

Appendix A: Timber Sale Unit Spreadsheet

**Browns Project Revised Draft Environmental Impact Statement -
Appendix A: Timber Sale Unit Spreadsheet - Alternative 3 - July 2007**

Unit	Logging System	Acres	Rx	RR	Powerline	GPS Landings	Cruised	Fuels Treatment	Fuels Prescription	Fuels	Design Features		
				Acres		Acres	Volume bdf			Priority			
2	tractor	5.9	Thinning		yes		67,377	Whole Tree Yard	RS, BC, DL	9			
3	tractor	47.9	Thinning			5.8	544,239	Whole Tree Yard	RS, BC, TP, DL	1			
3A*	tractor		Thinning	4.1	yes			Whole Tree Yard	RS, BC, DL		RR2		
3B	tractor	19.1	Thinning		yes		216,900	Whole Tree Yard	RS, BC, DL				
3C	tractor	8.2	Thinning			2.2	93,055	Whole Tree Yard	RS, BC, TP, DL				
3D	tractor	4.6	Thinning				53,378	Whole Tree Yard	RS, BC, DL				
3E	cable	1.5	Thinning				17,384	Whole Tree Yard	RS, BC, HL				
3F	cable	2.8	Thinning				31,586	Whole Tree Yard	RS, BC, HL				
3G	cable	11.2	Thinning				127,709	Whole Tree Yard	RS, BC, HL				
3H	cable	5.6	Thinning				63,627	Whole Tree Yard	RS, BC, HL				
3I	tractor	7.9	Thinning				89,192	Whole Tree Yard	RS, BC, DL	8	RR1		
3J	cable	4.9	Thinning				55,106	Whole Tree Yard	RS, BC, HL	7			
3K	tractor	11.9	Thinning				135,548	Whole Tree Yard	RS, BC, DL				
3L	tractor	27.7	Thinning				338,591	Whole Tree Yard	RS, BC, DL				
4A*	tractor		Thinning	3.4	yes			Whole Tree Yard	RS, BC, DL		RR2		
5A	cable	14.1	Thinning			1.9	121,660	Whole Tree Yard	RS, BC, BB, HL				
5B	tractor	14.4	Thinning				123,816	Whole Tree Yard	RS, BC, DL				
5C	cable	13.3	Thinning			2.0	114,417	Whole Tree Yard	RS, BC, BB, HL				
5D	tractor	58.8	Thinning			3.3	507,075	Whole Tree Yard	RS, BC, TP, DL		RR1		
5F	tractor	16.5	Thinning				142,440	Whole Tree Yard	RS, BC, DL				
5G	cable	1.4	Thinning				12,157	Whole Tree Yard	RS, BC, HL				
RR5G*	cable		Thinning	0.7				Whole Tree Yard			RR1		
5H	cable	1.9	Thinning				16,641	Whole Tree Yard	RS, BC, HL		RR1		
7	tractor	14.6	Thinning				165,885	Whole Tree Yard	RS, BC, DL	4			
8	tractor	4.7	Thinning				54,779	Whole Tree Yard	RS, BC, DL	5			
9A	cable	20.1	Thinning			3.5	230,829	Whole Tree Yard	RS, BC, BB, HL				
9B	cable	17.0	Thinning			1.9	193,495	Whole Tree Yard	RS, BC, BB, HL				
9C	tractor	22.6	Thinning			1.7	257,165	Whole Tree Yard	RS, BC, TP, DL		RR2-pond		
9D	cable	5.6	Thinning				63,400	Whole Tree Yard	RS, BC, HL				
9E	cable	20.2	Thinning				242,842	Whole Tree Yard	RS, BC, HL				
10A	tractor	15.2	Thinning				172,909	Whole Tree Yard	RS, BC, DL				
10B	tractor	1.1	Thinning				11,930	Whole Tree Yard	RS, BC, DL				
10C	cable	5.8	Thinning				66,942	Whole Tree Yard	RS, BC, HL				
10D	tractor	6.8	Thinning				77,489	Whole Tree Yard	RS, BC, DL				
10E	cable	1.9	Thinning				46,130	Whole Tree Yard	RS, BC, HL				
10F	tractor	24.6	Thinning				290,071	Whole Tree Yard	RS, BC, DL				
10G	cable	6.6	Thinning			2.1	74,535	Whole Tree Yard	RS, BC, BB, HL		RR1		
10H	cable	6.6	Thinning				76,874	Whole Tree Yard	RS, BC, HL				
10I	cable	6.6	Thinning				75,216	Whole Tree Yard	RS, BC, HL				
11	tractor	10.1	Thinning				116,588	Whole Tree Yard	RS, BC, DL	3			
12	tractor	23.7	Thinning			4.0	271,157	Whole Tree Yard	RS, BC, TP, DL		RR1		
13	cable	8.5	Thinning				96,690	Whole Tree Yard	RS, BC, HL		RR1		
14	cable	8.3	Thinning			1.5	94,077	Whole Tree Yard	RS, BC, BB, HL				

