Humboldt Redwood
COMPANY, LLC

Main Office
P.O. Box 37
Scotia, CA 95565
(707) 764-4472

Timber Operations
P.O. Box 712
Scotia, CA 95565
(707) 764-4472

April 21, 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 1-07-189 HUM (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 1-07-189 HUM. This unit is comprised of 2.3 acres of Selection (1.2 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 this is a small acreage unit that is underlain by silts, sands, and clays of the Wildcat Group. Slope inclinations never exceed 30% within the unit. One Class III watercourse is located along the northern harvest unit boundary and is within a Class III RMZ. No unstable areas have been mapped or observed within the unit. No modeling has suggested the slopes within the unit to be unstable. Based on the proposed partial harvest, the RMZ for the watercourse, and the gently inclined slopes, it is our opinion that this unit meets the requirements for Tier II enrollments. No changes to this unit are needed to meet the requirements 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. 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 #2622
Humboldt Redwood Company, LLC

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

Professional Certification of Design

I, _____, P.G. 7950, 4/21/09,
Signature license # Date

PROFESSIONAL GEOLOGIST
TAGG S. NORDSTROM
No. 7950
STATE OF CALIFORNIA

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. 1-07-189 HUM (Tom Collins) 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: Tom Collins THP 07-189 Unit # 4 3-24-09

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	For reasons other than slope stability hazard, silviculture is now group selection with a minimum retention of 90 ft^{s2} of basal area. No site preparation will occur due to partial harvesting.	No change to approved yarding methods.

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

The very small acreage Unit 4 is underlain by undifferentiated Wildcat Group sediments. This lithology is composed of fine grained silts, sands, infrequent gravels, and clays. Typical structural conditions result in gently dipping panels to the north.

No unstable areas have been mapped in the unit from Figure 3 or 6. Mass Wasting Potential is modeled as low. SHALSTAB modeling is never greater than value 4.

Figure 2 review (Hillslope shade) shows generally irregular surfaces that are moderately inclined. One poorly defined Class III watercourse is located along the northern unit boundary.

The THP was originally approved for even aged harvesting (clearcut). Slope stability conditions were evaluated with respect to that proposed silviculture. 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 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 includes only one watercourse, Class III.

Slopes within the Unit vary from 0 to 30%.

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 evenly distributed in the buffer. Where side slopes are less than 50% employ a

A) General Observations

25' RMZ that maintains 75 sq. ft 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.

No landslides were recorded in the THP during development and agency review. OG (2007) did not find areas of instability within the unit.

The stand appears to have been commercially thinned within the last 15 to 20 years using ground based yarding methods. The stand is predominantly redwood (80%).

B) Harvest Related Impacts and Hillslope Sensitivity

No landslides were observed within the harvest unit despite the history of active management including substantial ground-disturbance from legacy harvest activities.

The Class III RMZ was designed to provide a sediment filtration band 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.

C) Forestry / Silviculture Plan

The Unit silviculture was recently amended to group selection retaining 90 square feet of basal area where outside the groups. This change represents a new stand management approach converting the stand dynamics to uneven-aged.

Site preparation has been changed to none.

D) Operational Design Plan
THP approved yarding method is ground based. This appears reasonable.

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.

OG (Oswald Geologic), 2007, Engineering Geologic Evaluation of the Tom Collins THP, Humboldt County, California, unpublished report to Mr. Brian Griesbach, RPF, dated November 19, 2007 and found in section V of THP 1-07-189.

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 models 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 enforcable Zero Discharge Monitoring Plan (Tier II).

Total Clear Cut Equivilant Acres enrolled or submitted for enrollment	140.0

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				

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

THP Name	THP Number	Unit Number	Silviculture					CC Equivalent	Hazard[2]	
			CC	ROW	Disp VR	SHR	SEL		Low	High
Tom Collins	07-189	5				187	0.0	140.3	185	2
Tom Collins	07-189	1					4.9	2.5	4.9	0
Tom Collins	07-189	2					24	12.0	24	0
Tom Collins	07-189	3					5.3	2.7	5.3	0
Tom Collins	07-189	4					2.3	1.2	2.3	0
South Lake	08-084	2					20.2	10.1	20.2	0
*South Lake	08-084	1					29.1	14.6	29.1	0.0
							Total	183.2		

* This unit has 1.1 acres in N.F. Elk River total acres for the unit is 30.2

[2]Hazard Acres are reported here to conform to the requirements of the Pre-Harvest Planning Report. The Staff Landslide Model in South Fork Elk River allows up to 114 Acres irrespective of Hazard Class. Acres reported are true acres

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 114 Acres in South 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 enforcable Zero Discharge Monitoring Plan (Tier II).

Indicatas a plan where a portion of the unit is Tier 1 with the remainder is tier 2

Total Clear Cut Equivilant Acres enrolled or submitted for enrollment	80.4

Table 2. Summary of THPs to enrolled prior to establishment of Zero Discharge Monitoring Plan for South Fork Elk River.

			Hazard	
THP Number	Unit Number	Harvest Acres	Low	High*
07-189	1	4.9	4.9	0.0
07-189	2	24	24	0.0
07-189	3	5.3	5.3	0.0
07-189	5	50	50	0.0
08-084	1	29.1	29.1	0.0
	Totals	113.3	113.3	

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

THP Name	THP Number	Unit Number	Yarding System			Site Preparation	
			Ground Based	Yarder	Helicopter	Mechanical	Broadcast
Tom Collins	07-189	5	145.6	40.4			
Tom Collins	07-189	1	4.9	0			
Tom Collins	07-189	2	24	0			
Tom Collins	07-189	3	5.3	0			
Tom Collins	07-189	4	2.3	0			
South Lake	08-084	2	20.2				
South Lake	08-084	1	4.4	24.7			

Humboldt Redwood Company LLC

Erosion Control Plan (ECP) for
Tom Collins THP
1-07-189HUM

Updated ECP – for purpose of identifying **Tier 2** erosion control sites specific to unit 4 (2009 enrollment requests); Unit has site TC 9 (Skid road), sites 3589 and 3789 (U06.4880) and site 400 (U11.4308). 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] an R1-2006-0041 [Freshwater Creek] 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: Tom Collins 1-07-189HUM
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] an R1-2006-0041 [Freshwater Creek].

> "'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

Controllable sediment sources that have been identified will be corrected as part of this THP. All controllable sediment sources are listed in the attached "Controllable Sediment Sources" 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] an R1-2006-0041 [Freshwater Creek]. Highest priority is assigned to

the largest sediment discharge sources that discharge to waters that support domestic water supplies or fish. HRC'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 HRC 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

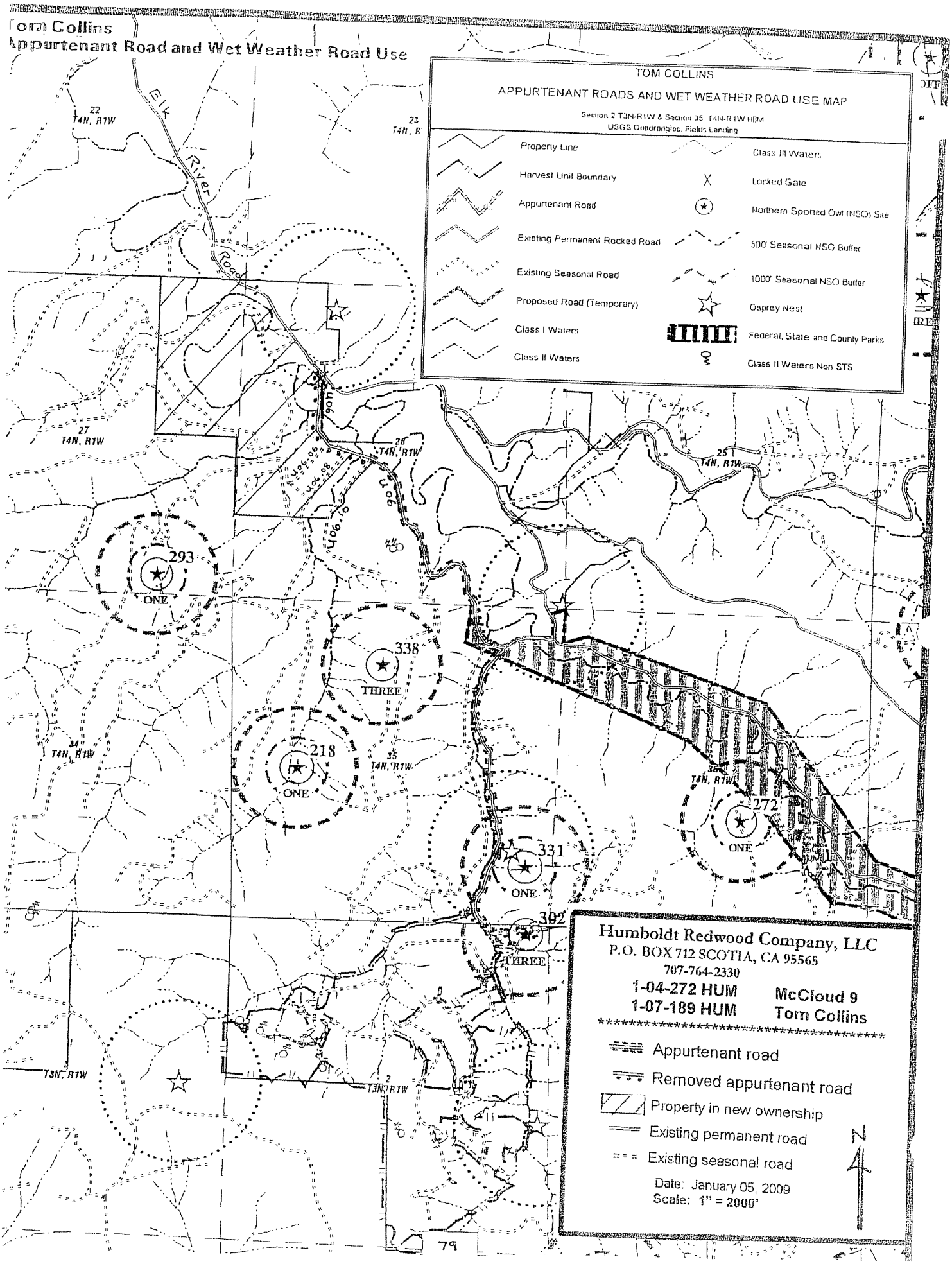
THP Section V:

