District ERFO Road Repair

ENVIRONMENTAL ASSESSMENT
EA No. DOI-BLM-OR-C000-2014-0001-EA
April 2014

FHWA reference number: OR BLM ERFO 2012-1

Coos Bay District
Bureau of Land Management
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Chapter 1 Purpose and Need for Action

Introduction

The Coos Bay District Bureau of Land Management (BLM) proposes to repair sections of roads that were damaged in the storm event of January 2012 (Appendix B Maps). The proposed project includes 11 damaged sites on 8 roads scattered throughout the district. These roads are a part of the district's transportation network and are needed for current and future use by the BLM and adjacent landowners. This environmental assessment (DOI-BLM-OR-C000-2014-0001-EA) contains the analysis of the environmental effects of repairing the storm-damaged roads. The proposed road repairs include rebuilding roads, replacing the stream crossing and cross-drain culverts, stabilizing fillslopes, and realigning roads. Waste and borrow areas have been identified if needed in support of the repair. The proposed project is expected to occur over a single construction season, typically June through October, in 2015.

The proposed project is being developed as a permanent repair through the Emergency Relief for Federally-Owned Roads (ERFO) Program of the Federal Highway Administration (FHWA), which is financed by the Federal Highway Trust Fund. To apply for funding, the BLM engineering staff completed an initial assessment of the repairs and estimated the costs required to repair the damaged roads. The ERFO program provides funding for the reconstruction of roads that have suffered damage because of a natural disaster over a wide area. The ERFO event on the Coos Bay District is named OR BLM ERFO 2012-1.

The BLM-administered land in western Oregon is predominantly intermingled in a checkerboard pattern with private ownership. Timber companies are the primary landowners and they manage their private lands for commercial timber production. Legal access to federal and private timberlands is provided through long-term or perpetual reciprocal right-of-way agreements between the United States and these timberland owners. The BLM's roads are for the use, development, protection, and administration of public lands and resources as well to provide access to other federal, private, and state landowners.

Need for the Project

Severe storm events in January 2012 resulted in damage to multiple roads that the BLM administers. The BLM applied for ERFO funding (described above) and the FHWA approved the BLM's request for financing to repair the proposed roads. The BLM has a responsibility to maintain needed roads for administrative access (e.g., timber harvest and fire suppression) as well as providing for access for adjoining landowners with reciprocal right-of-way agreements on those roads.

The Western Oregon District's Transportation Management Plan (TMP) (USDI 2010 *Update*) was developed to provide the goals and objectives for managing the BLM road and trail transportation systems in western Oregon. As directed in this TMP, the Interdisciplinary Team developed Transportation Management Objectives (TMOs) for the subject roads to identify the environmental concerns for erosion, wildlife, fish, hydrology; current and future use and constraints; improvements, renovation, and maintenance needs; and road closures. As a result, the Interdisciplinary Team identified the subject roads need maintenance for access for BLM administration and adjoining landowners.

Meteorological events on or about, January 17-19, 2012, leading to storm damage to roads

Two local weather stations (RAWS) recorded high precipitation amounts (Table 1) for the January 17-19 period. District hydrologists have noted occurrences of debris torrents, landslides, or road failures whenever a maritime rainstorm is greater than 5.5 inches of precipitation in 24 hours or 9.0 inches in 72

hours. This storm nearly met criteria for the 24-hour period at the Burnt Ridge RAWS station, and met the criteria for both stations for the 72-hour period.

Table 1 Seventy-two hour recorded precipitation from local weather stations for January 17-19, 2012.

RAWS Weather Station	Elevation (feet)	Precipitation (inches)
Charlotte Ridge	1,220	11.5
Burnt Ridge	2,955	9.1

Two long-term USGS stream gaging stations, one on the Umpqua River (station 14321000) and one on the South Fork Coquille River (station 14325000), recorded high runoff during January 19-20, 2012 (Table 2). At the Umpqua River gage, the mean daily high streamflow was 81,900 cfs (cubic feet/second) on January 20 and this flow was determined to be a 5-year recurrence interval based upon annual streamflow probabilities for this station (Wellman et al. 1993). Because much of the Umpqua basin lies to the east of the Coos Bay District, there is a delayed and muted response in precipitation-runoff, with contributing factors of upstream higher elevations with snowfall and delayed melt, reservoir regulation, withdrawals, and losses to groundwater storage. At the South Fork Coquille River gage, mean daily high streamflow was 17,600 cfs on January 19, 2012. This flow was determined to be a 10-year recurrence interval (Wellman et al. 1993). Low elevation coastal watersheds have relatively high drainage densities and low groundwater storage, resulting in high runoff for their drainage area.

Table 2 Recorded high streamflow from U.S. Geological Survey stream gaging stations for January 19-20, 2012

Stream Gaging Station	Location	Mean Daily High Streamflow (cfs)	Recurrence Interval
Umpqua River	Near Elkton, OR	81,900	5-year
S. Fork Coquille River	Near Powers, OR	17,600	10-year

The large amount of rainfall resulted in damage to many BLM-administered roads. The damage included water and debris overcharging ditches, saturated soil sloughing (failing) in road cutslopes and fillslopes, and water and debris caused culverts to plug. Once material plugged these culverts, water overflowed ditch lines, and ran across road surfaces and drained onto fillslopes, which saturated soils supporting the road surface. Over-saturation caused excessive erosion including complete road failures. Using the guidance provided in the Transportation Management Plan, BLM engineers determine the damaged roads needed "catastrophic maintenance" (USDI 2010 *Update*). The TMP defines this maintenance as "work activities necessary to return a roadway or bridge facility back to serviceability following a failure that is sudden and compete due to an external cause…catastrophic maintenance is not due to structural deficiencies, normal physical deterioration, or lack of maintenance."

Road Damage Description

The January 2012 rain event resulted in damage to these eight roads. Some of these roads were damaged in multiple locations. Three of the roads are impassable. These include the Burnt Mountain Access, Weaver, and Honcho Creek roads. The Moon Creek and Slide Creek roads were also blocked, but private landowners have re-opened the roads for their access. However, these repairs are temporary in nature and road conditions continue to deteriorate. The remaining roads are passible by vehicles, but they also continue to deteriorate, which could become a safety concern to traffic using these roads.

Table 3 includes the description of each road name, location, and the specific damage resulting from the storms.

Table 3 Road name and number, site location, and brief description of road damage

Road Name	Road Number	Mile Post	Road Damage
Camp Creek	22-10-35.0	12.7	Fillslope failed
Moon Creek	26-11-33.0	1.8	Entire road failure
Honcho Creek	27-10-4.1	0.50	Entire road failure, impassable
		0.54	Plugged culvert
		0.57	Plugged culvert
Burnt Mountain Access	27-11-12.0	0.94	Fillslope and road subsidence, impassable
Weaver	28-8-18.0	7.65	Fillslope failed, impassible
		7.7	Fillslope failed, impassable
Johns Creek	29-11-7.1	1.9	Damaged culvert and fillslope failed
Endicott Creek	29-12-24.0	3.2	Fillslope failed
Slide Creek	19-10-33.0	3.0	Fillslope and road subsidence

Purpose (Objectives)

A reasonable action alternative must meet the objectives provided in the Record of Decision/Resource Management Plan (ROD/RMP) for implementation of projects within the planning area. The ROD/RMP and applicable statutes specify accomplishing the following objectives in managing the lands within the project area:

Develop and maintain a transportation system that serves the needs of users in an environmentally sound manner. Arterial and major collector roads will form the backbone of the transportation system in the planning area ((USDI 1995), RMP p. 69). The BLM will accomplish this by:

- Locating, designing, constructing, and maintaining roads to standards that meet management objectives in accordance with the District road management plan (RMP p. 70)
- Following Best Management Practices for water quality and soil productivity to mitigate adverse effects on soils, water quality, fish, and riparian habitat during road construction and maintenance (RMP p. 70)

