



Humboldt Redwood
COMPANY, LLC

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March 25, 2009

Ms. Catherine Kuhlman
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd, Suite A
Santa Rosa, CA 95403

Subject: Enrollment of THP 1-08-072HUM (Unit 4) in the Elk River WWDR, "Tier II"

Dear Ms. Kuhlman:

HRC is requesting Tier II enrollment under Watershed-Wide Waste Discharge Requirement (WWDR) Order No. R1-2006-0039 for unit 4 of THP 1-08-072 HUM. This unit is comprised of 18.2 acres of Selection (9.1 clear-cut equivalent acres). Total acres currently enrolled or proposed for enrollment under Order No. R1-2006-0039 Tier II is shown in the Attached Pre-Harvest Planning Report provided by Forester, Mr. Wayne Rice. The Erosion Control Plan (ECP), Form 200 and an annual waste discharge enrollment fee have already been submitted for this THP.

Landslide risks associated with this plan were evaluated in compliance with the Freshwater Creek and Elk River WWDR Permit Acreage Enrollment and Compliance Monitoring Program Quality Assurance Project Plan (Version 2.0, September 1, 2006) approved by the Executive Officer of the North Coast Regional Water Quality Control Board. This approach uses commonly accepted standards for geologic practices in forest management (Sidle et al. 1985, Soeters and Van Western 1996, and Sidle and Ochiai 2006) to assess factors known to contribute to landslides, such as steepness of slope, slope convergence, hydrology, geologic features, and visibly unstable areas. Overlapping and complementary scientific techniques combining state-of-the-art digital elevation model (DEM) slope stability models, field investigation, and terrain analysis were used in this assessment.

In summary the unit is underlain by undifferentiated Wildcat Group sediments composed of moderate to well consolidated silts, sands, clays and gravels. Observed mass wasting in the unit has been limited to one road related failure. The unit was originally developed with respect to clearcut silviculture under tier II enrollment. The silviculture has been recently amended to group selection with a target retention of 90 ft² of retention. The change in silviculture to a greater retention combined with a limited history of harvest related mass wasting, wide RMZs, and appropriate yarding methods is not anticipated to significantly increase the potential for mass wasting. Based on this, we consider this unit to meet the qualifications for Tier II enrollment.

The THP proposes an uneven-age silviculture retaining 90 sqft of basal area. Sub-merchantable trees and those with specific wildlife value characteristics (e.g., cavities, large limbs, broken tops, snags,

etc.) will be retained within the harvest area to the extent feasible. Cable and ground based yarding is approved for the unit. Post-harvest no site preparation will occur.

Greater detail regarding this landslide hazard assessment is provided in the attached *THP Unit Review for Tier 2 Enrollment*. The licensed geologist involved with the Tier 2 landslide risk evaluation has concluded the proposed harvest operation, if implemented as planned and approved, will result in a negligible increase in potential for post-harvest landsliding; and thereby meets the applicable Zero Delivery of landslide related sediment performance standards of NCRWQCB Orders R1-2006-0039 and R1-2008-0071.

Please do not hesitate to contact me should you have any questions or comments regarding this application for enrollment into WWDR (Order No. R1-2006-0039).

Respectfully,




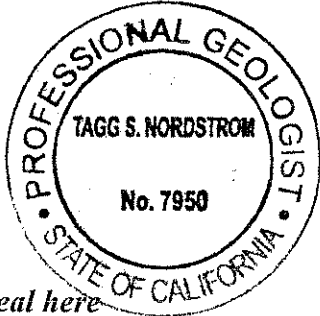
Wayne D. Rice,
RPF
Humboldt Redwood Company, LLC

Attachments:

Professional Certification of Design
THP Unit Review for Tier II enrollment
Pre-harvest Planning Report
Maps

Professional Certification of Design

I, , P.G. 7950, 3/25/09,
Signature license # Date



Place licensed seal here

hereby certify, in accordance with North Coast Regional Water Quality Control Board (NCRWQCB) Order Nos. R1-2006-0039 and R1-2006-0041, that the attached application and the description of THP modifications, and the materials submitted along with:

THP No. 1-07-072 HUM (Moss Elk) Unit # 4

- a. are in accordance with accepted practices, and recognized professional standards;
- b. comply with the requirements of the Monitoring and Reporting Program No. R1-2006-0103, approved by the Executive Officer of the North Coast Regional Water Quality Control Board; and
- c. provided that the THP is properly implemented, operated, and maintained, are adequate for the THP to meet the applicable Zero Net Delivery performance standards of NCRWQCB Orders R1-2006-0039, R1-2006-0041, and R1-2006-0103, insofar as such performance can reasonably be predicted by accepted engineering geologic practices.

The opinions presented in the subject THP have been developed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineering geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

THP: Moss Elk THP 08-072 Unit # 4 3-19-09

Tools Used in This Assessment	Figure Number
Elevation Map with 10 ft Contours (HRC LiDAR)	1
SHALSTAB (Montgomery and Dietrich, 1994 and Palco, 2006) / Slope Class / Hillshade Maps	2
CGS Geology and Geomorphic Features (CGS, 2005)	3
Mass Wasting Potential Map (HRC, 1999)	4
Aerial Photo Map (HRC, 2007)	5
HRC Elk River and Salmon Creek WA deep-seated LS inventory (HRC, 2004)	6
Road Condition Map	7

Please see back of enrollment for references

Summary of Changes to THP Prescriptions Based on Tier II Analysis in this Unit:

Geologic Review	Forestry Silviculture/Site Prep Plan	Operational Design Plan
4-1	<p>For reasons other than slope stability hazard, silviculture is now group selection with a retention minimum of 90 ft² of basal area.</p> <p>No site preparation will occur due to partial harvesting.</p>	No change to approved yarding methods.

Geological Summary (information presented from existing bodies of work):

Figure 3 shows the unit to be underlain by undifferentiated Wildcat Group sediments. These sediments are composed of silts, sands, clays, and infrequent gravels that moderately to well consolidated. The slopes are moderate to steeply inclined, include well defined watercourse channels in the north and south, and exhibit geomorphology suggestive of possible abandoned terraces. CGS (2005) maps debris slide / source areas atop the moderate to steeply inclined slopes adjacent Dunlap Gulch (Class I).

No mass wasting is presented within the unit from Figure 6.

Figure 2 review (Hillslope shade) shows regionally irregular slopes throughout the unit. The surface texture of the unit resembles weathering consistent with mélange type deposits. The prominent watercourses are well entrenched and appear linear. Dunlop Gulch is predominantly linear.

THP was originally approved for even aged harvesting (clearcut). Slope stability conditions were evaluated with respect to that proposed silviculture. In addition, the THP units were developed with Tier II enrollment considerations. Therefore, a note 45 geology report was included in the THP. New ownership and changed management style has resulted in a silviculture change to group selection retaining a minimum of 90 square of basal area per acre.

The area was clearcut and ground-lead cable logged using 'steam donkeys' around the turn of the twentieth century and subsequently commercially thinned using ground based yarding more recently, approximately 15-20 years ago. New road construction is proposed to access the unit to accommodate the harvesting of the timber.

The unit has been addressed as one polygon due to the small size of the unit.

THP Unit: # 4

Polygon: 4-1

A) General Observations

The unit is bound to the north and the south by well developed and entrenched Class II watercourses. The eastern boundary of the unit is Dunlap Gulch, a Class I watercourse. The western boundary is a property line crossing a ridge top.

Typical Riparian Management Zones for the Class I RMZs include a 50-foot no harvest inner band and an outerband that extends to 150 feet. Harvesting is permissible in the outerband provided canopy closure is not reduced below 50% post harvest. For this unit, the entire RMZ has been established as a no harvest zone.

Typical Riparian Management Zones for the Class II watercourses includes a 30-foot no harvest inner band and a selection buffer that extends the RMZ out to between 75 and 100 feet. The outerband may be harvested but must retain a minimum of 60% canopy closure. For this unit, the entire Class II RMZ has been established as a no harvest zone.

The implemented THP mitigation for the Class III watercourses includes the retention of all trees growing within the active channel and all trees 8 inches and less within 15 feet of the channel. The new silviculture has bolstered Class III mitigations to include a 50' RMZ where side slopes greater than 50% exist and maintaining 75 sq. ft (or the unit wide retention standard if greater) evenly distributed in the buffer. Where side slopes are less than 50% employ a 25' RMZ that maintains 75 sq. ft (or the unit wide retention standard if greater) evenly distributed in the buffer and no group opening greater than ¼ acre immediately above the terminus of class III with slopes greater than 40% or immediately above a headwall swale. Additionally sub-merchantable trees and those with specific wildlife value characteristics (e.g., cavities, large limbs, broken tops, snags, etc.) will be retained within the harvest area to the extent feasible. The Class III watercourses in this unit are short extensions of the Class II watercourse and often fall with the Class II RMZ. The southern Class III has been treated with a Class II RMZ.

Hillslope inclinations within the unit vary from 10 to over 60%, with the majority of the slopes between 50 and 60%. The more steeply inclined slopes are associated with the irregular flanking slopes to the eastern Class I watercourse.

Three locations of value 1 SHALSTAB has been modeled within the unit. Two of the site straddle the Class I RMZ . The other site is straddles the northern harvest unit boundary. Numerous pixels of value 2 SHALSTAB are modeled throughout the unit. These areas were not determined as unstable during THP development. Further description of the sites can be found in the THP geology report (SGD, 2008).

A) General Observations

Mass Wasting Potential (MWP) modeling for the unit is low across the upper elevations. Where mapped as a debris slide slope / source area (Figure 3) the MWP is modeled as high. No landslides were identified in the area modeled as high.

One landslide was identified in the unit during THP development. The landslide is road related. The source area is located outside of the unit. Harvest is proposed across the toe deposit. The landslide did not deliver and exhibits a low probability of reaching a downslope watercourse should it reactivate.

The stand appears to have been commercially thinned within the last 15 to 20. The stand is predominantly redwood (80%). A new road segment is proposed for construction to access the upper elevations of the unit.

B) Harvest Related Impacts and Hillslope Sensitivity

Only one landslide was observed within the harvest unit despite the history of active management including substantial ground-disturbance from turn of the twentieth century logging. Current planned operations will result in less ground disturbance than previous operations and are unlikely to increase potential for mass wasting-related discharge.

The extensive RMZs were designed to provide sediment filtration bands adjacent the watercourses should extensive sediment be generated from the clearcut harvesting. The current level of harvest will retain both canopy closure and slash from the harvested trees potentially increasing the effectiveness of the sediment filtration band.

Overall hillslope sensitivity to harvest activities appears minimal with respect to mass wasting.

