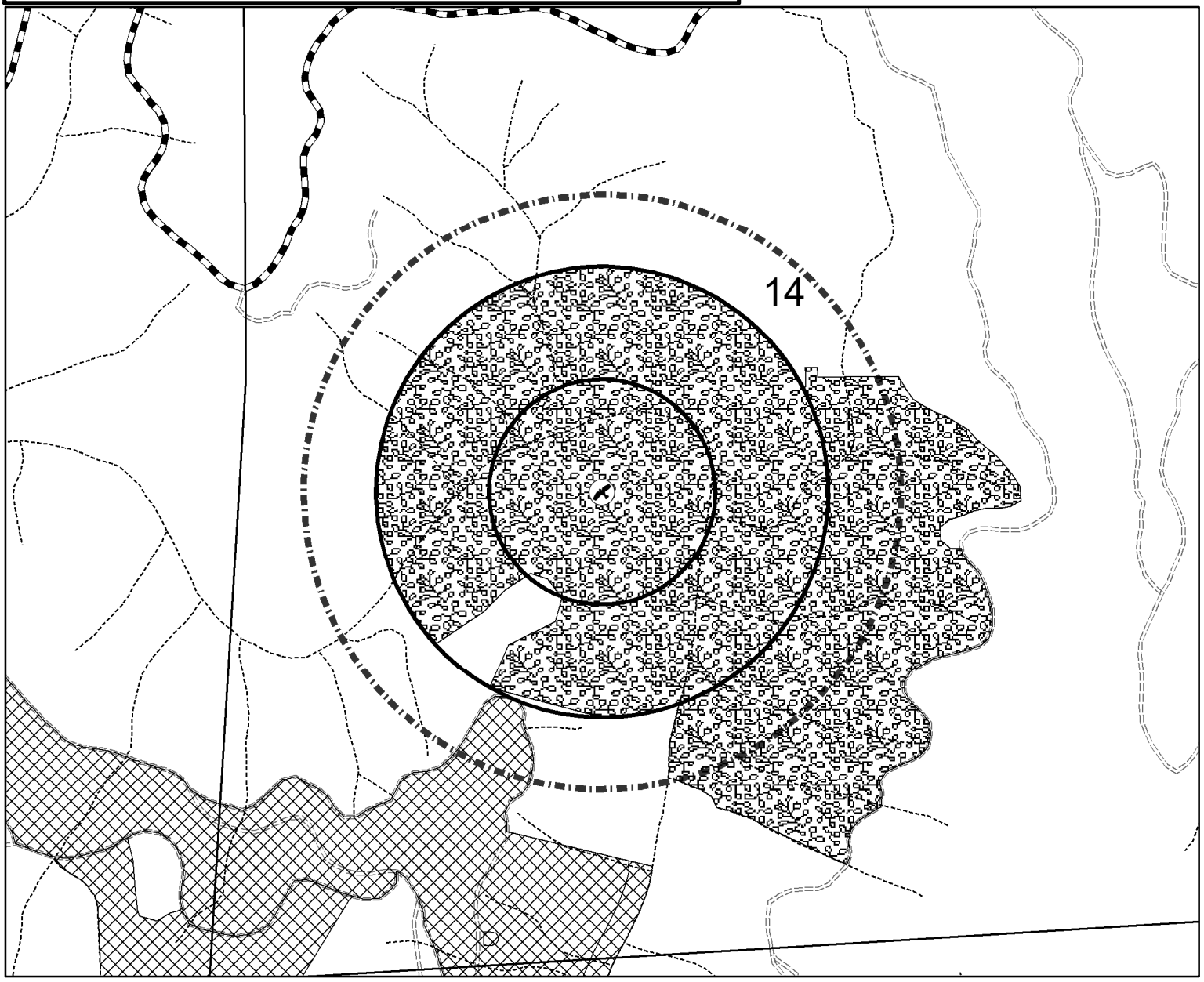
ROADS

Road Class

- Paved Public
- Unpaved Public
- Private Permanent
- Private Seasonal

N

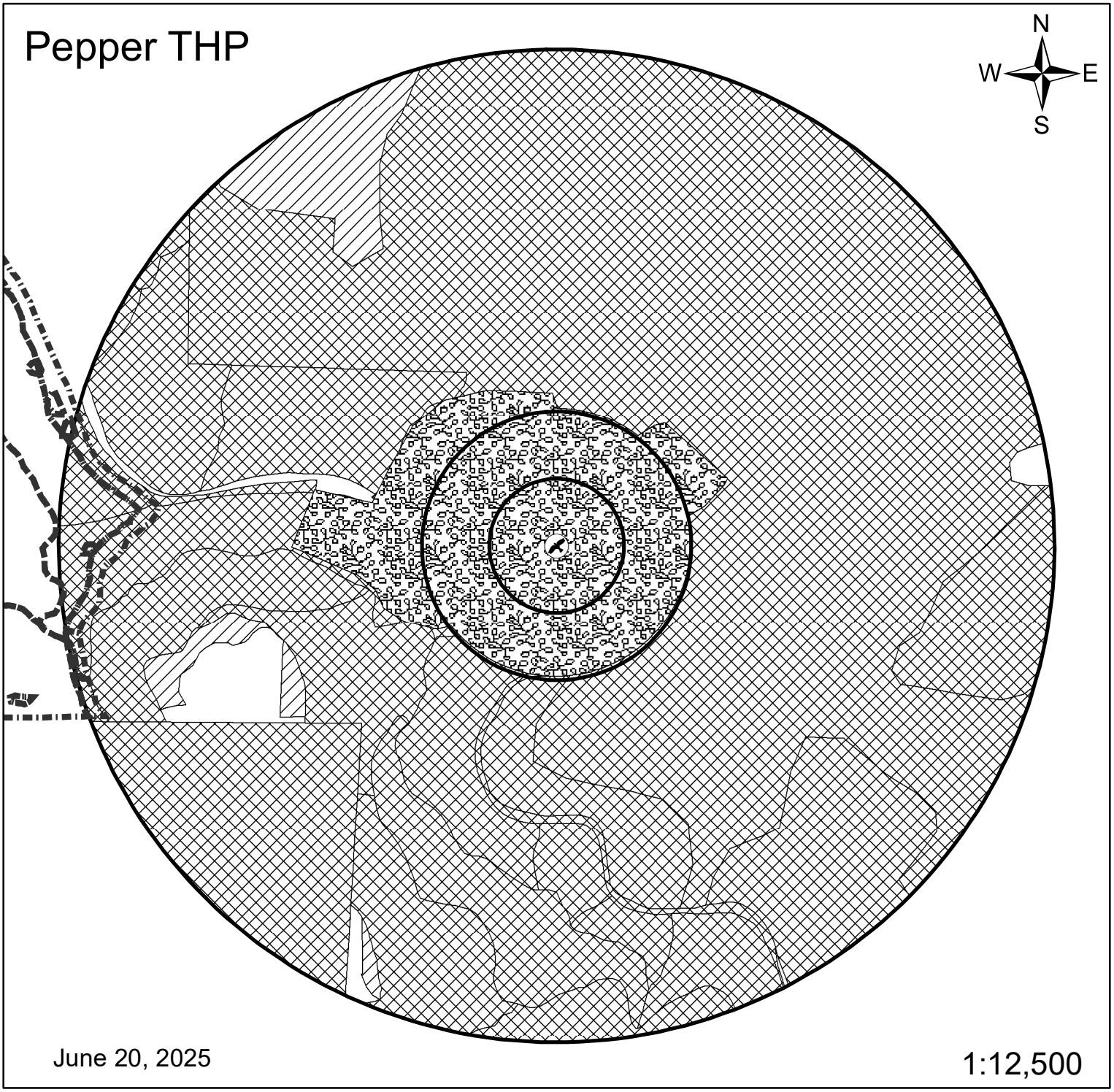
1 in = 667 ft



Spotted Owl Walk-In Visit Information

As of: 12/7/2021

Center		Visit	Sta.	Date	Surveyor	Start	End	Wind	Weather	Mouse Result	Occupancy	T	R	Sec	DBH	BA	Visit Type
Son0009	WF Low	994	0	5/14/2023	Town, Pam	18:30	19:45	4-7 mph	Clear	No Contact	No Contact				0		Walk-in
2 surveyors, 1 on north side of river walking and broadcast - 1 on south side of river from gate up to station 502. Went up draws near SON110. No owls detected and only heard other surveyor ocassionally.																	
Son0009	WF Low	1001	0	3/9/2024	Town, Pam	13:00	15:00	<1 mph	Partly Clo	No Contact	No Contact				0		Walk-in
Start broadcast from gate and walk up hill. No contact.																	
Son0009	WF Low	1015	0	5/18/2024	Town, Pam	16:30	18:30	<1 mph	Clear	No Contact	No Contact				0		Walk-in
Parked under and walk up road broadcasting. No owls.																	
Son0009	WF Low	1021	0	4/9/2025	Town, Pam	16:30	17:45	1-3 mph	Clear	No Contact	No Contact				0		Walk-in
Start below call station 500 and walk up road broadcast calling. Walk to station 502 and walk a few skid trails. Head back to station 500. At 1736 pair of Barred owls very vocal by the river.																	



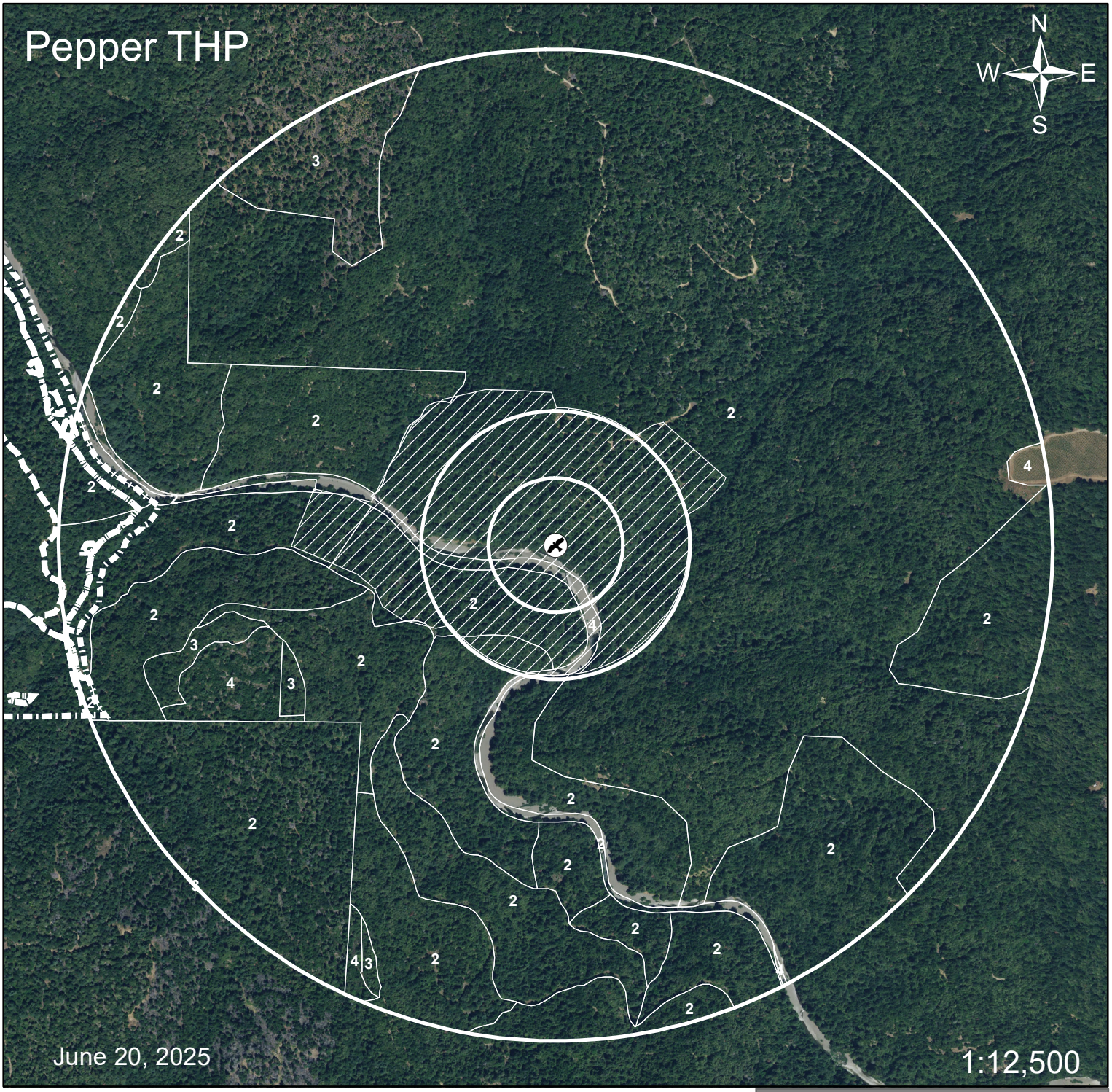
SON0043 PRE HARVEST HABITAT MAP

HABITAT TOTALS

NEST/ROOST	932 ac.
FORAGE	30 ac.
UNSUITABLE	23 ac.
TOTAL ACRES	985 ac.
CORE AREA =	100 ac. Nest/Roost

LEGEND

- SON0043 LOCATION
- PEPPER THP BOUNDARY
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- CORE AREA
- NEST/ROOST
- FORAGE
- UNSUITABLE