- 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 maps
- Road Construction Locations/ECP Site Locator Map

Tom Collins
Appurtenant Road and Wet Weather Road Use



Tom Collins

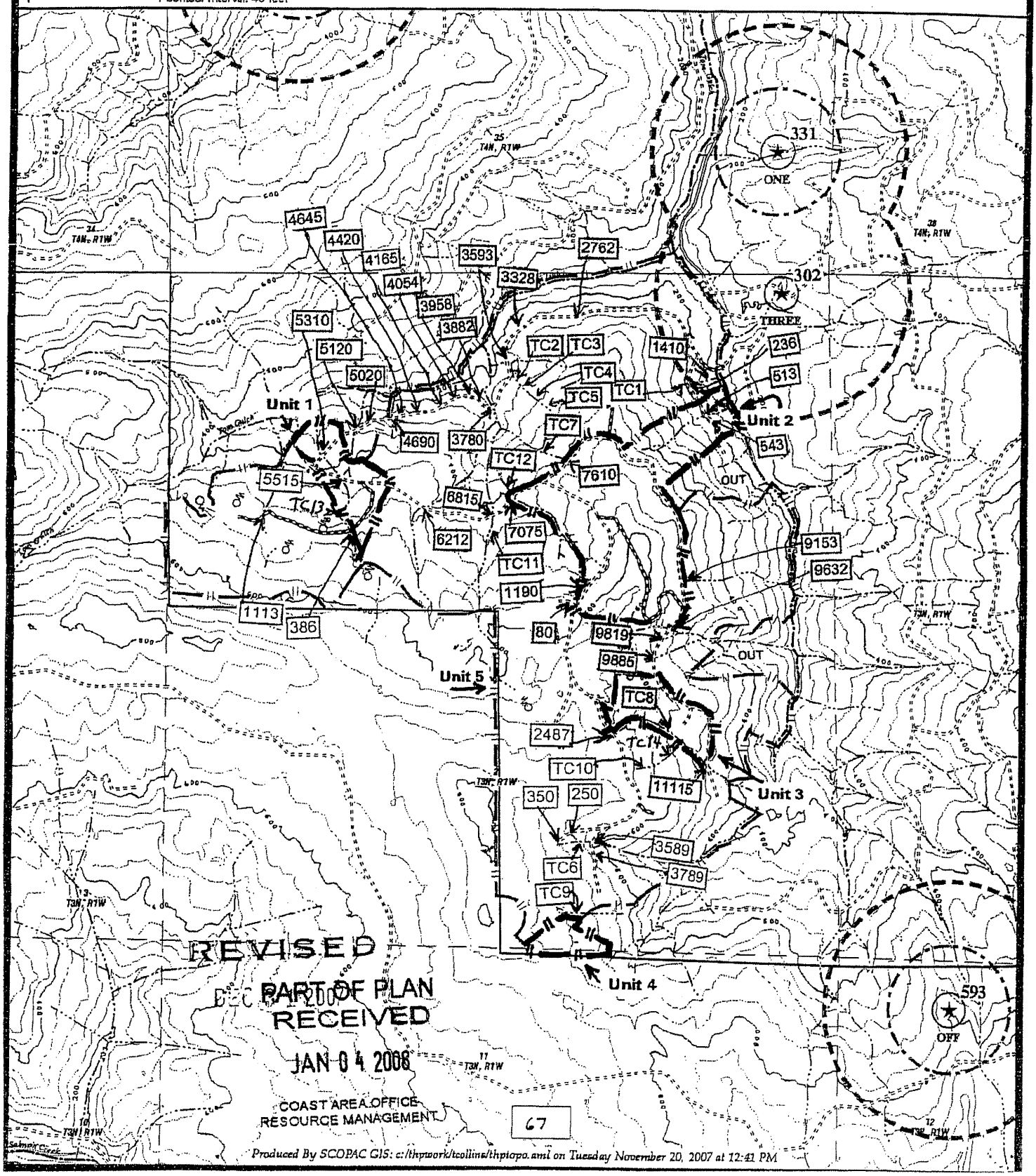
Topographic Map

T3N R1W Sec. 2 HB&M
T4N R1W Sec. 35 HB&M

USGS Quad(s): FIELDS LANDING

Property Line
Harvest Boundary
Permanent Road
Seasonal Road
Proposed Seasonal Road
Class I Watercourse
Class II Watercourse
Class III Watercourse
Class II waters non STS

Map Scale: 1 inch = 1000 feet
Contour Interval: 40 feet



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PART OF PLAN
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RESOURCE MANAGEMENT

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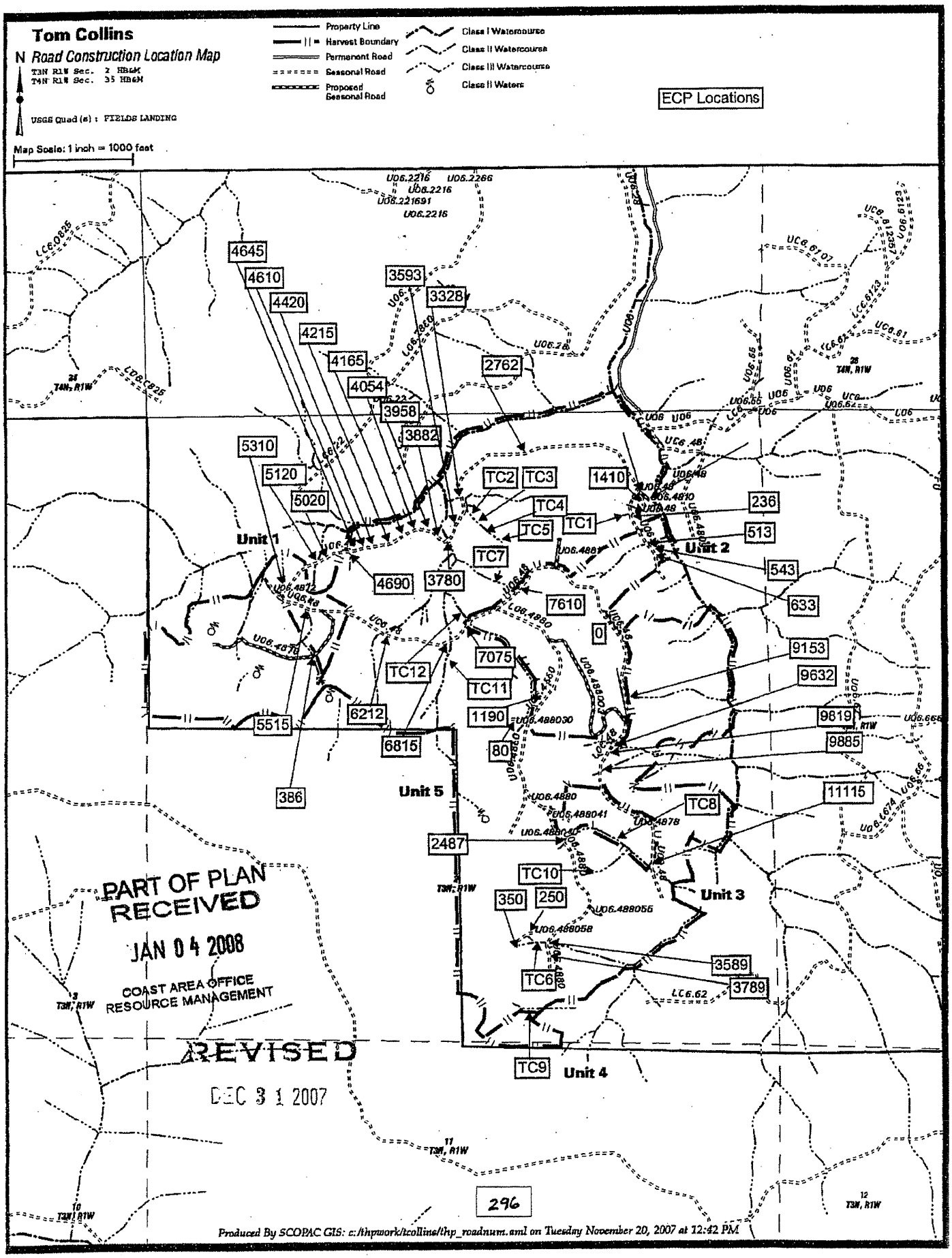
Tom Collins
N Road Construction Location Map
T3N R1W Sec. 2 HB&M
T4N R1W Sec. 35 HB&M
USGS Quad (s) : FIELDS LANDING
Map Scale: 1 inch = 1000 feet
Property Line
Harvest Boundary
Permanent Road
Seasonal Road
Proposed Seasonal Road
Class I Watercourse
Class II Watercourse
Class III Watercourse
Class II Waters
ECP Locations
4645
4610
4420
4215
4165
4054
3958
3882
3593
3328
2762
5310
5120
5020
TC2
TC3
TC4
TC5
TC1
1410
236
513
543
633
Unit 1
Unit 2
TC7
4690
3780
7610
0
9153
9632
9819
9885
7075
TC12
TC11
1190
80
6212
5515
6815
386
Unit 5
11115
TC8
2487
TC10
350
250
Unit 3
3589
3789
TC6
TC9
Unit 4
PART OF PLAN
RECEIVED
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RESOURCE MANAGEMENT
REVISED
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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) 489-1373.