Please see the THP geology report for a more comprehensive assessment of the role that timber harvesting has on slope stability.

C) Forestry / Silviculture Plan

The unit silviculture has been recently amended to group selection with a target retention of about 90 ft² per acre. The amendment is in response to new management and shift in stand management strategy.

C) Forestry / Silviculture Plan

Site preparation has been changed to none.

D) Operational Design Plan

THP approved yarding method is both cable and ground based. As delineated, the proposed yarding methods appear appropriate.

References:

CGS, 2005, Geologic and Geomorphic Features Related to Landsliding, Elk River Watershed, Humboldt County, California. Department of Conservation, now California Geological Survey (CGS) Watershed Mapping Series, Mapset 4, Plate 1. Available via the web at ftp://ftp.consrv.ca.gov/pub/dmg/thp/maps/elk/elk_color.pdf

Montgomery, D.R. and W.E. Dietrich, 1994. A physically based model for the topographic control on shallow landsliding. *Wat. Resour. Res.* 30: 1153-1171. For specific details regarding the model used in this evaluation, please see Palco, 2006. Additional information from the model authors is available at the following website: <http://socrates.berkeley.edu/~geomorph/shalstab>

HRC, 2007, Ortho-photo rectified aerial photographs flown by 3Di West, Eugene Oregon,

HRC, 2008. Freshwater Creek and Elk River WDR Permit Acreage Enrollment and Compliant Monitoring Program, NCRWQCB R1-2006—0039 and R1-2006-0041, Quality Assurance Project Plan, Version 3.0. Policy document submitted to NCRWQCB dated June 7, 2006.

HRC, 2004, Elk River / Salmon Creek Watershed Analysis, Scotia, California, prepared for Pacific Lumber Company (PALCO) dated 2004?, and acquired by Humboldt Redwood Company, LLC in 2008.

HRC, 2005, (Policy Acquired from The Pacific Lumber Company (PALCO)) Prescriptions Based on Watershed Analysis for Freshwater Creek, California, August 15, 2002.

HRC, 1999, The Pacific Lumber Company's Habitat Conservation Plan, Vol. 2 Part D, Landscape Assessment of Geomorphic Sensitivity, Public Review Draft.

SGD, 2008, Geologic Evaluation of the Moss Elk THP, Humboldt County, California, unpublished report to Wayne Rice RPF, Scotia Pacific Company LLC, dated April 30, 2008. Included within section V of the THP 1-08-072.

Brief descriptions of the models used in this evaluation:

SHALSTAB was first described in Dietrich and Montgomery (1994). SHALSTAB is a simple, physically-based model based on the Mohr-Coulomb failure law that can be used to map shallow landslide potential. The model calculates the potential for failure using gridded digital elevation data. The simplicity of the model lies in the formulation of slope stability parameters that allow the model to be run parameter-free using default values suggested by the authors or determined by local measurement. Because the model uses no field measurements of critical characteristics that determine slope stability, the evaluation of potential instability is only an approximation. In applying SHALSTAB for Tier 2 enrollment, HRC has run the model on a 10-m spatial grid using LiDAR elevation data and applied the parameters as suggested by the model authors. HRC's application of the method and parameters is described in HRC (2008).

Mass Wasting Potential (MWP) modeling is a cursory regional assessment that numerically values soil, slope inclination, geology type, and geomorphology with respect to past mass wasting (HRC, 1999). The sums of the values specific to an area are measured against a set ranking system that extends from very low to extreme. The model's intent is to highlight areas of high potential for instability at the planning level. The model's use at the site specific level is limited in that pedogenic soil types are used, not textures, the geologic formations utilized provide one value for all of the incorporated facies, and the model is heavily biased if past mass wasting has occurred or has been mapped as occurring in the area.

Table 1. Proposed 2009 Harvest in North Fork Elk River. Revised 3/25/09

THP Name	THP Number	Unit Number	Silviculture					CC Equivalent	Hazard	
			CC	ROW	CT	SHR	SEL		Low	High*
Bridgehead	06-202	6					19.5	9.8	13.2	80.6
Bridgehead	06-202	8					23.9	12.0	12.1	151.1
Bridgehead	06-202	9		2.6			27.9	16.6	14.9	199.7
Brown Bridge	08-026	4					23	11.5	14.3	111.4
Brown Bridge	08-026	5					32.7	16.4	23.9	112.7
S. Lake View	07-183	1					7.7	3.9	5.7	25.6
S. Lake View	07-183	2					13.7	6.9	11.6	26.9
S. Lake View	07-183	3					32.9	16.5	27.6	67.9
S. Lake View	07-183	4					17.9	9.0	11.7	79.4
Moss Elk	08-072	1					14.1	7.1	11.9	28.2
Moss Elk	08-072	2					13.5	6.8	10.5	38.4
Moss Elk	08-072	3					17.6	8.8	13	62.8
Moss Elk	08-072	4					18.2	9.1	10.9	97.3
South Lake	08-084	3					11	5.5	10.5	1.8
**South Lake	08-084	1					1.1	0.6	1.1	0.0
							Total	140.0		

*The acres represented here have been converted to High Hazard Acres by multiplying by 12.807.

** This unit is mostly in South Fork Elk total for the unit is 30.2

Highlight indicates a THP and Specific Unit to be enrolled prior to establishing an enforceable Zero Discharge Monitoring Plan. Weighted Acreage Totals are listed below to demonstrate compliance with the Staff Landslide Model limit of 266 Harvest Acres in North Fork Elk River. Other THP Units will be enrolled after approval of the aforementioned Monitoring Plan

No Highlight Indicates a THP and Specific Unit to be enrolled after establishment of an enforceable Zero Discharge Monitoring Plan (Tier II).

Total Clear Cut Equivalent Acres enrolled or submitted for enrollment	140.0
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Table 2. Summary of THPs to enrolled prior to establishment of Zero Discharge Monitoring Plan for North Fork Elk River.

THP Number	Unit Number	Harvest Acres	Hazard	
			Low	High*
06-202	6	19.6	13.2	80.6
07-183	1	7.7	5.7	25.6
07-183	2	13.7	11.6	26.9
08-072	1	14.1	11.9	28.2
08-072	2	13.5	10.5	38.4
08-084	3	11	10.5	1.8
08-084	1	1.1	1.1	0.0
Totals		80.7	266.0	

Table 3. Summary of THPs by Yarding System and Site Preparation for North Fork Elk River.

THP Name	THP Number	Unit Number	Yarding System			Site Preparation	
			Ground Based	Yarder	Helicopter	Mechanical	Broadcast
Bridgehead	06-202	6	3.5	16			
Bridgehead	06-202	8	0	23.9			
Bridgehead	06-202	9	2.6	27.9			
Brown Bridge	08-026	4	1.7	21.3			
Brown Bridge	08-026	5	17.6	15.1			
S. Lake View	07-183	1	7.7	0			
S. Lake View	07-183	2	0	13.7			
S. Lake View	07-183	3	8.1	24.8			
S. Lake View	07-183	4	1.8	16.1			
Moss Elk	08-072	1	14.1	0			
Moss Elk	08-072	2	13.5	0			
Moss Elk	08-072	3	15	2.6			
Moss Elk	08-072	4	1.9	16.3			
South Lake	08-084	3	8.1	2.9			
South Lake	08-084	1	1.1				

Humboldt Redwood Company LLC

Erosion Control Plan (ECP) for Moss Elk THP 1-08-072HUM

Updated ECP – for purpose of identifying **Tier 2** erosion control sites specific to units 3 & 4 (2009 enrollment requests); Unit 3 has sites F301, F302, F303, G401, G402 (Skid road), site 850 (U11.21) and site 400 (U11.4308). Unit 4 has no erosion control sites located on the spur road system leading specifically to this unit or in the unit.

This plan is being included in the THP to partially meet the requirements of the North Coast Regional Water Quality Control Board Watershed-wide Waste Discharge Requirements. (WWDRs)

All operational portions of this ECP that are to be enforced through the Forest Practice Rules have been included in Section II of the THP.

Version 20080930

Humboldt Redwood Company LLC Erosion Control Plan (ECP)

This document addresses the requirements of the California Regional Water Quality Control Board, North Coast Region Order No. R1-2006-0039 (Elk River) for an Erosion Control Plan (ECP) related to timber harvest activities on Non-Federal lands in the North Coast Region (Sec. III D2 and D3). The responsible party for this ECP is Humboldt Redwood Company LLC, P.O. Box 712 Scotia, CA 95565 (707) 764-2330.

This ECP is submitted for: THP Name: Moss Elk 1-08-072HUM
Contact Person: Jon Woessner Phone: (707) 764-4376

The landowner is committed to a wide variety of measures to prevent and minimize the discharge or threatened discharge of sediment from controllable sediment discharge sources as part of this project into the waters of the state in violation of applicable water quality requirements. Prevention and Minimization of Controllable Sediment Discharge Sources associated with this project are identified in the *Controllable Sediment Sources* table. The specific conditions of sediment discharge sources and a summary of prevention and minimization measures (Section I) are identified in the table. General prevention and minimization measures for the project (Section II) are incorporated in the ECP by reference.

The RPF and/or the RPF Designee have conducted an inventory of potential "controllable sediment discharge sources" within the project area. As defined in California Regional Water Quality Control Board Order No. R1-2006-0039 (Elk River).

"Controllable sediment discharge source" means 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 these WWDRs,
2. was caused or affected by human activity, and
3. may feasibly and reasonably respond to prevention."

Upon guidance of the North Coast Regional Water Quality Control Board (NCRWQCB) staff, discharge from the source must be likely to occur during the life of the Timber Harvesting Plan (THP) and WWDR. (Holly Lundborg, personal communication)

The inventory method consisted of an appurtenant road survey, aerial photos and ground assessments of the harvest units, and a complete ground assessment of all watercourses and associated stream protection zones.

The schedule for implementing the prevention and minimization management measures for the controllable sediment sources will be consistent with the duration of the THP. These measures will be implemented in accordance with the priority level assigned to each site. High priority sites will be addressed first with low priority sites to follow. Work at all sites will be accomplished prior to THP expiration. The general prevention and minimization measures will be implemented concurrent with operations.

I. Inventory and Treatment of Controllable Sediment Sources

All controllable sediment sources are listed in the attached "Erosion Control Plan" table. These sources have been assigned a treatment priority of low, medium or high based on: 1) potential for significant sediment delivery to a Class I, II or III channel; 2) treatment immediacy (a subjective combination of event probability and sediment delivery); and 3) treatment cost-effectiveness.