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Unit	Logging System	Acres	Rx	RR Acres	Powerline	GPS Landings Acres	Cruised Volume bdf	Fuels Treatment	Fuels Prescription	Fuels Priority	Design Features			
15A	tractor	5.0	Thinning				61,525	Whole Tree Yard	RS, BC, DL		SP			
15B	tractor	4.7	Thinning				61,052	Whole Tree Yard	RS, BC, DL					
15C	tractor	6.1	Thinning				69,081	Whole Tree Yard	RS, BC, DL					
15D	cable	0.8	Thinning				9,317	Whole Tree Yard	RS, BC, HL					
15E	cable	2.7	Thinning				30,791	Whole Tree Yard	RS, BC, HL					
15F	cable	4.2	Thinning				48,061	Whole Tree Yard	RS, BC, HL					
16	tractor	66.0	Thinning			2.0	774,861	Whole Tree Yard	RS, BC, TP, DL	2				
17	tractor	74.3	Thinning			7.4	847,955	Whole Tree Yard	RS, BC, TP, DL	6				
100*	tractor		Thinning	26.1				Whole Tree Yard			RR1			
101*	tractor		Thinning	13.6				Whole Tree Yard			RR1			
102*	tractor		Thinning	8.6				Whole Tree Yard			RR1			
103*	tractor		Thinning	7.1				Whole Tree Yard			RR1			
104*	cable		Thinning	0.7				Whole Tree Yard			RR1			
105*	tractor		Thinning	2.5				Whole Tree Yard			RR1			
108*	tractor		Thinning	0.9	yes			Whole Tree Yard			RR1			
109*	cable		Thinning	3.1				Whole Tree Yard			RR1			
111*	cable		Thinning	2.1				Whole Tree Yard			RR1			
112*	cable		Thinning	2.1				Whole Tree Yard			RR1			
113*	tractor		Thinning	0.8				Whole Tree Yard			RR1			
114*	cable		Thinning	1.4				Whole Tree Yard			RR1			
115*	tractor		Thinning	1.0				Whole Tree Yard			RR1			
* volumes for these units included with total RR volume														
							7,453,544							
Total Riparian Reserve Acres =				78.2			116,874	Total Riparian Reserve Unit Volume (bdf)						
Total Landing Acres to Plant =				38.8			1,143,892	Total Landing Unit Volume (bdf)						
Total Thinning Acres		673.8					132,371	Total Right-of-way Volume (bdf) from temporary roads in Units 3, 3, and 9						
Total Cable		171.6												
Total Tractor		502.2												
								Fuels Prescriptions		*Design Features				
								RS: Roadside pile/burn		SP: Flag & avoid sensitive plant site				
								MR: Mastication		RR1 = 150' Riparian Reserve				
								BC: Burn Concentrations		RR2= 300' Riparian Reserve				
								TP: Tractor pile/burn						
								BB: Broadcast Burn						
								HL: Handline						
								DL: Dozerline						
Total Harvest Acres =				790.8			8,847							

**Browns Project Revised Draft Environmental Impact Statement -
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Unit	Logging System	Acres	Strata	Rx	RR	Powerline	GPS Regen		Cruised	Fuels Treatment	Fuels Prescription	Fuels	Design Features				
					Acres		Acres		Volume bdf			Priority					
2	tractor	5.93	2	Thinning	0.94	yes			67,377	Whole Tree Yard	RS, BC, DL	9	RR1				
3	tractor	47.90	2	Thinning+Regen	15.21		5.8		544,239	Whole Tree Yard	RS, BC, TP, DL	1	RR1				
3A	tractor	0.00	4	Thinning	1.91	yes				Whole Tree Yard	RS, BC, DL		RR2				
3A	tractor	0.00	4	Thinning	2.24	yes				Whole Tree Yard	RS, BC, DL		RR2				
3B	tractor	19.09	2	Thinning		yes			216,900	Whole Tree Yard	RS, BC, DL						
3C	tractor	8.19	2	Thinning+Regen			2.21		93,055	Whole Tree Yard	RS, BC, TP, DL						
3D	tractor	4.59	2	Thinning					53,378	Whole Tree Yard	RS, BC, DL						
3I	tractor	7.85	2	Thinning					89,192	Whole Tree Yard	RS, BC, DL	8	RR1				
3J	cable	4.85	2	Thinning	0.73				55,106	Whole Tree Yard	RS, BC, HL	7	RR1				
3K	tractor	11.93	2	Thinning					135,548	Whole Tree Yard	RS, BC, DL						
3L	tractor	27.73	2	Thinning					338,591	Whole Tree Yard	RS, BC, DL						
4A	tractor	0.00	4	Thinning	3.35	yes				Whole Tree Yard	RS, BC, DL		RR2				
7	tractor	14.60	2	Thinning					165,885	Whole Tree Yard	RS, BC, DL	4					
8	tractor	4.66	2	Thinning					54,779	Whole Tree Yard	RS, BC, DL	5	RR1				
9E	cable	20.23	2	Thinning					242,842	Whole Tree Yard	RS, BC, HL						
10A	tractor	15.15	2	Thinning	1.02				172,909	Whole Tree Yard	RS, BC, DL		RR1				
10B	tractor	1.05	2	Thinning	0.79				11,930	Whole Tree Yard	RS, BC, DL		RR1				
10C	cable	5.76	2	Thinning	1.37				66,942	Whole Tree Yard	RS, BC, HL						
10D	tractor	6.82	2	Thinning	0.18				77,489	Whole Tree Yard	RS, BC, DL						
10E	cable	1.85	2	Thinning	2.22				46,130	Whole Tree Yard	RS, BC, HL		RR1				
10F	tractor	24.60	2	Thinning	0.93				290,071	Whole Tree Yard	RS, BC, DL		RR1				
10G	cable	6.56	2	Thinning+Regen			2.1		74,535	Whole Tree Yard	RS, BC, BB, HL		RR1				
10H	cable	6.59	2	Thinning					76,874	Whole Tree Yard	RS, BC, HL						
10I	cable	6.62	2	Thinning					75,216	Whole Tree Yard	RS, BC, HL						
11	tractor	10.10	2	Thinning	2.50				116,588	Whole Tree Yard	RS, BC, DL	3	RR1				
12	tractor	23.68	2	Thinning+Regen			3.98		271,157	Whole Tree Yard	RS, BC, TP, DL		RR1				
13	cable	8.51	2	Thinning					96,690	Whole Tree Yard	RS, BC, HL		RR1				
14	cable	8.28	2	Thinning+Regen	3.05		1.5		94,077	Whole Tree Yard	RS, BC, BB, HL		RR1				
15A	tractor	4.99	2	Thinning					61,525	Whole Tree Yard	RS, BC, DL		SP				
15B	tractor	4.67	2	Thinning					61,052	Whole Tree Yard	RS, BC, DL						
15C	tractor	6.08	2	Thinning					69,081	Whole Tree Yard	RS, BC, DL						
15D	cable	0.82	2	Thinning					9,317	Whole Tree Yard	RS, BC, HL						
15E	cable	2.71	2	Thinning					30,791	Whole Tree Yard	RS, BC, HL						
15F	cable	4.23	2	Thinning					48,061	Whole Tree Yard	RS, BC, HL						