Provide and maintain a cost-effective transportation system (TMP p. 11) by:

- Reducing maintenance costs by maintaining [roads] to the appropriately assigned Maintenance Intensity (TMP p. 11)
- Ensuring that the infrastructure is maintained in a suitable fashion that support's the Bureau's mission effectively and efficiently (TMP p. 10)

Decision Factors

In choosing an alternative that best meets the Purpose and Need, the Coos Bay District Manager will consider the extent each alternative would:

- Provide access that best meets the transportation needs of the BLM and adjoining landowners
- Provides cost-effective management of roads identified at certain Management Intensities in the Transportation Management Plan
- Comply with applicable laws and Bureau policies including, but not limited to: the Clean Water Act, the Endangered Species Act, the O&C Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the Special Status Species Program

Conformance with Existing Land Use Plans

This EA was developed under the management direction of the 1995 Coos Bay District Record of Decision and Resource Management Plan (1995 ROD/RMP). The analysis supporting this decision tiers to the *Final Coos Bay District Proposed Resource Management Plan/Environmental Impact Statement*

(UDSI 1994). The 1995 Record of Decision is also supported by, and in conformance with, the *Final Supplemental Environmental Impact Statement (EIS) on Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl (Northwest Forest Plan)* (USDA and USDI 1994) and its *Record of Decision* (USDA and USDI 1994a) as supplemented and amended.

In December 2009, the District Court for the Western District of Washington issued an order on partial summary judgment in favor of the Plaintiffs finding inadequacies in the National Environmental Policy Act (NEPA) analysis supporting the *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (2007 ROD). The District Court did not issue a remedy or injunction at that time.

Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Settlement Agreement adopted by the District Court on July 6, 2011.

The Defendant-Intervenor subsequently appealed the 2011 Settlement Agreement to the Ninth Circuit Court of Appeals. The April 25, 2013, ruling in favor of the Defendant-Intervener remanded the case back to the District Court.

On February 18, 2014, the District Court vacated the 2007 RODs. Vacatur of the 2007 RODs resulted in returning the BLM to the status quo in existence prior to the 2007 RODs.

The BLM has conducted surveys for Survey and Manage species in accordance with the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*. No species were found.

Endangered Species Act

This project has been addressed in the Biological Opinion (BO) from the U.S. Fish and Wildlife Service; *Biological Opinion and Concurrence on the FY 2008-2013 Programmatic Suite of Activities Planned by the District and the Tribe*. This BO is for activities that may affect the northern spotted owl or marbled murrelet and their designated critical habitat (Reference number:13420-2008-F-0118) (USDI 2008) and was extended through FY 2014.

Culvert replacements on fish-bearing streams are included in a programmatic BO with the National Marine Fisheries Service (NMFS); *Reinitiation of the Endangered Species Act Section 7 Formal Programmatic Conference and Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Aquatic Restoration Activities in the States of Oregon and Washington* (ARBO II). Replacing the culvert on Honcho Creek to provide fish passage is covered under Project Category 1(Fish Passage Restoration; (USDC 2013).

Other standard road maintenance activities are included in another programmatic BO with NMFS; *Endangered Species Act Programmatic Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations for the Programmatic Activities of USDA Forest Service, USDI Bureau of Land Management, and Coquille Indian Tribe in Western Oregon* (USDC 2011). This document addresses the road failure repair on Moon Creek.

Public Involvement

The primary purpose of scoping is to identify agency and public concerns relating to a proposed project, and as such, helps define the environmental impacts of concern to be examined in detail in the EA. The BLM mailed scoping letters to Tribal, Federal, State, and County government agencies, adjacent

landowners, and other interested parties listed on the Coos Bay BLM NEPA mailing list. In addition, the scoping letter and general vicinity map was posted online on the Coos Bay BLM webpage and an email was sent to members of the web group who are listed. The scoping period ran from November 5, 2013 to November 22, 2013. No comments were received during the scoping process.

Chapter 2 Alternatives

This chapter is a description of each alternative and contains a summary of the environmental consequences of the alternatives.

This EA contains the analysis of a no action alternative and a proposed action alternative. For an Interdisciplinary Team to consider an action alternative, that alternative must meet the purpose and need, while not violating any minimum environmental standards. The alternatives developed must be consistent with the 1995 RMP and satisfy the purpose and need of implementing the RMP.

All quantifications (e.g., acreages and mileages) are based on estimates obtained from the geographic information system (GIS) and measurements from the field. In implementing these plans in the field, final numbers could vary slightly.

No Action

The no action alternative provides a baseline for the comparison of the alternatives. This alternative describes the existing condition and the continuing trends.

Of the 11 failed sections of road, vehicle access would be expected to be temporary on the two roads that had emergency repairs, because road conditions are expected to worsen with time and use; the three currently impassable roads would remain impassable and the failures would likely enlarge as the roads deteriorate. The other six failures would continue to degrade if left in the current condition.

Proposed Action

The BLM proposes to repair 11 sites on eight roads damaged from a January 2012 storm event. An additional 10 waste or borrow sites are necessary in support of the repairs. While half of the repairs are located on private property, the BLM is the owner of the road and has the maintenance responsibility. All repairs are expected to occur over a single construction season beginning in the spring of 2015 to meet the timeline required by ERFO funding.

The repairs include excavating failed material in the roadbed, compacting road fill, repaving road surfaces, replacing one stream crossing, replacing three cross-drain culverts, stabilizing fillslopes with rip rap or soil nailing, and realigning roads. For common road and road repair terms, refer to Appendix A. In support of repair construction, waste areas have been identified for the endhaul of road material, and borrow areas have been identified when soil material is required for backfill. Asphalt waste from repair areas would be disposed of off-site.

The following tables describe the location of each site (Table 4) and summarize the proposed action (Table 5). Pictures of the road repair sites are included in the site descriptions.

Table 4 Location of road repairs, waste, and borrow areas along with the associated land ownership and BLM Land Use Allocations (LUA). Other abbreviations in the table include milepost (MP), UFO (Umpqua Field Office), MFO (Myrtlewood Field Office), GFMA (General Forest Management Area), and LSR (Late Successional Reserve)

Road Name*, Field Office	Map Location/EA Site ID	Site Type	Road Humber	Township-Range-Section	Land Ownership – Applicable BLM LUA
Camp Creek, UFO	A	Repair	22-10-35.0	23-09-12	Private
Moon Creek, UFO	B	Repair	26-11-33.0	26-11-35	BLM - GFMA
Honcho Creek, UFO	C1	Repair	27-10-4.1	26-10-33	BLM - LSR
	C2	Repair	27-10-4.1	26-10-33	BLM - LSR
	C3	Repair	27-10-4.1	26-10-33	BLM - LSR
	WS3	Waste	27-10-4.3	26-10-33	BLM - LSR
	BW1a	Borrow	27-10-4.3	26-10-33	BLM - LSR
	BW1b	Borrow	27-10-4.3	27-10-03	BLM - LSR
Burnt Mountain Access, UFO	D	Repair	27-11-12.0	27-11-12	Private
	WS4	Waste	27-10-7.0	27-10-07	BLM - LSR
Weaver, MFO	E1	Repair	28-8-18.0	28-09-34	Private
	E2	Repair	28-8-18.0	28-09-34	Private
	WS5	Waste	28-9-20.0	28-09- 33	BLM - LSR
Johns Creek, UFO	F	Repair	29-11-7.1	29-11-07	BLM - GFMA
	WS6	Waste	Unnamed	29-11-07	BLM
Endicott Creek, MFO	G	Repair	29-12-24.0	29-11-18	Private and BLM; GFMA
	WS7a	Waste	Unnamed	29-11-07	BLM - GFMA
	WS7b	Waste	Unnamed	29-12-13	BLM - GFMA
Slide Creek, MFO	H	Repair	29-10-33.0	30-10-06	BLM - GFMA
	BW2	Borrow	30-10-6.0	30-10-06	BLM - GFMA
	WS8	Waste	29-10-33.0	30-10-06	BLM - GFMA

*** Note: Sites are listed geographically from north to south**

Table 5 Summary of the road damage and the proposed action at each repair, waste, and borrow site. Abbreviations used below include cubic yards (cy) and diameter at breast height (DBH).