The Prioritization for implementing prevention and minimization measures for road-related and non road-related controllable sediment sources is based upon guidance provided in Order No. R1-2006-0039 (Elk River). Highest priority is assigned to the largest sediment discharge sources that discharge to waters that support domestic water supplies or fish. The landowner's prioritization method considers this guidance, and combines it with consideration for accessibility and level of imminent risk of significant sediment discharge. Sources that receive a high priority rating will be treated by a date certain as noted in the Controllable Sediment Sources table. Sources that receive a low or medium rating are determined to have a low to moderate risk of imminent discharge and will be treated prior to completion of the THP, or as otherwise indicated.

Non-road related controllable sediment sources can include skid road crossings, yarding furrow, skid road in watercourse, perched skid road fill, skid road rutting, landslide, layouts, railroad grade, incline, etc.

Information specific to Controllable Sediment Discharge Sources is listed in the Controllable Sediment Sources Table, below. An explanation of information provided in that table is provided below.

II. General Prevention and Minimization Measures for Controllable Sediment Discharge

In addition to the site specific measures detailed above, the general measures proposed in this project, either as required by another State or Federal regulating agency, or as a matter of Humboldt Redwood Company policy, will prevent or minimize future sediment delivery. These measures include, but are not limited to measures incorporated in the THP Section Items as follows:

THP Section II:

- Item 14 – Describes silvicultural prescriptions
 - (i) Site Preparation – Disclosure of selected site preparation treatments and mitigation measures
- Item 16 – Harvesting Practices – Describes yarding systems, equipment utilized, equipment limitations, and drainage facility installation timing
 - Inclusive through (m) – equipment use limitations and mitigation
- Item 18 – Soil Stabilization – waterbreak requirements, mitigation to minimize soil disturbance and sediment transport
- Item 20 – Ground Based Equipment Use Location
- Item 21 – Ground Based Equipment Use in Sensitive Areas – locations, descriptions of operations, limitations and mitigation measures
- Item 22 – Alternative Practices to Harvesting and Erosion Control
- Item 23 – Winter Operations – Provides descriptions of limitations and mitigation measures required during winter period operations and Winter Operating Plan
- Item 24 – Roads and Landings – Describes road and landing construction and re-construction operations, limitations, drainage relief structure installation, mitigation measures, road maintenance, inspections and wet weather road use restrictions
- Item 25 – Site Specific Measures to Reduce Adverse Impacts and Special Instructions to the LTO
- Item 26 – Watercourse and Lake Protection (WLPZ)
- Item 27 – “In Lieu” WLPZ Practice(s)
- Item 28 – Downstream Water Users Notification and Domestic Water Supply Protection Description of protection measures
- Item 29 – Sensitive Watershed – Identifies whether the plan is located in a designated sensitive watershed and mitigation measures
- Item 29 – 1 Hillslope Management (HCP 6.3.3.7) – Describes HCP hillslope management measures required as per watershed analysis

THP Section V:

- Sediment Reduction from Roads and THP Sediment Production--Including Table 1 – “Sediment Delivery for Units and Roads for this THP,” references, letter regarding Road related sediment assessment for this THP with the calculations of deliverable net cubic yards of sediment, calculations and PWA information related to the THP project area when available

Maps attached:

- Appurtenant Road and Wet Weather Road Use map
- Road Construction Locations/ECP Site Locator Map

**Moss Elk V. R1W
Appurtenant Road and Wet Weather Road Use**

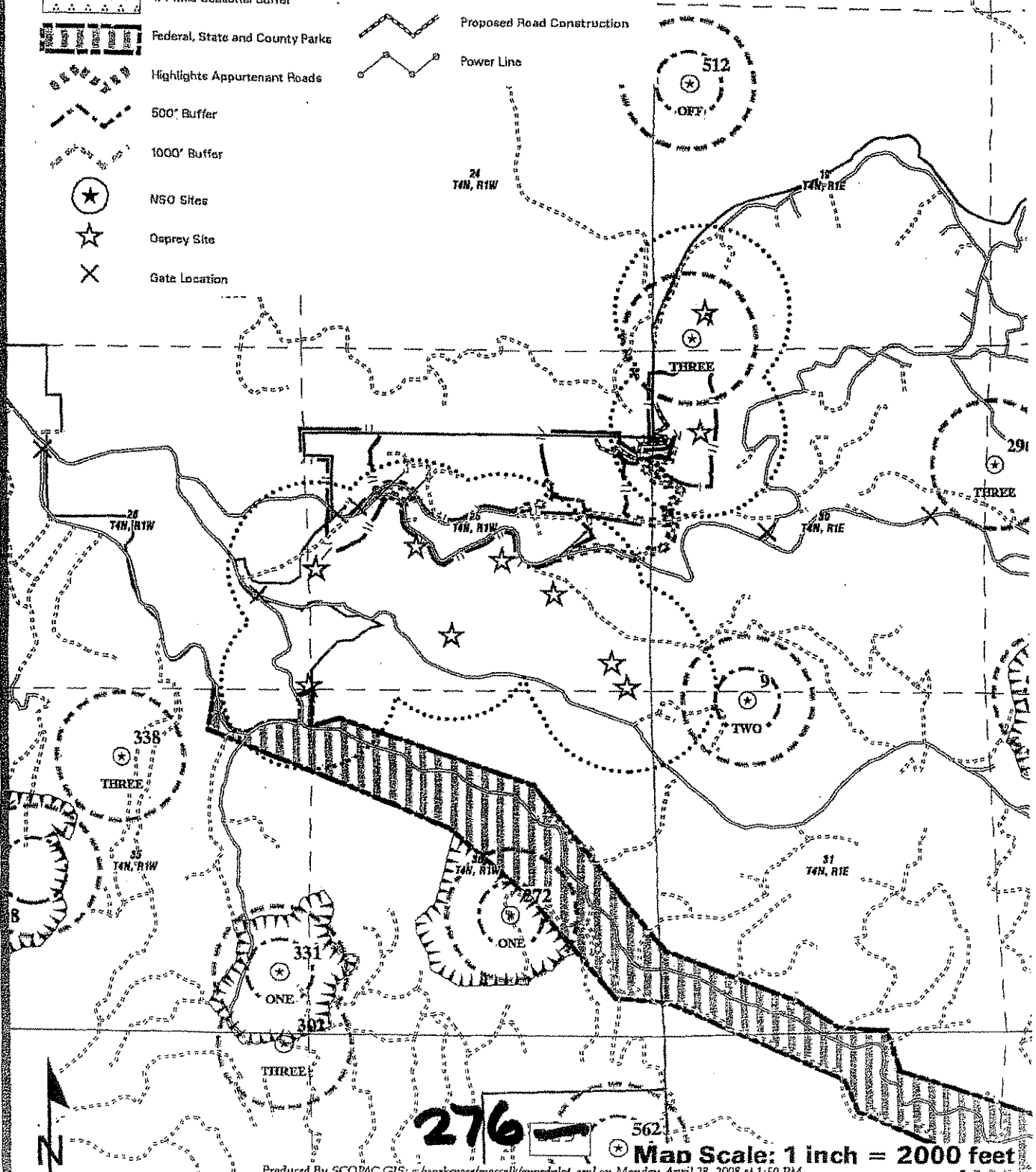
T4N, R1W

T4N, R1E

**Appurtenant Road and
Wet Weather Road Use**

- ***** Marbled Murrelet Conservation Area (MMCA)
- 1/4 Mile Seasonal Buffer
- ||||| Federal, State and County Parks
- Highlights Appurtenant Roads
- 500' Buffer
- 1000' Buffer
- ★ NSO Sites
- ☆ Oprey Site
- × Gate Location

- Permanent Road
- - - - Seasonal Road
- · - · Temporary Road
- - - - Proposed Road Construction
- - - - Power Line



276

562

★ Map Scale: 1 inch = 2000 feet

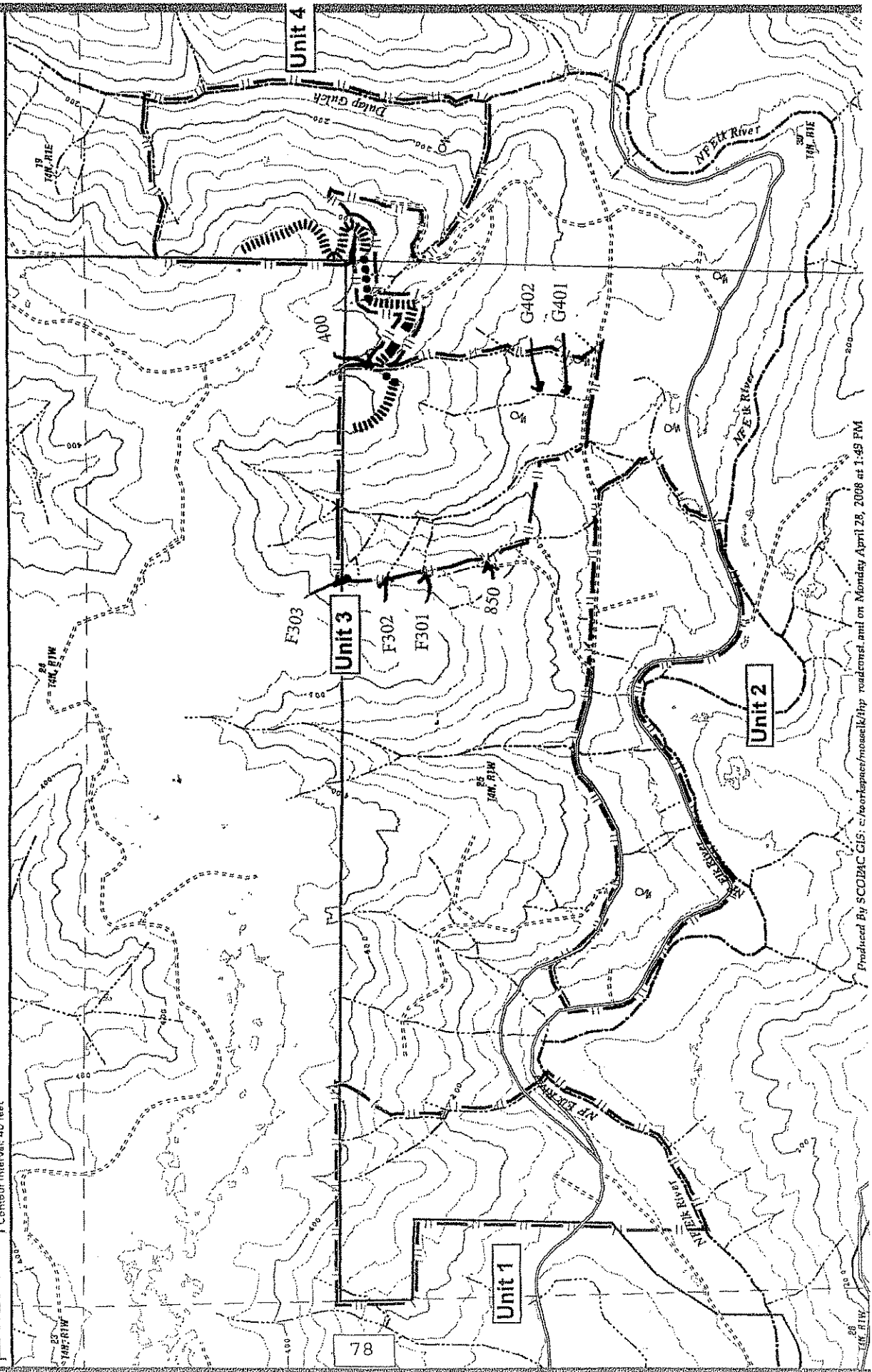
Moss Elk
N Road Construction Specifications Map