SON0043 PRE HARVEST HABITAT MAP

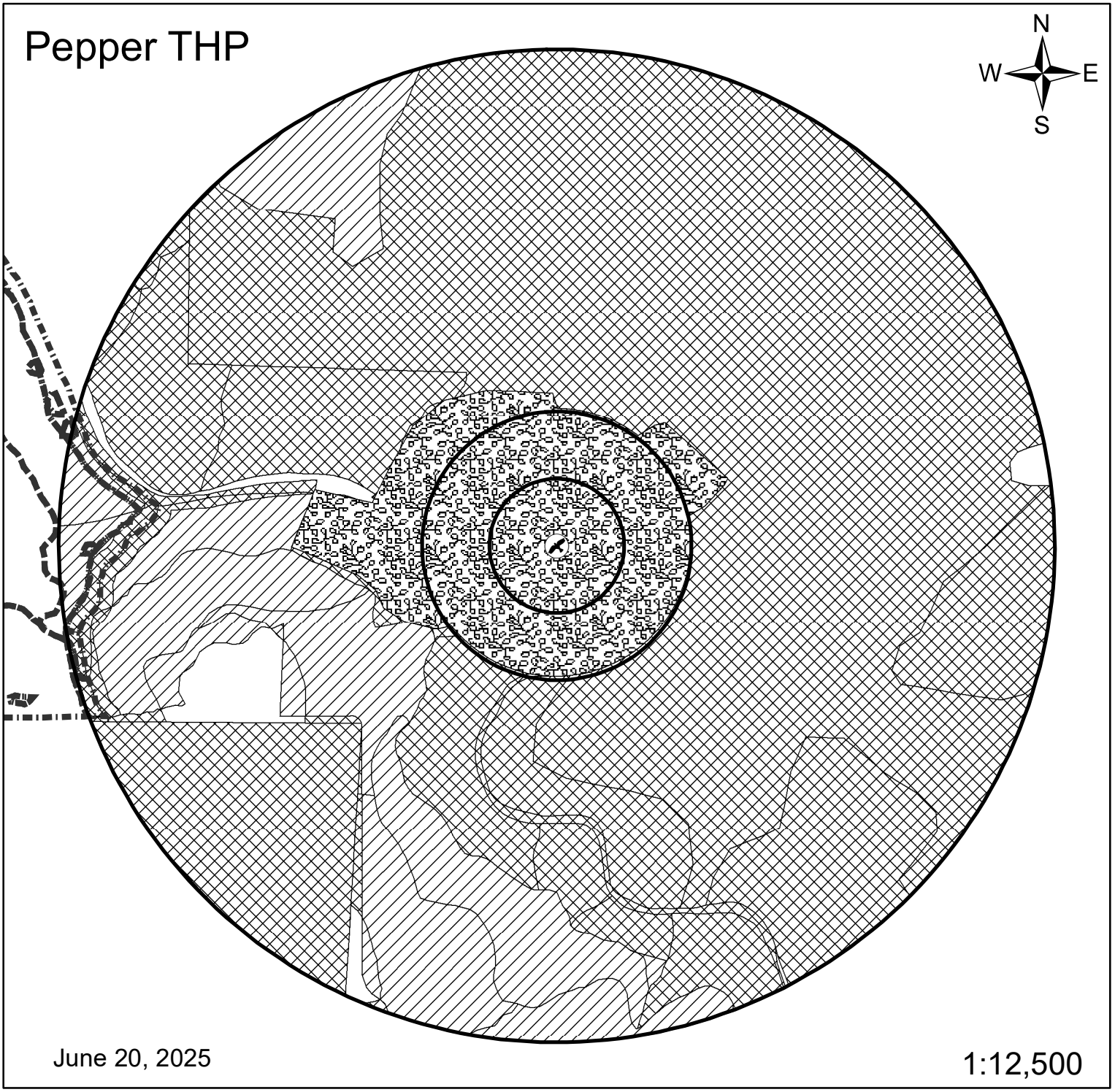
HABITAT TOTALS

NEST/ROOST	932 ac.
FORAGE	30 ac.
UNSUITABLE	23 ac.
TOTAL ACRES	985 ac.
CORE AREA =	100 ac.Nest/Roost

LEGEND

- SON0043 LOCATION
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- PEPPER THP BOUNDARY
- CORE AREA

HABITAT
2 = NEST/ROOST
3 = FORAGE
4 = UNSUITABLE



SON0043 POST HARVEST HABITAT MAP

HABITAT TOTALS

NEST/ROOST	806 ac.
FORAGE	156 ac.
UNSUITABLE	23 ac.
TOTAL ACRES	985 ac.
CORE AREA =	100 ac. Nest/Roost

514

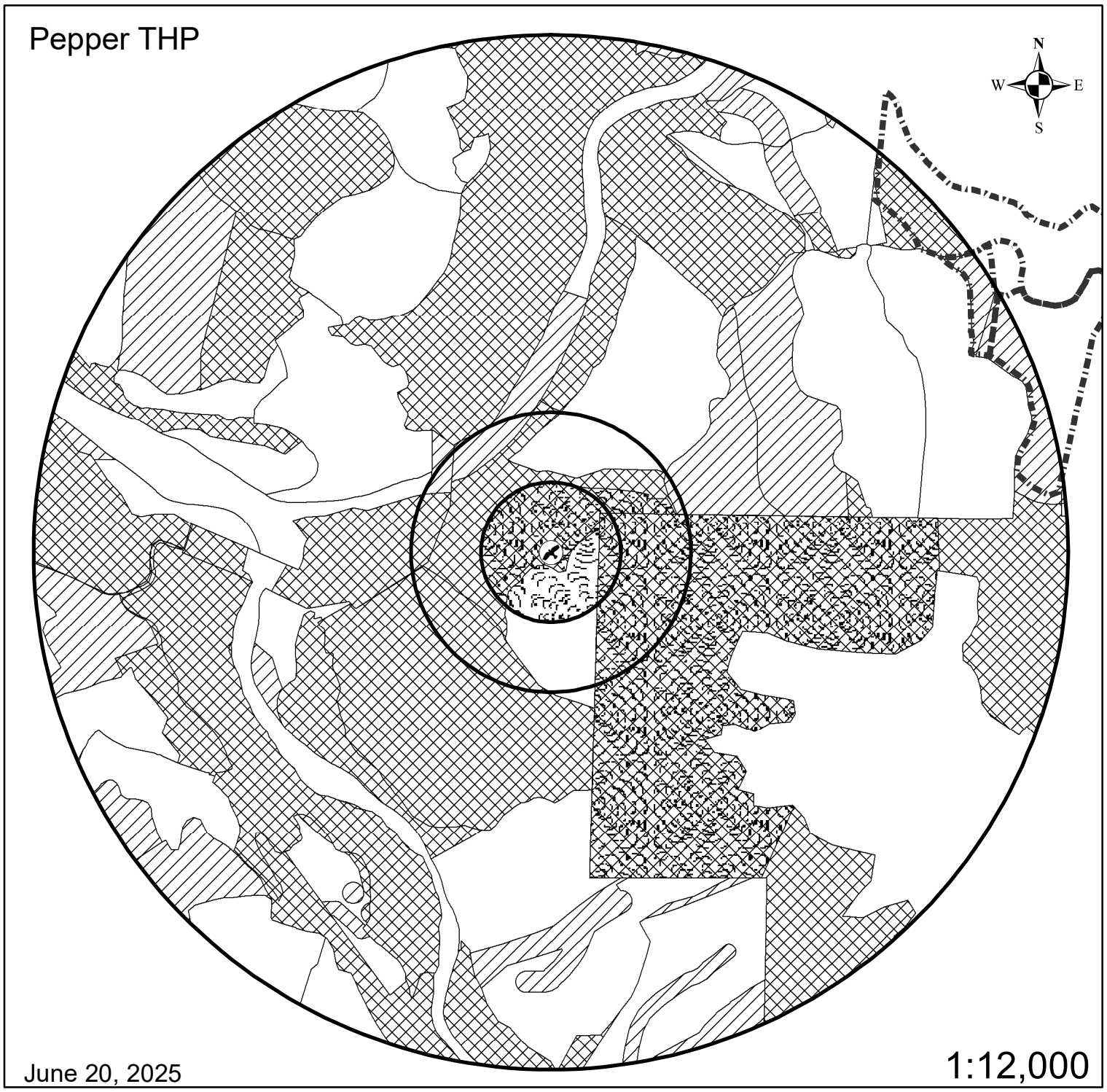
LEGEND

- SON0043 LOCATION
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- 0.7 MILE BUFFER
- PEPPER THP BOUNDARY
- CORE AREA

Habitat Type

- Nest/Roost
- Forage
- Unsuitable

6/24



SON0110 PRE HARVEST HABITAT MAP (0.7 MILE)

HABITAT TOTALS

NEST/ROOST	474 ac.
FORAGE	114 ac.
UNSUITABLE	397 ac.

TOTAL ACRES 985 ac.
CORE AREA = 107 ac. N/R

Legend

- SON0110 LOCATION
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- PEPPER THP BOUNDARY
- CORE AREA
- NEST/ROOST
- FORAGE
- UNSUITABLE

SON0110 PRE HARVEST HABITAT MAP (0.7 MILE)

HABITAT TOTALS

NEST/ROOST	474 ac.
FORAGE	114 ac.
UNSUITABLE	397 ac.

TOTAL ACRES 985 ac.
CORE AREA = 107 ac. Nest/Roost

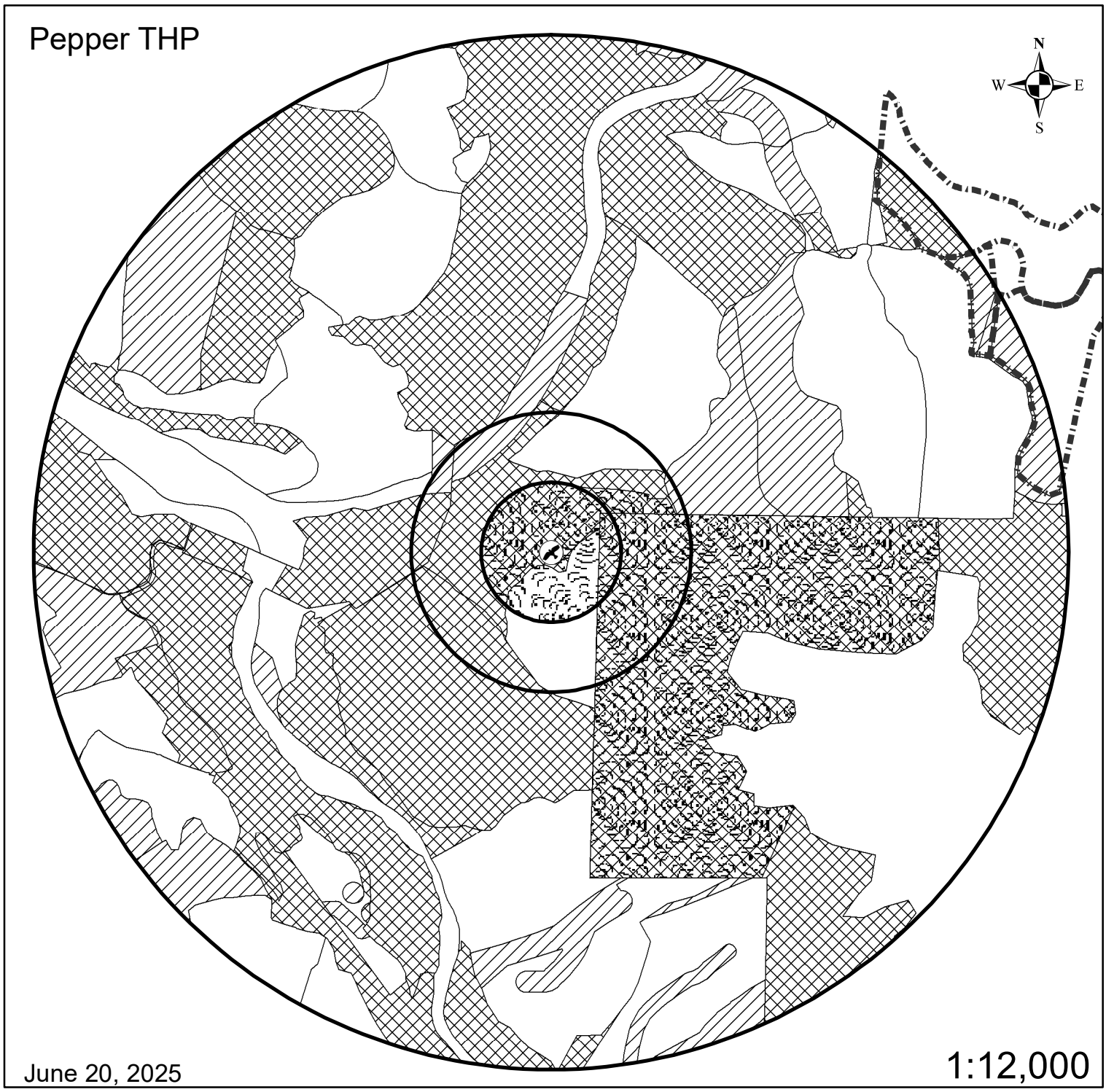
Legend

- SON0110 LOCATION
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- PEPPER THP BOUNDARY
- CORE AREA

HABITAT TYPE

2 = NEST/ROOST
3 = FORAGE
4 = UNSUITABLE

6/24



SON0110 POST HARVEST HABITAT MAP (0.7 MILE)

HABITAT TOTALS

NEST/ROOST	474 ac.
FORAGE	114 ac.
UNSUITABLE	397 ac.

TOTAL ACRES 985 ac.
CORE AREA = 107 ac. Nest/Roost

Legend

- SON0110 LOCATION
- 500 FOOT BUFFER
- 1,000 FOOT BUFFER
- PEPPER THP BOUNDARY
- CORE AREA

Habitat Type

- Nest/Roost
- Forage
- Unsuitable

Pepper THP

SON0110 SEASONAL AND PERMANENT NSO RESTRICTIONS

June 20, 2025

PERMANENT RESTRICTIONS:
No harvesting within 500 feet of NSO without amendment.
Maintain nest/roost habitat between 500-1,000 ft.

SEASONAL RESTRICTIONS:
Seasonal restrictions may apply within 0.25 miles of active NSO. Generally no timber operations (except use of permanent roads) until after July 31.
(See USFWS Attachment A, revised 11/1/2019)

Legend

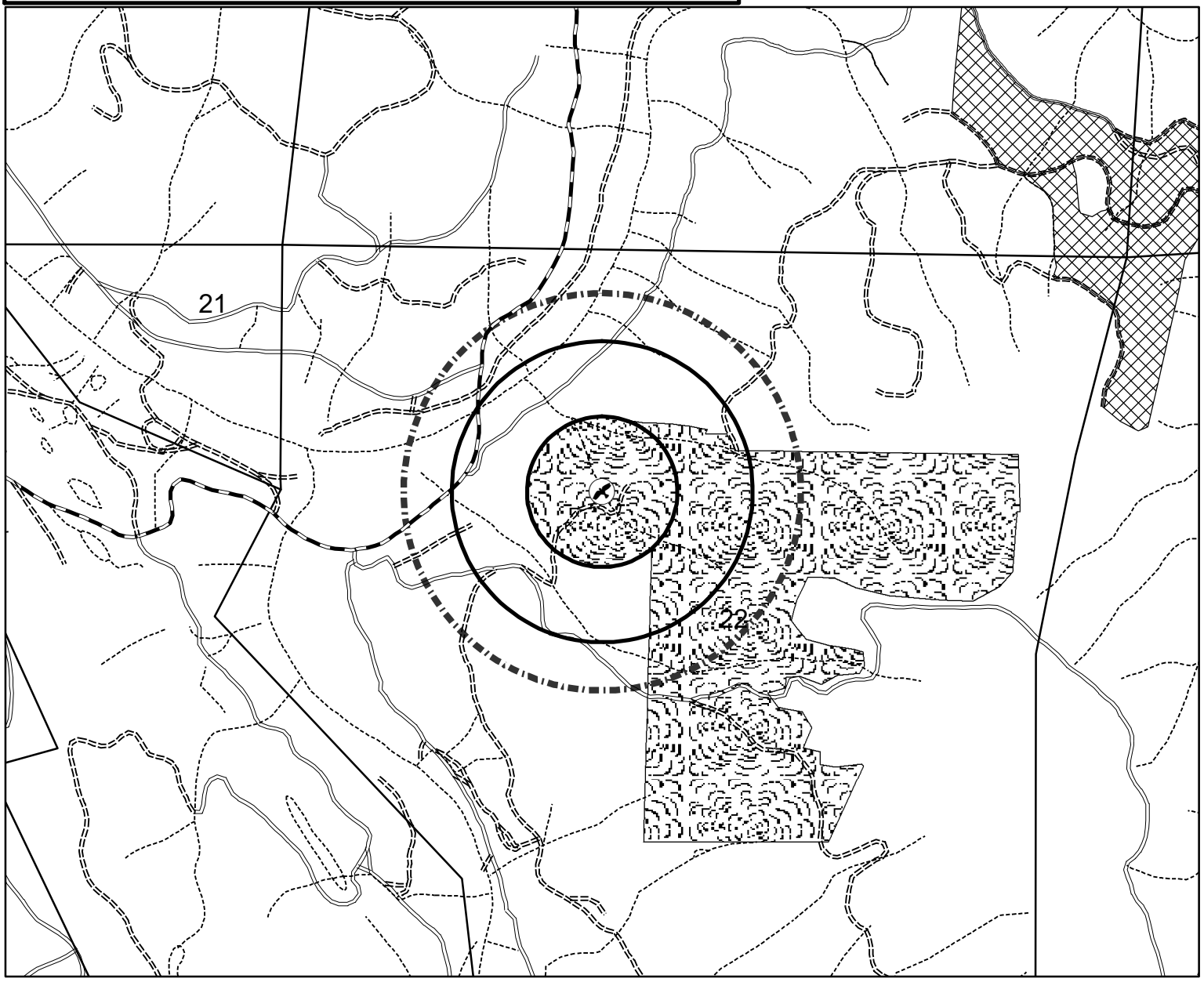
- SON0110 Activity Center

Transportation

- Existing Paved Public
- Existing Private Permanent
- Existing Private Seasonal
- 500 Foot Buffer
- 1,000 Foot Buffer
- 0.25 Mile Buffer
- Pepper THP Boundary
- Watercourses
- CORE AREA