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Unit	Logging System	Acres	Strata	Rx	RR	Powerline	GPS Regen		Cruised	Fuels Treatment	Fuels Prescription	Fuels	Design Features				
					Acres		Acres		Volume bdf			Priority					
16	tractor	66.02	1	Thinning+Regen	26.09		2	774,861	Whole Tree Yard	RS, BC, TP, DL		2	RR1				
17	tractor	74.25	1	Thinning+Regen	13.61		7.38	847,955	Whole Tree Yard	RS, BC, TP, DL		6	RR1				
Total Thinning Unit Volume (bdf) =									5,430,143								
Total Riparian Reserve Acres =					76.14				109,069	Total Riparian Reserve Unit Volume (bdf)							
Total Regen Unit Acres =						24.92	24.97		785,675	Total Regen. Unit Volume (bdf)							
Total Thinning Acres		466.89	<small>(excludes Riparian Reserve acres)</small>														
Total Cable		77.01	<small>(excludes Riparian Reserve acres)</small>														
Total Tractor		389.88	<small>(excludes Riparian Reserve acres)</small>														
										Fuels Prescriptions			*Design Features				
										RS:	Roadside pile/burn	SP: Flag & avoid sensitive plant site					
										MR:	Mastication	RR1 = 150' Riparian Reserve					
										BC:	Burn Concentrations	RR2= 300' Riparian Reserve					
										TP:	Tractor pile/burn						
										BB:	Broadcast Burn						
										HL:	Handline						
										DL:	Dozerline						
Total Cruised Sale Volume (MBF) =									6,325								
Total Harvest Acres =					567.95												

Appendix B: Erosion Control Plan, Mitigation Measures, and Monitoring Requirements

Appendix B: Erosion Control Plan, Mitigation Measures, and Monitoring Requirements

Erosion Control Plan: The purpose of this plan is to facilitate the transition from the environmental analysis to the contract to ensure that erosion control measures described in the environmental analysis are not lost during the transition. This plan applies to all of the watersheds within the project area.

This erosion control plan compliments the Best Management Practice 2.2 Erosion Control Plan (C6.3) that requires the Purchaser (contractor) to submit a general plan that describes erosion control measures to be employed on roads and construction practices. Below is a generic erosion control plan that will enable purchaser or contractor to readily see what is required in the erosion control plan. This plan will also display the erosion control measures that will be used for each project and for each type of disturbance.

Descriptions for references: C clauses (e.g. “C6.6”) are from the timber sale contract; “T-” specifications are road maintenance T-specifications from the timber sale contract; “WW/WO” are wet weather or winter operations; “STRMP” is a Shasta-Trinity Land and Resource Management Plan requirement; and “IDT” is a Project Interdisciplinary Team requirement.

Timing of Erosion Control Work

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
Work before winter storms begin.	Applies to project area	1.5	C6.6
Purchaser monitors and maintains erosion control work.	Until accepted by FS (see monitoring section below)	1.13, 1.20	C6.6

Skid Trails

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
Use designated skid trails.	Applies to project area	1.10	C6.422#
Use water bars (per Timber Sale Admin. Handbook specifications).	Applies to project area	1.13, 1.17	C6.6
Install more than normal number water bars on skid trails (>35% slope).	Water bar every 20 to 40 feet on >35% slopes	1.13, 1.17	C6.6
Spread appropriate material on skid trails to achieve a minimum 50% ground cover. Material may consist of either: fine slash, wood chips, weed-free or rice straw, or any combination.	Applies to project area where needed to attain 50% cover, such as >35% slopes or where steeper skid trails enter landings	1.14	C6.602
Skid trails generally restricted to <35% slope.	Applies to project area	1.9	STLRMP
Use skid trails when soil is dry to 4 inches deep.	Applies to project area	1.13	WW/WO
Install silt fences between skid trail and culvert when slope distance is <50 feet.	Applies to project area	1.14	C6.602
Use existing skid trails to the extent possible to minimize the number of skid trails.	Applies to project area	1.10	C6.422#