T9N 33E Sec. 30 H84M
 T9N 33E Sec. 25 H84M

USGS Quad (s): FIELDS LANDING, WICHITAN CREEK

Map Scale: 1 inch = 680 feet
 Contour Interval: 40 feet

- Property line
- Harvest Boundary
- Permanent Road
- Seasonal Road
- Class I Watercourse
- Class II Watercourse
- Class III Watercourse
- Class II Waters
- Fill Slope Construction
- Cut and Fill Construction
- 1/2 Cut and 1/2 Fill
- Keyway Construction
- Fill Bottom-Up Compaction



Moss Elk

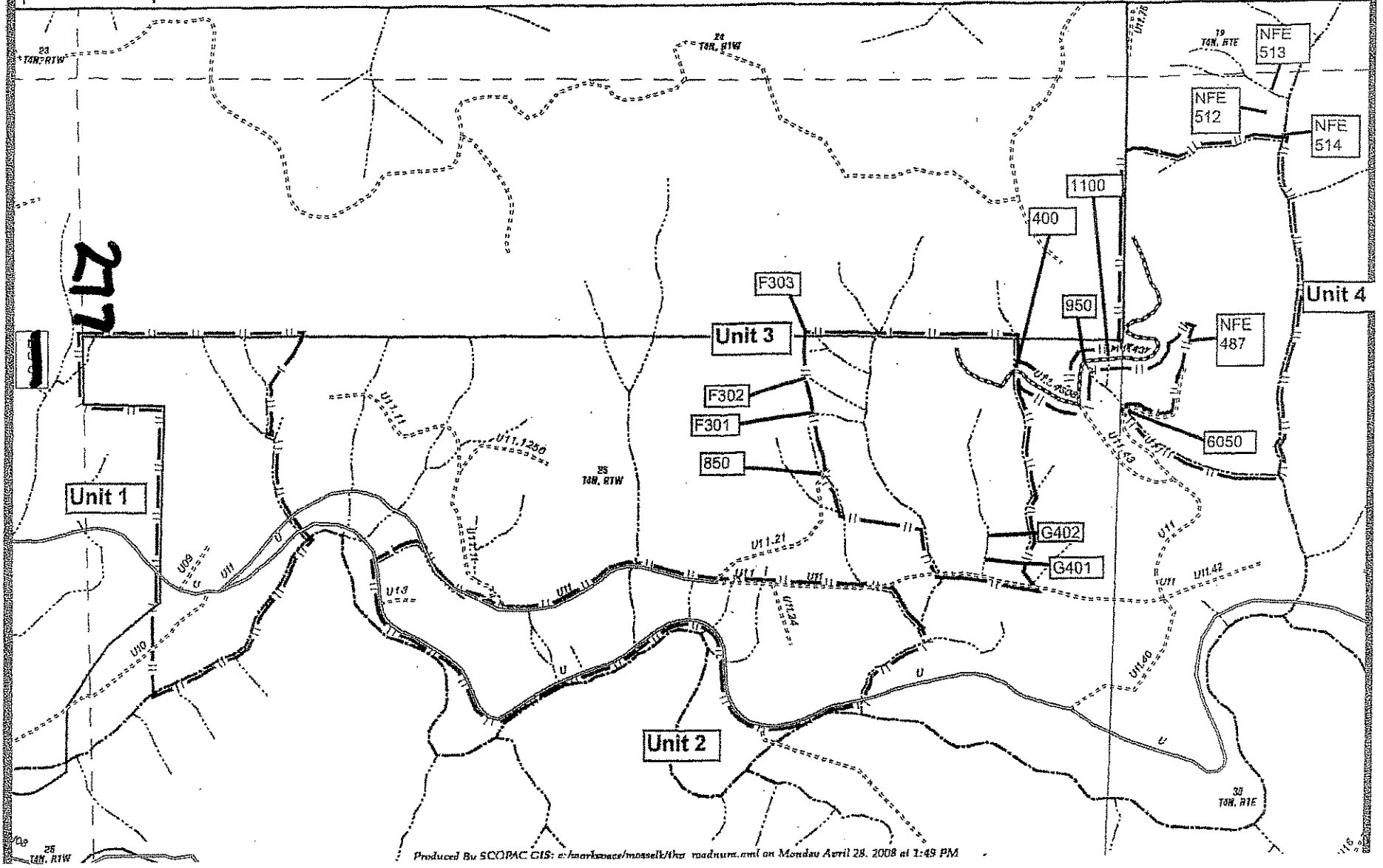
N Road Construction Location Map / ECP
Locator Map

T4N R1E Sec. 30 HB&M
T4N R1W Sec. 35 HB&M

- Property Line
- Harvest Boundary
- Permanent Road
- Seasonal Road
- Proposed Seasonal Road
- Class I Watercourse
- Class II Watercourse
- Class III Watercourse

Uses Quad (s): FIELDS LANDING, HENNINGER CREEK

Map Scale: 1 inch = 600 feet



III Inspection Plan and Reporting Requirements

A. Inspection Plan

The Inspection Plan is designed to ensure that all required management measures are installed and functioning prior to rainfall events; that the management measures are effective in controlling sediment discharge sources throughout the winter period; and that no new controllable sediment discharge sources developed.

- B. Qualified and trained professionals will conduct all specified inspections of the project site to identify areas causing or contributing to a violation of the applicable water quality requirements or other provisions of these WWDRs. The responsible party for inspection and reporting is **Jon Woessner (707) 764-4376**.
- C. No inspections are required in Project Areas where Timber Harvest Activities have not yet commenced.
- D. Project Areas where Timber Harvest Activities have commenced and no winter period Timber Harvest Activities have occurred inspections will be conducted each year and throughout the duration of the Project while Timber Harvest Activities occur.
 - a. The Project is covered under WWDRs and the following inspection requirements will begin at the startup of timber harvest activities within the Project area:
 - i. By November 15 to assure Project Areas are secure for the winter period;
 - ii. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and
 - iii. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new controllable sediment discharges sources have developed.
 - b. Project Areas with Winter Period Timber Harvest Activities will conduct inspections of such Project Areas while Timber Harvesting Activities occur and the Project is covered under the WWDRs as follows:
 - i. Immediately following cessation of winter period Timber Harvest Activities to assure areas with winter Timber Harvest Activities are secure for the winter;
 - ii. Once following ten (10) inches of cumulative rainfall commencing on November 15 and prior to March 1, as worker safety and access allows; and
 - iii. After April 1 and before June 15 to assess the effectiveness of management measures designed to address controllable sediment discharges and to determine if any new controllable sediment discharges sources have developed.
 - c. Inspection reports will identify where management measures have been ineffective and when repairs and design changes will be implemented to correct management measure failures.
 - d. After completing the required inspections, and when it has been determined new controllable sediment discharges sources have developed, the ECP, implementation schedule, and inspection plan will be updated, if required, consistent with the WWDRs and submit the updated documents to the Regional Water Board to maintain coverage under the WWDRs. If the approved amendment is found to be out of compliance with the WWDRs, the Project will be amended to be consistent with the provisions of the WWDR within 30 days, or coverage under the WWDRs will be terminated. The Project will then be required to seek Project coverage under an individual WDR.
 - e. Equipment, materials, and workers will be available for rapid response to failures and emergencies, implement, as feasible, emergency management measures depending upon field conditions and worker safety for access.
- D. If during the inspection or during the course of conducting timber harvest activities, a violation of an applicable water quality requirement or conditions of WWDRs is discovered, the following procedures will be followed:
 - a. When it has been determined that discharges are causing or contributing to a violation or an exceedence of an applicable water quality requirement or a violation of a WWDR prohibition:

- i. Corrective measures will be implemented immediately following the discovery that applicable water quality requirements were exceeded or a prohibition violated, followed by notification to the Regional Board by telephone as soon as possible but no later than 48 hours after the discharge has been discovered. The notification will be followed by a report within 14 days to the Regional Board, unless otherwise directed by the Executive Officer, that includes:
 1. the date the violation was discovered;
 2. the name and title of the person(s) discovering the violation;
 3. a map showing the location of the violation site;
 4. a description of recent weather conditions prior to discovering the violation;
 5. the nature and cause of the water quality requirement violation or exceedence or WWDR prohibition violation;
 6. photos of the site characterizing the violation;
 7. the management measure(s) currently being implemented;
 8. any maintenance or repair of management measures;
 9. any additional management measures which will be implemented to prevent or reduce discharges that are causing or contributing to the violation or exceedence of applicable water quality requirements or WWDR prohibition violation; and,
 10. the signature and title of the person preparing the report.
 11. the report will include an implementation schedule for corrective actions and describe the actions taken to reduce the discharges causing or contributing to violation or exceedence of applicable water quality requirements or WWDR prohibition violation.

- E. For other inspections conducted where violations are not discovered, a summary report will be submitted to Executive Officer by June 30th for each year of coverage under the WWDRs or upon termination of coverage. The summary report, at a minimum will include the date of inspections, the inspector's name, the location of each inspection, and the title and name of the person submitting the summary report.

If helicopter operations are proposed for this project, please find attached a Columbia Helicopters, Inc. (CHI) Fuel Spill Prevention and Cleanup Plan For Columbia Helicopters Field Operations.