Road Name	Proposed Action
Camp Creek	Excavate, backfill, replace cross-drain culvert, compact, pave, place 200 cy waste in privately owned quarry
Moon Creek	Reduce elevation of large boulder in stream with hydraulic stinger; use boulder and additional rock slope protection; pave
Honcho Creek	Backfill road washout; reconstruct ditch; resurface
	Install a catch basin; replace 24” cross-drain culvert; repair ditch
	Stabilize slope; replace damaged stream crossing culvert with a fish passage culvert; resurface road
	Place < 150 cy of material at existing waste site
	Create new borrow site approximately 200’ long × 100’ wide × 6’ deep (0.5 acres); remove 20 to 30 conifer trees, 8” to 10” DBH, and 60’tall; excavate up to 3,400 cy of material
	Create a new borrow site approximately 200’ long × 100’ wide × 4’ deep (0.5 acres); remove 10 to 15 myrtle, alder, and conifers, 16” to 20” DBH, and 120’ tall; excavate up to 3,400 cy of material
Burnt Mountain Access	Remove asphalt, excavate, and re-compact sub-grade
	Grub site, stockpile dirt generated from construction at approximately 30’ long × 40’ wide recently thinned area and cleared adjacent to road
Weaver	Soil nail 240 feet, apply shotcrete, excavate and re-compact sub-grade, repave. If failures worsen, realign the road into the cutslope. Expand waste areas to accommodate extra materials.
	Stockpile < 200 cy material generated from construction at existing 60’ long × 60’wide stockpile site at road junction
Johns Creek	Replace cross-drain culvert, soil nail 125 feet, and apply shotcrete.
	Grub site, stockpile < 100 cy material generated from construction on existing 140’ long × 50’ wide landing
Endicott Creek	Realign road approximately 12’ into hillside
	Utilize old logging spur and landing for waste approximately 500’ long × 20’ wide (0.3 acres). Cut alders that have grown up in road and landing. Stockpile up to 3400 cy material generated from construction. Remove cross-drain culvert and other drainage features.
	Create new waste area approximately 100’ long × 100’ wide, (0.3 acres) in a recently thinned stand and below a landing; remove up to 30 merchantable conifers, grub the site, stockpile up to 3400 cy material generated from construction
Slide Creek	Excavate temporary repairs and re-compact sub-grade, add aggregate, stabilize fillslope with boulders
	Create a new borrow site approximately 65’ long × 25’ wide × 8’deep, (0.03 acres) from a cutslope at road junction; remove 8 to 12 young conifers; and excavate 120 cy of material for borrow
	Expand existing waste site by 0.1 acres; remove 10 to 15 young conifers; stockpile < 100 cy

Camp Creek Road 22-10-35.0 at milepost (MP) 12.7

The road has an asphalt surface and is currently passable. However, the wear surface and subgrade has sloughed downhill 69 linear feet on the outer edge of the road (Photo 1). The repair would consist of excavating approximately 200 cubic yards of asphalt surface and subgrade, compacting road fill, replacing a 24-inch cross-drain culvert, and repaving the road surface. The asphalt waste would be disposed of off-site and other waste material would be hauled to a privately owned quarry along Camp Creek road.

Photo 1 Camp Creek MP 12.7 (A), May 2012, looking north

Moon Creek Road 26-11-33.0 at MP 1.8

The initial damage consisted of a 95-linear foot crescent-shape embankment failure (Photo 2). The road was asphalt and was temporarily repaired by Menasha for their commercial use in February 2012 (Photo 3). A 25-foot long by 25-foot wide instream woodpile and a large boulder narrow the stream channel and redirect stream flow toward the repaired embankment. To alleviate the water force on the embankment, the repairs would include using a hydraulic hammer to reduce the elevation of a large boulder in Moon Creek by approximately 2 feet (to bank full height). The instream wood jam would be left in place. Additional riprap boulders would be placed on the remaining unprotected 25 feet of embankment to protect from continued road erosion. Riprap was not placed at this location during the temporary repair and would not change the original footprint of the slope. The temporary road repairs would also be paved.

Photo 2 Moon Creek MP 1.8 (B) January 2012, looking north

Photo 3 Moon Creek in its current condition (after temporary repairs were completed by adjacent landowner). The boulder would be reduced in size, and the road would be repaved. Large wood jam would be left in stream. November 2013, looking north

Honcho Creek Road 27-10-04.1 at MP 0.50, 0.54, and 0.57

Damage consists of severe erosion of the road surface, ditch, and subgrade at three separate sites along a 375-foot stretch of road. Sediment has plugged two culverts causing the stream to run down the road. This has resulted in extensive ditch erosion (up to 6 feet deep) and a road washout. The road has a rock surface and is currently impassible.

Proposed repairs include:

- MP 0.50- Backfill the washout, reconstruct the ditch, and resurface the road (Photo 4);
- MP 0.54- Reconstruct ditch and road crown, replace 24" cross-drain culvert (Photo 5);
- MP 0.57- Stabilize the adjacent slope with riprap, replace the washed out culvert with a larger culvert designed for fish passage and 100-year storm events (80' × 14.25' × 9.1'), and resurface the road (Photo 6).

The project would require a waste area for placement of 155 cubic yards of excavated material and a borrow area to supply 3,400 cubic yards of soil for construction backfill. Two borrow locations have been identified and the size of the areas developed would depend on the soil depth at each site. At borrow site BW1a, 20 to 30 conifers, 8 to 10 inches diameter at breast height (DBH), and 60 feet tall, would be removed. At borrow site BW1b, 10 to 15 myrtle, maple, and conifer trees, 16 to 20 inches DBH, and 120 feet tall, would be removed. The borrow and waste sites are located in three locations on the 27-10-4.3 road.

Photo 4 Honcho Creek Road MP 0.50 (C1). Road was washed out. See the car for scale. January 2012, looking south.

Photo 5 Honcho Creek road, MP 0.54 (C2). The BLM would reconstruct the ditch and road crown, clean the culvert, and repair the catch basin. January 2012, looking south.

Photo 6 Honcho Creek road, MP 0.57 (C3). This culvert would be replaced and the road resurfaced. January 2012, looking south.

Burnt Mountain Access Road 27-11-12.0 at MP 0.94

Damage consists of 170 linear feet of 18-inch grade subsidence, likely due to subsurface water migration and over-saturation from the storm (Photo 7). The road has an asphalt surface and is closed to traffic at both access points. The permanent repair consists of removing the existing asphalt surface, excavating sufficient material to form ramps on either side of the sunken grade, recompacting the fill, and applying a lift of aggregate.

The 100 to 500 cubic yards of rock and dirt material generated during construction would be endhauled to a nearby waste area along side road 27-10-7.0. The asphalt waste would be disposed of off-site.

Photo 7 Burnt Mountain Access Road MP 0.94 (D). April 2012, looking north

Weaver Road 28-08-18.0 at MP 7.65 and MP 7.7

Damage consists of failed outer embankments encroaching to the edge of the roadbed pavement. Damage at MP 7.65 extends approximately 75 linear feet in one area and 65 linear feet in another (Photo 8). Damage at MP 7.7 extends for approximately 100 linear feet (Photo 9). The road now closed to traffic (as of 3/3/2014). The repairs would consist of soil nailing 240 linear feet, applying shotcrete, excavating and recompacting the subgrade, and repaving the road surface. Less than 200 cubic yards of material would be endhauled to an existing stockpile site at road 28-9-20.0. If the road condition worsens, the road would be realigned into the cutslope and a waste area would be expanded to accommodate the additional excavated materials.