Skyline Cable Yarding

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
Require one-end suspension.	Applies to project area	1.11	C6.427
Use water bars on skid corridor (per Timber Sale Admin. Handbook specs).	Applies to project area	1.17	C6.6, C6.602
Full log suspension across Riparian Reserves.	Applies to project area	1.11, 1.19	C6.427
Cable corridors on contour (or acute angle to slope) require breaches in downhill side berm in lieu of water bars.	Applies to project area	1.17	C6.602

Landings _____

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
No new landings in Riparian Reserves.	Applies to project area	1.12	IDT
Outslope landings.	Applies to project area	1.16	C6.601, C6.602
Rip landings (up to 12 inches deep).	Applies to project area within riparian reserves	NA	C6.601, C6.603
Seed and mulch landings.	Applies to project area within riparian reserves	1.14, 1.15	C6.601
Divert skid trail and road runoff from crossing landing	Applies to project area	1.16	SA, C6.602
If runoff must cross landing, design landing drainage in a way to prevent rilling and gulling of fill slope.	Applies to project area	1.16	C6.602
Pull organic materials out of fill slope of landings if necessary to prevent collapse.	Applies to project area	1.16, 2.10	C6.602
When building landings, layer place and compact soil material on fill slopes.	Applies to project area	1.16, 2.10	C6.602 (2/1/00)
Seed and mulch landing fill slopes.	Applies to project area	1.14, 1.15	C6.601, C6.6
Place silt fence below landing fill slope during wet weather operations if runoff is causing erosion.	Applies to project area	1.14	WW/WO, C6.6, C6.602

Use of Mechanized Equipment in Riparian Reserves _____

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
No tractor yarding or piling in Riparian Reserves.	Applies to project area, unless specifically designated (see mitigation section below)	1.8, 1.19	C6.422, C6.5, C6.61
No heavy equipment in waterways.	Applies to project area, unless specifically designated (see mitigation section below)	1.8, 1.19	C6.422, C6.5, C6.61

The project hydrologist designated Equipment Exclusion Zones (EEZ) for near stream areas within riparian reserve units. The width of EEZ near perennial streams is 100 feet from high water line, and 50-25 feet near intermittent or ephemeral channels. Equipment will not operate within EEZ or the inner gorge of any drainage. Thinning within the EEZ of Class I and II streams is limited to understory removal and must be consistent with attainment of Aquatic Conservation Strategy objectives. A minimum 50 foot buffer will be flagged above the crown or head of active or potentially active landslides, or as prescribed by a geoscientist. Equipment will not operate on active or potentially active landslides.

Roads

Description of Erosion Control Measure	Applicability of Erosion Control Measure to Project	BMP	Reference
Spot rocking of native surface roads with aggregate if used during wet weather operations.	Applies to project area	2.7, 2.23	WW/WO
Install silt fences at culvert outlets if road will be used during wet weather.	Applies to project area	2.7	WW/WO
Mulch and seed new or disturbed fill slopes.	Applies to project area	1.14, 1.15	C6.601
No debris disposal in or within 100 feet Streamside Management Zone, meadows, wetlands or Riparian Reserve.	Applies to project area	1.19, 2.11, 2.19	T-802, T-803, C5.4
No disposal within 100 feet of culverts, road dips, in an inside ditch, above a ditch or any where material can reach a stream channel.	Applies to project area	1.19, 2.11	T-802, T-803, C5.4
Dispose of cleaned out material from culvert intake to location where it will not enter a channel, ditch, or re-enter intake area.	Applies to project area	1.19, 2.11, 2.22	T-802, C5.4
Soil material at approved disposal sites will be seeded and mulched prior to winter.	Applies to project area	2.4	C5.4

Mitigation Measures: Standard Pacific Southwest Region Forest Service timber sale harvest management requirements and mitigation measures, as required by the Forest Service Manual, applicable Forest Service Handbooks, and the timber sale contract, are incorporated by reference into this plan for those alternatives proposing harvest activities. The present Watershed Condition Class of the project area requires implementation of mitigation measures to offset the impacts of the proposed harvest activities. These impacts are related to soil and water quality. The following mitigation measures are required and are in addition to BMPs listed in the erosion control plan.

Fire Mitigations

- Minimize ignition or intensive burning within designated riparian areas and maintain consistency with the Prescribed Burn Programmatic Biological Assessment.
- Keep prescribed fire as cool as possible and attain desired burn conditions.
- Allow hand cutting, piling and burning where feasible to reduce fuel load in riparian areas. Burn piles should not be larger than five feet high and five feet in diameter.

Timber Harvest Mitigations

- All Streamside Management Zones and Equipment Exclusion Zones (EEZ) to be flagged and/or signed within proposed treatment units. Identify Riparian Reserves as “Protect Streamcourse” on Sale Area Map.
- Post-project canopy closure within EEZs will be maintained at or above 85% where it currently exists.
- Remove harvest operations-created floatable material within the high water mark of the streamcourse.
- Follow Streamside Management Zone Objectives (SMZOs) as defined for each protected streamcourse in the assessment area for details of permissible and prohibited activities (BMP 1-8).
- 50 foot no mechanical entry or harvesting for riparian zones (i.e., riparian zones include landslide prone areas).
- Designate/approve Riparian Reserve crossings. Skid trail grade shall not exceed 35% and shall be located so as to minimize ground and vegetative disturbance. Rehabilitate skid trail disturbed mineral soil within 50 feet (slope distance) of defined channel limits with available organic material, resulting in minimum 50-70% ground cover post-treatment.
- Limit the slopes on which tractor prescription activity takes place. To control erosion and soil disturbance, down hill tractor activity should be limited to 35% slopes and uphill to 25% unless the leading end is suspended. Tractor piling should be limited to 30% slopes and below. (BMP 1-9) Limit the operating period of heavy machinery prescription activity. To avoid compaction, rutting, gullyng and the resulting long term damage to the productivity of the soil resource, as well as to achieve clean tractor piles, tractor piling activities should be limited to the dry periods of the year. Tractor operation will be suspended by the contract administrator

when soil conditions become too wet, and there is a potential for soil compaction and soil hydrologic function to occur. (BMPs 1-10,5-2,5-6,1-13.)