Explanation of Information Included in the Controllable Sediment Sources Table	
Column Heading	Explanation
Site No.	Site identification unique to project area
Site Type	A description of the existing site. Example: Humboldt Crossing; Culvert Crossing; Unstable Fill; Unstable Cut Slope; Diversion Potential.
Estimate of Potential Erosion	A quantitative estimate of the volume, in cubic yards, of the total amount of potential erosion/displacement of soil that will occur should the site entirely fail. The landowner often uses a methodology developed by Pacific Watershed Associates to estimate erosion, which assumes 100% delivery of calculated volume—use of this method for individual sites is noted in Site Description.
Potential Sediment Delivery Percent	An estimate of the relative potential for sediment delivery expressed as a percent of the total amount of Potential Erosion that will be discharged to waters of the State should the site fail.
Sediment Prevention Volume	The volume, in cubic yards, of sediment discharge estimated to be prevented by implementation of the prescribed treatment. Volume represents the Estimate of Potential Erosion multiplied by the Potential Sediment Delivery Percent.
Priority for Treatment	Treatment priority reflects the immediacy of sediment discharge and the relative risk to the receptor, should the site fail. Low priority sites are ones that will not likely deliver significant amounts of sediment during the life of the WWDR permit, and will be treated prior to filing of THP work completion report, which does not exceed 5-years following THP approval date. <i>Medium or high priority sites indicate potentially imminent discharge, and the timing of treatment is indicated in Implementation Schedule column.</i>
Implementation Schedule	Indicates the timing of implementing the prevention and minimization measures listed in the Treatment column.
Site Description	Provides sufficient information that describes the existing condition of the site and factors that inform the chosen treatment methods and implementation schedule. This information will include a description of how the existing condition of the site (ie. stable or unstable) will be affected by different storm events, and whether sediment discharge is imminent. For example, an unstable site could easily discharge significant amounts of sediment in a small storm, thus the treatment priority should be higher. Conversely, a stable site that may take one or more very large storms to trigger discharge could be lower treatment priority. If PWA method is used to calculate erosion/delivery volumes, it will noted here.
Treatment	Sediment discharge prevention and minimization measures that will be implemented at the site, including treatment specifications if necessary.

Attachments:

- ECP Table

Erosion Control Plan

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)	Priority for Treatment	Implementation Schedule	Site Description	Treatment
Project Moss Elk							
D: 1600 Cat-Xing TATION: 301 ITE: F301 VOID: -328609103 EDID: 4N1W25F301 EPAIRED: NO	Failing Crossing	250	20 8%	Low	Prior to THP Final Completion.	Fill crossing is failing and delivering to a class III watercourse. Associated skid trail on the left bank looking downstream has a large amount of perched fill available for delivery to watercourse.	Perched fill over class III. Only include pulling the perched fill material at the crossing outlet and establishing channel grade through the crossing after use. Install 6" pipe if water present at time of use.
D: 1600 Cat-Xing TATION: 302 ITE: F302 VOID: -1725624546 EDID: 4N1W25F302 EPAIRED: NO	Temporary Crossing	90	10 11%		Prior to THP Final Completion.	Temporary Crossing and associated fills below crossing in channel. Perched fill on left bank looking downstream.	Treat the sink hole in the road surface and to establish a channel through the road. Earthen material or gravels used to fill the sink hole should be compacted with a bull prick at time of installation. If water present at time of use minimum 6" culvert.
D: 1600 Cat-Xing TATION: 303 ITE: F303 VOID: 1382175012 EDID: 4N1W25F201 EPAIRED: NO	Temporary Crossing	90	10 11%	Low	Prior to THP Final Completion.	Temporary Crossing and associated fill below crossing.	If water present at time of use install a minimum 6" culvert.
D: 1600 Cat-Xing TATION: 401 ITE: G401 VOID: -1944651933 EDID: 4N1W25H401 EPAIRED: NO	Dirt Seasonal Crossing	12	12 100%	Low	Prior to THP Final Completion.	Temporary Crossing is delivering sediment to Class III watercourse. Upon removal of this temporary crossing, side slopes will be laid back 2:1 or natural gradient.	Upon removal of this temporary crossing, side slopes will be laid back 2:1 or natural gradient.
D: 1600 Cat-Xing TATION: 402 ITE: G402 VOID: 1812754024 EDID: 4N1W25H402 EPAIRED: NO	Dirt Seasonal Crossing	83	83 100%		Prior to THP Final Completion.	Class III watercourse was used as a skid trail, and the channel was infilled for approximately 125 ft.	Class III watercourse was used as a skid trail, and the channel was infilled for approximately 125 ft. Use the tractor crossing as is. In the event the crossing use results in deviation from the existing drainage patterns the drainage should be re-established after use. Monitoring requirement: tractor crossing G402 shall be monitored fro signs of erosion the 1st winter period after use. In the event the crossing exhibits signs of erosion, then the RPF of record shall contact the Regional Water Board staff to schedule an enspection to discuss treatment options.
D: U11.21 TATION: 850 ITE: C2 VOID: -258932709 EDID: 4N1W25F402 EPAIRED: NO	Temporary Crossing	200	100 50%	Low	Prior to THP Final Completion.	Temporary crossing and associated fill above and below in channel.	Only pull and stabilize fill materials at the road/watercourse interface. Install minimum 6" pipe if water present at time of use.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)	Priority for Treatment	Implementation Schedule	Site Description	Treatment
ID: U11.4308 STATION: 400 SITE: C1 VOID: -2053319853 SEDID: 4N1W25H301 REPAIRED: NO	Tractor Crossing	800	200 25%	Low	Prior to THP Final Completion.	Existing skid trail crossing perpendicular to creek. Appears creek was used as skid trail. Perched fill eroding on outboard edge of crossing.	If water present, a minimum 6" diameter culvert will be installed, and upon completion slopes will be layed back to natural gradient or 2:1. Limit excavation to stabilization of the head cut at the outboard edge of the crossing.
Total Estimated Yards		1525	435				

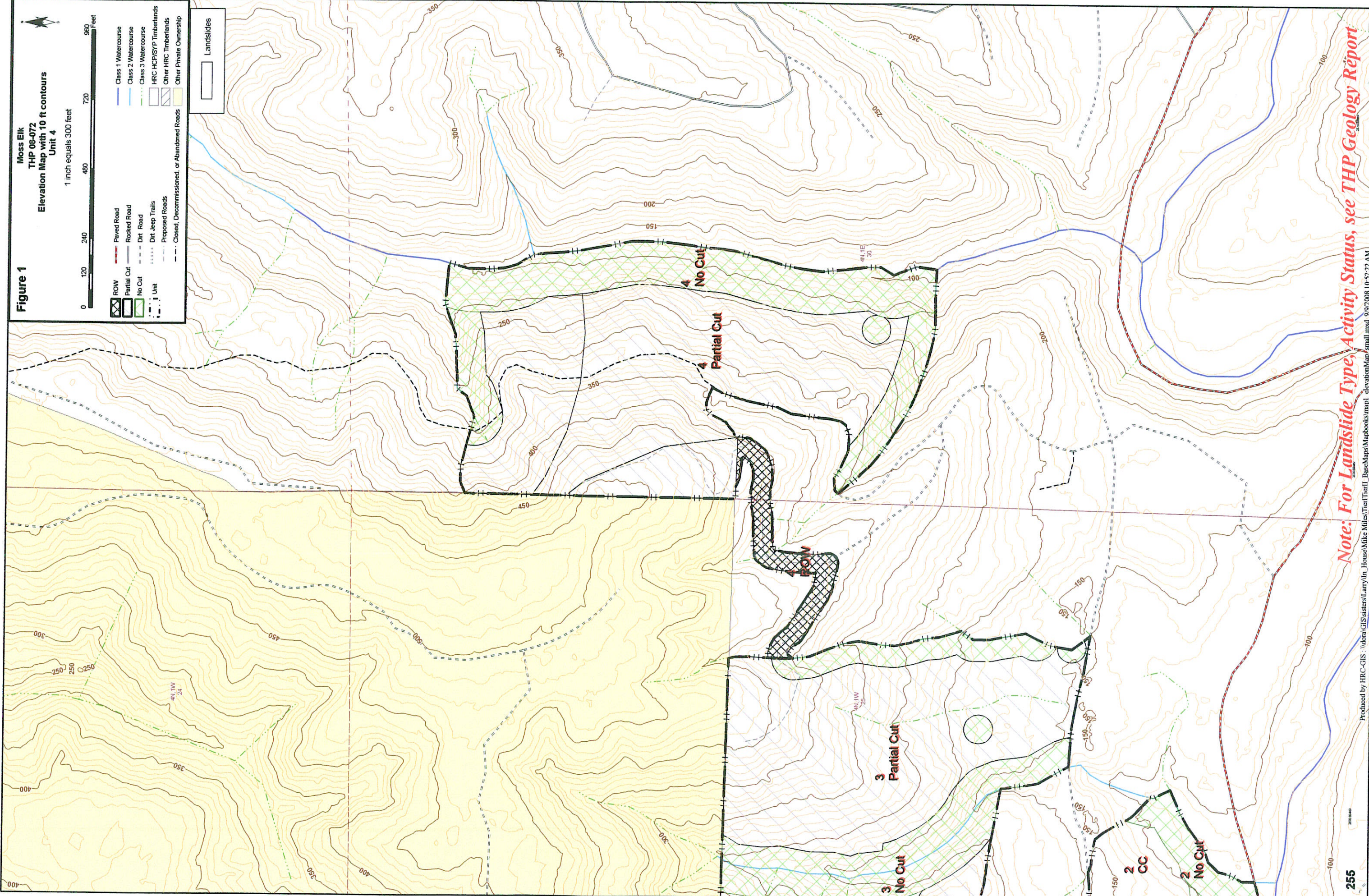
Figure 1

Moss Elk
THP 08-072
Elevation Map with 10 ft contours
Unit 4

1 inch equals 300 feet



ROW	Paved Road	Class 1 Watercourse
Partial Cut	Rocked Road	Class 2 Watercourse
No Cut	Dirt Road	Class 3 Watercourse
Unit	Dirt Jeep Trails	HRC HCP/ISYP Timberlands
	Proposed Roads	Other HRC Timberlands
	Closed, Decommissioned, or Abandoned Roads	Other Private Ownership
		Landslides



Note: For Landslide Type, Activity Status, see THP Geology Report

Produced by HRC-GIS: \\Mora\GIS\sisters\Larry\In_House\Mike Miles\Tier1\Tier1_BaseMaps\Mapbooks\map1_elevationMap_small.mxd 9/9/2008 10:52:22 AM