Photo 8 Weaver Road MP 7.65 (E1) showing the two-fillslope failures as of May 2012, looking northeast

Photo 9 Weaver Rd MP 7.7 (E2) showing fillslope failure, May 2012, looking south

Johns Creek Road 29-11-07.1 at MP 1.9

Damage consists of 125 linear feet of sloughing on the road's fillslope (Photo 10). The failure irreparably damaged the cross-drain culvert. The failed slope embankment is now exposed and prone to continued failure and threatening the road surface. The road is rocked and still passable. The repair would consist of soil nailing, replacing the cross-drain culvert, and applying shotcrete. No resurfacing is needed. Construction would generate less than 100 cubic yards and this waste would be endhauled to an old landing at the end of an unnamed road.

Photo 10 Johns Creek Road MP 1.9 failure. May 2012, looking south

Endicott Creek Road 29-12-24.0 at MP 3.2

The damage consists of a 5-foot scarp along the outboard edge of the existing roadway that formed from a landslide movement likely due to subsurface water migration and over saturation from the storm (Photo 11). The road has a rock surface and is still passable. The proposed repair consists of realigning the roadway, approximately 12 feet, into the hillside away from the scarp. The cutslope of the realignment would be on BLM land.

The repair would generate 3,500 cy of waste. Two waste areas have been identified. The closest to the repair is site WS7a, an unnamed road that is 500-foot long. The waste would be placed on the landing and fill in the unused road. The road would be decommissioned from future use. Young alders growing in the road and landing would be cut and the culvert would be removed.

The second site (WS7b) is located below a landing within a recently thinned stand of trees three miles south of the repair. Approximately 10 to15 merchantable conifers would be removed to provide room for the waste.

Photo 11 Endicott Creek Road MP 3.2 (G) failure. Propose to realign road 12' into cutslope. June 2012, looking south

Slide Creek Road 29-10-33.0 at MP 3.0

Damage consists of approximately 90 linear feet of a road failure (Photo 12). A private landowner completed temporary repairs shortly after the 2012 storm (Photo 13). However, the repairs lack acceptable buildup and compaction of subgrade or appropriate gradation of aggregate wear. The proposed repairs would consist of excavating and recompacting the temporary fill material, adding thicker lifts of aggregate, lessening the severity of the downhill embankment slope, cutting in a more defined ditch line, and reusing boulders for erosion control.

The project requires a waste and borrow area. These sites would be in two separate locations. The waste area would be expanded to include an existing road turnout, an old roadbed, and a new area, which requires removing 10 to 15 young conifers. The waste area would be approximately 0.1 acres and construction would generate approximately 50 cubic yards of boulders, gravel, and stumps.

The borrow area would provide 120 cubic yards material used for backfill and would be 0.03 acres. The material would come from a road cutslope west of the repair. Approximately 8 to 12 young conifers would be cut.

Photo 12 Slide Creek road, MP 3.0 (H) failure. Date between January and June 2012, looking east

Photo 13 Slide Creek road MP 3.0 (H) shows temporary repairs. June 2012, looking east

Design Features for the Proposed Action

This section describes measures designed to avoid, minimize, or rectify impacts on resources and are included as part of the proposed action. Design features are specific measures, restrictions, requirements, or mitigations included in the design of a project in order to reduce adverse environmental impacts. The measures are designed by a specialist or are incorporated from BLM policy, guidance, or direction, which include Best Management Practices (BMPs) (USDC 2011; USDI 1995, 2011). The specific intent of the BMPs is to minimize or prevent sediment delivery to waters of the U.S. in compliance with the Clean Water Act.

General Design Features and BMPs applicable for all sites

Construction/Engineering

Road construction would be limited to the dry season, generally from June into October.

Road fills would be constructed to prevent fill failure using inorganic material, compaction, buttressing, subsurface drainage, rock facing, and/or other construction methods to improve stability

Energy dissipation material would be placed around the inlet and outlet road drainage structures.

Road cut and fill slopes would be designed with stable angles, to minimize erosion and prevent slope failure.

Water runoff from roads would be diverted away from headwalls, slide areas, high landslide hazard locations, and/or steep erodible fill slopes.

Waste material excavated during construction or renovation would be end-hauled offsite, when side slopes exceed 60 percent and where side-cast material may enter wetlands, floodplains or other waters of the state.

Waste areas would be located in flat stable location away from streams, and designed to disperse surface water to vegetated stable areas.

Waste areas would be free of vegetation and scarified before piling materials on the area. If trees sapling size or larger need to be removed, they would be cut (i.e., not pushed over) before grubbing the site. Damage to residual trees would be avoided when falling and removing designated trees. Trees 6 inches DBH and larger would be decked at designated sites to be disposed with firewood permits or as a commercial sale.

The topsoil at borrow areas would be removed and stockpiled. Upon completion of borrow removal activities, this topsoil would be spread over the disturbed area for purpose of reclamation.

Mechanized equipment would be inspected daily for fluid leaks, and refueled, repaired, and stored overnight at least 150 feet from streams and wetlands.

A district-approved native grass seed mix, fertilizer (if necessary), and mulch would be applied to bare ground, including cut and fill slopes, ditch lines, borrow and waste sites.

Cultural Resources

If, in connection with operations, anyone discovers, encounters or becomes aware of objects or sites of potential cultural resource value on the project area, such as historic or prehistoric ruins, fossils or

artifacts, operations in the vicinity of the discovery site shall be suspended and the District Archaeologist shall be notified. Objects of cultural resource value shall be left in place and not removed. Operations may resume at the discovery site upon instructions from the authorized officer.

Pursuant to 43 CFR 10.4(g) the authorized officer must be notified immediately upon discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), all activities in the vicinity of the discovery must stop and the discovery must be protected for 30 days or until notified by the authorized officer.

Site-Specific Design Features and BMPs

Honcho Creek, Moon Creek
All in-water work would be conducted during the ODFW instream work window July 1 to September 15.

The theoretical 100-year flood would be used as culvert design criteria, including an allowance for bed load and debris. This would provide for stream simulation to pass fish and other aquatic organisms.

Mechanized equipment would not enter wetted stream channels except where no practicable alternative exists.

Prior to implementing work at the fish-bearing culvert replacement site, fish and other aquatic species would be removed and excluded from the site (to the extent practicable) and placed upstream of the work area. Nets would be installed upstream and downstream of the site to prevent fish from re-entering the work area until culvert installation is completed.

All functional-sized instream or floodplain wood would be retained within the stream channel, or floodplain.

Endicott
When vacating a road, existing drainage structures such as ditches and cross-drains culverts would be converted to a long-term maintenance-free drainage configuration such as outsloped road surface and water bars (waste site WS7a)

Road realignment at Endicott (and Weaver if necessary) would be designed and constructed to BLM standards.

Johns Creek, Weaver, Slide Creek
There are infected Port-Orford-cedar trees within these project areas. Therefore, the BLM will implement management practices from the *2004 Final Supplemental Final Environmental Impact Statement (FSEIS) for Management of Port-Orford-Cedar in Southwest Oregon* (USDA and USDI 2004) and it's *Record of Decision* (USDI 2004). These include Management Practice 1) Project Scheduling 9) Road Management Measures, 11) Washing Project Equipment, and 15) Summer Rain Events.

- Project Scheduling: All project activities would be limited to the dry season, generally June through October.
- Road Management Measures: All activities include the use of surfaced roads, design of structures to divert water, and dirt material would be disposed of in stable areas with no connection to stream channels.
- Washing Project Equipment: All equipment would be power washed remove all dirt, mud, and vegetative material prior to accessing BLM lands. Mechanized equipment that leaves the surfaced road and contacts bare soil would be washed prior to leaving BLM lands.

- Summer Rain Events: operations would be suspended if any rain saturates soils to the extent that there is a potential for movement of sediment from the road.