- Dedicate no more than 15% of the unit to primary skid roads, trails, and landings. The objective is to design a skidding pattern that best fits the terrain and limits the impact on the soil. Predesignated skid trails, felling to the lead, and end lining are methods that can be used to achieve this. Skid trails should be outsloped and not located in swales, where waterbarring is not possible or requires deep cuts. (BMPs 1-10,1-12,1-13,1-16.)
- Where skid trails cross streams remove sediment and crossing material (culvert or logs), reshape stream banks, water bar skid trail adjacent to channel, and mulch-seed disturbed area within stream protection zone.
- To minimize potential for erosion and improve soil quality, all primary skid trails and temporary roads from the present, as well as past sales should be scarified, if they have not previously. This will be to a depth of 6” to 12” depending on soil type. These areas will be respread with slash. Subsoiling should be performed when the soils are dry.

Road and Trail Mitigations

- Decommission system and non-system roads and trails that will improve soil and water quality conditions and are not needed for long-term use (i.e., >20 years). Road decommissioning entails removing culverts, ripping and outsloping road surface, and tank trapping. Other activities may occur depending on site conditions (see Appendix C). The goal is to control surface runoff, erosion, and mass failure leaving the road unavailable for future use. The condition of these roads is monitored long-term as part of BMP effectiveness monitoring.
- For this project, 9 miles of road were identified to be decommissioning. Decommissioning will be implemented using dollars generated by KV, FS engineering and watershed restoration funds, and non-FS sources (e.g., water quality grants). Appendix C lists the roads and the prescribed treatments.
- Reconstruct system roads that do not meet current engineering and BMP standards. Road reconstruction consists of several or all following actions; blading and shaping of the travel way, drainage improvement including pipe installation (size culverts to Q₁₀₀ flood event), waterbars, and/or rolling dips, overside drain where necessary, and rocking for surface protection.
- If hauling is performed outside the normal operating season, the placement of aggregate base course may be required to provide a stable running surface and prevent rutting and potential erosion. Snow berms will be removed or drains installed to avoid channelization of melt water to minimize potential for damage to the road and to protect water quality. If the road surface is damaged, lost surface material shall be replaced, and damaged structures repaired. (BMPs 2-23, 2-24 and 2-25)
- Purchaser utilized roads rutted or otherwise damaged by Purchaser operations will be spot-rocked or otherwise suitably repaired. Drainage structures shall be protected or repaired as

necessary. The road surface shall be outsloped, if possible, during maintenance operations. Road surfaces in areas crossing serpentinitic soils should be rocked to prevent roadbed deformation (rutting) during wet conditions, resulting in subsequent rilling and gullyng of the roadbed.

- Seasonal Road Closure - In areas where public and service access is required, but soils are seasonally saturated and road use would cause rutting, soil compaction, damage to the roots of trees, as well as wildlife disturbance during critical periods, roads will be closed October 30th to May 1st. During the open period of the year, regular road maintenance will occur to prevent surface runoff, sediment delivery to streams, and the resulting cumulative effects.
- Year Around Road Closure - In areas where public and service access is required, but soils are seasonally saturated and road use would cause rutting, soil compaction, damage to the roots of trees, as well as wildlife disturbance during critical periods, roads will be closed year around.
- Closed roads will have tank trap or gate.
- Do not conduct harvest, yarding or hauling activity during wet weather conditions. Generally, from October 15 to April 15 activity should only occur when soil conditions are such that the operations will not have a deleterious affect on watershed resources. An earth scientist should be consulted prior to conducting activities during the time frame specified above.

Monitoring Requirements

Wet weather operations implementation and effectiveness monitoring

Hauling activities may occur outside of the Normal Operating Season (NOS), defined as May 15 to October 15, providing that the following guidelines are adhered to.

Daily monitoring of haul routes, landings, and skid trails consisting of BMP forms or daily diaries will document implementation and effectiveness of BMPs. Project activities will be curtailed and corrective action taken when any of the following are encountered or expected:

- **Erosion of Road Material**
 - Scour or sediment deposition evident, and extending more than 20 feet below outlet of cross drain.
 - Scour or sediment movement into riparian reserve or drainage way from road surface, cut slope, or fill slope.
- **Ponding**
 - Ponding present on road surface that is causing fill subsidence or otherwise threatening integrity of fill.
- **Ruts/Rills**
 - More than 10% of road segment length has rills more than 2 inches deep and 20 feet in length that continue off road.
 - Ruts formed that can channel water past erosion control structures.