N

1 in = 1,000 ft



Spotted Owl Walk-In Visit Information

As of: 12/7/2021

Center		Visit	Sta.	Date	Surveyor	Start	End	Wind	Weather	Mouse Result	Occupancy	T	R	Sec	DBH	BA	Visit Type
Son0009	WF Low	994	0	5/14/2023	Town, Pam	18:30	19:45	4-7 mph	Clear	No Contact	No Contact				0		Walk-in
2 surveyors, 1 on north side of river walking and broadcast - 1 on south side of river from gate up to station 502. Went up draws near SON110. No owls detected and only heard other surveyor ocassionally.																	
Son0009	WF Low	1001	0	3/9/2024	Town, Pam	13:00	15:00	<1 mph	Partly Clo	No Contact	No Contact				0		Walk-in
Start broadcast from gate and walk up hill. No contact.																	
Son0009	WF Low	1015	0	5/18/2024	Town, Pam	16:30	18:30	<1 mph	Clear	No Contact	No Contact				0		Walk-in
Parked under and walk up road broadcasting. No owls.																	
Son0009	WF Low	1021	0	4/9/2025	Town, Pam	16:30	17:45	1-3 mph	Clear	No Contact	No Contact				0		Walk-in
Start below call station 500 and walk up road broadcast calling. Walk to station 502 and walk a few skid trails. Head back to station 500. At 1736 pair of Barred owls very vocal by the river.																	

Spotted Owl Visit Summary 23-171 Pepper

Active Stations

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
Year 2024										
492	3/8/2024	Town	<1 mph	Clear	21:47	22:00	No Contact	No Contact	0	0
492	4/7/2024	Town	<1 mph	Clear	22:54	23:04	No Contact	No Contact	0	0
492	4/18/2024	Town	1-3 mph	Fog	23:04	23:14	No Contact	No Contact	0	0
492	4/25/2024	Town	4-7 mph	Partly Clou	20:49	21:00	No Contact	No Contact	0	0
492	5/12/2024	Town	4-7 mph	Fog	23:10	23:20	No Contact	No Contact	0	0
492	5/19/2024	Town	8-12 mph	Clear	21:12	21:22	No Contact	No Contact	0	0
Year 2025										
492	3/4/2025	Town	1-3 mph	Partly Clou	21:30	21:40	No Contact	No Contact	0	0
492	3/11/2025	Town	4-7 mph	Partly Clou	22:44	22:54	No Contact	No Contact	0	0
492	4/9/2025	Town	1-3 mph	Clear	22:25	22:35	No Contact	No Contact	0	0
			Barred owl whinny down by river. Same as station 500.							
492	4/16/2025	Town	1-3 mph	Overcast	22:14	22:24	No Contact	No Contact	0	0
492	5/9/2025	Town	1-3 mph	Clear	21:48	22:00	No Contact	No Contact	0	0
492	5/16/2025	Town	4-7 mph	Clear	23:14	23:24	No Contact	No Contact	0	0
Year 2024										
496	3/8/2024	Town	<1 mph	Clear	20:20	20:30	No Contact	No Contact	0	0
496	4/6/2024	Town	1-3 mph	Overcast	21:09	21:19	No Contact	No Contact	0	0
			Pair Barred owls.							
496	4/13/2024	Town	1-3 mph	Partly Clou	21:04	21:14	No Contact	No Contact	0	0
496	4/20/2024	Town	1-3 mph	Clear	22:30	22:40	No Contact	No Contact	0	0
			Pair bared owls at river.							
496	5/11/2024	Town	<1 mph	Fog	23:00	23:10	No Contact	No Contact	0	0
496	5/18/2024	Town	<1 mph	Clear	22:07	22:17	No Contact	No Contact	0	0
Year 2025										
496	3/7/2025	Town	<1 mph	Clear	20:09	20:19	No Contact	No Contact	0	0
496	3/14/2025	Town	1-3 mph	Overcast	22:25	22:35	No Contact	No Contact	0	0
496	4/11/2025	Town	4-7 mph	Clear	22:09	22:19	No Contact	No Contact	0	0
496	4/18/2025	Town	<1 mph	Clear	23:45	23:55	No Contact	No Contact	0	0
496	5/9/2025	Town	<1 mph	Fog	22:39	22:50	No Contact	No Contact	0	0
496	5/16/2025	Town	1-3 mph	Clear	22:29	22:39	No Contact	No Contact	0	0
Year 2024										
500	3/9/2024	Town	<1 mph	Partly Clou	20:25	20:35	No Contact	No Contact	0	0
500	4/6/2024	Town	1-3 mph	Overcast	1:40	1:50	No Contact	No Contact	0	0
500	4/13/2024	Town	1-3 mph	Partly Clou	0:07	0:17	No Contact	No Contact	0	0
			Barred owl by river.							
500	4/20/2024	Town	1-3 mph	Clear	1:23	1:33	No Contact	No Contact	0	0
500	5/11/2024	Town	<1 mph	Fog	23:57	0:07	No Contact	No Contact	0	0
500	5/18/2024	Town	<1 mph	Clear	23:58	0:08	No Contact	No Contact	0	0
Year 2025										
500	3/4/2025	Town	1-3 mph	Partly Clou	20:19	20:29	No Contact	No Contact	0	0
500	3/11/2025	Town	4-7 mph	Partly Clou	21:15	21:25	No Contact	No Contact	0	0
500	4/9/2025	Town	1-3 mph	Clear	20:45	21:00	No Contact	No Contact	0	0
			Pair barred owls by river.							
500	4/16/2025	Town	1-3 mph	Overcast	20:34	20:44	No Contact	No Contact	0	0
500	5/9/2025	Town	1-3 mph	Clear	20:44	20:54	No Contact	No Contact	0	0
500	5/16/2025	Town	4-7 mph	Clear	21:25	21:45	No Contact	No Contact	0	0
			Pair barred owls by river.							
Year 2024										
502	3/9/2024	Town	<1 mph	Partly Clou	19:53	20:03	No Contact	No Contact	0	0
502	4/7/2024	Town	<1 mph	Clear	22:40	22:50	No Contact	No Contact	0	0

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
502	4/18/2024	Town	1-3 mph	Fog	22:47	22:57	No Contact	No Contact	0	0
502	4/20/2024	Town	1-3 mph	Clear	1:09	1:19	No Contact	No Contact	0	0
502	4/25/2024	Town	4-7 mph	Partly Clou	21:04	21:14	No Contact	No Contact	0	0
502	5/12/2024	Town	4-7 mph	Fog	22:56	23:06	No Contact	No Contact	0	0
502	5/19/2024	Town	8-12 mph	Clear	21:25	21:35	No Contact	No Contact	0	0
Year	*2025*									
502	3/4/2025	Town	1-3 mph	Partly Clou	20:04	20:14	No Contact	No Contact	0	0
502	3/11/2025	Town	4-7 mph	Partly Clou	21:00	21:10	No Contact	No Contact	0	0
			Car on Annapolis Rd.							
502	4/9/2025	Town	1-3 mph	Clear	20:25	20:35	No Contact	No Contact	0	0
502	4/16/2025	Town	1-3 mph	Overcast	20:20	20:30	No Contact	No Contact	0	0
502	5/9/2025	Town	1-3 mph	Clear	20:30	20:40	No Contact	No Contact	0	0
502	5/16/2025	Town	4-7 mph	Clear	21:10	21:20	No Contact	No Contact	0	0
Year	*2024*									
510	3/9/2024	Town	<1 mph	Partly Clou	20:07	20:17	No Contact	No Contact	0	0
510	4/6/2024	Town	1-3 mph	Overcast	23:20	23:30	No Contact	No Contact	0	0
510	4/13/2024	Town	1-3 mph	Partly Clou	23:50	0:00	No Contact	No Contact	0	0
510	4/20/2024	Town	1-3 mph	Clear	1:36	1:46	No Contact	No Contact	0	0
			Barred owl by river. Very vocal.							
510	5/11/2024	Town	<1 mph	Fog	23:45	23:55	No Contact	No Contact	0	0
510	5/18/2024	Town	<1 mph	Clear	23:45	23:55	No Contact	No Contact	0	0
Year	*2025*									
510	3/4/2025	Town	1-3 mph	Partly Clou	20:33	20:43	No Contact	No Contact	0	0
510	3/11/2025	Town	4-7 mph	Partly Clou	21:28	21:38	No Contact	No Contact	0	0
			Flying Canada Geese							
510	4/9/2025	Town	1-3 mph	Clear	21:04	21:14	No Contact	No Contact	0	0
510	4/16/2025	Town	1-3 mph	Overcast	20:48	21:00	No Contact	No Contact	0	0
510	5/9/2025	Town	1-3 mph	Clear	20:59	21:09	No Contact	No Contact	0	0
510	5/16/2025	Town	4-7 mph	Clear	21:50	22:00	No Contact	No Contact	0	0
Year	*2024*									
514	3/9/2024	Town	<1 mph	Partly Clou	19:40	19:50	No Contact	No Contact	0	0
514	4/6/2024	Town	1-3 mph	Overcast	23:37	23:47	No Contact	No Contact	0	0
514	4/13/2024	Town	1-3 mph	Partly Clou	0:25	0:35	No Contact	No Contact	0	0
514	4/20/2024	Town	1-3 mph	Clear	0:56	1:06	No Contact	No Contact	0	0
514	5/11/2024	Town	<1 mph	Fog	0:15	0:25	No Contact	No Contact	0	0
514	5/18/2024	Town	<1 mph	Clear	0:17	0:27	No Contact	No Contact	0	0
Year	*2025*									
514	3/4/2025	Town	1-3 mph	Partly Clou	19:49	20:00	No Contact	No Contact	0	0
514	3/11/2025	Town	4-7 mph	Partly Clou	20:45	20:55	No Contact	No Contact	0	0
514	4/9/2025	Town	1-3 mph	Clear	20:00	20:10	No Contact	No Contact	0	0
514	4/16/2025	Town	1-3 mph	Overcast	20:05	20:15	No Contact	No Contact	0	0
514	5/9/2025	Town	1-3 mph	Clear	20:15	20:25	No Contact	No Contact	0	0
514	5/16/2025	Town	4-7 mph	Clear	20:55	21:05	No Contact	No Contact	0	0
Year	*2024*									
516	3/9/2024	Town	<1 mph	Partly Clou	19:27	19:37	No Contact	No Contact	0	0
516	4/6/2024	Town	1-3 mph	Overcast	23:54	0:04	No Contact	No Contact	0	0
516	4/13/2024	Town	1-3 mph	Partly Clou	0:45	0:55	No Contact	No Contact	0	0
516	4/20/2024	Town	1-3 mph	Clear	0:40	0:50	No Contact	No Contact	0	0
516	5/11/2024	Town	<1 mph	Fog	0:29	0:39	No Contact	No Contact	0	0
516	5/18/2024	Town	<1 mph	Clear	0:30	0:40	No Contact	No Contact	0	0
Year	*2025*									
516	3/4/2025	Town	1-3 mph	Partly Clou	19:30	19:40	No Contact	No Contact	0	0
516	3/11/2025	Town	4-7 mph	Partly Clou	20:27	20:37	No Contact	No Contact	0	0
516	4/9/2025	Town	1-3 mph	Clear	17:50	20:00	No Contact	No Contact	0	0
			Due to road conditions, broadcast calling during daytime for safety.							