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

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. HRC 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.

	Medium or high priority sites indicate potentially imminent discharge, and the timing of treatment is indicted in Implementation Schedule column.
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 be 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 Tom Collins							
RD: 1600 Cat-Xing STATION: 1 SITE: TC1 WOID: 1766052427 SEDID: 3N1W02G201 REPAIRED: NO	Tractor Crossing	11	11 100%	Low	NO TREATMENT	Class III tractor fill crossing	Fill material in channel from historic skid road Class III crossing; chronic discharge appears minor due to low hydrologic power; unstable area located downstream of watercourse <100'. In consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 2 SITE: TC2 WOID: -879011536 SEDID: 3N1W02E201 REPAIRED: NO	Tractor Crossing	5	5 100%	Low	NO TREATMENT	class III tractor fill crossing	Class III hillslope drainage in this area has been disrupted and is irregular as a result of past tractor logging operations. Sites consist of skid trails crossing irregular Class III watercourse. No evidence of discharge to higher order stream (i.e. Class II) observedIn consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 3 SITE: TC3 WOID: -1200632463 SEDID: 3N1W02E202 REPAIRED: NO	Tractor Crossing	10	10 100%	Low	NO TREATMENT	class III tractor fill crossing	Class III hillslope drainage in this area has been disrupted and is irregular as a result of past tractor logging operations. Sites consist of skid trails crossing irregular Class III watercourse. No evidence of discharge to higher order stream (i.e. Class II) observed In consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 4 SITE: TC4 WOID: -981818658 SEDID: 3N1W02E203 REPAIRED: NO	Tractor Crossing	10	10 100%	Low	NO TREATMENT	class III tractor fill crossing	Class III hillslope drainage in this area has been disrupted and is irregular as a result of past tractor logging operations. Sites consist of skid trails crossing irregular Class III watercourse. No evidence of discharge to higher order stream (i.e. Class II) observed In consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 5 SITE: TC5 WOID: -966650617 SEDID: 3N1W02E204 REPAIRED: NO	Tractor Crossing	15	15 100%	Low	NO TREATMENT	class III tractor fill crossing	Class III hillslope drainage in this area has been disrupted and is irregular as a result of past tractor logging operations. Sites consist of skid trails crossing irregular Class III watercourse. No evidence of discharge to higher order stream (i.e. Class II) observed In consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 6 SITE: TC6 WOID: 1558314044 SEDID: 3N1W02F701 REPAIRED: NO	Tractor Crossing	40	40 100%	Low	NO TREATMENT	class III fill crossing	If tractor crossing is used during THP operations, or if a change in site conditions warrants treatment, then excavate site. Existing fill crossing with sinkholes. ECP treatment site only if used. Do not cross or use for skidding. Will require excavator. Approach and spoil using skid trail to south. Do not extend excavation at outboard beyond class II RMZ flags. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. Armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)	Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: 1600 Cat-Xing STATION: 7 SITE: TC7 WOID: 1062682253 SEDID: 3N1W02E301 REPAIRED: NO	Tractor Crossing	10	10 100%	Low	NO TREATMENT	class III fill crossing	If tractor crossing is used during THP operations, or if a change in site conditions warrants treatment, then excavate site from Bot of 7610 down 35 to 40' below crossing at large stump with Bot flag.
RD: 1600 Cat-Xing STATION: 8 SITE: TC8 WOID: 650685642 SEDID: 3N1W02G602 REPAIRED: NO	Tractor Crossing	20	20 100%	Low	NO TREATMENT	Clas II fill crossing	If tractor crossing is used during THP operations, or if a change in site conditions warrants treatment, then excavate site
RD: 1600 Cat-Xing STATION: 9 SITE: TC9 WOID: -586949757 SEDID: 3N1W02F802 REPAIRED: NO	Tractor Crossing	10	10 100%	Low	NO TREATMENT	class III tractor fill crossing	If tractor crossing is used during THP operations, or if a change in site conditions warrants treatment, then excavate site
RD: 1600 Cat-Xing STATION: 10 SITE: TC10 WOID: -492484600 SEDID: 3N1W02F601 REPAIRED: NO	Tractor Crossing	20	20 100%	Low	NO TREATMENT	class III tractor fill crossing	If tractor crossing is used during THP operations, or if a change in site conditions warrants treatment, then excavate crossing
RD: 1600 Cat-Xing STATION: 11 SITE: TC11 WOID: 801429865 SEDID: 3N1W02D402 REPAIRED: NO	Tractor Crossing	50	50 100%	Low	NO TREATMENT	class II tractor fill crossing	Existing fill crossing with two 8x8 approx. sinkholes. In consultation with WQ,it was determined best not to fix
RD: 1600 Cat-Xing STATION: 12 SITE: TC12 WOID: 982663083 SEDID: 3N1W02E303 REPAIRED: NO	Tractor Crossing	40	30 75%	Low	NO TREATMENT	failing class II tractor fill crossing	Failing existing fill crossing. In consultation with WQ,it was determined best not to fix
RD: SkidRoad STATION: 13 SITE: 3N1W02C301 WOID: 1217009969 SEDID: 3N1W02C301 REPAIRED: NO	Crossing	50	50 100%	Low	Prior to THP Final Completion.	Dirt fill crossing.	Excavate fill from channel, from the redwood stump at the TOP to the BOT at the ring of marked trees.
RD: SkidRoad STATION: 14 SITE: 3N1W02G601 WOID: -366447714 SEDID: 3N1W02G601 REPAIRED: NO	Crossing	14	14 100%	Low	Prior to THP Final Completion.	dirtfill crossing	Excavate headcut to orriginal grade and slash pack.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 1410 SITE: SFE300.9 WOID: -1933152471 SEDID: 3N1W02G102 REPAIRED: NO	Failing Fill	27	27	100%	Low	Prior to THP Final Completion.	Road surface drainage eroding road fill above class I watercourse	Road and landing drainage concentration creating sinkhole in running surface. Remove outboard fillslope and place into cutbank. Install drainage facility to drain pond at inboard edge of intersection with old haul road and pipe. Outlet should direct water to inboard of U06.48 road. Second facility should drain water north across landing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur prior to Oct 15th year of site treatment.
RD: U06.48 STATION: 2762 SITE: SFE227.5 WOID: 1643322369 SEDID: 3N1W02E101 REPAIRED: NO	Failing Fill	21	21	100%	Low	Prior to THP Final Completion.	roadsurface draining onto failing outboard fillslope	Clean Inside ditch at inboard of landing to the right. Install DRC at left edge of landing. DRC shall discharge onto skid trail at OBR. Reconstruct 40' segment of outboard of road removing woody debris.
RD: U06.48 STATION: 3328 SITE: SFE228 WOID: 1579471406 SEDID: 3N1W02E206 REPAIRED: NO	Dirt Seasonal Crossing	5	5	100%	Low	Prior to THP Final Completion.		1. Excavate TOP to BOT 2. Rock armor and use inside ditch for 75' to capture two class IIIs to left and direct them into CMP. Outslope for 75' and dip through the berm. Install culvert to stream grade. Compact fill in 1 foot lifts. If necessary to mitigate diversion potentialI install critical dip. Rock armor fillslope to top of culvert inlet and outlet. Crossing fillslopes exceeding 1/2:1 shall be armored. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site work.
RD: U06.48 STATION: 3593 SITE: SFE229 WOID: -555237039 SEDID: 3N1W02D204 REPAIRED: NO	Failing Fill	2200	1320	60%	Low	Prior to Oct 15; THIRD year of operations.	slumped outboard fillslope of landing	Prior to Oct 15; THIRD year of operations: Excavate slumping unstable fill along outer 30% of landing for ~110'x15'x30'. This is an average dimension. Pull more material (deeper and longer) near center-right of feature. Stockpile material on landing against cutbank or place on road bed. Endhaul remainder to stable storage.