- Numerous rills present at stream crossing (>1 rill per lineal 5 feet), apparently active or enlarging, evidence of some sediment delivery to stream.
- **Culverts**
 - Sediments or debris is blocking 30% of inlet or outlet.
 - More than 10% of the flow to pass beneath or around culvert, or noticeable piping evident.
- **Skid Trails/ Harvest Areas**
 - More than 20% of skid trail or cableway surface lengths have rills present that are over 2 inches deep and more than 10 feet in length.
 - More than 10% of skid trail surface length has ruts greater than 2 inches deep.
 - Rills or sediment deposition extends more than 20 feet below waterbar outlet.
 - More than 10% of waterbars fail to divert flow off skid trails or cableways
 - Sediment movement into a riparian reserve.
 - Presence of gullies (erosional features greater than 4” deep and 6”wide).
- **Landings**
 - Rills (greater than ½” deep and 10’ in length) or sediment deposition has extended more than 20 feet off of landing.
 - More than 1 cubic yard of material (from erosion or slope failure) has moved into riparian reserve.

Erosion control materials and preventative maintenance measures would be in place prior to hauling outside the NOS. These measures include a combination of water-bars, mulch, spot rocking, and road maintenance. When activities extend outside the NOS, erosion control plans are implemented and kept current on a daily basis.

The Shasta-Trinity National Forest’s shall provide NMFS with a monthly report of concurrent BMP monitoring for all ground disturbing activities that occur outside the NOS.

Mitigation measure implementation and effectiveness monitoring

- Site review by hydrologist, geologist, and/or fishery biologist

Watershed Condition Class monitoring (control versus treated)

- Channel stability monitoring of Rush, Little Browns, and Weaver Creeks.
 - Use channel reference sites to monitor the channel stability trend pre and post project.
- Monitor implementation and effectiveness of watershed restoration activities
 - Track benefits to help meet TMDL goals.

BMP implementation and effectiveness monitoring

- Follow standard BMPEP monitoring plan

Browns Project trend monitoring

The Browns Project Instream and Upland Monitoring Plan (available in the project record) provides details for the project-specific water quality monitoring plan, and is summarized below.

The purpose of the instream and upland monitoring is to prevent and measure the potential impacts of the Browns Project on the water quality and beneficial uses of Rush, Little Browns, and Weaver

Creeks. To meet the terms and conditions and regulatory requirements of the National Marine Fisheries Service and North Coast Regional Water Quality Control Board, the Forest Service needs to monitor the instream fisheries habitat, water quality, and upland condition downstream and adjacent to project activities.

The project monitoring plan is classified as site-selective instream and upland monitoring and is part of the Forest Service Region 5 Best Management Practices Evaluation Program (BMPEP) (USDA, 2000). Project-specific monitoring will be conducted downstream of the project area, in addition to the usual BMPEP monitoring, to ensure compliance with Federal and State water and land use laws (i.e., Endangered Species Act and Basin Plan). The monitoring plan results will be reduced and reported on an annual basis.

The instream portion of this plan will measure channel and substrate characteristics in Rush and Little Browns Creeks before and for five years after project implementation. Channel characteristics will be measured before project implementation, for two consecutive years after implementation, and then once more on the fifth year after implementation. The channel characteristics of East Weaver Creek will not be monitored. Water temperature in Rush, Little Browns, and West Weaver Creeks, will be monitored continuously, between May and October, until five years after project implementation. Thermographs will be placed within the channel monitoring reaches on Rush and Little Browns Creeks, and above Weaverville in East Weaver Creek.

The upland portion of this plan will measure hillslope characteristics and focuses on unstable landforms, areas prone to surface erosion and compaction, riparian areas and sediment delivery points. Implementation and effectiveness BMP monitoring will be completed during and after implementation of project activities. Monitoring sites will be visited once during and immediately before finishing road construction, timber harvest, and road decommissioning. The sites will be re-occupied for five years after project implementation. Monitoring will continue for two consecutive years after implementation and once more on the fifth year after implementation. The upland condition focuses on the Little Browns Creek subwatershed. The instream and upland monitoring data produced by this plan will be used to prevent and measure the potential impacts of the Browns Project activities on critical habitat, water quality and upland condition.

Appendix C: Road Decommissioning List and Prescriptions

Appendix C: Road Decommissioning List and Prescriptions

Road Decommissioning: The Browns Project will decommission about 31 miles of road to mitigate impacts related to timber harvest. Road decommissioning is defined as the demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems nor require maintenance.

Road decommissioning activities result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1, FSM 7705 - Transportation System). Road decommissioning prescriptions include:

- Removal of culverts and all other drainage structures;
- Stream channel restoration;
- Recontouring and/or outsloping to return road prism to near natural hydraulic function;
- Stabilization of road and associated disturbed surfaces tillage, ripping, fertilization and/or revegetation;
- Earthen berm barrier installation; and
- Other activities depending on site conditions.

Table 1 is a list of the 31 miles of road decommissioning and the prescriptions within the Browns Project area. The following is a list of prescriptions:

- **T-1:** close road with earthen berm or other type of barrier (not a gate)
- **T-2:** rip and outslope road surface
- **T-3:** mulch and seed ripped road surface with weed free straw and native seed mix
- **T-4:** excavate all culverts and other drainage structures (haul off of site)
- **T-5:** shape stream-road crossings to pre-road condition (natural channel slope, width, and depth)
- **T-6:** rehabilitate springs, seeps, and meadows to stable condition
- **T-7:** stabilize active mass failure

Table 1. Browns Project list of roads to be decommissioned.