Camp Creek
Because this site is infested with noxious weeds, mechanized equipment would be washed at an off-site commercial facility after leaving the Camp Creek Road and before entering another construction site.

Equipment washing sites would be located in areas with no potential for runoff into wetlands, Riparian Reserves, floodplains, and waters of the state. Solvents or detergents would not be used to clean equipment on-site.

Wildlife Timing Restrictions

Table 6 Wildlife timing restrictions

Road Name	Site ID	When Operations May Occur
Honcho Creek	C1-C3	April 1 through September 15, from 2 hours after sunrise to 2 hours before sunset
Weaver	E2	April 1 through September 15, from 2 hours after sunrise to 2 hours before sunset
Endicott Creek	G	April 1 through September 15, from 2 hours after sunrise to 2 hours before sunset
Slide Creek	H	April 1 through September 15, from 2 hours after sunrise to 2 hours before sunset
	BW2	After July 1, from 2 hours after sunrise to 2 hours before sunset
	WS8	After July 1, from 2 hours after sunrise to 2 hours before sunset

Chapter 3 & 4 Affected Environment and Environmental Consequences

Analysis Background

This Chapter combines the Affected-Environment (typically EA Chapter 3) and Effects-Analysis discussion (Chapter 4) and has been arranged by specific resource values that may be impacted. It identifies the direct, indirect, and cumulative environmental effects that may result from implementation of either of the two alternatives described in Chapter 2. It also addresses the interaction between the effects of the proposed action with the current environmental baseline by describing effects that might be expected, how they would occur, and the incremental effect that could result. The description of the current conditions inherently includes and represents the cumulative effects of past and current land management activities undertaken by the BLM, other federal, and tribal and private entities.

Reasonably Foreseeable Actions

Annual recurring activities are likely to occur within the project area. These include, but are not limited to, fire suppression, routine road maintenance, control of noxious weeds, timber sales (see the Timber section), and silviculture activities in young stands. The proposed right-of-way for the Pacific Connector Gas Pipeline project is not within the vicinity of the sites.

The BLM assumes that the adjacent private industrial forestlands would be intensively managed on an approximate 40-year harvest rotation under the direction of the State of Oregon Forest Practices Act (OAR 527).

Cumulative Effects Considerations

The Council on Environmental Quality (CEQ) provided guidance on June 24, 2005, as to the extent to which agencies of the Federal government are required to analyze the environmental effects of past actions when describing the cumulative environmental effect of a proposed action in accordance with Section 102 of the National Environmental Policy Act (NEPA). CEQ noted the "[e]nvironmental analysis required under NEPA is forward-looking," and "[r]eview of past actions is only required to the extent that this review informs agency decision making regarding the proposed action." This is because a description of the current state of the environment inherently includes effects of past actions. Guidance further states that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historic details of individual past actions."

The information on individual past actions is merely subjective, and would not be an acceptable scientific method to illuminate or predict the direct or indirect effects of the action alternative. The basis for predicting the direct and indirect effects of the action alternative should be based on generally accepted scientific methods such as empirical research. The cumulative effects of this project upon the environment did not identify any need to exhaustively list individual past actions or analyze, compare, describe the environmental effects of individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the proposed action.

Resources

Wildlife

This section analyzes the effects of conducting road repairs to the northern spotted owl (*Strix occidentalis caurina*; spotted owl), and marbled murrelet (*Brachyramphus marmoratus*; murrelet), their designated critical habitats, and a variety of other Bureau Sensitive special status wildlife species (SSS). The BLM wildlife biologist analyzed for impacts to wildlife at each site location.

Threatened and Endangered Species

Northern Spotted Owl
Proposed project locations are within the Coast Range and Klamath Physiographic provinces of the spotted owl. Nine project locations are in designated spotted owl critical habitat (USDI and USFWS 2012). Project work would occur within the home range of seven known spotted owl sites (and seven associated alternate sites). Two of the project sites are within the disruption distance (65 yards) of identified unsurveyed suitable spotted owl habitat. There are no sites within the disruption distance of any nest patch or activity centers.

Marbled Murrelet
All project locations are within Murrelet Zone 1; 0-35 miles inland from the ocean. Seven project locations are in designated Critical Habitat Unit (CHU) OR-06-b and one other project location is in designated CHU OR-06-d (USDI and USFWS 2011). Six of the sites are within the disruption distance (100 yards) of unsurveyed suitable murrelet habitat. There are no known murrelet occupied sites within the disruption distance of any proposed project location.

No Action
Access to Late Successional Reserve stands would remain compromised, affecting fire suppression and any future stand management enhancement activities that may benefit the spotted owl or murrelet.

Proposed Action

Habitat
There would be no near-term effect on spotted owl habitat or no direct effect to murrelet habitat, because the proposed tree removal is small in quantity (less than 2 acres), the trees are less than 40 years old, they are not suitable habitat, and they do not contain primary constituent elements of spotted owl critical habitat.

Noise Disturbance
The following timing restrictions, included in the design features, would prevent disruption to spotted owls and murrelets:

- Seasonal restrictions (no work before 1 July) during the critical breeding season would prevent disruption to nesting spotted owls in the Slide Creek project area.
- Daily timing restrictions would be implemented to prevent disruption to nesting murrelets that may be in the unsurveyed suitable habitat in the Honcho Creek, Weaver, Endicott Creek, and Slide Creek project areas. As a result, operations at these sites would be limited to 2 hours after sunrise to 2 hours before sunset during the breeding season, 1 April through 15 September,

Survey and Manage Species
There are no known Survey and Manage wildlife species present at any of the specific project locations. Trees to be removed at individual project sites are not suitable habitat for red tree voles, (*Arborimus longicaudus*), due to their size, and surveys are not required in accordance with *Survey Protocol for the Red Tree Vole v. 3.0* – November 2012 (Huff et al. 2012).

Special Status Species
There are no known sites of special status wildlife species present in any of the proposed project locations.

Timber and Stand Management

Currently, two active timber sales have altered their haul routes because of the closure of the Burnt Mountain Access road. This increased the cost of the sales and reduced the profit to the government.

No Action

There are approximately 300 acres of Douglas-fir plantations that would be considered for commercial thinning in the next 10 years that would normally be accessed by the Burnt Mountain Access road for timber haul. An alternative route is available, but this route would involve roughly 7 miles of additional haul. This would add approximately $500,000 in transportation costs.

The Johns Creek road is planned for use in the Johns Creek commercial thinning (CT) timber sale, planned for auction in 2015. An alternate route to access the stands is available, but it would increase transportation costs.

Additionally, adjoining landowners would need to find alternate routes to manage their lands for timber production, increasing costs and fossil fuel consumption.

Proposed Action

Repair of these roads would facilitate access to proposed timber sales (i.e., Johns Creek CT) and potential thinning sales in 300 acres of stands above the Burnt Mountain Access Road failure. Development of waste and borrow sites would result of 0.43 acres of General Forest Management Area out of forest production. This constitutes approximately 0.0000045 percent of forested stands on the Coos Bay District. The need for important support infrastructure to conduct road repair and maintenance was analyzed in the 1994 EIS supporting the 1995 RMP. This very small loss of timber-capable lands is within the effects of that analysis.

Geology and Soil Resources

The repair, waste, and borrow sites are within the southern Tyee Basin in the Oregon Coast Range. The rock types include massive sandstone inter-bedded with thinner layers of mudstone and occasional marine volcanic basalt deposits (Table 7). The steep and highly dissected slopes with uniform ridges and valley terrain are sandstone-dominant units, and the low gradient, hummocky, bench-like terrain are mudstone-dominant units (Roering et al. 2005). The sandstone areas are highly susceptible to shallow landslides and debris flows. The mudstone areas form large deep-seated landslides (Beaulieu and Hughes 1975).

Table 7: The geologic units under the 11 road repairs (Ma 2009).