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
516	4/16/2025	Town	1-3 mph	Overcast	17:30	20:00	No Contact	No Contact	0	0
			Broadcast call during daylight for safety.							
516	5/9/2025	Town	1-3 mph	Clear	17:45	19:45	No Contact	No Contact	0	0
			Due to road conditions survey during daylight for safety. Broadcast calling walking in.							
516	5/16/2025	Town	4-7 mph	Clear	20:35	20:45	No Contact	No Contact	0	0
Year	*2024*									
518	3/9/2024	Town	<1 mph	Partly Clou	19:14	19:24	No Contact	No Contact	0	0
518	4/6/2024	Town	1-3 mph	Overcast	0:09	0:19	No Contact	No Contact	0	0
			Barred owl.							
518	4/13/2024	Town	1-3 mph	Partly Clou	0:59	1:09	No Contact	No Contact	0	0
518	4/20/2024	Town	1-3 mph	Clear	0:26	0:36	No Contact	No Contact	0	0
518	5/11/2024	Town	<1 mph	Fog	0:43	0:53	No Contact	No Contact	0	0
518	5/18/2024	Town	<1 mph	Clear	0:47	0:57	No Contact	No Contact	0	0
Year	*2025*									
518	3/4/2025	Town	1-3 mph	Partly Clou	19:13	19:23	No Contact	No Contact	0	0
518	3/11/2025	Town	4-7 mph	Partly Clou	20:14	20:24	No Contact	No Contact	0	0
518	4/9/2025	Town	1-3 mph	Clear	17:50	20:00	No Contact	No Contact	0	0
			Due to road conditions, broadcast calling during daytime for safety.Barred owl by river.							
518	4/16/2025	Town	1-3 mph	Overcast	17:30	20:00	No Contact	No Contact	0	0
			Broadcast call during daylight for safety.							
518	5/9/2025	Town	1-3 mph	Clear	17:45	19:45	No Contact	No Contact	0	0
			Due to road conditions survey during daylight for safety. Broadcast calling walking in. GHOW uphill.							
518	5/16/2025	Town	4-7 mph	Clear	20:20	20:30	No Contact	No Contact	0	0
Year	*2024*									
524	3/9/2024	Town	<1 mph	Partly Clou	18:56	19:10	No Contact	No Contact	0	0
524	4/6/2024	Town	1-3 mph	Overcast	0:27	0:37	No Contact	No Contact	0	0
			Barred owl from station 518.							
524	4/13/2024	Town	1-3 mph	Partly Clou	1:13	1:23	No Contact	No Contact	0	0
524	4/20/2024	Town	1-3 mph	Clear	0:12	0:22	No Contact	No Contact	0	0
524	5/11/2024	Town	<1 mph	Fog	0:55	1:05	No Contact	No Contact	0	0
524	5/18/2024	Town	<1 mph	Clear	1:00	1:10	No Contact	No Contact	0	0
Year	*2025*									
524	3/4/2025	Town	1-3 mph	Partly Clou	19:00	19:10	No Contact	No Contact	0	0
524	3/11/2025	Town	4-7 mph	Partly Clou	19:58	20:08	No Contact	No Contact	0	0
524	4/9/2025	Town	1-3 mph	Clear	17:50	20:00	No Contact	No Contact	0	0
			Due to road conditions, broadcast calling during daytime for safety.Barred owl by river.							
524	4/16/2025	Town	1-3 mph	Overcast	17:30	20:00	No Contact	No Contact	0	0
			Broadcast call during daylight for safety.							
524	5/9/2025	Town	1-3 mph	Clear	17:45	19:45	No Contact	No Contact	0	0
			Due to road conditions survey during daylight for safety. Broadcast calling walking in.							
524	5/16/2025	Town	4-7 mph	Clear	18:45	20:00	No Contact	No Contact	0	0
			Daytime broadcast for safety due to road conditions							
Year	*2024*									
526	3/9/2024	Town	<1 mph	Partly Clou	18:43	18:53	No Contact	No Contact	0	0
526	4/6/2024	Town	1-3 mph	Overcast	0:40	0:50	No Contact	No Contact	0	0
526	4/13/2024	Town	1-3 mph	Partly Clou	1:27	1:37	No Contact	No Contact	0	0
526	4/20/2024	Town	1-3 mph	Clear	0:00	0:10	No Contact	No Contact	0	0
526	5/11/2024	Town	<1 mph	Fog	1:10	1:20	No Contact	No Contact	0	0
526	5/18/2024	Town	<1 mph	Clear	1:45	1:55	No Contact	No Contact	0	0
Year	*2025*									
526	3/4/2025	Town	1-3 mph	Partly Clou	18:45	18:55	No Contact	No Contact	0	0
526	3/11/2025	Town	4-7 mph	Partly Clou	19:44	19:54	No Contact	No Contact	0	0
526	4/9/2025	Town	1-3 mph	Clear	17:50	20:00	No Contact	No Contact	0	0
			Due to road conditions, broadcast calling during daytime for safety.							
526	4/16/2025	Town	1-3 mph	Overcast	17:30	20:00	No Contact	No Contact	0	0
			Broadcast call during daylight for safety.							

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
526	5/9/2025	Town	1-3 mph	Clear	17:45	19:45	No Contact	No Contact	0	0
			Due to road conditions survey during daylight for safety. Broadcast calling walking in.							
526	5/16/2025	Town	4-7 mph	Clear	18:45	20:00	No Contact	No Contact	0	0
			Daytime broadcast for safety due to road conditions							
Year	*2024*									
536	3/9/2024	Town	<1 mph	Partly Clou	18:27	18:37	No Contact	No Contact	0	0
536	4/6/2024	Town	1-3 mph	Overcast	0:54	1:04	No Contact	No Contact	0	0
536	4/13/2024	Town	1-3 mph	Partly Clou	1:39	1:49	No Contact	No Contact	0	0
536	4/20/2024	Town	1-3 mph	Clear	23:43	23:53	No Contact	No Contact	0	0
536	5/11/2024	Town	<1 mph	Fog	1:25	1:35	No Contact	No Contact	0	0
536	5/18/2024	Town	<1 mph	Clear	1:32	1:42	No Contact	No Contact	0	0
Year	*2025*									
536	3/4/2025	Town	1-3 mph	Partly Clou	18:24	18:34	No Contact	No Contact	0	0
536	3/11/2025	Town	4-7 mph	Partly Clou	19:30	19:40	No Contact	No Contact	0	0
536	4/9/2025	Town	1-3 mph	Clear	17:50	20:00	No Contact	No Contact	0	0
			Due to road conditions, broadcast calling during daytime for safety.							
536	4/16/2025	Town	1-3 mph	Overcast	17:30	20:00	No Contact	No Contact	0	0
			Broadcast call during daylight for safety.							
536	5/9/2025	Town	1-3 mph	Clear	17:45	19:45	No Contact	No Contact	0	0
			Due to road conditions survey during daylight for safety. Broadcast calling walking in.							
536	5/16/2025	Town	4-7 mph	Clear	18:45	20:00	No Contact	No Contact	0	0
			Daytime broadcast for safety due to road conditions							

Spotted Owl Visit Summary 21-14 Pepper

Active Stations

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
Year 2023										
492	3/8/2023	Town	<1 mph	Partly Clou	4:57	5:07	No Contact	No Contact	0	0
492	4/9/2023	Town	<1 mph	Clear	22:00	22:10	No Contact	No Contact	0	0
			Barred Owl by river							
492	4/16/2023	Town	<1 mph	Clear	0:30	0:40	No Contact	No Contact	0	0
			Barred Owl moving around down by river							
492	5/7/2023	Town	1-3 mph	Overcast	23:09	23:19	No Contact	No Contact	0	0
492	5/14/2023	Town	1-3 mph	Partly Clou	23:45	23:55	No Contact	No Contact	0	0
492	5/21/2023	Town	1-3 mph	Partly Clou	20:45	20:55	No Contact	No Contact	0	0
Year 2023										
496	3/8/2023	Town	<1 mph	Partly Clou	5:50	6:00	No Contact	No Contact	0	0
			DEJU, AMRO							
496	4/9/2023	Town	<1 mph	Clear	21:50	22:00	No Contact	No Contact	0	0
496	4/16/2023	Town	<1 mph	Clear	22:45	22:55	No Contact	No Contact	0	0
496	5/7/2023	Town	1-3 mph	Overcast	22:55	23:05	No Contact	No Contact	0	0
496	5/14/2023	Town	1-3 mph	Partly Clou	22:25	22:35	No Contact	No Contact	0	0
496	5/21/2023	Town	1-3 mph	Partly Clou	21:00	21:10	No Contact	No Contact	0	0
Year 2023										
500	3/8/2023	Town	<1 mph	Partly Clou	5:10	5:20	No Contact	No Contact	0	0
500	4/9/2023	Town	<1 mph	Clear	20:20	20:30	No Contact	No Contact	0	0
500	4/16/2023	Town	<1 mph	Clear	21:35	21:45	No Contact	No Contact	0	0
500	5/7/2023	Town	1-3 mph	Overcast	22:13	22:23	No Contact	No Contact	0	0
500	5/14/2023	Town	4-7 mph	Partly Clou	22:17	22:27	No Contact	No Contact	0	0
500	5/21/2023	Town	1-3 mph	Partly Clou	21:44	21:54	No Contact	No Contact	0	0
Year 2023										
502	3/8/2023	Town	<1 mph	Partly Clou	5:24	5:34	No Contact	No Contact	0	0
			AMRO							
502	4/9/2023	Town	<1 mph	Clear	20:00	20:15	No Contact	No Contact	0	0
502	4/16/2023	Town	<1 mph	Clear	21:35	21:45	No Contact	No Contact	0	0
502	5/7/2023	Town	1-3 mph	Overcast	22:00	22:10	No Contact	No Contact	0	0
502	5/14/2023	Town	4-7 mph	Partly Clou	22:03	22:13	No Contact	No Contact	0	0
502	5/21/2023	Town	1-3 mph	Partly Clou	21:59	22:09	No Contact	No Contact	0	0
Year 2023										
510	3/8/2023	Town	<1 mph	Partly Clou	4:30	4:40	No Contact	No Contact	0	0
510	4/9/2023	Town	<1 mph	Clear	20:36	20:46	No Contact	No Contact	0	0
510	4/16/2023	Town	<1 mph	Clear	22:09	22:19	No Contact	No Contact	0	0
510	5/7/2023	Town	1-3 mph	Overcast	22:27	22:37	No Contact	No Contact	0	0
510	5/14/2023	Town	4-7 mph	Partly Clou	22:30	22:40	No Contact	No Contact	0	0
510	5/21/2023	Town	1-3 mph	Partly Clou	21:30	21:40	No Contact	No Contact	0	0
Year 2023										
514	3/7/2023	Town	<1 mph	Overcast	19:40	19:50	No Contact	No Contact	0	0
514	4/9/2023	Town	<1 mph	Clear	19:45	19:55	No Contact	No Contact	0	0
514	4/16/2023	Town	<1 mph	Clear	21:19	21:29	No Contact	No Contact	0	0
514	5/7/2023	Town	1-3 mph	Overcast	21:45	21:55	No Contact	No Contact	0	0
514	5/14/2023	Town	4-7 mph	Partly Clou	21:49	22:00	No Contact	No Contact	0	0
514	5/21/2023	Town	1-3 mph	Partly Clou	22:15	22:25	No Contact	No Contact	0	0
Year 2023										
516	3/7/2023	Town	<1 mph	Overcast	19:24	19:34	No Contact	No Contact	0	0
516	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							

Station	Date	Surveyor	Wind	Weather	Start	End	Behavior	Sex	Dist.	Azmu
516	4/16/2023	Town	<1 mph	Clear	21:05	21:15	No Contact	No Contact	0	0
516	5/7/2023	Town	1-3 mph	Overcast	21:29	21:39	No Contact	No Contact	0	0
516	5/14/2023	Town	4-7 mph	Partly Clou	21:34	21:44	No Contact	No Contact	0	0
516	5/21/2023	Town	1-3 mph	Partly Clou	22:39	22:49	No Contact	No Contact	0	0
Year	*2023*									
518	3/7/2023	Town	<1 mph	Overcast	19:08	19:18	No Contact	No Contact	0	0
518	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							
518	4/16/2023	Town	<1 mph	Clear	20:50	21:00	No Contact	No Contact	0	0
518	5/7/2023	Town	1-3 mph	Overcast	21:15	21:25	No Contact	No Contact	0	0
518	5/14/2023	Town	4-7 mph	Partly Clou	21:19	21:29	No Contact	No Contact	0	0
518	5/21/2023	Town	1-3 mph	Partly Clou	22:53	23:03	No Contact	No Contact	0	0
Year	*2023*									
524	3/7/2023	Town	<1 mph	Overcast	18:56	19:06	No Contact	No Contact	0	0
524	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							
524	4/16/2023	Town	<1 mph	Clear	20:37	20:47	No Contact	No Contact	0	0
524	5/7/2023	Town	1-3 mph	Overcast	20:59	21:09	No Contact	No Contact	0	0
524	5/14/2023	Town	4-7 mph	Partly Clou	21:04	21:14	No Contact	No Contact	0	0
524	5/21/2023	Town	1-3 mph	Partly Clou	23:06	23:16	No Contact	No Contact	0	0
Year	*2023*									
526	3/7/2023	Town	<1 mph	Overcast	18:43	18:53	No Contact	No Contact	0	0
526	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							
526	4/16/2023	Town	<1 mph	Clear	20:18	20:28	No Contact	No Contact	0	0
526	5/7/2023	Town	1-3 mph	Overcast	20:44	20:54	No Contact	No Contact	0	0
526	5/14/2023	Town	4-7 mph	Partly Clou	20:49	21:00	No Contact	No Contact	0	0
526	5/21/2023	Town	1-3 mph	Partly Clou	23:25	23:35	No Contact	No Contact	0	0
Year	*2023*									
536	3/7/2023	Town	<1 mph	Overcast	18:27	18:37	No Contact	No Contact	0	0
536	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							
536	4/16/2023	Town	<1 mph	Clear	20:05	20:15	No Contact	No Contact	0	0
536	5/7/2023	Town	1-3 mph	Overcast	20:28	20:38	No Contact	No Contact	0	0
536	5/14/2023	Town	4-7 mph	Partly Clou	20:34	20:44	No Contact	No Contact	0	0
536	5/21/2023	Town	1-3 mph	Partly Clou	23:40	23:50	No Contact	No Contact	0	0
Year	*2023*									
538	3/7/2023	Town	<1 mph	Overcast	18:12	18:22	No Contact	No Contact	0	0
			PYOW							
538	4/9/2023	Town	<1 mph	Clear	17:50	19:30	No Contact	No Contact	0	0
			Due to road conditions, recent flooding and down trees, for safety had to hike. Station area called during cruise survey.							
538	4/16/2023	Town	<1 mph	Clear	19:50	20:02	No Contact	No Contact	0	0
538	5/7/2023	Town	1-3 mph	Overcast	20:15	20:25	No Contact	No Contact	0	0
538	5/14/2023	Town	4-7 mph	Partly Clou	20:20	20:30	No Contact	No Contact	0	0
538	5/21/2023	Town	1-3 mph	Partly Clou	23:56	0:06	No Contact	No Contact	0	0

Data Version Date:
05/28/2025

Report Generation Date:
6/24/2025

Report #1 - Spotted Owl Sites Found

Known Spotted Owl sites having observations within the search area.

Meridian, Township, Range, Section (MTRS) searched:

M_10N_14W Sections(09,10,11,12,13,14,15,16,21,22,23,24,25,26,27,28);

M_10N_13W Sections(18,19,30);

Masterowl	*Subspecies*	*LatDD NAD83*	*LonDD NAD83*	*MTRS*	*AC Coordinate Source*
SON0009	NORTHERN	38.711151	-123.390124	M 10N 14W 14	Contributor
SON0043	NORTHERN	38.695059	-123.359110	M 10N 13W 19	Contributor
SON0044	NORTHERN	38.683539	-123.350632	M 10N 13W 30	Contributor
SON0085	NORTHERN	38.726478	-123.430503	M 10N 14W 09	Contributor
SON0094	NORTHERN	38.680074	-123.392003	M 10N 14W 26	Contributor
SON0110	NORTHERN	38.700594	-123.408161	M 10N 14W 22	Activity center

Data Version Date:
05/28/2025

Report Generation Date:
6/24/2025

Report #2 - Observations Reported

List of observations reported by site.