Road ID	Length (miles)	Project	Prescription
33N38F	0.69	Browns	T-1, T-2, T-3, T-4, T-5
33N42A	0.54	Oregon MT	T-1, T-2, T-3
34N42A	0.2	Browns	T-1, T-2, T-3
34N52Y	0.67	Browns	T-1, T-2, T-3, T-4, T-5, T-6
34N52Y-10	0.05	Browns	T-1, T-2, T-3
34N52Y-14	0.15	Browns	T-1, T-2, T-3
34N52YA-11	0.04	Browns	T-1, T-2, T-3
34N52YA-13	0.02	Browns	T-1, T-2, T-3
34N83A	0.34	Browns	T-1, T-2, T-3
34N83B	0.25	Browns	T-1, T-2, T-3
34N89	0.80	Browns	T-1, T-2, T-3, T-4, T-5
34N89A	0.48	Browns	T-1, T-2, T-3, T-4, T-5
34N95-1	0.19	Browns	T-1, T-2, T-3
34N95-10	0.13	Browns	T-1, T-2, T-3
34N95-11	0.08	Browns	T-1, T-2, T-3
34N95-12	0.08	Browns	T-1, T-2, T-3
34N95-13	0.04	Browns	T-1, T-2, T-3
34N95-14	0.04	Browns	T-1, T-2, T-3
34N95-16	0.05	Browns	T-1, T-2, T-3
34N95-17	0.31	Browns	T-1, T-2, T-3
34N95-18	0.25	Browns	T-1, T-2, T-3
34N95-19	0.03	Browns	T-1, T-2, T-3
34N95-20	0.03	Browns	T-1, T-2, T-3
34N95-21	0.05	Browns	T-1, T-2, T-3
34N95-22	0.20	Browns	T-1, T-2, T-3
34N95-23	0.23	Browns	T-1, T-2, T-3
34N95-25	0.08	Browns	T-1, T-2, T-3
34N95-7	0.19	Browns	T-1, T-2, T-3
34N95-9	0.04	Browns	T-1, T-2, T-3
34N95A	0.59	Browns	T-1, T-2, T-3, T-4, T-5, T-6
34N95A-1	0.03	Browns	T-1, T-2, T-3
34N95B	0.31	Browns	T-1, T-2, T-3
34N95C	0.57	Browns	T-1, T-2, T-3
34N95C-1	0.07	Browns	T-1, T-2, T-3
34N95E	0.60	Browns	T-1, T-2, T-3
34N95F	0.27	Browns	T-1, T-2, T-3
34N95F-1	0.04	Browns	T-1, T-2, T-3
34N95G-1	0.02	Browns	T-1, T-2, T-3
34N95G-2	0.14	Browns	T-1, T-2, T-3
34N96-1	0.39	Browns	T-1, T-2, T-3, T-4, T-5, T-7
34N96-2	0.35	Browns	T-1, T-2, T-3, T-4, T-5
34N96-3	0.06	Browns	T-1, T-2, T-3, T-4, T-5

**Browns Project Revised Draft Environmental Impact Statement –
Appendix C: Road Decommissioning List and Prescriptions – July 2007**

Road ID	Length (miles)	Project	Prescription
34N96-4	0.13	Browns	T-1, T-2, T-3, T-4, T-5
34N96-5	0.35	Browns	T-1, T-2, T-3, T-4, T-5
34N96-6	0.29	Browns	T-1, T-2, T-3, T-4, T-5
34N96B	0.31	Browns	T-1, T-2, T-3, T-4, T-5
34N96B-1	0.26	Browns	T-1, T-2, T-3
34N96B-2	0.06	Browns	T-1, T-2, T-3
34N96B-3	0.06	Browns	T-1, T-2, T-3
34N96B-4	0.15	Browns	T-1, T-2, T-3
34N96B-5	0.34	Browns	T-1, T-2, T-3
34N96C	0.47	Browns	T-1, T-2, T-3, T-4, T-5
34N96C-1	0.44	Browns	T-1, T-2, T-3
U09W95A	0.09	Oregon MT	T-1, T-2, T-3
U230A	0.72	Browns	T-1, T-2, T-3, T-4, T-5
U232A & B	0.15	Browns	T-1, T-2, T-3
U236AA	0.14	5 cent Gulch	T-1, T-2, T-3, T-4, T-5
U236AB	0.17	5 cent Gulch	T-1, T-2, T-3, T-4, T-5
U236AC	0.17	5 cent Gulch	T-1, T-2, T-3, T-4, T-5
U236AD	0.42	5 cent Gulch	T-1, T-2, T-3, T-4, T-5
U33N01C	0.03	Oregon MT	T-1, T-2, T-3
U33N01K	0.43	Oregon MT	T-1, T-2, T-3, T-4, T-5
U33N38B	0.43	Oregon MT	T-1, T-2, T-3, T-4, T-5
U33N38D	0.10	Oregon MT	T-1, T-2, T-3
U33N38G	0.10	Oregon MT	T-1, T-2, T-3
U33N42C	0.02	Oregon MT	T-1, T-2, T-3
U33N42R	1.94	Oregon MT	T-1, T-2, T-3
U33N42RD	0.04	Oregon MT	T-1, T-2, T-3
U34N05YA	0.03	Browns	T-1, T-2, T-3
U34N05YB	0.14	Browns	T-1, T-2, T-3
U34N05YC	0.13	Browns	T-1, T-2, T-3
U34N33YA	0.49	Browns	T-1, T-2, T-3, T-4, T-5
U34N34B	0.82	Browns	T-1, T-2, T-3
U34N34B-1	0.04	Browns	T-1, T-2, T-3
U34N34B-2	0.11	Browns	T-1, T-2, T-3
U34N52YB	0.34	Browns	T-1, T-2, T-3
U34N52YC	0.58	Browns	T-1, T-2, T-3
U34N52YCA	0.04	Browns	T-1, T-2, T-3
U34N52YCB	0.04	Browns	T-1, T-2, T-3
U34N52YD	0.92	Browns	T-1, T-2, T-3
U34N77A	0.38	Browns	T-1, T-2, T-3
U34N77A-1	0.02	Browns	T-1, T-2, T-3
U34N77AA	0.56	Browns	T-1, T-2, T-3
U34N77AAB	0.03	Browns	T-1, T-2, T-3
U34N77B	0.16	Browns	T-1, T-2, T-3