Figure 2

Moss Elk
Trip 08-072
Shalstab 10 mls grid / Slope Class Map
Unit 4

1 inch equals 500 feet

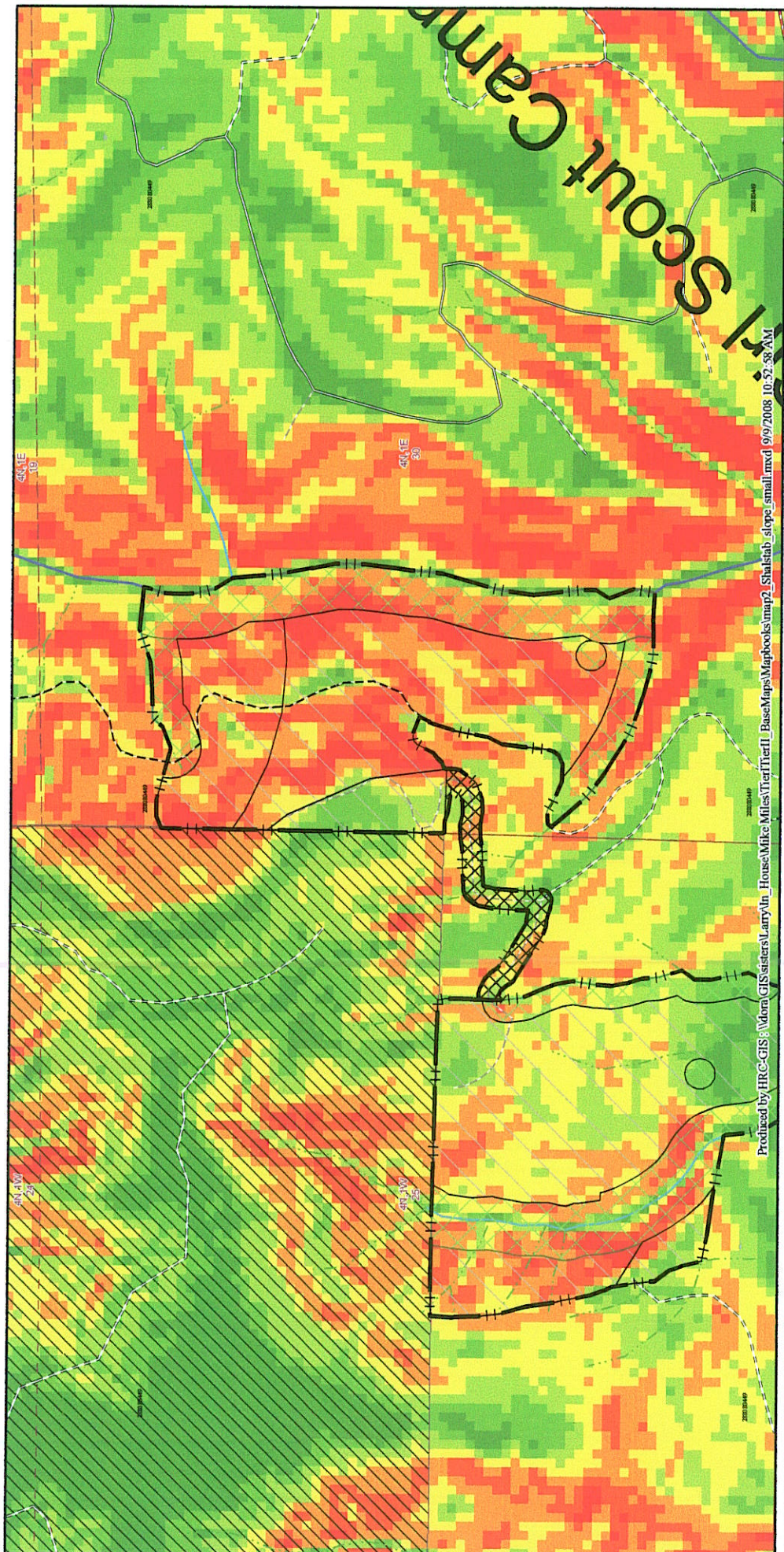
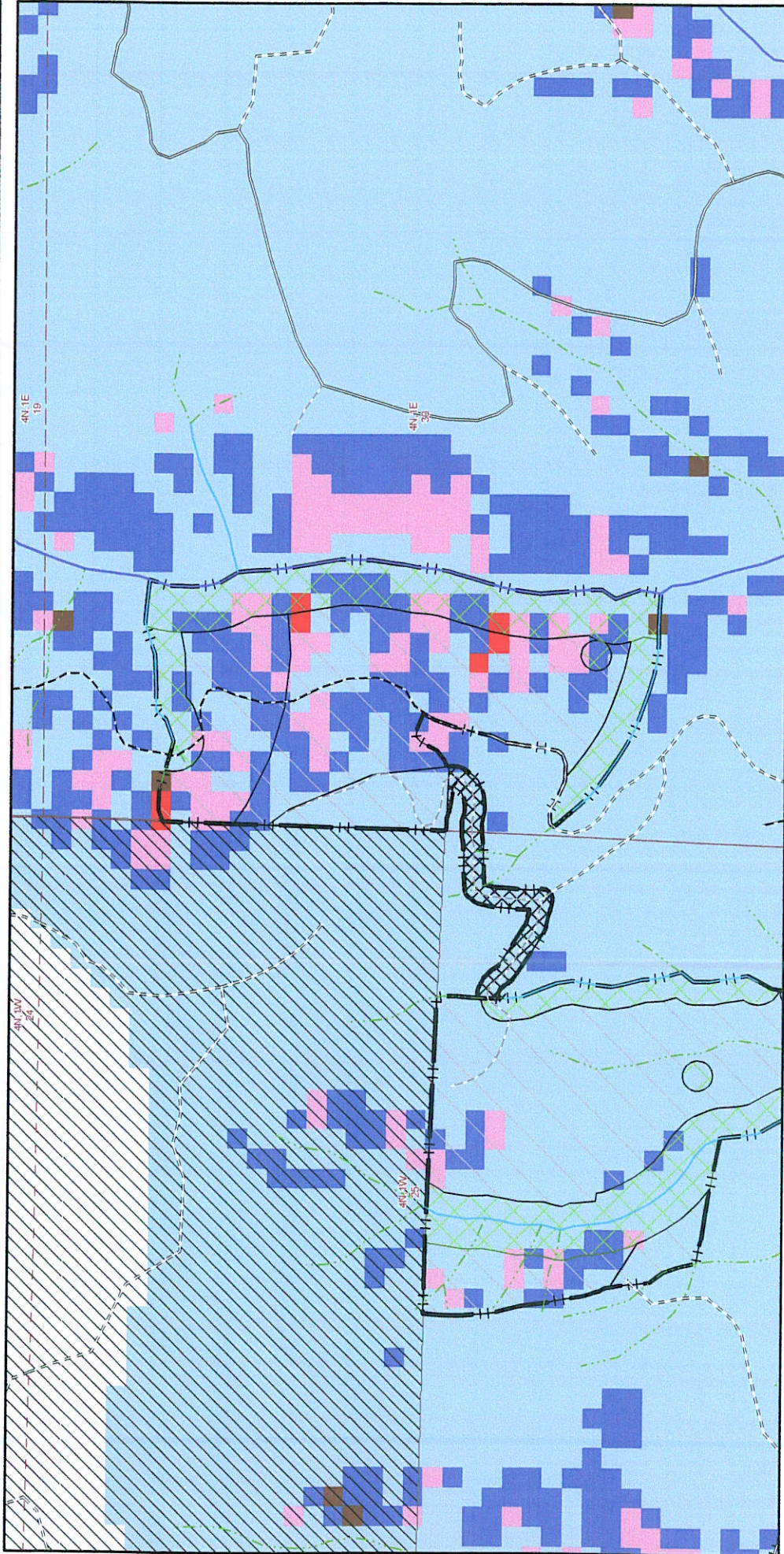
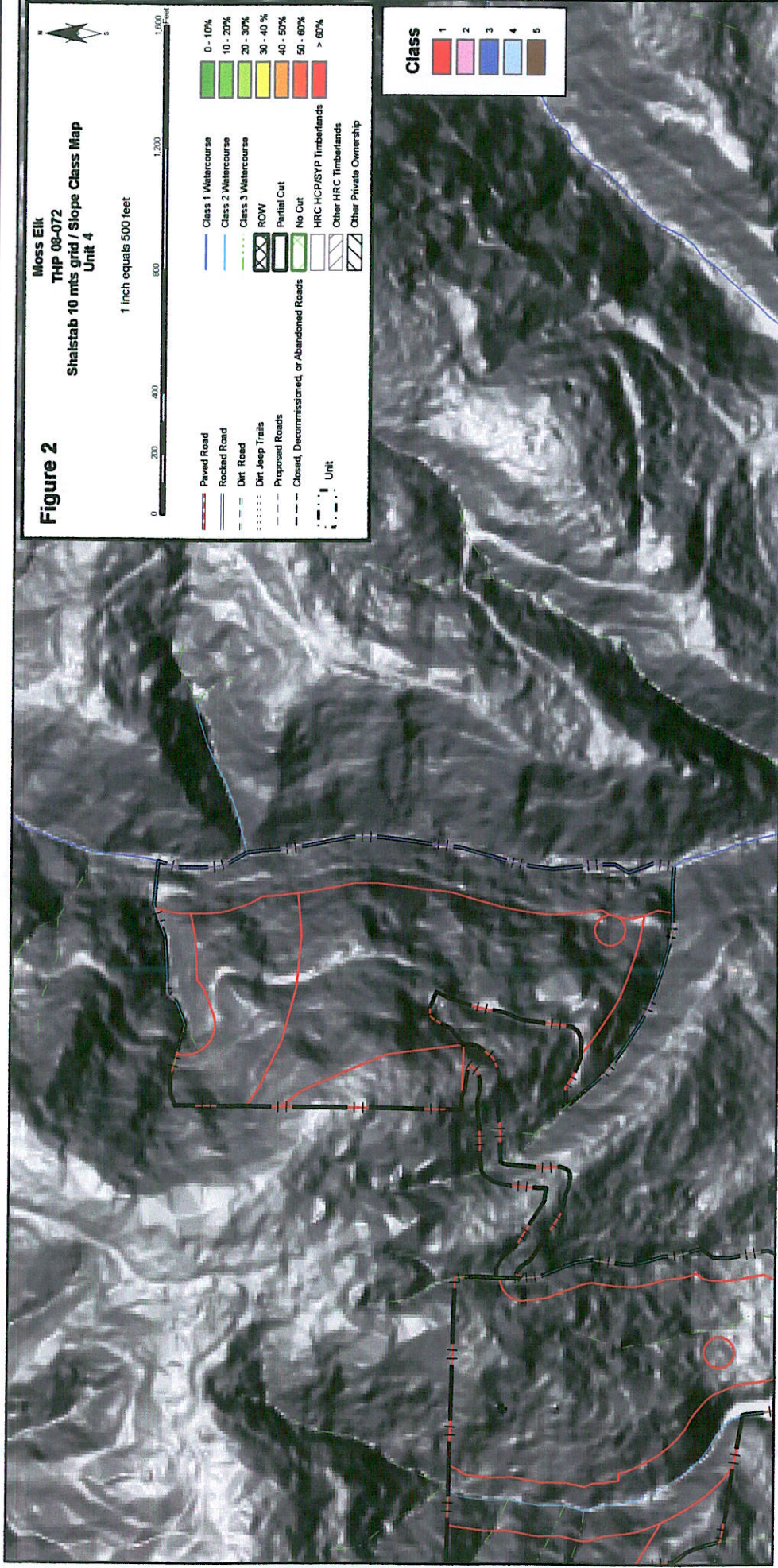
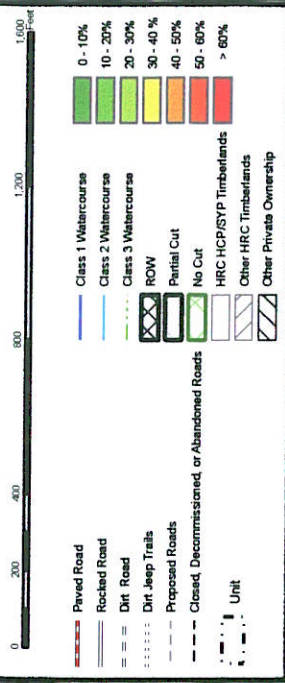
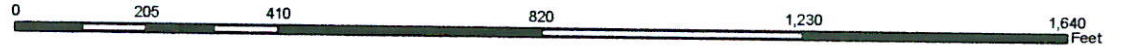