Meridian, Township, Range, Section (MTRS) searched:

M_10N_14W Sections(09,10,11,12,13,14,15,16,21,22,23,24,25,26,27,28);

M_10N_13W Sections(18,19,30);

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
Masterowl: SON0009 Subspecies: NORTHERN											
POS	1989		1	UU				38.716427	-123.382045	M 10N 14W 14	Quarter-section centroid
POS	1989		2	UMUF	Y			38.716346	-123.400499	M 10N 14W 15	Quarter-section centroid
POS	1989-08-02		1	UM				38.708896	-123.391412	M 10N 14W 14	Quarter-section centroid
POS	1990-04-04	2210	1	UM				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1990-05-08	2017	0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	1990-07-25	2100	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1991-04-02		1	UF				38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
POS	1991-05-23	1745	2	UMUF	Y	Y		38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1991-07-08	2100	2	UMUF	Y			38.716345	-123.400493	M 10N 14W 15	Quarter-section centroid
POS	1992-04-02	0000	2	UMUF	Y			38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
POS	1992-04-03	1004	2	UMUF	Y	Y		38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1992-04-03		1	UU				38.712464	-123.407591	M 10N 14W 15	Contributor
POS	1992-04-16	1950	2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1992-05-07	1743	2	UMUF	Y	Y		38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1992-06-18	1633	1	UU	Y		1	38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1992-09-04	1935	0				1	38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1992-12-01	2320	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993		2	UMUF	Y		1	38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1993-03-09		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993-03-11		2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993-03-15		2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993-03-22	2207	1	UM				38.716345	-123.400493	M 10N 14W 15	Quarter-section centroid
NEG	1993-03-30		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993-04-13		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1993-04-15	2214	1	UF				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1993-06-09		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1993-06-15		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1993-06-22		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1993-07-07	1959	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1993-11-05	1734	1	UM				38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
POS	1994-01-20	1805	1	UU				38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1994-02-15	2135	1	UM				38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1994-03-15	1543	2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1994-04-22		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1994-06-03		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1995-03-26		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1995-03-27		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1995-03-29		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1995-04-03		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1995-04-11	1501	2	UMUF	Y	Y		38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1995-05-02		2	UMUF	Y	Y		38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1995-05-03		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1995-05-04		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	1995-06-27		1	UU				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1995-07-04		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1995-07-18	2211	1	UM				38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1995-07-24		1	UU				38.716623	-123.419036	M 10N 14W 16	Quarter-section centroid
NEG	1995-07-25	1200	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1995-07-31		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1995-11-03		1	UF				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1995-11-10	1758	1	UU				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1996-02-20		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1996-02-25		1	UM				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1996-02-26		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1996-02-29	1824	2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	1996-03-02		1	UF				38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1996-03-12	1834	0					38.716623	-123.419036	M 10N 14W 16	Quarter-section centroid
NEG	1996-03-15		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	1996-03-25		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	1996-03-28		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1996-04-04		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	1996-05-12		2	UMUF	Y			38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1996-05-13		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1996-05-20		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1996-05-23		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1996-05-28		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1996-06-02		0					38.712660	-123.386728	M 10N 14W 14	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1996-06-05	2400	0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	1996-06-25	1931	2	UMUF		Y	2	38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	1996-08-27	2123	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1996-10-24	1845	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-01-17	1815	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-03-10		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-03-17		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-03-26		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-04-07		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-04-24		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-06-16		0					38.712991	-123.424007	M 10N 14W 16	Section centroid
NEG	1997-06-24		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-07-14	2245	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-07-23		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1997-07-24		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-03-04		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-03-06	1915	0					38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1998-03-19		1	UU				38.708896	-123.391412	M 10N 14W 14	Quarter-section centroid
NEG	1998-03-20		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1998-03-25		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1998-04-21		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1998-04-22		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1998-06-03		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-06-10		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1998-06-17		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-06-23		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-07-02		0					38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	1998-07-08		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	1998-08-02		0					38.712991	-123.424007	M 10N 14W 16	Section centroid
NEG	1998-08-11		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	1999-03-15	2251	1	UU				38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	1999-03-16	2252	2	UMUF	Y			38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1999-03-16	0055	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	1999-03-17	1634	2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1999-03-27	2112	1	UM				38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	1999-03-28	1652-1733	2	UMUF	Y			38.712759	-123.403128	M 10N 14W 15	Contributor
NEG	1999-06-11	0139	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1999-06-17	2146	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	2000-03-04	1426	1	UM				38.716512	-123.409684	M 10N 14W 15	Quarter-section centroid
NEG	2000-03-15	2124	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	2000-03-21	0200	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	2000-03-30	2000	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	2001-03-17	1940	0					38.716425	-123.382044	M 10N 14W 14	Quarter-section centroid
NEG	2001-04-07	2237	0					38.716425	-123.382044	M 10N 14W 14	Quarter-section centroid
NEG	2001-05-03	2330	0					38.716425	-123.382044	M 10N 14W 14	Quarter-section centroid
NEG	2001-05-19	2150	0					38.716425	-123.382044	M 10N 14W 14	Quarter-section centroid
NEG	2001-06-27	1330	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	2003-03-05	2302	1	UM				38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2003-03-06	1410-1645	0					38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
POS	2003-03-11	2212	1	UM				38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2003-03-22	2247	0					38.712670	-123.405303	M 10N 14W 15	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2003-04-02	1727-1820	0					38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
POS	2003-04-02	1802-1840	2	UMUF	Y			38.710495	-123.390153	M 10N 14W 14	Contributor
POS	2003-04-13	1545-1645	1	UM				38.708896	-123.391412	M 10N 14W 14	Quarter-section centroid
NEG	2003-04-13	1715-1800	0					38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	2003-04-16	1515-1830	0					38.708896	-123.391412	M 10N 14W 14	Quarter-section centroid
POS	2003-04-30	1522	2	UMUF	Y			38.710502	-123.390190	M 10N 14W 14	Contributor
NEG	2003-05-19	2200	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	2003-05-20	1831-1858	2	UMUF	Y			38.711484	-123.390868	M 10N 14W 14	Contributor
NEG	2003-05-27	2234	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	2003-06-09	2325	1	UM				38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2004-02-19	1951	1	UU				38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
NEG	2004-03-23	2256	0					38.712670	-123.405303	M 10N 14W 15	Section centroid
AC	2004-04-28	1855	2	UMUF	Y	Y		38.711151	-123.390124	M 10N 14W 14	Contributor
POS	2004-05-17	0144	1	UU				38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
NEG	2005	2400	0					38.722005	-123.398160	M 10N 14W 10	Contributor
NEG	2005-04-09	1900	0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	2005-04-20	1910	0					38.712660	-123.386728	M 10N 14W 14	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2005-06-01	0401	2	UMUF	Y			38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
POS	2005-07-06	0707	2	UMUF	Y			38.708918	-123.400797	M 10N 14W 15	Quarter-section centroid
NEG	2006	2400	0					38.722005	-123.398160	M 10N 14W 10	Contributor
NEG	2006-03-15	2252-2302	0					38.713636	-123.395860	M 10N 14W 14	Contributor
NEG	2006-03-15	2239-2249	0					38.716549	-123.389340	M 10N 14W 14	Contributor
NEG	2006-04-30	2056-2106	0					38.716549	-123.389340	M 10N 14W 14	Contributor
POS	2006-04-30	2044	1	UM				38.713479	-123.400581	M 10N 14W 15	Contributor
POS	2006-05-11	2330	1	UM				38.713479	-123.400581	M 10N 14W 15	Contributor
NEG	2006-05-11	2334-2344	0					38.716549	-123.389340	M 10N 14W 14	Contributor
POS	2006-05-27	1947	1	UM				38.713479	-123.400581	M 10N 14W 15	Contributor
POS	2007		2	UMUF	Y	Y		38.713479	-123.400581	M 10N 14W 15	Contributor
NEG	2007	2400	0					38.722005	-123.398160	M 10N 14W 10	Contributor
POS	2008		2	UMUF	Y	Y		38.713479	-123.400581	M 10N 14W 15	Contributor
POS	2008-03-26	2152	2	AMAF	Y			38.716345	-123.400493	M 10N 14W 15	Quarter-section centroid
POS	2008-05-19	2130	2	AMAF	Y			38.716345	-123.400493	M 10N 14W 15	Quarter-section centroid
NEG	2009	2400	0					38.703266	-123.396223	M 10N 14W 23	Contributor
NEG	2009	2400	0					38.709721	-123.399863	M 10N 14W 15	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2009	2400	0					38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2009-04-08		2	AMAF	Y			38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2009-04-10	1737-1820	0					38.711151	-123.390124	M 10N 14W 14	Activity center
POS	2009-05-18	2147	1	UU				38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2009-05-19	2352-0002	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2009-05-19	1900	0					38.709147	-123.410298	M 10N 14W 15	Quarter-section centroid
NEG	2009-06-15	2221-2231	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2009-06-21	2304-2314	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2010	2400	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2010	2400	0					38.703266	-123.396223	M 10N 14W 23	Contributor
POS	2010-03-30	1945-2020	2	UMUF	Y			38.711021	-123.407171	M 10N 14W 15	Activity center
POS	2010-04-02	1630-1745	2	UMUF	Y			38.711021	-123.407171	M 10N 14W 15	Activity center
POS	2010-04-05	2345-2350	2	UMUF	Y			38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2010-04-05	2332-2342	0					38.709721	-123.399863	M 10N 14W 15	Contributor
POS	2010-04-07	1940-1956	2	UMUF	Y			38.711021	-123.407171	M 10N 14W 15	Activity center
POS	2010-04-14	1640-1930	1	UMUF	Y			38.711021	-123.407171	M 10N 14W 15	Activity center
NEG	2010-05-14	2100-2110	0					38.709721	-123.399863	M 10N 14W 15	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2010-06-15	2225-2235	2	UMUF	Y			38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2011	2400	0					38.715390	-123.412003	M 10N 14W 15	Contributor
NEG	2011	2400	0					38.720592	-123.415733	M 10N 14W 09	Contributor
NEG	2011	2400	0					38.703266	-123.396223	M 10N 14W 23	Contributor
NEG	2011	2400	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2011	2400	0					38.712514	-123.417526	M 10N 14W 16	Contributor
NEG	2011	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2011-03-07	1917-1927	0					38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2011-03-07	1937-1947	0					38.709721	-123.399863	M 10N 14W 15	Contributor
NEG	2011-03-07	2022-2032	0					38.712132	-123.406047	M 10N 14W 15	Contributor
POS	2011-03-07	2040	2	UMUF	Y			38.711354	-123.390591	M 10N 14W 14	Contributor
POS	2011-03-31	2119-2129	2	UMUF	Y			38.711021	-123.407171	M 10N 14W 15	Activity center
NEG	2011-03-31	1700-1830	0					38.711021	-123.407171	M 10N 14W 15	Activity center
POS	2011-04-03	2210-2215	2	UMUF	Y			38.709721	-123.399863	M 10N 14W 15	Contributor
POS	2011-05-15	0430	1	UM				38.711021	-123.407171	M 10N 14W 15	Contributor
NEG	2012	2400	0					38.720592	-123.415733	M 10N 14W 09	Contributor
NEG	2012	2400	0					38.712514	-123.417526	M 10N 14W 16	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2012	2400	0					38.715390	-123.412003	M 10N 14W 15	Contributor
NEG	2012	2400	0					38.703266	-123.396223	M 10N 14W 23	Contributor
NEG	2012-03-05	2145-2155	0					38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2012-03-05	2225-2235	0					38.712132	-123.406047	M 10N 14W 15	Contributor
POS	2012-03-05	2212-2222	2	UMUF	Y			38.713479	-123.400581	M 10N 14W 15	Activity center
NEG	2012-03-05	2212-2222	0					38.712652	-123.405406	M 10N 14W 15	Section centroid
NEG	2012-03-05	2300-2310	0					38.704009	-123.402086	M 10N 14W 22	Contributor
POS	2012-03-05	2158	2	UMUF	Y			38.712717	-123.400472	M 10N 14W 15	Contributor
NEG	2012-03-23	0030-0040	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2012-03-23	2058-2108	0					38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2012-03-23	2111-2121	0					38.709721	-123.399863	M 10N 14W 15	Contributor
NEG	2012-03-23	2125-2135	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2012-03-24	2325-2335	0					38.712652	-123.405406	M 10N 14W 15	Section centroid
NEG	2012-03-30	2028-2038	0					38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2012-03-30	1630-1745	2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid
POS	2012-04-29	1920-1945	2	UMUF	Y			38.712670	-123.405303	M 10N 14W 15	Section centroid
NEG	2012-04-29	2028-2038	0					38.708636	-123.391540	M 10N 14W 14	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2012-05-06	2310-2320	1	UM				38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2012-07-01	2200-2210	1	UU				38.709721	-123.399863	M 10N 14W 15	Contributor
NEG	2012-07-01	2143-2153	0					38.708636	-123.391540	M 10N 14W 14	Contributor
NEG	2013	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2013	2400	0					38.712514	-123.417526	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.709721	-123.399863	M 10N 14W 15	Contributor
NEG	2013	2400	0					38.703266	-123.396223	M 10N 14W 23	Contributor
NEG	2013	2400	0					38.712132	-123.406047	M 10N 14W 15	Contributor
NEG	2013	2400	0					38.715390	-123.412003	M 10N 14W 15	Contributor
NEG	2013	2400	0					38.712652	-123.405406	M 10N 14W 15	Section centroid
NEG	2013	2400	0					38.720592	-123.415733	M 10N 14W 09	Contributor
NEG	2013-03-04	1920-1930	0					38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2013-03-10	2321-2331	2	UMUF	Y			38.708636	-123.391540	M 10N 14W 14	Contributor
POS	2013-03-12	1400-1500	2	UMUF	Y			38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	2013-04-23	0840	2	UMUF	Y			38.711588	-123.389893	M 10N 14W 14	Contributor
POS	2013-06-03	0800-0930	1	UM				38.712660	-123.386728	M 10N 14W 14	Section centroid
POS	2014		1	UM				38.711151	-123.390124	M 10N 14W 14	Activity center