RD: U06.48 STATION: 3780 SITE: SFE230 WOID: 194703150 SEDID: 3N1W02D205 REPAIRED: NO	Failing Crossing	414	414	100%	Med	Prior to Oct 15; SECOND year of operations.	failing class II Humboldt	A geologist shall be on site durring construction and a letter of completion shall be sent to the DFG. Excavate failing crossing from the TOP flag to the BOT flag, in order to capture natural stream grade and alignment. Pull back over steepened fills along the left bank up stream where the abandon skid trail lies. Armor the left bank upstream of the crossing after it is laid back with available LWD. Install permanent culvert. Follow HCP and 1600. Out slope the road to the west 250 feet. Install grade controls between TOP and BOT to minimize headcutting
RD: U06.48 STATION: 3882 SITE: SFE231 WOID: -441728706 SEDID: 3N1W02D206 REPAIRED: NO	Failing Fill	519	156	30%	Low	Prior to THP Final Completion.	Failing outboard edge of road above class II watercourse	Minimze removal of cut bank slump. Pull back perched outboard fill. End haul spoils and minimze fills. No inside ditch in slide area.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 3958 SITE: SFE232 WOID: -959560169 SEDID: 3N1W02D207 REPAIRED: NO	Failing Fill	703	176	25%	Low	Prior to THP Final Completion.	Slumped outboard road fill above class II watercourse	This will be repaired with 3882-3958 (SFE 231)
RD: U06.48 STATION: 4054 SITE: SFE232.1 WOID: 1036701583 SEDID: 3N1W02D208 REPAIRED: NO	Dirt Seasonal Crossing	245	245	100%	Med	Prior to Oct 15; SECOND year of operations.	class III fill crossing	Prior to Oct 15; excavte road surface approximatel 10' deep , by 10' wide. Line excavation with road fabric. Fill excavation with 3" or grater rock with minimal to no fines such that water can pass through the rock. Cap rock over the top of the road surface, 25' either side of the crossing. Minimiz vegeation damage outside the minimal road width necessary.
RD: U06.48 STATION: 4165 SITE: SFE232.2 WOID: -1745159156 SEDID: 3N1W02D209 REPAIRED: NO	Failing Fill	93	37	40%	Low	Prior to THP Final Completion.	slumped outbaord road fill	1. Excavate OBF from start to end flags for ~50wx3'dx20'l
RD: U06.48 STATION: 4420 SITE: SFE232.3 WOID: -57600483 SEDID: 3N1W02C201 REPAIRED: NO	Failing Fill	11111	2222	20%	Low	Prior to Oct 15; THIRD year of operations.	slumping outboard road fill	Prior to Oct 15; THIRD year of operations: Do not sidecast and minimize cutting. Remove vertical portions of outboard fillslope. Retain dip at 4531 and 4610.
RD: U06.48 STATION: 4645 SITE: SFE232.4 WOID: -573589427 SEDID: 3N1W02C202 REPAIRED: NO	Failing Fill	52	16	31%	Low	Prior to THP Final Completion.	perched outboard road fill	1. Excavate unstable fill and endhaul all spoils. Treat in conjunction with site #SFE233
RD: U06.48 STATION: 4690 SITE: SFE233 WOID: -1106395757 SEDID: 3N1W02C203 REPAIRED: NO	Failing Crossing	124	124	100%	Low	Prior to THP Final Completion.	6" class II culvert, undersized, plugged	Requires Geologic oversight. Letter of completion shall be sent to the DFG.1) Excavate TOP to BOT and install 24" x 70' CMP in channel bottom at grade. Install trash rack 2) Install critical dip. 3) Endhaul all spoils. 4) Outslope and remove ditch for 150' 5) Install 1 rolling dip and one DRC Compact fill in 1 foot lifts. Rock armor fillslope to top of culvert inlet and outlet. Crossing fillslopes exceeding 1/2:1 shall be armored. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site work.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 5020 SITE: SFE234 WOID: -1149522987 SEDID: 3N1W02C204 REPAIRED: NO	Gully	13	3	23%	Low	Prior to THP Final Completion.	Failing road fill	1. Excavate 20'x3'dx25'l, endhaul to stable location. Pull back sides and top of gully on right side of feature down to LWD. Ramp down to pull material from outer-most edge of site. 2. Road drainage handled on site SFE 233 treatments, but rolling dip should discharge runoff down low gradient slope along left side of site. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.48 STATION: 5120 SITE: SFE235 WOID: -789373902 SEDID: 3N1W02C205 REPAIRED: NO	Failing Crossing	213	213	100%	Med	Prior to Oct 15; SECOND year of operations.	failed class II Humboldt crossing	Failed Humboldt. Prior to Oct 15; 1st year of operations: Excavate TOP to BOT and install 24"x40' CMP at grade.Install flared inlet. Endhaul all spoils. Minimize crossing fills as feasible. Compact fill in 1 foot lifts. Install Critical Dip Install 2 rolling dips. Over size disconnect structures. Armor inboard and outboard fillslopes to top of culvert. Crossing fillslopes exceeding 1/2:1 shall be armored. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site work.
RD: U06.48 STATION: 5310 SITE: C3 WOID: 1444583831 SEDID: 3N1W02B302 REPAIRED: NO	Humboldt	180	180	100%	Med	Prior to Oct 15; SECOND year of operations.	class II humboldt crossing	Functioning Humboldt to be replaced by permanent culvert. Work shall be completed Prior to Oct 15; THIRD year of operations. Install culvert to stream grade. Compact fill in 1 foot lifts.Hydrologically disconnect road surface from crossing. If necessary to mitigate diversion potentiaII install critical dip. Rock armor fillslope to top of culvert inlet and outlet. Crossing fillslopes exceeding 1/2:1 shall be armored. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site work.
RD: U06.48 STATION: 5515 SITE: SFE237 WOID: 714880149 SEDID: 3N1W02C302 REPAIRED: NO	Humboldt	139	139	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II Humboldt crossing	Washed out class II fill crossing. Prior to Oct 15; THIRD year of operations: 1. Excavate TOP to BOT, spoil locally 2. Install culvert in natural stream channel at grade 3. Install critical dip 4. Outslope and retain ditch for 530' 5. Install two rolling dips and two DRC's. Compact fill in 1 foot lifts. Rock armor fillslope to top of culvert inlet and outlet. Crossing fillslopes exceeding 1/2:1 shall be armored. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site work.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)	Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 6212 SITE: SFE238 WOID: -1186220724 SEDID: 3N1W02D305 REPAIRED: NO	Humboldt	613	613 100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II humboldt crossing	Washed out class II Humboldt crossing. Prior to Oct 15; THIRD year of operations: 1. Excavate TOP to BOT 2. Installcritical dip on right hinge line. This will also act as road drainage structure, so install well right of re-built OBF 3. Crown and rock road through through-cut on left approach berm off OBF and IBF of xing so road drainage will bypass site and drain at the critical dip 4. Armor headcut above TOP with 10cyd rip rap. Lay back headcut before placing armor. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.48 STATION: 6815 SITE: SFE239 WOID: -118856045 SEDID: 3N1W02D306 REPAIRED: NO	Humboldt	937	937 100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II Humboldt crossing	Washed out class II Humboldt crossing. Prior to Oct 15; THIRD year of operations: 1. Excavate TOP to BOT at natural channel grade. Abive and below the road excavate a 5'channel bottom width and lay back side slopes to 2:1. 2. Install 36" cmp and rebuild road so no diversion potential exists to the left. 3. Install 3 rolling dips up left road 4. Cut ditch and outslope road and keep ditch through broad springy swale up left road 5. Install drc and direct flow into near origin class 3 stream up left road. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment. Gelogist Shall be onsite during excavation.