EA Site ID	Road Name	Geology
A	Camp Creek Access	Mudstone, Elkton Siltstone Member
B	Moon Creek	Sandstone, Tyee Mountain Member
C1 - C3	Honcho Creek	Sandstone, Tyee Formation, Baughman Member
D	Burnt Mountain Access	Sandstone, Tyee Formation, Baughman Member
E1 –E2	Weaver	Sandstone, Tyee Formation, Baughman Member
F	Johns Creek	Sandstone, Roseburg Formation
G	Endicott Creek	Sandstone, Roseburg Formation
H	Slide Creek	Mudstone, Looking Glass Formation, Tenmile Member

Typical soils in the Oregon Coast range are relatively thin on hilltops and side slopes (approximately 20 inches) and thicker in unchanneled valleys (approximately 40 to 80 inches) (Roering et al. 2005). The soils are fine-grained sand, silt, and clay derived from the sedimentary bedrock. The soils layer has been removed from all of the existing roads and landings. Soil would be removed from road realignment repairs and the three borrow sources.

Landslides
Landslides are a frequent and natural geologic occurrence in the Tyee Basin due to many factors including rock type, bedding dip angle, weak rock strength, soil thickness, slope steepness, high rates of precipitation, streams, earthquakes, and land use management. Several mechanisms trigger road-related failures, which include underlying geology, initial road construction techniques, geographic location of the road, and/or plugged culverts. Saturating a slope with water is the main threat to initiate road related landslides (Robinson et al. 1999).

The BLM Geologist categorized the failures on the subject roads as sidecast failures, fill failures, headwall failures, washouts, and deep-seated landslides (Table 8). The following is a description of these terms:

Sidecast is the unconsolidated material pushed to the downhill side during construction. The sidecast material fails when it becomes saturated, because either the sidecast material was perched on vegetation or debris (which can decay), or the sidecast material artificially increased the slope steepness. Historically, sidecast road construction was a common practice.

Road fill failure can occur when roads are built across weakly consolidated soils on steep slopes. If the roadbed is not properly compacted and armored with a layer of rock, the roadbed may fail as it becomes saturated. The exposed soil of a road cut can become saturated during a large storm event and trigger a landslide that takes out the road as well.

Headwall failures can occur when roads are built across steep headwalls that concentrate water and debris and that are natural debris shoots. Increased debris deposition and concentration of water can overload the stability of the constructed road design or the downhill slope below the road can be the initiation point of a debris flow.

Washouts can occur when stream flows exceed the capacity of the drainage structures or plug the drainage structures (culverts and ditches) with debris. As a result, water will overrun the plugged drainage structures, erode ditches, and concentrate water on fill slopes.

Deep-seated landslides may occur when the movement of soil is based on a slide plane deep in the underlying geology rock layers. These slides are large and typically expensive to stabilize permanently, because the land mass below the road will continue to move.

Field analysis of the sites included a surficial evaluation of the damaged areas. The type of failures included three fill failures, two washouts, and three or four areas are within larger deep landslides. The trigger for all the failures was due to heavy precipitation from the January 2012 storm event that saturated fill slopes, initiated upslope debris flows, or plugged drainage structures (culverts).

Table 8 Landslide analysis for all repair sites.

EA Site ID	Road Name	Slope Grade	Geographic Location of Road	Failure Mechanism	Reason for Failure
A	Camp Creek Access	+40%	Midslope	Deep-seated landslide	Likely part of a larger earth flow complex landslide
B	Moon Creek	50% to 70%	Valley	Washout	Stream was chocked by debris flow material from adjacent drainage and stream undercut road
C1 - C3	Honcho	30% to	Valley	Washout	Plugged culvert

EA Site ID	Road Name	Slope Grade	Geographic Location of Road	Failure Mechanism	Reason for Failure
	Creek	70%			
D	Burnt Mountain Access	50% to 80%	Midslope	Headwall	Road crosses a debris chute where water concentrates and drains on road fill
E1 - E2	Weaver	60% to 80%	Midslope	Headwall	Road crosses a headwall, which is the natural debris chute.
F	Johns Creek	40% to 80%	Midslope	Sidecast or Fill failure	Water concentrated onto fill, shallow earth flow to debris flow
G	Endicott Creek	25% to 60%	Ridge	Deep-seated landslide	Shallow earth flow, episodic movement, could be effected by lower road that cut off toe
H	Slide Creek	25% to 70%	Midslope	Fill or Deep-seated landslide	Unknown, likely geologic, but could be due to initial construction or maintenance

Waste and Borrow Areas

Soil, rock, and organic debris (wood and stumps) generated from the repair would be placed in an existing or newly constructed waste areas. The asphalt waste would be disposed off-site. Waste areas would be located in stable flat (< 5–10 percent slope) areas to ensure stability of the material. Waste areas would be located away from streams. The BLM Geologist reviewed and evaluated the waste areas and all are in appropriate locations.

"Borrow areas" is a term used in construction to identify location where existing soil may be excavated for backfill in conducting road repair. The waste and borrow locations are located as close as possible to the repair site to reduce operating costs.

The proposed action includes three borrow sites and seven waste areas. The borrow areas and two of the waste areas (Table 9) would be new disturbance (outside of existing road prism or landing). The new ground disturbance totals 1.43 acres.

Table 9 Waste and borrow areas

EA Site ID	Road name	Site type	New disturbance	New disturbance (Acres)
BW1a	Honcho Creek	Borrow	Yes	0.5
BW1b	Honcho Creek	Borrow	Yes	0.5
WS7b	Endicott Creek	Waste	Yes	0.3
BW2	Slide Creek	Borrow	Yes	0.03
WS8	Slide Creek	Waste	Yes	0.1
			Total Disturbance	1.43

No Action

The roads would continue to deteriorate and material would slough downslope. The damaged drainage structure will continue to divert water and can be expected to cause additional damage at existing sites or new road failures. The six passable roads would be expected to become impassable over time and unsafe for haul or passenger traffic.

Proposed Action

The proposed action would not adversely affect geology or soil. However, stabilizing the road failures, replacing culverts, and maintaining ditches would reduce soil erosion and sediment delivery to streams. The following general design features would reduce the potential for erosion and sedimentation during repair activities:

- Road construction would be limited to the dry season, generally from June into October.
- Road fills would be constructed to prevent fill failure using inorganic material, compaction, buttressing, subsurface drainage, rock facing, and/or other construction methods to improve stability.
- Road cut and fill slopes would be designed with stable angles, to minimize erosion and prevent slope failure.
- Water runoff from roads would be diverted away from headwalls, slide areas, high landslide hazard locations, and/or steep erodible fill slopes.
- Road realignment at Endicott (and possibly Weaver) would be designed and constructed to BLM standards, but be at the narrowest width that will still meet safety standards, objectives of anticipated uses, and resource protection.
- Waste material excavated during construction or renovation would be end-hauled offsite, when side slopes exceed 60 percent and where side-cast material may enter wetlands, floodplains or other waters of the state.
- A district-approved native grass seed mix, fertilizer (if necessary), and mulch would be applied to bare ground, including cut and fill slopes, ditch lines, borrow and waste sites.

Based on site-specific investigations, the following design features are included to ensure that the waste and borrow areas would be maintained and not increase erosion, sediment delivery to watercourses, or damage older age class trees:

- Waste areas would be located in flat stable location away from streams, and designed to disperse surface water to vegetated stable areas.
- Waste areas would be free of vegetation and scarified before piling materials on the area. If trees sapling size or larger need to be removed, they would be cut (i.e., not pushed over) before grubbing the site. Damage to residual trees would be avoided when falling and removing designated trees. Trees 6 inches DBH and larger would be decked at designated sites disposed of with firewood permits or as a commercial sale.
- The topsoil at borrow areas would be removed and stockpiled. Upon completion of borrow removal activities, this topsoil would be spread over the disturbed area for purpose of reclamation.
- When vacating a road, existing drainage structures such as ditches and cross-drains culverts would be converted to a long-term maintenance free drainage configuration such as outsloped road surface and water bars (Endicott WS7a site)

Water Resources

The project area is located in four HUC 10 watersheds within the Lower Umpqua and Coquille basins. The analysis area has a Mediterranean climate characterized by cool, wet winters and warm, dry summers. The project area receives approximately 50-80 inches of precipitation annually; mainly rain between October and April (Froehlich and McNabb 1982). Small headwater streams often are intermittent and have discontinuous pools, dry entirely, during the summer.