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
POS	2015		1	UU				38.711151	-123.390124	M 10N 14W 14	Activity center
NEG	2020	2400	0					38.712514	-123.417526	M 10N 14W 16	Contributor
NEG	2021	2400	0					38.712514	-123.417526	M 10N 14W 16	Contributor
Masterowl: SON0043 Subspecies: NORTHERN											
POS	1990-08-30		1	UM				38.702062	-123.364349	M 10N 14W 24	Quarter-section centroid
NEG	1991-03-28		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1991-04-03		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1991-04-09		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1991-04-25		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1991-05-23		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
POS	1991-06-04	2000	1	UF				38.694902	-123.347927	M 10N 13W 19	Contributor
NEG	1991-06-05		0					38.693869	-123.346933	M 10N 13W 19	Quarter-section centroid
NEG	1991-06-25		0					38.693869	-123.346933	M 10N 13W 19	Quarter-section centroid
NEG	1992		0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	1992-01-02		2	UMUF	Y			38.695615	-123.379783	M 10N 14W 23	Contributor
POS	1992-01-02		1	UM				38.694609	-123.355550	M 10N 13W 19	Quarter-section centroid
POS	1992-01-02		1	UU				38.701836	-123.355562	M 10N 13W 19	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1993	2400	1	UM				38.702883	-123.360961	M 10N 14W 24	Contributor
NEG	1993		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1993-06-22		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1993-06-22		0					38.698398	-123.368724	M 10N 14W 24	Section centroid
NEG	1994		0					38.683529	-123.350977	M 10N 13W 30	Section centroid
POS	1994		1	UM				38.694609	-123.355550	M 10N 13W 19	Quarter-section centroid
NEG	1994-10-18		0					38.701908	-123.373135	M 10N 14W 24	Quarter-section centroid
NEG	1995		0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	1995-04-03		0					38.712660	-123.386728	M 10N 14W 14	Section centroid
NEG	1995-06-06		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1996		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	1996-05-13		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1996-05-20		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1996-05-23		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1996-05-28		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	1996-05-30		0					38.698398	-123.368724	M 10N 14W 24	Section centroid
NEG	1996-06-02		0					38.697977	-123.387604	M 10N 14W 23	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1996-06-14		0					38.698398	-123.368724	M 10N 14W 24	Section centroid
POS	1996-07-02		1	UU				38.694771	-123.373155	M 10N 14W 24	Quarter-section centroid
POS	1996-07-03	1200	1	UU				38.694898	-123.364290	M 10N 14W 24	Quarter-section centroid
NEG	1996-07-09		0					38.698398	-123.368724	M 10N 14W 24	Section centroid
POS	1996-07-15		1	UU				38.694898	-123.364290	M 10N 14W 24	Quarter-section centroid
POS	1997-05-01		1	UU				38.701716	-123.382299	M 10N 14W 23	Quarter-section centroid
POS	1997-05-01		1	UU				38.694771	-123.373155	M 10N 14W 24	Quarter-section centroid
NEG	1997-06-06		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
POS	1997-06-24		1	UU				38.694771	-123.373155	M 10N 14W 24	Quarter-section centroid
NEG	1997-07-24		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
POS	1998-03-04		1	UU				38.701716	-123.382299	M 10N 14W 23	Quarter-section centroid
NEG	1998-03-06		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
POS	1998-03-19		1	UU				38.701716	-123.382299	M 10N 14W 23	Quarter-section centroid
NEG	1998-03-20		0					38.697977	-123.387604	M 10N 14W 23	Section centroid
POS	1998-04-04		1	UU				38.694771	-123.373155	M 10N 14W 24	Quarter-section centroid
POS	1998-05-05	2040	1	UM				38.687624	-123.373153	M 10N 14W 25	Quarter-section centroid
NEG	1998-06-03		0					38.697977	-123.387604	M 10N 14W 23	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1999-05-21	1730	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	1999-05-27	2000	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	1999-06-04	1930	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	1999-06-10	1930	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	1999-06-24	2045	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	1999-06-30	2024	0					38.709046	-123.355621	M 10N 13W 18	Quarter-section centroid
NEG	2000		0					38.695472	-123.362131	M 10N 14W 24	Activity center
NEG	2000-05-30	2012	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2000-06-05	2238	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2000-06-12	2211	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2000-06-22	2054	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2000-06-28	2137	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2001		0					38.695472	-123.362131	M 10N 14W 24	Activity center
NEG	2001-03-15	1910	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2001-03-21	1851	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2001-03-28	1826	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2001-04-09	2100	0					38.712357	-123.351209	M 10N 13W 18	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2001-04-23	1932	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2001-05-01	2122	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2001-05-16	2045	0					38.712357	-123.351209	M 10N 13W 18	Section centroid
NEG	2002-05-08	2308	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2002-06-06	2129	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2002-07-08	2127	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2003-06-17	2040	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2003-07-17	2111	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2003-07-29	2134	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2004-03-09	1953	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2004-03-10	0807	0					38.693869	-123.346933	M 10N 13W 19	Quarter-section centroid
NEG	2004-04-20	2005	0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	2004-04-20	2002	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2004-04-20	1613	0					38.694243	-123.351236	M 10N 13W 19	Half-section centroid
NEG	2004-04-26	2010	0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	2004-05-03	2250	0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	2004-05-11	2020	0					38.697977	-123.387604	M 10N 14W 23	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2004-05-12	2025	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2004-05-19	2030	0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	2004-05-25	2035	0					38.697977	-123.387604	M 10N 14W 23	Section centroid
NEG	2004-06-07	2331	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2004-07-14	2400	0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	2005-03-14	2158	2	UMUF	Y			38.700941	-123.350774	M 10N 13W 19	Contributor
POS	2005-03-14	2134	1	UU				38.699961	-123.356013	M 10N 13W 19	Contributor
POS	2005-03-14	2158	2	UMUF	Y			38.699766	-123.348871	M 10N 13W 19	Contributor
POS	2005-03-29	1920	1	UM				38.702560	-123.354818	M 10N 13W 19	Contributor
NEG	2005-03-29	1405	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2005-04-05	1556	0					38.701836	-123.355562	M 10N 13W 19	Quarter-section centroid
NEG	2005-04-05	2400	0					38.701836	-123.355562	M 10N 13W 19	Quarter-section centroid
NEG	2005-04-05	2003	0					38.697911	-123.351173	M 10N 13W 19	Section centroid
NEG	2005-04-25	2400	0					38.701516	-123.351168	M 10N 13W 19	Half-section centroid
NEG	2005-04-26	2400	0					38.693869	-123.346933	M 10N 13W 19	Quarter-section centroid
NEG	2005-06-15	2400	0					38.694609	-123.355550	M 10N 13W 19	Quarter-section centroid
POS	2005-06-15	2045	2	UMUF	Y			38.693957	-123.356685	M 10N 13W 19	Contributor

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
NEG	2005-07-28	2400	0					38.694609	-123.355550	M 10N 13W 19	Quarter-section centroid
POS	2006		2	UMUF	Y			38.693255	-123.359360	M 10N 13W 19	Contributor
NEG	2006		0					38.695472	-123.362131	M 10N 14W 24	Activity center
POS	2006-05-10		1	SM				38.693255	-123.359360	M 10N 13W 19	Contributor
NEG	2006-06-27		0					38.687624	-123.373153	M 10N 14W 25	Quarter-section centroid
POS	2006-07-26		1	AM		N	0	38.693255	-123.359360	M 10N 13W 19	Contributor
POS	2007		2	UMUF	Y			38.693420	-123.364018	M 10N 14W 24	Contributor
POS	2007-05-14	2046	1	UU				38.693067	-123.364764	M 10N 14W 24	Contributor
NEG	2007-05-14	1200	0					38.694609	-123.355550	M 10N 13W 19	Quarter-section centroid
POS	2007-05-14	2035	1	UM				38.695540	-123.363397	M 10N 14W 24	Contributor
POS	2007-05-14		1	UF				38.696231	-123.361606	M 10N 14W 24	Contributor
NEG	2007-05-15	1200	0					38.694898	-123.364290	M 10N 14W 24	Quarter-section centroid
NEG	2007-05-29	1200	0					38.702062	-123.364349	M 10N 14W 24	Quarter-section centroid
NEG	2007-06-11	1200	0					38.708459	-123.346739	M 10N 13W 18	Quarter-section centroid
POS	2007-06-11	2103	2	UMUF	Y			38.695472	-123.362131	M 10N 14W 24	Contributor
POS	2007-06-11	2043	2	UMUF	Y			38.692892	-123.363096	M 10N 14W 24	Contributor
POS	2007-06-12	1200	2	UMUF	Y	N		38.698886	-123.365610	M 10N 14W 24	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2008		2	UMUF	Y			38.693170	-123.363431	M 10N 14W 24	Contributor
POS	2008-03-03	1904	1	UM				38.693214	-123.363879	M 10N 14W 24	Contributor
NEG	2008-03-03		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	2008-03-03		0					38.695472	-123.362131	M 10N 14W 24	Activity center
POS	2008-03-03	1922	1	UM				38.701678	-123.351214	M 10N 13W 19	Contributor
NEG	2008-03-04		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	2008-03-10		0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	2008-03-18		1	UM				38.697374	-123.362049	M 10N 14W 24	Contributor
POS	2008-04-09		2	UMUF	Y			38.693170	-123.363431	M 10N 14W 24	Contributor
NEG	2008-05-15		0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	2008-05-21	1745	2	AMAF	Y			38.702124	-123.372373	M 10N 14W 24	Contributor
NEG	2008-06-19		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	2010		0					38.695472	-123.362131	M 10N 14W 24	Activity center
POS	2010-07-06	0115	1	UM				38.698943	-123.353859	M 10N 13W 19	Contributor
POS	2010-07-06	0053	1	UM				38.695814	-123.355784	M 10N 13W 19	Contributor
NEG	2010-08-10		0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	2011-04-21	2120	1	UM				38.687995	-123.371613	M 10N 14W 25	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2011-04-21	2125	1	UU				38.687204	-123.372241	M 10N 14W 25	Contributor
NEG	2011-04-26		0					38.695472	-123.362131	M 10N 14W 24	Activity center
NEG	2011-06-02		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	2011-06-21		0					38.693170	-123.363431	M 10N 14W 24	Activity center
NEG	2012-06-26		0					38.695472	-123.362131	M 10N 14W 24	Activity center
NEG	2012-06-26		0					38.694899	-123.364291	M 10N 14W 24	Quarter-section centroid
POS	2012-06-26	2346	1	UM				38.705891	-123.349788	M 10N 13W 18	Contributor
POS	2012-06-26	2115	1	UM				38.693122	-123.374155	M 10N 14W 24	Contributor
NEG	2012-06-27		0					38.693170	-123.363431	M 10N 14W 24	Activity center
POS	2012-06-28		1	UM				38.695483	-123.370146	M 10N 14W 24	Contributor
POS	2013-03-14	2012	1	UU				38.686164	-123.364603	M 10N 14W 25	Contributor
POS	2013-03-14	1944	1	UM				38.690129	-123.364761	M 10N 14W 25	Contributor
POS	2013-03-27	2053	2	UMUF	Y			38.690858	-123.370732	M 10N 14W 25	Contributor
POS	2013-04-08	1200	2	UMUF	Y	N		38.696589	-123.362137	M 10N 14W 24	Contributor
POS	2013-06-28	1200	2	UMUF	Y			38.695352	-123.360153	M 10N 14W 24	Contributor
POS	2013-06-28	2352	1	UM				38.694840	-123.356482	M 10N 13W 19	Contributor
POS	2013-07-16	1200	1	UM		N		38.696603	-123.360803	M 10N 14W 24	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2014-03-07	1836	1	UU				38.698813	-123.363142	M 10N 14W 24	Contributor
POS	2014-03-07	1845	1	UU				38.700031	-123.356857	M 10N 13W 19	Contributor
POS	2014-03-07	1958	1	UU				38.700862	-123.350203	M 10N 13W 19	Contributor
NEG	2014-03-14	1200	0					38.696589	-123.362137	M 10N 14W 24	Activity center
NEG	2014-03-20	1200	0					38.696589	-123.362137	M 10N 14W 24	Activity center
POS	2014-07-21	2254	1	UM				38.685799	-123.366399	M 10N 14W 25	Contributor
NEG	2014-07-22	1200	0					38.696589	-123.362137	M 10N 14W 24	Activity center
POS	2014-08-01	1200	1	UM				38.695885	-123.362874	M 10N 14W 24	Contributor
AC	2016-06-06	1200	2	UMUF	Y	N		38.695059	-123.359110	M 10N 13W 19	Contributor
POS	2016-06-21	1200	1	UF		N		38.693563	-123.359091	M 10N 13W 19	Contributor
POS	2016-07-25	2123	1	UU				38.703777	-123.355658	M 10N 13W 19	Contributor
NEG	2016-07-25	1200	0					38.694609	-123.355547	M 10N 13W 19	Quarter-section centroid
POS	2016-07-25	2145	1	UU				38.704119	-123.354217	M 10N 13W 19	Contributor
NEG	2016-07-26	1200	0					38.694609	-123.355547	M 10N 13W 19	Quarter-section centroid
Masterowl: SON0044 Subspecies: NORTHERN											
POS	1990		2	UMUF	Y			38.676976	-123.345197	M 10N 13W 30	Contributor
POS	1990-08-30	1837	1	UM				38.680326	-123.355157	M 10N 13W 30	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1991	2400	2	UMUF	Y			38.678064	-123.343247	M 10N 13W 30	Contributor
NEG	1991-03-28		0					38.672856	-123.345970	M 10N 13W 31	Quarter-section centroid
NEG	1991-04-03		0					38.672856	-123.345970	M 10N 13W 31	Quarter-section centroid
POS	1991-05-16	1213	1	UM				38.672856	-123.345970	M 10N 13W 31	Quarter-section centroid
POS	1991-06-03	2125	2	UUUU				38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid
NEG	1991-06-04		0					38.672856	-123.345970	M 10N 13W 31	Quarter-section centroid
POS	1991-06-11	2210	1	UM				38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid
POS	1991-06-20		2	UMUF	Y			38.672920	-123.345637	M 10N 13W 31	Contributor
POS	1992		2	UMUF	Y			38.677701	-123.343821	M 10N 13W 30	Contributor
POS	1993	2400	1	UM				38.678599	-123.345204	M 10N 13W 30	Contributor
AC	1994-06-22		2	UMUF	Y		2	38.683539	-123.350632	M 10N 13W 30	Contributor
NEG	1995		0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	1996		0					38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	1997		0				0	38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	1998		0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2001-03-08	1913	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2001-03-15	1930	0					38.683529	-123.350977	M 10N 13W 30	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2001-03-21	1930	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2002-06-06	2053-2103	0					38.684960	-123.343950	M 10N 13W 30	Contributor
NEG	2002-06-06	2040-2050	0					38.687220	-123.350280	M 10N 13W 30	Contributor
NEG	2002-06-06	2040	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2002-06-06	2106-2116	0					38.688267	-123.339094	M 10N 13W 29	Contributor
NEG	2002-07-08	2046-2056	0					38.687220	-123.350280	M 10N 13W 30	Contributor
NEG	2002-07-08	2112-2122	0					38.688267	-123.339094	M 10N 13W 29	Contributor
NEG	2002-07-08	2059-2109	0					38.684960	-123.343950	M 10N 13W 30	Contributor
NEG	2002-07-08	2046	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2003-06-17	2053	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2003-07-16	2140	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2003-07-29	2300	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2004-05-12	1930	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2004-05-12	1930	0					38.683529	-123.350977	M 10N 13W 30	Section centroid
NEG	2006		0					38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	2006-05-10		0					38.679568	-123.337230	M 10N 13W 29	Quarter-section centroid
NEG	2006-06-15		0					38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2007		1	AU				38.678165	-123.339535	M 10N 13W 29	Contributor
NEG	2007-05-15	1200	0					38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid
NEG	2007-06-11	1200	0					38.686732	-123.346784	M 10N 13W 30	Quarter-section centroid
NEG	2007-06-12	1200	0					38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid
NEG	2007-06-26	1200	0					38.679821	-123.346279	M 10N 13W 30	Quarter-section centroid
NEG	2008		0					38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	2008-03-03		0					38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	2008-05-15		0					38.683539	-123.350632	M 10N 13W 30	Activity center
POS	2009-04-16	2015	1	UU				38.672820	-123.335234	M 10N 13W 32	Contributor
NEG	2009-04-20		0					38.679821	-123.346280	M 10N 13W 30	Quarter-section centroid
POS	2010-05-18	2126	1	UM				38.683486	-123.334680	M 10N 13W 29	Contributor
POS	2010-07-06	2250	1	UF				38.676319	-123.331221	M 10N 13W 29	Contributor
NEG	2010-08-10		0					38.683539	-123.350632	M 10N 13W 30	Activity center
NEG	2011		0					38.683539	-123.350632	M 10N 13W 30	Activity center
POS	2011-04-21	2125	1	UM				38.685585	-123.344145	M 10N 13W 30	Contributor
POS	2012-05-06	2130	1	UM				38.677354	-123.343087	M 10N 13W 30	Contributor
NEG	2012-05-09		0					38.679821	-123.346280	M 10N 13W 30	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2012-05-30	2139	1	UM				38.676699	-123.343889	M 10N 13W 30	Contributor
POS	2012-06-26	2226	1	UM				38.674158	-123.343378	M 10N 13W 31	Contributor
NEG	2012-06-27		0					38.683539	-123.350632	M 10N 13W 30	Activity center
POS	2013-03-14	1948	1	UM				38.683244	-123.353022	M 10N 13W 30	Contributor
POS	2013-03-27	2010	2	UMUF	Y			38.676572	-123.341826	M 10N 13W 30	Contributor
POS	2013-05-20	2200	2	UMUF	Y			38.677492	-123.344544	M 10N 13W 30	Contributor
NEG	2013-06-05	1200	0					38.679821	-123.346280	M 10N 13W 30	Quarter-section centroid
POS	2013-07-17	2125	1	UM				38.682079	-123.353855	M 10N 13W 30	Contributor
POS	2013-07-25	2143	1	UM				38.671890	-123.349610	M 10N 13W 31	Contributor
NEG	2013-07-26	1200	0					38.672858	-123.345966	M 10N 13W 31	Quarter-section centroid
POS	2014-06-26	2113	1	UM				38.683934	-123.345452	M 10N 13W 30	Contributor
NEG	2014-07-21	1200	0					38.683539	-123.350632	M 10N 13W 30	Activity center
POS	2016-06-20	2141	1	UM				38.679012	-123.346130	M 10N 13W 30	Contributor
NEG	2016-06-21	1200	0					38.679821	-123.346280	M 10N 13W 30	Quarter-section centroid
Masterowl: SON0085 Subspecies: NORTHERN											
POS	1995-06-26		1	UU				38.723439	-123.428175	M 10N 14W 09	Quarter-section centroid
NEG	1997-03-17		0					38.712991	-123.424007	M 10N 14W 16	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1997-06-04		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
POS	1997-06-10		1	UU				38.723254	-123.446361	M 10N 14W 08	Quarter-section centroid
NEG	1997-06-12		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1997-06-16		0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	1997-06-19		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1997-07-16		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1997-07-23		0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	1997-07-31		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1998-03-04		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1998-03-11		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1998-05-22		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1998-06-08		0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1998-08-31		0					38.712991	-123.424007	M 10N 14W 16	Section centroid
NEG	1999	2400	0					38.712854	-123.441616	M 10N 14W 17	Section centroid
NEG	1999-03-15	2233	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-03-16	2156	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	1999-03-20	1930	0					38.726812	-123.441885	M 10N 14W 08	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1999-03-27	2321	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-04-05	2007	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-04-08	2012	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-04-15	2049	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-04-21	2226	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-04-27	2158	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	1999-04-28	2139	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	1999-06-03	2327	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	1999-06-17	2219	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	2000-03-15	2226	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2000-03-21	2109	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2000-03-30	2034	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	2001-03-14	2351	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	2001-03-15	2032	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2001-04-02	0049	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
POS	2001-05-08	2020	1	UM				38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	2001-05-28	2104	0					38.726812	-123.441885	M 10N 14W 08	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2001-07-19	0139	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2001-08-09	0024	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
POS	2002-03-15	2033	1	UM				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2002-03-16	1200-1500	0					38.723439	-123.428175	M 10N 14W 09	Quarter-section centroid
NEG	2002-04-02	2157	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2002-04-11	2245	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
NEG	2002-04-30	2317	0					38.726710	-123.423168	M 10N 14W 09	Section centroid
POS	2003-03-04	2104	1	UF				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2003-03-05	1515-1730	0					38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
NEG	2003-03-08	1620-1820	0					38.716455	-123.437601	M 10N 14W 17	Quarter-section centroid
POS	2003-03-11	2329	1	UF				38.719397	-123.430042	M 10N 14W 16	Contributor
POS	2003-04-01	2107	1	UU				38.725867	-123.436561	M 10N 14W 08	Contributor
NEG	2003-04-02	1446-1659	0					38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
NEG	2003-04-08	1700-1930	0					38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
POS	2003-04-08	2022	2	UMUF	Y			38.715288	-123.431643	M 10N 14W 16	Contributor
NEG	2003-04-09	1245-1520	0					38.730012	-123.436923	M 10N 14W 08	Quarter-section centroid
NEG	2003-05-14	1740-2032	0					38.723326	-123.441895	M 10N 14W 08	Half-section centroid