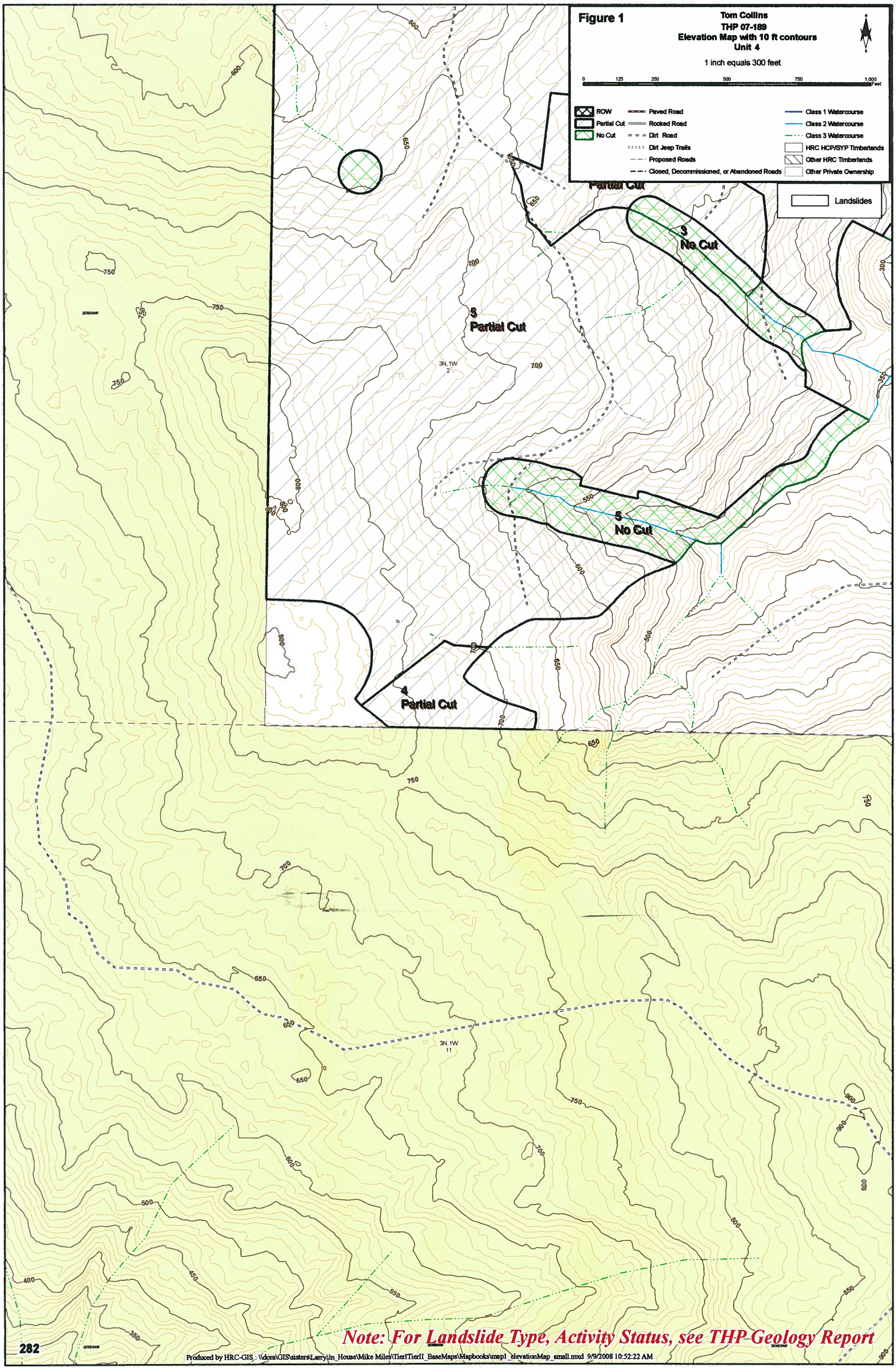
Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 7075 SITE: SFE240 WOID: -641452535 SEDID: 3N1W02E305 REPAIRED: NO	Dirt Seasonal Crossing	283	283	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II fill crossing	Washed out class II fill crossing. Prior to Oct 15; THIRD year of operations: Excavate TOP to BOT. Above and below crossing, lay back side slopes 2:1 and define 4' wide channel. Spoil locally on skids and/or landing to the left. Install 1 rolling dip to left, and 2 to far right. Cut 2 diagonal berm breaches in through-cut to right. Outslope 110' of left road. To the nearest extent feasible excavate natural channel with a consistent gradient and width.. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.If water is presnt use a spitler crossing with a 1/2 round culvert pior to use. Pull crossing prior to october 15th of the first year of use.
RD: U06.48 STATION: 7610 SITE: SFE241 WOID: -2038668072 SEDID: 3N1W02E306 REPAIRED: NO	Temporary Crossing	65	65	100%	Low	Prior to THP Final Completion.	Class III fill crossing	Functioning class II fill crossing. Excavate crossing from TOP to BOT. Outslope 80' of left road. Outslope 120' of right road and install 1 Rolling Dip. Spoil locally. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.48 STATION: 9153 SITE: SFE248.1 WOID: -1592498528 SEDID: 3N1W02G403 REPAIRED: NO	Surface Drainage	44	31	70%	Low	Prior to THP Final Completion.	Poor road drainage on fill above a class III watercourse.	Eroding road fill above a class III watercourse. Remove road fill approximately 40 x10x3. Hydrologically disconnect road segment. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur prior to Oct 15th year of site treatment.
RD: U06.48 STATION: 9632 SITE: SFE248 WOID: -833475122 SEDID: 3N1W02F503 REPAIRED: NO	Temporary Crossing	75	75	100%	Low	Prior to THP Final Completion.	Class III fill crossing	1. Excavate from TOP to BOT 2. Outslope and remove ditch for 120' 3. Install one rolling dip To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment. The redwood tree spanning the channel below the BOT flag shall be left in place.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.48 STATION: 9819 SITE: SFE247 WOID: -1446758714 SEDID: 3N1W02F501 REPAIRED: NO	Temporary Crossing	108	108	100%	Med	Prior to Oct 15; SECOND year of operations.	Class III fill crossing	Prior to Oct 15; THIRD year of operations: 1. Excavate from TOP to BOT 2. Outslope 40' of left road and 65 ' of right road. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.48 STATION: 9885 SITE: SFE246 WOID: 1685572089 SEDID: 3N1W02F504 REPAIRED: NO	Temporary Crossing	53	53	100%	Low	Prior to THP Final Completion.	class III fill crossing	1. Excavate from IBR to BOT armor IBR to prevent head cut 2. Install one rolling dip 3. Outslope 150' of right road. 4. Spoil locally. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.48 STATION: 11115 SITE: SFE245 WOID: -1111692201 SEDID: 3N1W02G603 REPAIRED: NO	Temporary Crossing	139	139	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II Humboldt crossing	Failed class II Humboldt crossing with large sinkholes. Prior to Oct 15; THIRD year of operations: 1. Excavate crossing from TOP to BOT. Endhaul spoil. 2. Outslope 1080' of left road and install 6 rolling dips 3. Outslope 150' of right road and install 1 rolling dip 4. Place inlet of pipe at TOP, at base of sinkhole. Excavate 20cyd material above TOP, to smooth knickpoint following excavation. Below outlet, define 4' channel width with 2:1 slopes. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Seeding and mulch or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.4811 STATION: 236 SITE: C1 WOID: -1367366587 SEDID: 3N1W02G206 REPAIRED: NO	Humboldt	133	133	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class III Humboldt crossing	Failed Humboldt crossing with large sink hole. Prior to Oct 15; 1styear of operations: Install pipe to handle flow if water present, minimum 6". To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. Armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.If water is presnt, failling crossing needs to pulled and temorary crossing (spitler) installed before use.
RD: U06.4811 STATION: 513 SITE: C2 WOID: -767173086 SEDID: 3N1W02G207 REPAIRED: NO	Humboldt	115	115	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class III Humboldt crossing	Prior to Oct 15; 1st year of operations: Install pipe to handle flow if water present, minimum 6". Do not excavate top beyond inboard edge of road. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. Armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.4811 STATION: 543 SITE: S1 WOID: 442144763 SEDID: 3N1W02G208 REPAIRED: NO	Failing Fill	270	178	66%	Med	Prior to Oct 15; SECOND year of operations.	slumped outboard road fill above a class III watercourse.	W ork shall be completed pior to Oct 15; THIRD year of operations. Slumped outboard fillslope above class III watercourse . Excavate and end haul slumped outboard road fill approximately 90 x 30 x3. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.4876 STATION: 386 SITE: C1 WOID: -1154168159 SEDID: 3N1W02C401 REPAIRED: NO	Temporary Crossing	30	30	100%	Low	Prior to THP Final Completion.	Class III fill crossing	Existing functional trctor fill crossing to be converted to temporary road crossing. Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.4876 STATION: 1113 SITE: C2 WOID: -1718336434 SEDID: 3N1W02B303 REPAIRED: NO	Temporary Crossing	40	36	90%	Low	Prior to THP Final Completion.	Class II tractor fill crossing proposed as haul road temp crossing.	Existing tractor fill crossing to be converted to temporary road crossing. Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.4880 STATION: 1190 SITE: C1 WOID: 1106122167 SEDID: 3N1W02F401 REPAIRED: NO	Temporary Crossing	3	3	100%	Low	Prior to THP Final Completion.	Class III fill crossing	Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.4880 STATION: 2487 SITE: C2 WOID: -1726203092 SEDID: 3N1W02F603 REPAIRED: NO	Temporary Crossing	70	70	100%	Low	Prior to THP Final Completion.	Failing class III fill crossing	Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.4880 STATION: 3589 SITE: C3 WOID: -228932294 SEDID: 3N1W02F703 REPAIRED: NO	Failing Crossing	250	250	100%	Med	Prior to Oct 15; SECOND year of operations.	Failing class II fill crossing	Prior to Oct 15; THIRD year of operations: Install pipe to handle flow if water present, minimum 6" diameter. Place rock of sufficient size to prevent erosion of the south side embankment of the watercourse channel caused by water draining from the road surface and soil pipe located at 3650. See sketch on page 92.5 and 92.6. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.