Two of the eleven repair sites have the potential to deliver sediment to adjacent streams and are discussed below. Reference the hydrology staff report in the project file for descriptions of each repair sites' distance to streams and discussions on which sites may deliver sediment to a stream if a larger landslide failure occurred.

The following general Best Management Practices (BMPs) and design features would be applied to each repair location as appropriate to maintain and protect water quality. These are in addition to the design features listed above under the Geology and Soils section:

- Energy dissipation material would be placed around the inlet and outlet road drainage structures.
- Equipment washing sites would be located in areas with no potential for runoff into wetlands, Riparian Reserves, floodplains, or waters of the state. Solvents or detergents would not be used to clean equipment on site.

Moon Creek Road 26-11-33.0 at MP 1.8

Moon Creek is within the North Fork Coquille watershed, Moon Creek-North Fork Coquille River subwatershed. Moon Creek has a drainage area of 37.7 mi^2.The drainage area affected by the project is much smaller (4.5 mi^2). Moon Creek road (26-11-33.0) parallels the stream for much of its length; including through the washout area at MP 1.8. The project is within the Riparian Reserve land allocation. The stream, has a gradient of 2.5-4.5 percent, and is straight, being somewhat constrained by the road... Stream substrate is composed of sand, gravel, cobble and some very large boulders including one car-sized boulder through the project area. Bankfull streamflow (a streamflow that returns on average every two years) is estimated at 318 cfs for the site and a nearly double 583 cfs peak streamflow was estimated (10-year recurrence interval flood) at the time of the debris flow and washout.

No Action

Surface rills (small channels in the road surface caused by concentrated water run-off) may develop in the aggregate roadway and provide some sediment delivery to Moon Creek. Pieces of the existing wood jam could float away at any flows exceeding the 10-year recurrence interval event. If the wood jam becomes smaller, it would cause an increase in stream width and a lower stream velocity along the road embankment. This would be beneficial for road stability. A car-sized boulder (next to the logjam) further constricts the stream section and may further impede floodwaters, assuming the logjam stays in place. During flood stage, a whirlpool or back eddy may develop in Moon Creek below the car-sized boulder and logjam, and may direct stream energy into the road embankment. If this were to occur, the road would be undermined with road fill entering the stream at the downstream end of the project area.

Proposed Action

The proposed action involves leaving the remaining wood jam within the channel. Hydrologic and hydraulic modeling at the site, (Moore 2009; Moore 2011), indicates that there is enough cross-sectional area to pass streamflows up to the 100-year recurrence interval event estimated at 937 cfs. Velocities along the boulder foundation of the reconstructed road section are estimated at 12.8 feet per second for this extreme event and meet the permissible velocity approach for embankment retention. The car-sized boulder through the constricted stream section where the wood jam is lodged would be reduced to bankfull height during the repair. This would have a beneficial effect in reducing damaging stream velocities at flood stage that could direct against the downstream end of the reconstructed road embankment with a potential loss of road fill and subsequent sediment delivery.

Repairing the roadway, providing under-drainage, paving, and reducing the height of the boulder would maintain and protect water quality. There would be no effects from the proposed activity on summer water temperatures or sediment delivery to Moon Creek with the project plan and the application of BMPs and project design features listed above.

Honcho Creek Road 27-10-04.1 at MP 0.50, 0.54, and 0.57

Honcho Creek is within the North Fork Coquille watershed, Middle Creek subwatershed. The stream channel is small and vertically entrenched, with gravel, cobble and boulder substrate. Steep convergent

topography is above the road stream crossing at MP 0.57. The road parallels Honcho Creek and is within a Riparian Reserve.

No Action
The road surface would continue to erode, gully, and provide a significant sediment delivery source to Honcho Creek. The stream diversion from Honcho Creek may reactivate down the road at high streamflows, and would continue to erode and wash out the road, providing a large sediment delivery source.

Proposed Action
A multi-plate culvert (80' × 14.25' × 9.1') would replace the washed-out stream crossing at MP 0.57. Analysis (field data collection, hydrologic and hydraulic modeling for the site, Oregon Water Resources Department Peak Discharge Estimation program) shows that a bankfull streamflow would occupy a 14-foot width, passing 63 cfs at the crossing (Moore 2009; Moore 2011). The planned culvert matches stream bankfull width and would be expected to easily pass the 100-year recurrence interval flood at approximately 190 cfs. This action is beneficial because streamflow would not continue to divert water down the road. Hydrologic connectivity would be restored, and the culvert would pass the 100-year recurrence streamflows with additional freeboard for drifting organic material.

There would be no effects from the proposed activity on sediment delivery to Honcho Creek with the project plan and the application of BMPs and project design features listed above and in addition to the site-specific measures listed below:

- All nonemergency in-water work would be conducted during the ODFW instream work window July 1 to September 15.
- The theoretical 100-year flood would be used as design criteria for all culverts, bridges, and other stream crossings, including allowance for bed load and debris.
- Mechanized equipment would not enter wetted stream channels except where no practicable alternative exists.

The other nine sites do not have the potential to effect water resources and therefore not included in this section; see the project file for the descriptions of the additional sites.

Aquatic Species
The BLM fisheries biologist evaluated the analysis area and the proposed road repair locations by watershed. The subject watershed boundaries are listed in Table 10.

Table 10 the analysis area includes following 6th field subwatersheds and 5th field watersheds.

Road	Watershed Boundary 5th field	Subwatershed Boundary 6th field
Camp Creek Access	Mill Creek	Lower Camp Creek
Moon Creek	North Fork Coquille River	Moon Creek-North Fork Coquille River
Honcho Creek	North Fork Coquille River	Middle Creek
Burnt Mountain Access	North Fork Coquille River	Middle Creek
Johns Creek Tie	North Fork Coquille River	Johns Creek-North Fork Coquille River
Endicott Creek	Middle Fork Coquille River	Indian Creek-Middle Fork Coquille River
Slide Creek	Middle Fork Coquille River	Belieu Creek-Middle Fork Coquille River
Weaver	East Fork Coquille River	Camas Creek

Endangered Species Act
The analysis area is located within the federally listed threatened Oregon Coast Coho Salmon, *Oncorhynchus kisutch*, evolutionarily significant unit (ESU). The National Marine Fisheries Service (NMFS) published the listing determination and Coho Critical Habitat (CCH) designation for Oregon Coast Coho Salmon on February 11, 2008, effective May 12, 2008 (73 FR 7816). Additionally, the Magnuson-Stevens Fishery Conservation and Management Act designated streams as Essential Fish Habitat (EFH) for a variety of species. The species with designated EFH found within the analysis area include Coho and Chinook Salmon *(Oncorhynchus tshawytscha).* The Magnuson-Stevens Act defines EFH as "…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (67 FR 2343)." Coho Salmon and Coho CCH and Chinook and Coho EFH are located within all 6th field subwatersheds listed above except for Camas Creek (Table 10).

Special Status Species (SSS)
Aquatic Sensitive species found in the analysis area include Oregon Coast Coho Salmon (federally threatened), Oregon Coast Steelhead Trout (sensitive), and possibly the Pacific Coast Chum Salmon (sensitive). The foothill yellow-legged frog (sensitive), Pacific pond turtle (sensitive), and a snail, the Pacific Walker, are documented within the Coos Bay District, with unknown distribution within the analysis area. The Western ridged mussel, a freshwater mollusk, Rotund Lanx, a semi-aquatic snail, the Robust Walker, and three caddisflies, *Namamyia plutonis*, *Rhyacophila chandleri*, and *Rhyacophila haddocki*, are not documented on BLM-administered land, but may occur in the analysis area.