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
NEG	2003-05-15	1643	0					38.726716	-123.427854	M 10N 14W 09	Half-section centroid
POS	2003-05-17	2030	1	UM				38.718356	-123.438234	M 10N 14W 17	Contributor
POS	2003-06-08	2129	1	UU				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2003-06-08	1800-2100	0					38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
POS	2003-06-09	1955	1	UM				38.730284	-123.435473	M 10N 14W 08	Contributor
POS	2003-06-12	1820	2	UMUF	Y			38.725983	-123.432182	M 10N 14W 09	Contributor
AC	2004-03-20	1205-1400	2	UMUF	Y			38.726478	-123.430503	M 10N 14W 09	Contributor
POS	2005		2	UMUF	Y			38.726478	-123.430503	M 10N 14W 09	Activity center
POS	2006		1	UM				38.726478	-123.430503	M 10N 14W 09	Activity center
NEG	2007		0					38.726478	-123.430503	M 10N 14W 09	Activity center
POS	2008-04-01	2250	2	AMAF	Y			38.725073	-123.434696	M 10N 14W 08	Contributor
POS	2008-05-19	2014	1	UU				38.730002	-123.427524	M 10N 14W 09	Quarter-section centroid
POS	2008-05-21	2311	1	UU				38.730002	-123.427524	M 10N 14W 09	Quarter-section centroid
POS	2009-04-08	0009	1	UU				38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
POS	2009-04-14	2259	1	UU				38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
NEG	2009-04-15	1930	0					38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
NEG	2009-05-18	1800	0					38.726704	-123.437179	M 10N 14W 08	Half-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	2009-05-20	2157	1	UU				38.723396	-123.437435	M 10N 14W 08	Quarter-section centroid
NEG	2010		0					38.726478	-123.430503	M 10N 14W 09	Activity center
NEG	2011	2400	0					38.725815	-123.420295	M 10N 14W 09	Contributor
NEG	2011	2400	0					38.715288	-123.431643	M 10N 14W 16	Contributor
NEG	2011	2400	0					38.731058	-123.447583	M 10N 14W 08	Contributor
NEG	2011	2400	0					38.719423	-123.422663	M 10N 14W 16	Contributor
NEG	2011-03-07	2139-2149	0					38.719397	-123.430042	M 10N 14W 16	Contributor
NEG	2011-03-07	2154-2204	0					38.725867	-123.436561	M 10N 14W 08	Contributor
POS	2011-04-02	1900-1910	2	UMUF	Y			38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2011-05-13	2005-2015	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2011-05-15	1730-1900	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
POS	2011-05-15	1945-2000	1	UM				38.724329	-123.429618	M 10N 14W 09	Contributor
NEG	2012	2400	0					38.715288	-123.431643	M 10N 14W 16	Contributor
NEG	2012	2400	0					38.731058	-123.447583	M 10N 14W 08	Contributor
NEG	2012	2400	0					38.719423	-123.422663	M 10N 14W 16	Contributor
NEG	2012	2400	0					38.735029	-123.437292	M 10N 14W 05	Contributor
NEG	2012	2400	0					38.725815	-123.420295	M 10N 14W 09	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2012	2400	0					38.725143	-123.447637	M 10N 14W 08	Contributor
POS	2012-03-05	1935-1945	1	UM				38.724329	-123.429618	M 10N 14W 09	Contributor
NEG	2012-03-06	1912-1922	0					38.719397	-123.430042	M 10N 14W 16	Contributor
POS	2012-03-09	1900-1910	1	UM				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2012-04-30	2356-0006	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2012-07-06	2030-2045	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2013	2400	0					38.719423	-123.422663	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.715288	-123.431643	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.725143	-123.447637	M 10N 14W 08	Contributor
NEG	2013	2400	0					38.731058	-123.447583	M 10N 14W 08	Contributor
NEG	2013	2400	0					38.725815	-123.420295	M 10N 14W 09	Contributor
NEG	2013	2400	0					38.735029	-123.437292	M 10N 14W 05	Contributor
NEG	2013-03-03	2035-2055	0					38.724329	-123.429618	M 10N 14W 09	Contributor
NEG	2013-03-04	2209-2219	0					38.719397	-123.430042	M 10N 14W 16	Contributor
NEG	2013-03-04	2224-2234	0					38.725867	-123.436561	M 10N 14W 08	Contributor
POS	2013-03-09	1830-1845	1	UU				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2013-03-10	1630-1810	0					38.726812	-123.441885	M 10N 14W 08	Section centroid

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
NEG	2013-04-21	1930-2000	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2013-05-23	0213-0223	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2013-05-31	0030-0040	0					38.720267	-123.442278	M 10N 14W 08	Contributor
POS	2013-06-30	0255-0305	1	UU				38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2013-07-04	1030-1130	0					38.726812	-123.441885	M 10N 14W 08	Section centroid
NEG	2013-07-07	0348-0358	0					38.720267	-123.442278	M 10N 14W 08	Contributor
NEG	2014		0					38.726478	-123.430503	M 10N 14W 09	Activity center
POS	2015		1	UU				38.726478	-123.430503	M 10N 14W 09	Activity center
NEG	2020	2400	0					38.715288	-123.431643	M 10N 14W 16	Contributor
NEG	2021	2400	0					38.725143	-123.447637	M 10N 14W 08	Contributor
NEG	2021	2400	0					38.727010	-123.437020	M 10N 14W 08	Contributor
NEG	2021	2400	0					38.735029	-123.437292	M 10N 14W 05	Contributor
NEG	2021	2400	0					38.731058	-123.447583	M 10N 14W 08	Contributor
NEG	2021	2400	0					38.715288	-123.431643	M 10N 14W 16	Contributor
Masterowl: SON0094 Subspecies: NORTHERN											
NEG	1998-08-11		0					38.683145	-123.406011	M 10N 14W 27	Section centroid
NEG	1998-08-18		0					38.683145	-123.406011	M 10N 14W 27	Section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
POS	1998-08-18		1	UM				38.679721	-123.392323	M 10N 14W 26	Quarter-section centroid
POS	1998-08-29		1	UU				38.679721	-123.392323	M 10N 14W 26	Quarter-section centroid
NEG	1998-08-29		0					38.683145	-123.406011	M 10N 14W 27	Section centroid
NEG	1998-08-31		0					38.683145	-123.406011	M 10N 14W 27	Section centroid
NEG	1998-08-31		0					38.683756	-123.387654	M 10N 14W 26	Section centroid
POS	2000-03-14	2036	1	UM				38.679721	-123.392323	M 10N 14W 26	Quarter-section centroid
NEG	2000-03-15	1615	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2000-03-31	1914	0					38.683145	-123.406011	M 10N 14W 27	Section centroid
POS	2002-03-13	2346	1	UF				38.687229	-123.406060	M 10N 14W 27	Contributor
NEG	2002-03-15	1505	0					38.687005	-123.406250	M 10N 14W 27	Half-section centroid
POS	2002-04-30	0035	1	UF				38.677813	-123.397279	M 10N 14W 27	Contributor
NEG	2002-05-01	1540-1805	0					38.679721	-123.392323	M 10N 14W 26	Quarter-section centroid
NEG	2007-03-12	1930-1945	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-03-18	1940-2000	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-03-23	2035-2050	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-03-29	2040-2055	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-04-02		0					38.680349	-123.396612	M 10N 14W 26	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2007-04-02		0					38.686915	-123.401719	M 10N 14W 27	Contributor
NEG	2007-04-02		0					38.690800	-123.408800	M 10N 14W 27	Contributor
NEG	2007-04-02		0					38.676496	-123.392621	M 10N 14W 26	Contributor
NEG	2007-04-09		0					38.690800	-123.408800	M 10N 14W 27	Contributor
NEG	2007-04-09		0					38.686915	-123.401719	M 10N 14W 27	Contributor
NEG	2007-04-09	2123	0					38.680349	-123.396612	M 10N 14W 26	Contributor
NEG	2007-04-09		0					38.676496	-123.392621	M 10N 14W 26	Contributor
NEG	2007-04-24	1955-2010	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-04-29	2055-2110	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2007-05-15		0					38.690800	-123.408800	M 10N 14W 27	Contributor
NEG	2007-05-15	0054	0					38.680349	-123.396612	M 10N 14W 26	Contributor
NEG	2007-05-15		0					38.686915	-123.401719	M 10N 14W 27	Contributor
NEG	2007-05-15		0					38.676496	-123.392621	M 10N 14W 26	Contributor
NEG	2007-05-16	2110-2125	0					38.689913	-123.397406	M 10N 14W 26	Contributor
NEG	2008-03-19	0007	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2008-03-26	2056	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2008-04-01	2038	0					38.683756	-123.387654	M 10N 14W 26	Section centroid

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
AC	2009-04-15	2348	1	UF				38.680074	-123.392003	M 10N 14W 26	Contributor
NEG	2009-04-16	0800	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2009-05-18	2229	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2009-06-15	2143	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2009-06-15	2000	0					38.683756	-123.387654	M 10N 14W 26	Section centroid
NEG	2010		0					38.680074	-123.392003	M 10N 14W 26	Activity center
NEG	2011	2400	0					38.682000	-123.407294	M 10N 14W 27	Contributor
NEG	2011	2400	0					38.690096	-123.396184	M 10N 14W 26	Contributor
NEG	2012	2400	0					38.682000	-123.407294	M 10N 14W 27	Contributor
NEG	2012	2400	0					38.690096	-123.396184	M 10N 14W 26	Contributor
NEG	2013	2400	0					38.690096	-123.396184	M 10N 14W 26	Contributor
NEG	2013	2400	0					38.682000	-123.407294	M 10N 14W 27	Contributor
NEG	2014	2400	0					38.690096	-123.396184	M 10N 14W 26	Contributor
POS	2015		1	UU				38.685758	-123.399952	M 10N 14W 27	Activity center
Masterowl: SON0110 Subspecies: NORTHERN											
POS	1990-01-05		1	UM				38.701931	-123.419848	M 10N 14W 21	Quarter-section centroid
NEG	1991-02-06		0					38.701931	-123.419848	M 10N 14W 21	Quarter-section centroid