Site	Site Type	Est. Potential Erosion (Cu.Yards)	Est. Potential Delivery (Cu.Yards & %)		Priority for Treatment	Implementation Schedule	Site Description	Treatment
RD: U06.4880 STATION: 3789 SITE: C4 WOID: 1196104482 SEDID: 3N1W02F704 REPAIRED: NO	Failing Crossing	44	44	100%	Low	Prior to THP Final Completion.	failing class III fill crosing	Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate, including tractor crossing at toe of outboard fillslope, natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.488030 STATION: 80 SITE: C1 WOID: 420009464 SEDID: 3N1W02E404 REPAIRED: NO	Temporary Crossing	20	20	100%	Low	Prior to THP Final Completion.	class II fill crosiing	Wet landing site. Site will not be used.
RD: U06.488058 STATION: 250 SITE: C1 WOID: 1196281494 SEDID: 3N1W02E702 REPAIRED: NO	Failing Crossing	79	79	100%	Low	Prior to THP Final Completion.	failing class III fill crossing	Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
RD: U06.488058 STATION: 350 SITE: C2 WOID: -1480059809 SEDID: 3N1W02E701 REPAIRED: NO	Failing Crossing	59	59	100%	Low	Prior to THP Final Completion.	failing class III fill crossing	Install pipe to handle flow if water present, minimum 6" diameter. To the nearest extent feasible excavate natural channel trough the prism to BOT flag with a consistent gradient and width. Excavated side slopes shall be less than 1/2:1 or natural slope. If significant erosion potential exists post excavation such as headcutting , bank failure, etc. Armoring with LWD or rock shall occur. Hydrologically disconnect road surface drainage from crossing. Seeding and mulching or slash packing of disturbed soil within the RMZ/EEZ shall occur concurrent with completion of site treatment.
Total Estimated Yards		19794	8914					