Figure 3

Moss Elk
THP 08-072
CGS Map Unit 4

1 inch equals 300 feet



- | | | | |
|-------------------------|-------------|--|---------------------|
| HRC HCP/SYP Timberlands | ROW | Paved Road | Class 1 Watercourse |
| Other HRC Timberlands | Partial Cut | Rocked Road | Class 2 Watercourse |
| Other Private Ownership | No Cut | Dirt Road | Class 3 Watercourse |
| | Unit | Dirt Jeep Trails | |
| | | Proposed Roads | |
| | | Closed, Decommissioned, or Abandoned Roads | |

Legend

- dss
- a
- df
- gh
- db
- y
- contact, approx. located
- contact, approx. located,
- contact, approx. located, concealed
- f.a., anticline, approx. located
- f.a., anticline, approx. located, concealed
- f.a., anticline, certain
- fault, approx. located
- fault, certain
- thrust fault, approx. located
- thrust fault, concealed
- thrust fault, concealed, queried
- thrust fault, inferred
- tt
- df, h
- ds, dm
- ds, dy
- ds, h
- ef, dm
- ef, do
- ef, dy
- ef, h
- rs, dm
- rs, do
- rs, dy
- rs, h
- u,
- Kfs
- Q
- Qds
- Qh
- Qmts
- Qrt
- Qtwu
- Ty

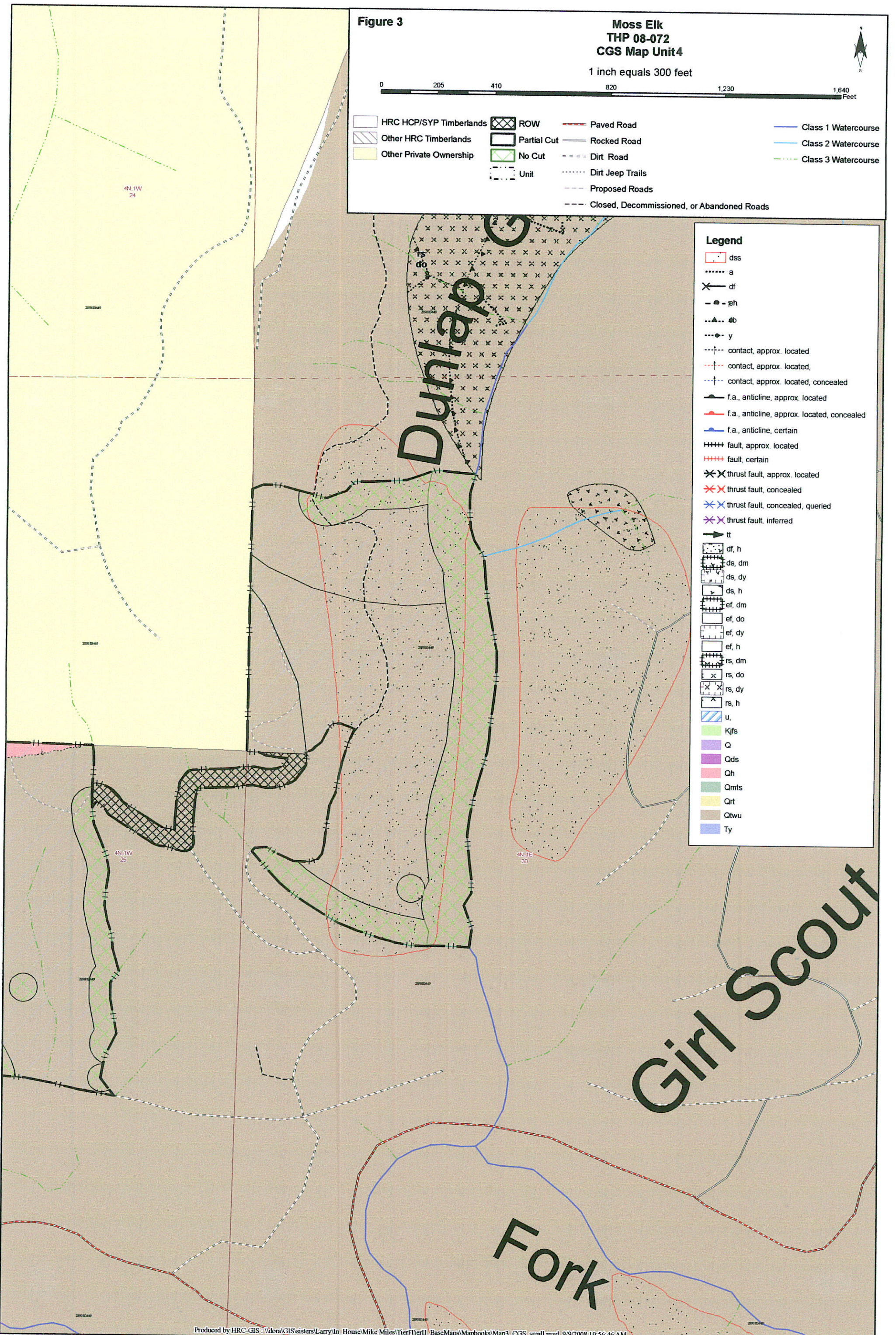
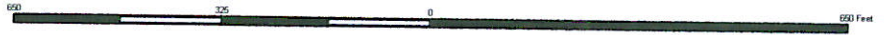


Figure 4

Moss Elk
THP 08-072
Mass Wasting Potential
Unit 4

1 inch equals 300 feet



- | | | |
|-------------------------|---------------------------|--|
| HRC HCP/SYP Timberlands | Class 1 Watercourse | Paved Road |
| Other HRC Timberlands | Class 2 Watercourse | Rocked Road |
| Other Private Ownership | Class 3 Watercourse | Dirt Road |
| ROW | DS & Amphitreatre / Slope | Dirt Jeep Trails |
| Partial Cut | | Proposed Roads |
| No Cut | | Closed, Decommissioned, or Abandoned Roads |
| Unit | | |
- Potential**
- Very Low
 - Low
 - Moderate
 - High
 - Very High
 - Extreme

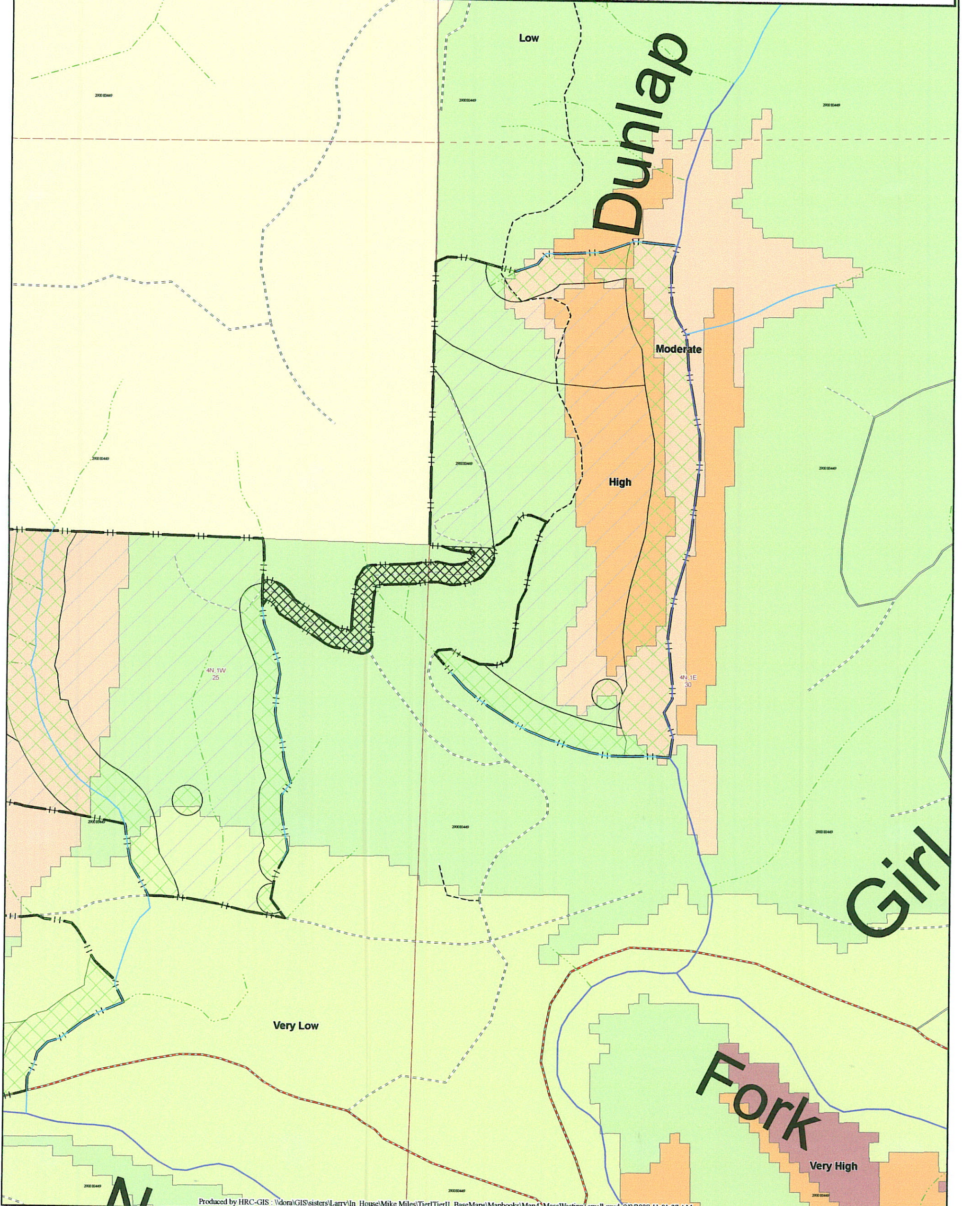


Figure 5

Moss Elk
THP 08-072
Aerial Photo Map - Unit 4
1 inch equals 300 feet



- | | | | |
|-------------------------|-------------|---------------------|--|
| HRC HCP/SYP Timberlands | ROW | Class 1 Watercourse | Paved Road |
| Other HRC Timberlands | Partial Cut | Class 2 Watercourse | Rocked Road |
| Other Private Ownership | No Cut | Class 3 Watercourse | Dirt Road |
| Unit | | Dirt Jeep Trails | Proposed Roads |
| | | | Closed, Decommissioned, or Abandoned Roads |