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	1998-08-18		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	1998-08-18		0					38.698292	-123.424208	M 10N 14W 21	Section centroid
NEG	1998-08-29		0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	1998-08-29		0					38.698292	-123.424208	M 10N 14W 21	Section centroid
NEG	1998-08-31		0					38.698292	-123.424208	M 10N 14W 21	Section centroid
NEG	2009	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2010	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2011	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2011	2400	0					38.707853	-123.412689	M 10N 14W 15	Contributor
NEG	2011	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor
NEG	2011	2400	0					38.700219	-123.420800	M 10N 14W 21	Contributor
NEG	2011	2400	0					38.693147	-123.419634	M 10N 14W 21	Contributor
POS	2011		1	UF				38.700594	-123.408161	M 10N 14W 22	Activity center
NEG	2011-03-07	2007-2017	0					38.698095	-123.409399	M 10N 14W 22	Contributor
NEG	2011-04-03	2155-2205	0					38.698095	-123.409399	M 10N 14W 22	Contributor
POS	2011-05-15	2245-2247	1	UF				38.698095	-123.409399	M 10N 14W 22	Contributor
POS	2011-05-15	2250-2310	1	UF				38.698095	-123.409399	M 10N 14W 22	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2012	2400	0					38.707853	-123.412689	M 10N 14W 15	Contributor
NEG	2012	2400	0					38.700219	-123.420800	M 10N 14W 21	Contributor
NEG	2012	2400	0					38.698631	-123.401695	M 10N 14W 22	Contributor
NEG	2012	2400	0					38.697137	-123.406015	M 10N 14W 22	Contributor
NEG	2012	2400	0					38.693147	-123.419634	M 10N 14W 21	Contributor
NEG	2012	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor
NEG	2012-03-05	2300-2310	0					38.704009	-123.402086	M 10N 14W 22	Contributor
POS	2012-03-05	2239-2249	2	UMUF	Y			38.698095	-123.409399	M 10N 14W 22	Contributor
POS	2012-03-06	1600-1730	1	UU				38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2012-03-06	1600-1730	2	UMUF	Y			38.700594	-123.408161	M 10N 14W 22	Activity center
NEG	2012-03-23	2125-2135	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2012-03-24	2354-0004	0					38.698095	-123.409399	M 10N 14W 22	Contributor
NEG	2012-03-26	1745-1900	0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2012-03-30	1800-1930	1	UM				38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2012-03-30	2250-2253	2	UMUF	Y			38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2012-04-29	1730-1900	2	UMUF	Y			38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2012-06-30	0020-0030	2	UMUF	Y			38.698095	-123.409399	M 10N 14W 22	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2012-07-01	1930-2015	0					38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	2013	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.693147	-123.419634	M 10N 14W 21	Contributor
NEG	2013	2400	0					38.698631	-123.401695	M 10N 14W 22	Contributor
NEG	2013	2400	0					38.697137	-123.406015	M 10N 14W 22	Contributor
NEG	2013	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2013	2400	0					38.707853	-123.412689	M 10N 14W 15	Contributor
NEG	2013-03-04	0129-0139	0					38.700219	-123.420800	M 10N 14W 21	Contributor
POS	2013-03-04	2025-2035	1	UF				38.698095	-123.409399	M 10N 14W 22	Contributor
NEG	2013-04-23	0715-0815	0					38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2013-04-25	0800-0920	1	UU				38.698301	-123.406488	M 10N 14W 22	Section centroid
POS	2013-06-02	1400-1535	2	UMUF	Y			38.698301	-123.406488	M 10N 14W 22	Section centroid
NEG	2014	2400	0					38.698631	-123.401695	M 10N 14W 22	Contributor
NEG	2014	2400	0					38.697137	-123.406015	M 10N 14W 22	Contributor
AC	2014		2	UMUF	Y			38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2015		1	UU				38.700594	-123.408161	M 10N 14W 22	Activity center

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
POS	2016-03-02	1620-1630	2	UMUF	Y			38.701542	-123.410992	M 10N 14W 22	Contributor
POS	2016-05-20	1800-2000	1	UU				38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2017-04-10	1045	2	UMUF	Y	N		38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2017-05-18	1500-1600	1	UM				38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2018-03-06	1640-1655	2	UMUF	Y			38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2018-03-13	1745-1755	2	UMUF	Y			38.700594	-123.408161	M 10N 14W 22	Activity center
POS	2018-05-11	1500-1600	1	UU				38.700594	-123.408161	M 10N 14W 22	Activity center
NEG	2019-04-03	1500-1530	0					38.701865	-123.410725	M 10N 14W 22	Quarter-section centroid
NEG	2019-05-12	0815-1130	0					38.700594	-123.408161	M 10N 14W 22	Activity center
NEG	2020	2400	0					38.707853	-123.412689	M 10N 14W 15	Contributor
NEG	2020	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor
NEG	2020	2400	0					38.700219	-123.420800	M 10N 14W 21	Contributor
NEG	2020	2400	0					38.698095	-123.409399	M 10N 14W 22	Contributor
NEG	2020-04-19	1630-1900	0					38.700594	-123.408161	M 10N 14W 22	Activity center
NEG	2021	2400	0					38.698095	-123.409399	M 10N 14W 22	Contributor
NEG	2021	2400	0					38.707853	-123.412689	M 10N 14W 15	Contributor
NEG	2021	2400	0					38.707901	-123.418307	M 10N 14W 16	Contributor

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
NEG	2021	2400	0					38.700219	-123.420800	M 10N 14W 21	Contributor
NEG	2021	2400	0					38.704009	-123.402086	M 10N 14W 22	Contributor
NEG	2021-05-02	1700-1900	0					38.701865	-123.410725	M 10N 14W 22	Quarter-section centroid
Positive Spotted Owl detections not associated with a known Activity Center Subspecies: NORTHERN											
POS	1996-07-29		1	AF				38.709243	-123.428747	M 10N 14W 16	Quarter-section centroid
POS	2001-07-25	1817-2050	1	UF				38.725135	-123.399636	M 10N 14W 10	Contributor
POS	2020-04-05	0134	1	UM				38.690120	-123.410490	M 10N 14W 27	Contributor
Additional surveys within the search area with no Spotted Owls detected											
NEG	1996-06-05	2400	0					38.698292	-123.424208	M 10N 14W 21	Section centroid
NEG	1998-08-11		0					38.698292	-123.424208	M 10N 14W 21	Section centroid
NEG	2001	2400	0					38.712867	-123.368796	M 10N 14W 13	Section centroid
NEG	2001	2400	0					38.723573	-123.400326	M 10N 14W 10	Quarter-section centroid
NEG	2001-08-02	1630	0					38.723573	-123.400326	M 10N 14W 10	Quarter-section centroid
NEG	2002	2400	0					38.719874	-123.366999	M 10N 14W 13	Contributor
NEG	2002	2400	0					38.727575	-123.411944	M 10N 14W 10	Contributor
NEG	2002	2400	0					38.713849	-123.343861	M 10N 13W 18	Contributor
NEG	2002	2400	0					38.715111	-123.353567	M 10N 13W 18	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2002	2400	0					38.724174	-123.406019	M 10N 14W 10	Contributor
NEG	2005	2400	0					38.728132	-123.395160	M 10N 14W 11	Contributor
NEG	2005	2400	0					38.727830	-123.374090	M 10N 14W 12	Contributor
NEG	2005	2400	0					38.727395	-123.367820	M 10N 14W 12	Contributor
NEG	2005	2400	0					38.723913	-123.365290	M 10N 14W 12	Contributor
NEG	2006	2400	0					38.727395	-123.367820	M 10N 14W 12	Contributor
NEG	2006	2400	0					38.723913	-123.365290	M 10N 14W 12	Contributor
NEG	2006	2400	0					38.728132	-123.395160	M 10N 14W 11	Contributor
NEG	2006	2400	0					38.727830	-123.374090	M 10N 14W 12	Contributor
NEG	2006	2400	0					38.726558	-123.382500	M 10N 14W 11	Contributor
NEG	2007	2400	0					38.727395	-123.367820	M 10N 14W 12	Contributor
NEG	2007	2400	0					38.726558	-123.382500	M 10N 14W 11	Contributor
NEG	2007	2400	0					38.723913	-123.365290	M 10N 14W 12	Contributor
NEG	2007	2400	0					38.727830	-123.374090	M 10N 14W 12	Contributor
NEG	2007	2400	0					38.728132	-123.395160	M 10N 14W 11	Contributor
NEG	2007-03-12	2035-2055	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-03-12	2000-2020	0					38.696796	-123.394488	M 10N 14W 23	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2007-03-18	2035-2050	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2007-03-18	2010-2025	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-03-23	1950-2005	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-03-23	2010-2025	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2007-03-29	1935-1950	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-03-29	2005-2020	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2007-04-02		0					38.698940	-123.412662	M 10N 14W 22	Contributor
NEG	2007-04-09		0					38.698940	-123.412662	M 10N 14W 22	Contributor
NEG	2007-04-24	2015-2030	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-04-24	2045-2100	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2007-04-29	2030-2045	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-04-29	2010-2025	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2007-05-15		0					38.698940	-123.412662	M 10N 14W 22	Contributor
NEG	2007-05-16	2015-2030	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2007-05-16	2040-2055	0					38.696796	-123.394488	M 10N 14W 23	Contributor
NEG	2009	2400	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2009-04-15	2159-2209	0					38.701667	-123.391262	M 10N 14W 23	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2009-05-18	2224-2234	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2010	2400	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2011	2400	0					38.727575	-123.411944	M 10N 14W 10	Contributor
NEG	2011	2400	0					38.693934	-123.395921	M 10N 14W 23	Contributor
NEG	2011	2400	0					38.694485	-123.402748	M 10N 14W 22	Contributor
NEG	2011	2400	0					38.686568	-123.414475	M 10N 14W 27	Contributor
NEG	2011	2400	0					38.724174	-123.406019	M 10N 14W 10	Contributor
NEG	2011	2400	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2011	2400	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2011	2400	0					38.713678	-123.425607	M 10N 14W 16	Contributor
NEG	2012	2400	0					38.724174	-123.406019	M 10N 14W 10	Contributor
NEG	2012	2400	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2012	2400	0					38.713678	-123.425607	M 10N 14W 16	Contributor
NEG	2012	2400	0					38.727575	-123.411944	M 10N 14W 10	Contributor
NEG	2012	2400	0					38.694485	-123.402748	M 10N 14W 22	Contributor
NEG	2012	2400	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2012	2400	0					38.694388	-123.401531	M 10N 14W 22	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2012	2400	0					38.686568	-123.414475	M 10N 14W 27	Contributor
NEG	2012	2400	0					38.692140	-123.395074	M 10N 14W 23	Contributor
NEG	2012	2400	0					38.693934	-123.395921	M 10N 14W 23	Contributor
NEG	2012	2400	0					38.690309	-123.391562	M 10N 14W 26	Contributor
NEG	2013	2400	0					38.694485	-123.402748	M 10N 14W 22	Contributor
NEG	2013	2400	0					38.701667	-123.391262	M 10N 14W 23	Contributor
NEG	2013	2400	0					38.724174	-123.406019	M 10N 14W 10	Contributor
NEG	2013	2400	0					38.713678	-123.425607	M 10N 14W 16	Contributor
NEG	2013	2400	0					38.686568	-123.414475	M 10N 14W 27	Contributor
NEG	2013	2400	0					38.727575	-123.411944	M 10N 14W 10	Contributor
NEG	2013	2400	0					38.693934	-123.395921	M 10N 14W 23	Contributor
NEG	2013	2400	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2014	2400	0					38.694485	-123.402748	M 10N 14W 22	Contributor
NEG	2014	2400	0					38.697801	-123.397642	M 10N 14W 23	Contributor
NEG	2014	2400	0					38.693934	-123.395921	M 10N 14W 23	Contributor
NEG	2020	2400	0					38.713678	-123.425607	M 10N 14W 16	Contributor
NEG	2020-03-05	2315-2325	0					38.690120	-123.410490	M 10N 14W 27	Contributor

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
NEG	2020-03-12	0110-0120	0					38.690120	-123.410490	M 10N 14W 27	Contributor
NEG	2020-04-06	1645-1830	0					38.687021	-123.410523	M 10N 14W 27	Quarter-section centroid
NEG	2020-04-12	0120-0130	0					38.690120	-123.410490	M 10N 14W 27	Contributor
NEG	2020-04-19	0136-0146	0					38.690120	-123.410490	M 10N 14W 27	Contributor
NEG	2020-05-15	2224-2234	0					38.690120	-123.410490	M 10N 14W 27	Contributor
NEG	2020-05-16	1000-1030	0					38.687021	-123.410523	M 10N 14W 27	Quarter-section centroid
NEG	2021	2400	0					38.727296	-123.361569	M 10N 14W 12	Contributor
NEG	2021	2400	0					38.722929	-123.371138	M 10N 14W 12	Contributor
NEG	2021	2400	0					38.713678	-123.425607	M 10N 14W 16	Contributor
NEG	2021	2400	0					38.726331	-123.366500	M 10N 14W 12	Contributor
NEG	2021	2400	0					38.717732	-123.354496	M 10N 13W 18	Contributor
NEG	2021	2400	0					38.724306	-123.365311	M 10N 14W 12	Contributor
NEG	2021	2400	0					38.690120	-123.410490	M 10N 14W 27	Contributor
NEG	2022	2400	0					38.724306	-123.365311	M 10N 14W 12	Contributor
NEG	2022	2400	0					38.726331	-123.366500	M 10N 14W 12	Contributor
NEG	2022	2400	0					38.717732	-123.354496	M 10N 13W 18	Contributor
NEG	2022	2400	0					38.722929	-123.371138	M 10N 14W 12	Contributor

Type	*Date*	*Time*	*#Adults*	*Age/Sex*	*Pair*	*Nest*	*#Young*	*Latitude DD NAD83*	*Longitude DD NAD83*	*MTRS*	*Coordinate Source*
NEG	2022	2400	0					38.727296	-123.361569	M 10N 14W 12	Contributor
NEG	2023	2400	0					38.722929	-123.371138	M 10N 14W 12	Contributor
NEG	2023	2400	0					38.727296	-123.361569	M 10N 14W 12	Contributor
NEG	2023	2400	0					38.726331	-123.366500	M 10N 14W 12	Contributor
NEG	2023	2400	0					38.717732	-123.354496	M 10N 13W 18	Contributor
NEG	2023-04-07	2108-2118	0					38.724306	-123.365311	M 10N 14W 12	Contributor