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

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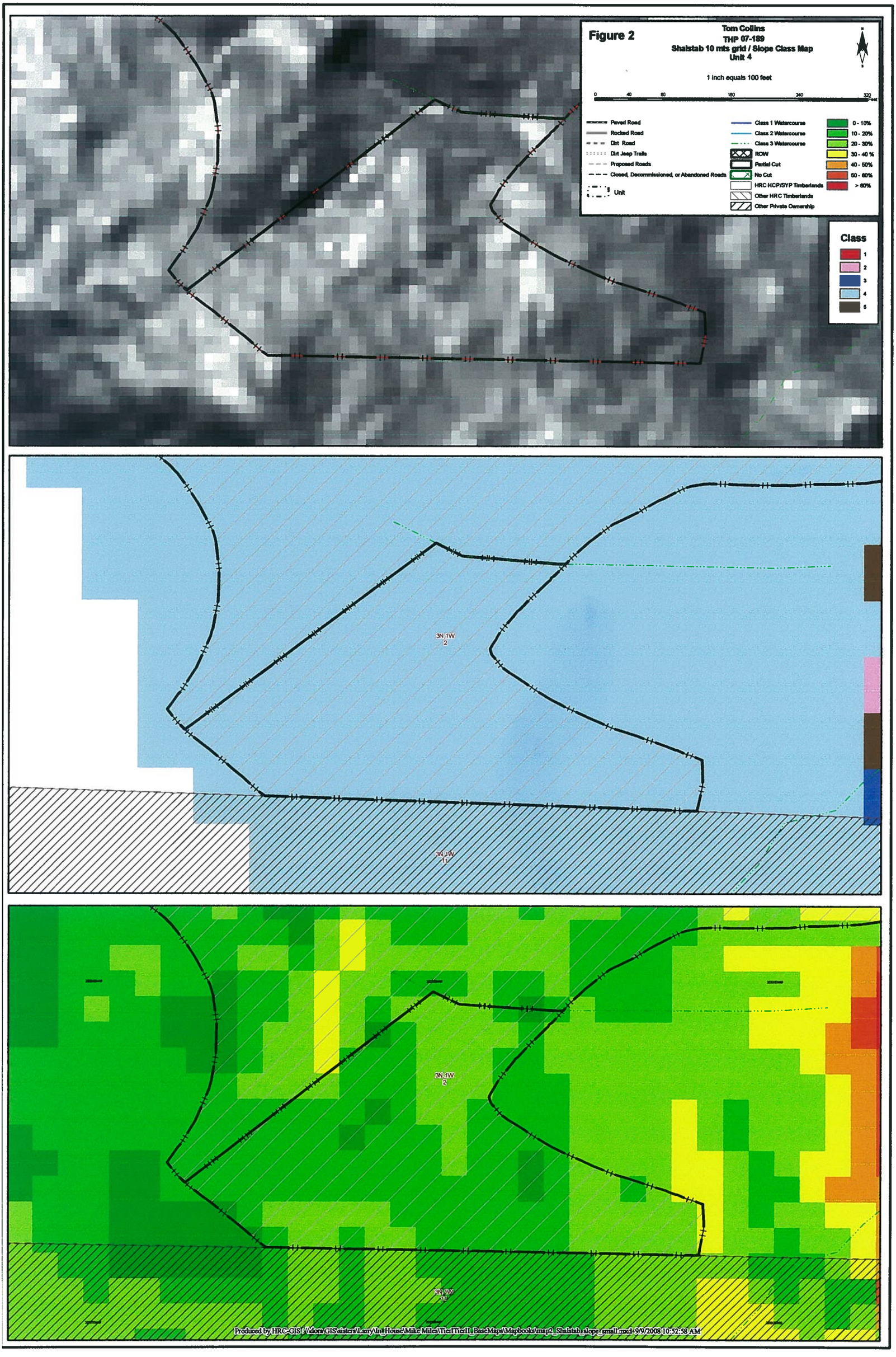
Figure 2
Tom Collins
THP 07-189
Shalstab 10 mts grid / Slope Class Map
Unit 4
1 inch equals 100 feet
0
40
80
160
240
320
Feet
Paved Road
Rocked Road
Dirt Road
Dirt Jeep Trails
Proposed Roads
Closed, Decommissioned, or Abandoned Roads
Unit
Class 1 Watercourse
Class 2 Watercourse
Class 3 Watercourse
ROW
Partial Cut
No Cut
HRC HCP/SYP Timberlands
Other HRC Timberlands
Other Private Ownership
0 - 10%
10 - 20%
20 - 30%
30 - 40 %
40 - 50%
50 - 60%
> 60%
Class
1
2
3
4
5
3N 1W
2
3N 1W
1
3N 1W
2
3N 1W
1
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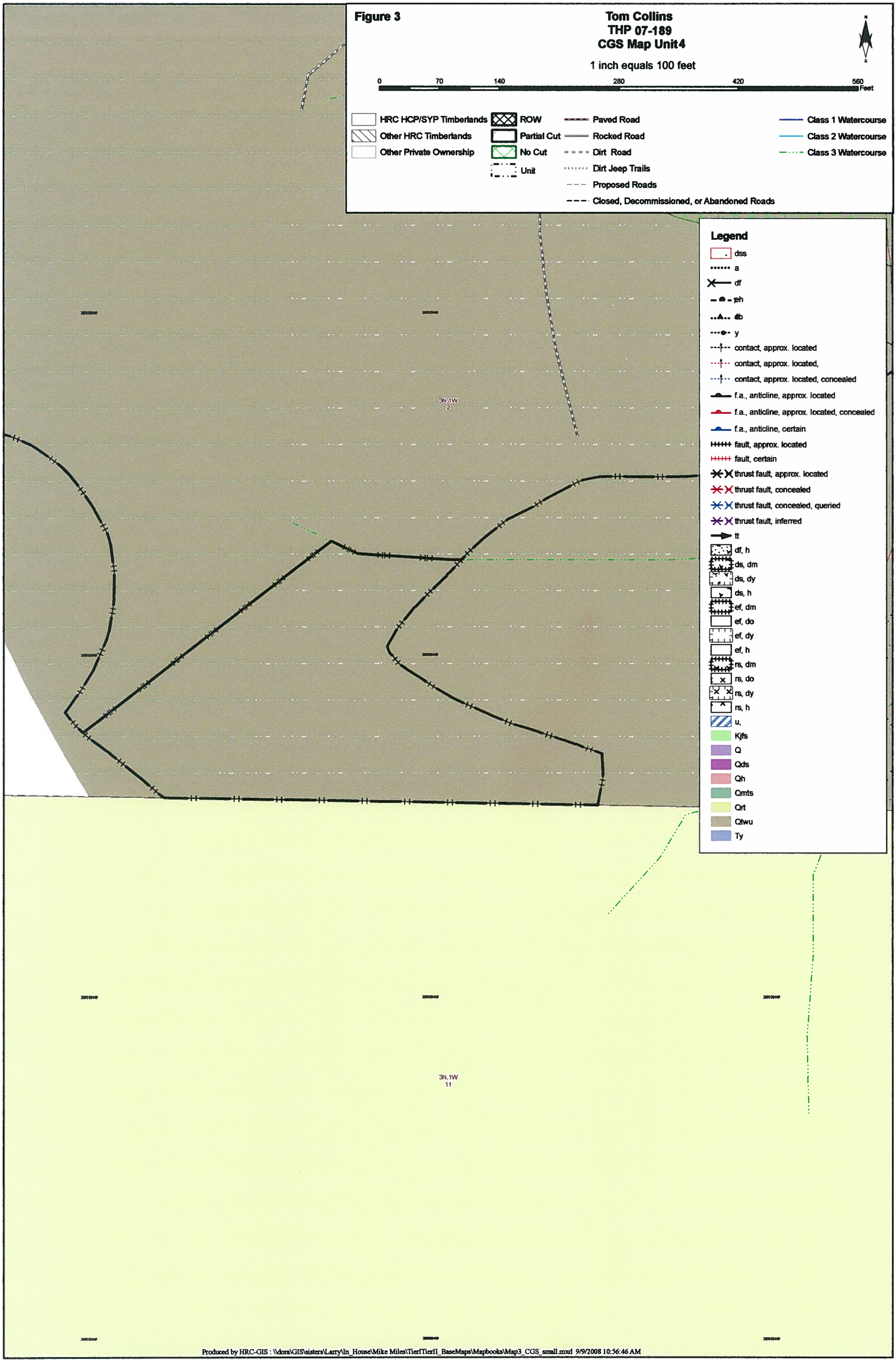
Figure 3
Tom Collins
THP 07-189
CGS Map Unit4
1 inch equals 100 feet
0
70
140
280
420
560
Feet
HRC HCP/SYP Timberlands
Other HRC Timberlands
Other Private Ownership
ROW
Partial Cut
No Cut
Unit
Paved Road
Rocked Road
Dirt Road
Dirt Jeep Trails
Proposed Roads
Closed, Decommissioned, or Abandoned Roads
Class 1 Watercourse
Class 2 Watercourse
Class 3 Watercourse
Legend
dss
a
df
eh
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,
Kjfs
Q
Qds
Qh
Qmts
Qrt
Qtwu
Ty
3N,1W
2
3N,1W
11
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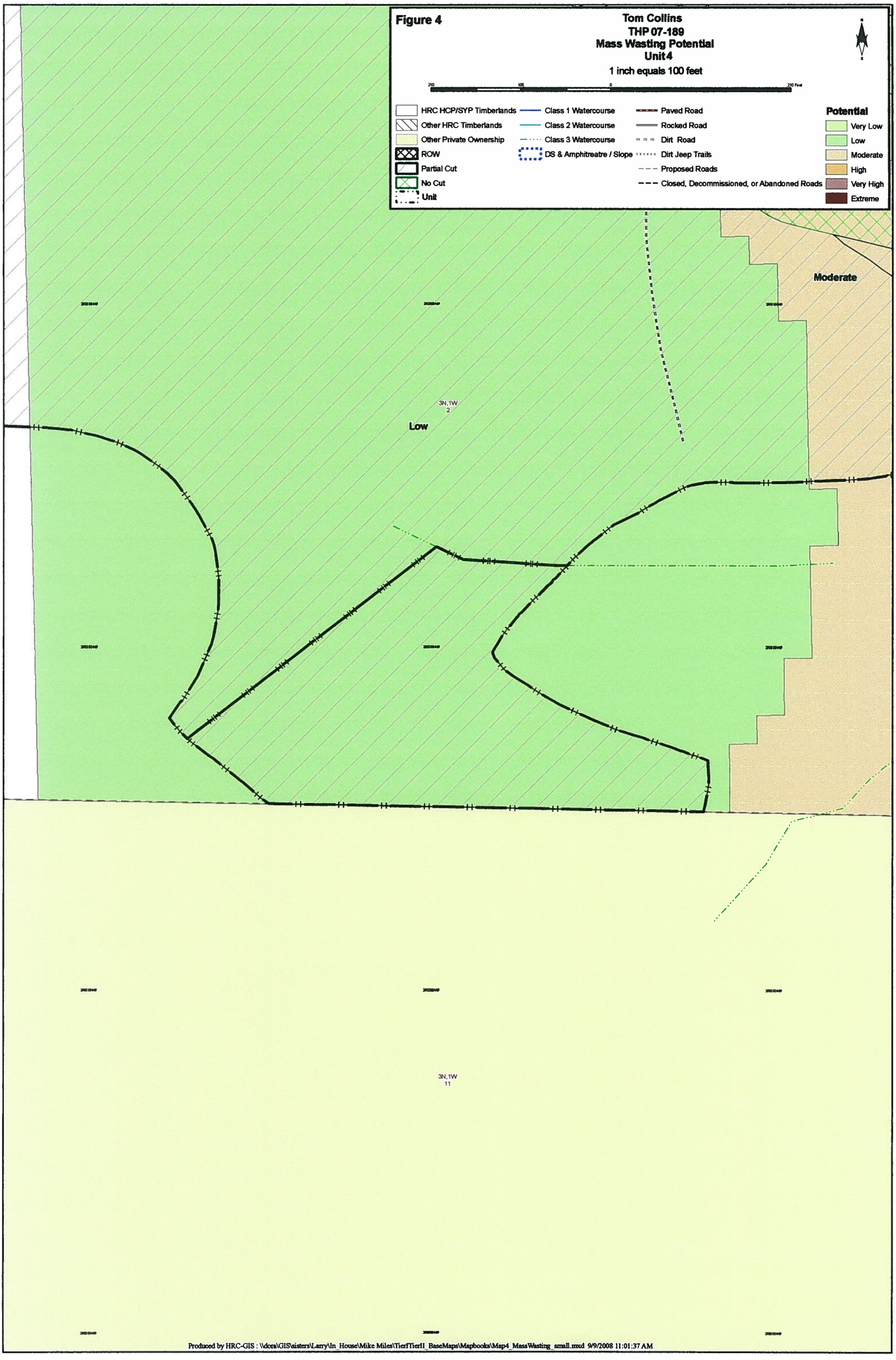
Figure 4
Tom Collins
THP 07-189
Mass Wasting Potential
Unit 4
1 inch equals 100 feet
210
105
0
210 Feet
HRC HCP/SYP Timberlands
Other HRC Timberlands
Other Private Ownership
ROW
Partial Cut