**Browns Project Revised Draft Environmental Impact Statement –
Appendix C: Road Decommissioning List and Prescriptions – July 2007**

Road ID	Length (miles)	Project	Prescription
U34N77C	0.17	Browns	T-1, T-2, T-3, T-4, T-5
U34N95A	0.22	Browns	T-1, T-2, T-3
U34N95AA	0.40	Browns	T-1, T-2, T-3
U34N95B	0.08	Browns	T-1, T-2, T-3
U34N95H	0.56	Browns	T-1, T-2, T-3
U34N95I	0.25	Browns	T-1, T-2, T-3
U34N95I-1	0.24	Browns	T-1, T-2, T-3
U34N95J	0.50	Browns	T-1, T-2, T-3
U34N95J-1	0.13	Browns	T-1, T-2, T-3
U34N95J-2	0.04	Browns	T-1, T-2, T-3
U34N95K	0.13	Browns	T-1, T-2, T-3
U34N95L	0.04	Browns	T-1, T-2, T-3
U34N95M	0.23	Browns	T-1, T-2, T-3
U34N95N	0.29	Browns	T-1, T-2, T-3
U34N95O	0.85	Browns	T-1, T-2, T-3
U34N95P	0.03	Browns	T-1, T-2, T-3
U34N96AB	0.15	Browns	T-1, T-2, T-3
U34N96AC	0.23	Browns	T-1, T-2, T-3
U34N96AD	0.04	Browns	T-1, T-2, T-3
U34N96AE	0.05	Browns	T-1, T-2, T-3
U34N96B-4	0.02	Browns	T-1, T-2, T-3
U34N96BA	0.02	Browns	T-1, T-2, T-3
U34N96D	1.01	Browns	T-1, T-2, T-3
U34N96E	0.04	Browns	T-1, T-2, T-3
U34N96F	0.70	Browns	T-1, T-2, T-3
U34N96G	0.04	Browns	T-1, T-2, T-3
U34N96H	0.13	Browns	T-1, T-2, T-3
U3TRI01	0.13	Browns	T-1, T-2, T-3
U3TRI01A	0.06	Browns	T-1, T-2, T-3
U3TRI02	0.04	Browns	T-1, T-2, T-3
U3TRI03	0.53	Browns	T-1, T-2, T-3
U3TRI03A	0.20	Browns	T-1, T-2, T-3
U3TRI03B	0.11	Browns	T-1, T-2, T-3
U3TRI03C	0.03	Browns	T-1, T-2, T-3
U3TRI03D	0.05	Browns	T-1, T-2, T-3
U3TRI03E	0.04	Browns	T-1, T-2, T-3
U3TRI03F	0.15	Browns	T-1, T-2, T-3
U3TRI03G	0.04	Browns	T-1, T-2, T-3
U3TRI04	0.14	Browns	T-1, T-2, T-3
U3TRI04A	0.14	Browns	T-1, T-2, T-3
U3TRI05	0.13	Browns	T-1, T-2, T-3
U3TRI05-2	0.10	Browns	T-1, T-2, T-3
U3TRI05-3	0.08	Browns	T-1, T-2, T-3

**Browns Project Revised Draft Environmental Impact Statement –
Appendix C: Road Decommissioning List and Prescriptions – July 2007**

Road ID	Length (miles)	Project	Prescription
U3TRI05-4	0.04	Browns	T-1, T-2, T-3
U3TRI05A	0.06	Browns	T-1, T-2, T-3
U3TRI05A-1	0.09	Browns	T-1, T-2, T-3
UC232-1	0.07	Browns	T-1, T-2, T-3
UT34N95C-1	0.10	Browns	T-1, T-2, T-3
UT34N96BA	0.12	Browns	T-1, T-2, T-3
Grand Total = 31			

Appendix C: Road Decommissioning List and Prescriptions
Proposed Road Management
National Forest: Shasta-Trinity
Weaverville Ranger District
Trinity River Management Unit
T 34 N R 9 W, M.D.M.
Sections 16-18, 20-24, 27-29, 31-34

- Legend**
- Project Area Boundary
 - Timber Harvest Units
 - Owenship**
 - National Forest Lands
 - Private Lands
 - Outside Forest Boundary
 - Coho Critical Habitat
 - Project Area Roads**
 - National Forest
 - Trinity County
 - State Highway
 - Road Reconstruction
 - Road Decommissioning**
 - Foreseeable
 - Proposed
 - Temporary Roads To Decommission
 - Unclassified Easement To Acquire**
 - Private
 - Unclassified On National Forest
 - Crossings
 - Potential Landings