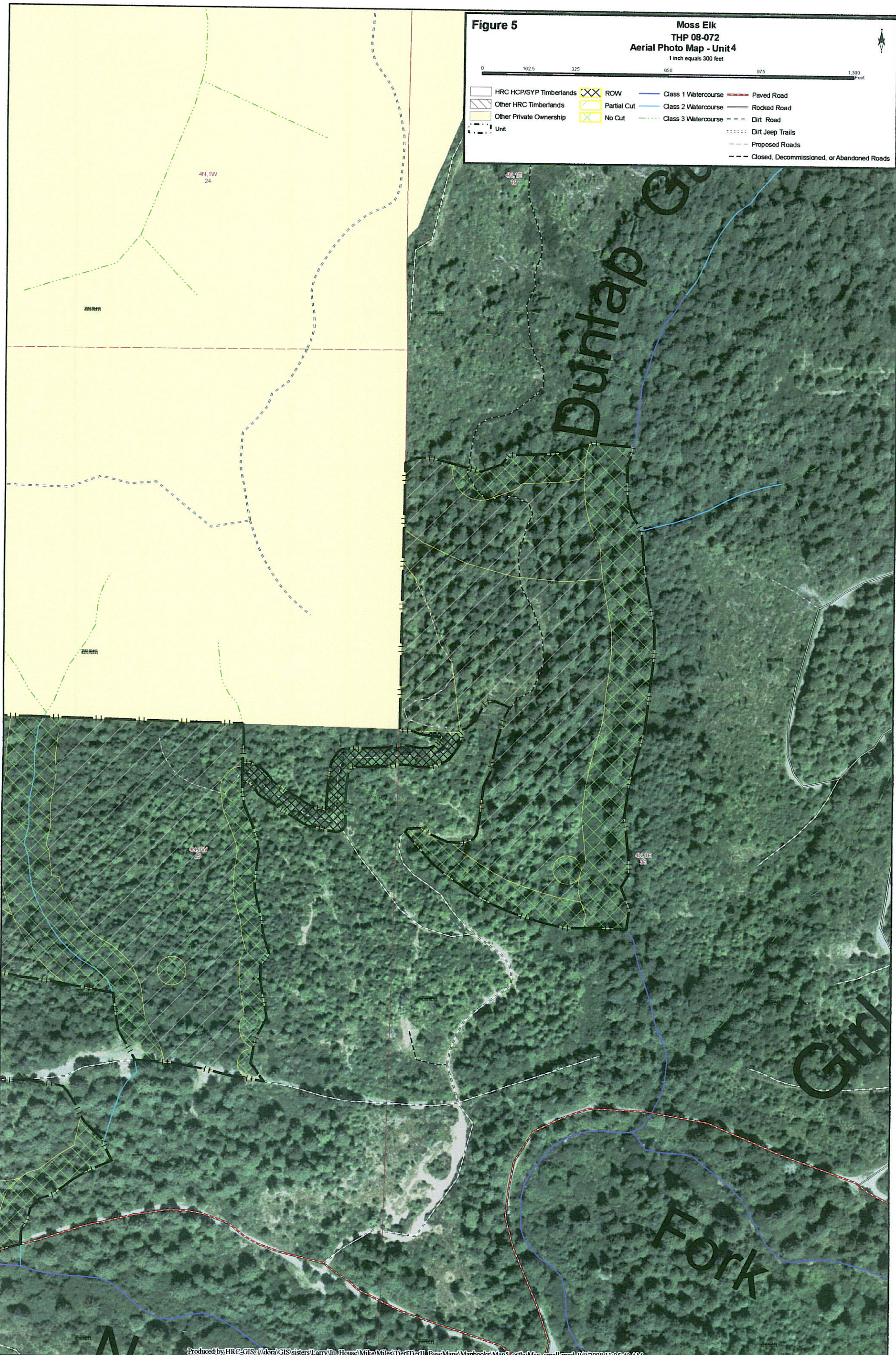
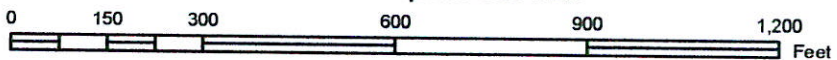


Figure 6

THP 08-072
Watershed Analysis Deep-Seated Landslide Inventory
Unit 4



1 inch equals 300 feet



- | | | |
|-------------------------|---------------------|--|
| HRC HCP/SYP Timberlands | Class 1 Watercourse | Paved Road |
| Other HRC Timberlands | Class 2 Watercourse | Rocked Road |
| Other Private Ownership | Class 3 Watercourse | Dirt Road |
| ROW | Unit | Dirt Jeep Trails |
| Partial Cut | | Proposed Roads |
| No Cut | | Closed, Decommissioned, or Abandoned Roads |

Legend

- | | |
|--------------------------------------|--|
| Scarp | |
| Earthflow | |
| Rotational/ Translational/ Earthflow | |
| Rotational/ Translational | |

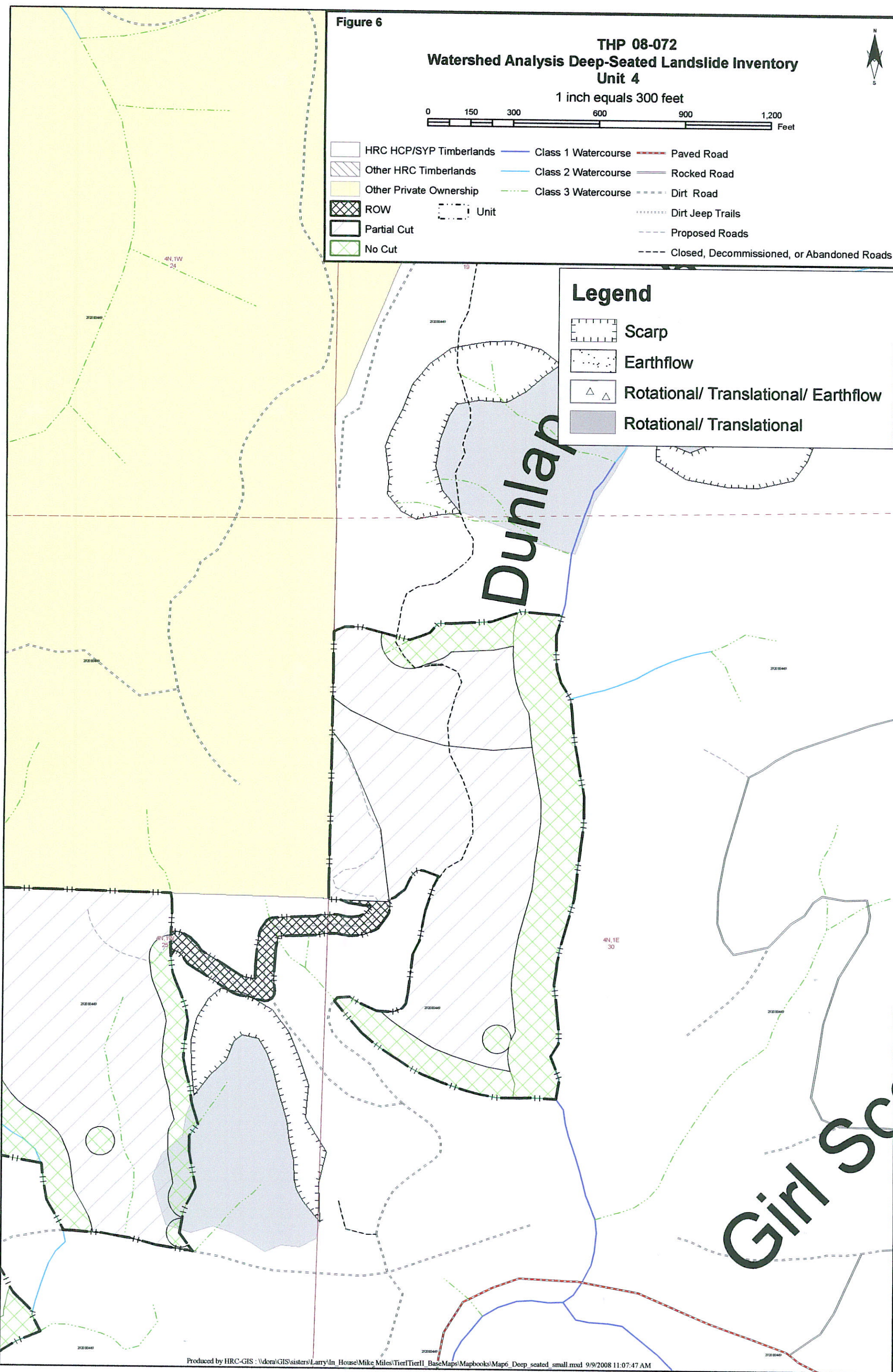


Figure 7

**Moss Elk
THP 08-072
Road Map**

1 inch equals 1,000 feet



- | | | |
|-------------------------|--|----------------|
| HRC HCP/SYP Timberlands | Class 1 Watercourse | Paved Road |
| Other HRC Timberlands | Class 2 Watercourse | Rocked Road |
| Other Private Ownership | Class 3 Watercourse | Dirt Road |
| ROW | Dirt Jeep Trails | Proposed Roads |
| Partial Cut | Closed, Decommissioned, or Abandoned Roads | Stormproofed |
| No Cut | | Upgraded |
| | | Decommissioned |