No Cut
Unit
Class 1 Watercourse
Class 2 Watercourse
Class 3 Watercourse
DS & Amphitreatre / Slope
Paved Road
Rocked Road
Dirt Road
Dirt Jeep Trails
Proposed Roads
Closed, Decommissioned, or Abandoned Roads
Potential
Very Low
Low
Moderate
High
Very High
Extreme
Moderate
3N,1W
2
Low
3N,1W
11
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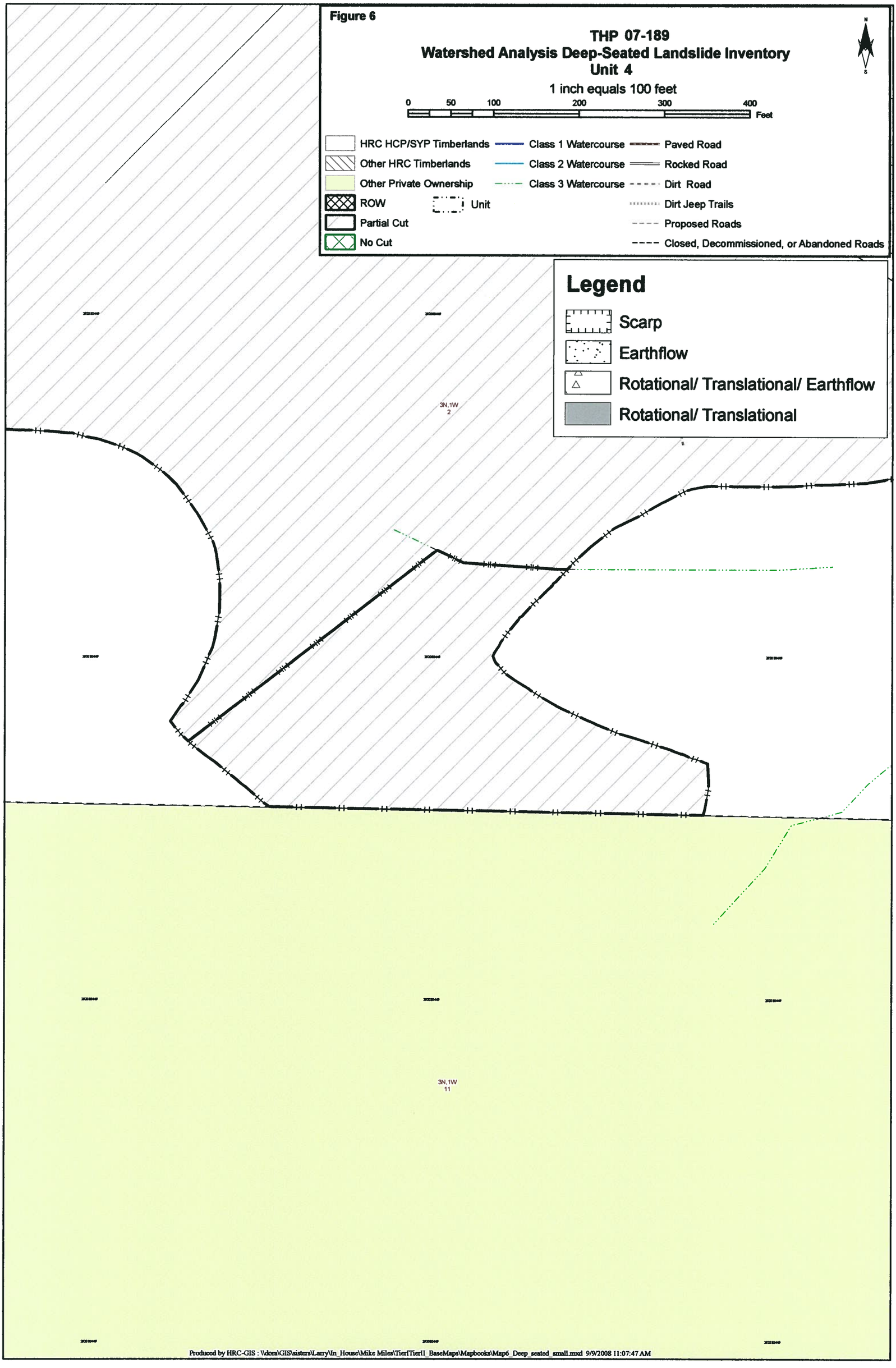
Figure 6
THP 07-189
Watershed Analysis Deep-Seated Landslide Inventory
Unit 4
1 inch equals 100 feet
0
50
100
200
300
400
Feet
N
S
HRC HCP/SYP Timberlands
Other HRC Timberlands
Other Private Ownership
ROW
Partial Cut
No Cut
Unit
Class 1 Watercourse
Class 2 Watercourse
Class 3 Watercourse
Paved Road
Rocked Road
Dirt Road
Dirt Jeep Trails
Proposed Roads
Closed, Decommissioned, or Abandoned Roads
Legend
Scarp
Earthflow
Rotational/ Translational/ Earthflow
Rotational/ Translational
3N,1W
2
3N,1W
11
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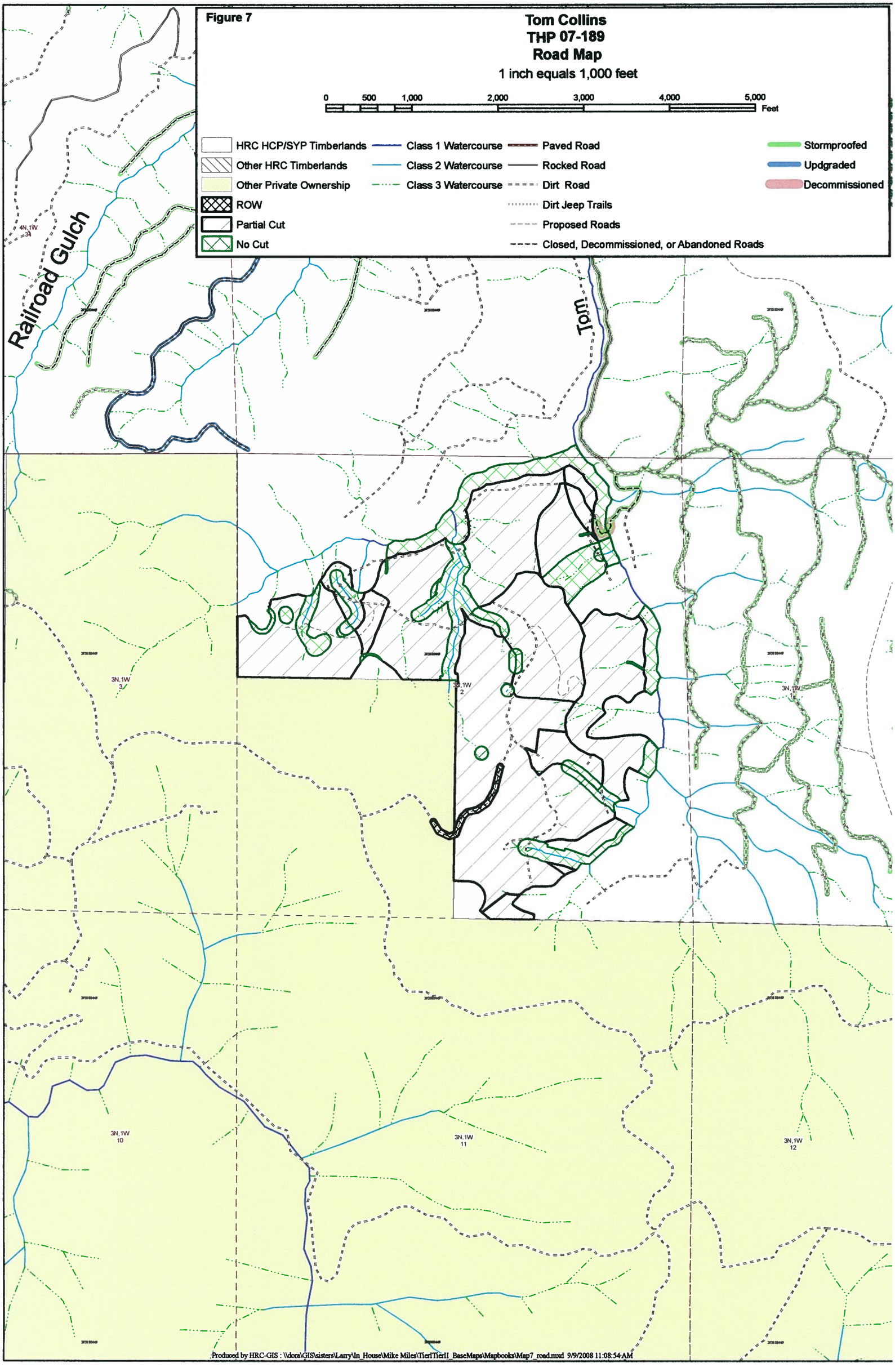
Figure 7
Tom Collins
THP 07-189
Road Map
1 inch equals 1,000 feet
0
500
1,000
2,000
3,000
4,000
5,000
Feet
HRC HCP/SYP Timberlands
Other HRC Timberlands
Other Private Ownership
ROW
Partial Cut
No Cut
Class 1 Watercourse
Class 2 Watercourse
Class 3 Watercourse
Paved Road
Rocked Road
Dirt Road
Dirt Jeep Trails
Proposed Roads
Closed, Decommissioned, or Abandoned Roads
Stormproofed
Updgraded
Decommissioned
Railroad Gulch
Tom
4N,1W
3
3N,1W
3
3N,1W
2
3N,1W
1
3N,1W
10
3N,1W
11
3N,1W
12
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