No Action Alternative
Sediment delivery to streams would continue.

Two sites (Moon Creek and Honcho Creek) are currently affecting fish habitat and habitat access. The Moon Creek embankment erosion would continue to contribute sediment to Chinook Salmon, Coho Salmon, Steelhead Trout, and Cutthroat Trout habitat during high winter flows. At the Honcho Creek site, there is no passage for Coho Salmon, Steelhead Trout, and Cutthroat Trout due to the old culvert being damaged. If further plugging of the culverts occurs, there would be potential for Honcho Creek to run down the road, which previously resulted in extensive ditch erosion and a major road washout. Chronic sediment input to streams reduces spawning production/egg survival, juvenile rearing survival, and aquatic insect production (Everest et al. 1987; Hicks et al. 1991; Meyer et al. 2005; Waters 1995). Increased sediment influx would also be expected to adversely affect habitat for other aquatic special status species (e.g., frogs, turtles, and insects).

None of the other sites are hydrologically connected to the stream network and cannot affect stream channels at this time.

Proposed Action

Moon Creek Road 26-11-33.0 at MP 1.8
The repair site is directly adjacent to Moon Creek. The project would not have any direct or indirect effects to aquatic species. The height of a boulder at the site would only be reduced to bankfull height but not adversely affect fish habitat. The wood jam would remain in place, continuing to provide instream cover and habitat for aquatic organisms. Boulders/rip rap placed on the eroding stream bank would reduce the amount of sediment entering Moon Creek.

The general Best Management Practices (BMPs) and design features listed above under the *Geology and Soils* and *Water Resources* sections would be implemented, in addition to the following site specific design features, during construction to ensure effects to aquatic species would be minimized.

- All functional-sized instream or floodplain wood would be retained within the stream channel, or floodplain.

Honcho Creek Road 27-10-04.1 at MP 0.50, 0.54, and 0.57

The culvert replacement site at MP 0.57 is in Honcho Creek, which contains Coho Salmon, as well as, Steelhead and Cutthroat Trout. The repair site at MP 0.50 is approximately 83 feet from Honcho Creek and the proposed repair site at MP 0.54 is approximately 92 feet from Honcho Creek. The waste area on road 27-10-4.3 is 0.44 miles from a tributary to Middle Creek, which provides spawning and rearing habitat for Coho Salmon, Steelhead Trout, and Cutthroat Trout. Borrow site BW1A is located on road 27-10-4.3 and is approximately 0.38 miles from an unnamed tributary to Middle Creek, which contains Coho Salmon, Steelhead Trout, and Cutthroat Trout. Borrow site BW1B is located on the same road and is approximately 0.18 miles from the same unnamed tributary to Middle Creek.

Replacing the two culverts has the potential to increase turbidity (fine sediment) during implementation in the local area in the short-term. Increased turbidity would be greatest at the work sites, would dissipate before entering Middle Creek, 3,280 feet downstream, and continue for the time that the equipment is working within the stream channels (portions of a few days). Turbidity would quickly decrease in magnitude as the sediment moves downstream, within a few minutes to hours after the equipment leaves the stream channel. Therefore, direct effects to fish-rearing habitat and fish distribution at these sites would be minor and short-term. Indirect effects would be limited to the first season after construction before vegetation becomes reestablished on exposed soils. Replacing the fish passage culvert would improve salmon and trout habitat for the life of the culvert (approximately 70 to 100 years). The culvert replacement would provide for improved stream flow and passage of sediment, organic materials, and aquatic organisms, thereby restoring natural drainage patterns. Replacing the small stream culvert would allow for more efficient surface water drainage from the road system, reducing the road drainage network, reducing the risk of culvert failure, and allowing sediment to filter onto stable, vegetated slopes.

The additional site specific Best Management Practices (BMPs) and design features would be implemented during construction Honcho Creek.

- All in-water work would be conducted during the ODFW instream work window (July 1 to September 15).
- The theoretical 100-year flood would be used as culvert design criteria, including an allowance for bed load and debris.
- Prior to implementing work at the fish-bearing culvert replacement site, fish and other aquatic species would be removed and excluded from the site (to the extent practicable) and placed upstream of the work area. Nets would be installed upstream and downstream of the site to prevent fish from re-entering the work area until culvert installation is completed

Cumulative Effects

Cumulative effects of past land management practices on private and BLM lands have contributed to the current degraded stream and fish habitat within the analysis area. Long-term sediment reduction due to the proposed road repairs would improve localized stream conditions, but only at the site-specific scale. The cumulative effects are within the scope of anticipated effects to aquatic resources including fisheries analyzed in the Coos Bay District RMP EIS (USDI 1995).

There would be no placement of fill or removal of excavated material at the Moon Creek site below the ordinary high water mark. The wood jam would remain in place, to maintain instream cover and habitat for aquatic organisms. The boulders placed along approximately 25 feet of embankment would prevent further bank erosion and sediment from entering the stream and would not change the original footprint of the slope.

The environmental effects of the sedimentation at the Honcho site are anticipated to be localized within a few hundred feet of the culvert replacement sites and to last a few days while equipment is working within the stream channel, with no changes to overall water quality. Sediment delivery would not be expected to result in long-term changes to fish habitat; therefore, effects would be negligible to Coho Salmon or Coho habitat.

<u>Aquatic Conservation Strategy</u>

Components of the Aquatic Conservation Strategy
There are four components to the Aquatic Conservation Strategy (ACS): Riparian Reserves (RRs), Key Watersheds, watershed analysis, and watershed restoration. A "fifth" component is the standards and guidelines for management activities located in the Coos Bay District RMP.

Three of the repair sites and their related waste and borrow areas are addressed below, because of their proximity to the stream. The other sites are not discussed because they are not hydrologically connected or are not located in the Riparian Reserve.

1) Riparian Reserves:
The RR widths within the analysis area are two site-potential tree heights for fish-bearing streams and one site-potential tree height for perennial and intermittent streams. Site-potential tree heights are the following at the 5th field watershed scale: North Fork Coquille River - 240 feet and Middle Fork Coquille River – 200 feet.

2) Key Watersheds:
The project areas are not located within any Key Watersheds.

3) Watershed Analysis:
The applicable watershed analyses are North Fork Coquille River (USDI 2002) and Middle Fork Coquille River (USDI 2007 *Update*).

The North Fork Coquille River Watershed Analysis suggests several strategies, which could be considered to restore degraded channel conditions, water quality and riparian and floodplain habitat and function. One is to "remove, resize or retrofit improperly sized culverts to reduce flow velocities, allow free passage of sediments and debris and allow for passage of vertebrate and invertebrate aquatic species." Another is to "look for opportunities to decommission, reroute or improve drainage on existing or abandoned roads" (USDI 2002).

The Middle Fork Coquille River Watershed Analysis mentions the following as potential stream restoration projects: "repair/replace culverts identified as barriers to fish passage, and closing, decommissioning, or repairing roads to address erosion and sediment delivery problems and restore hydrologic processes." Project-level planning/restoration opportunities include: "reduce erosion in sub-basins through culvert upgrades or removals, reestablishing stream crossings, reducing fills on large culverts, and pulling back over-hanging sidecast that will be delivered to stream systems in the event of a 50 to 100 year storm event" (USDI 2007 *Update*).

4) Watershed Restoration:
The Coos Bay RMP states that "watershed restoration will be an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality. The program's most important components are control and prevention of road-related runoff and sediment production…." (USDI 1995). Replacing the fish passage culvert, non-fish-bearing culverts, and repairing the road damage in the RRs would contribute to

the restoration of watershed processes, aid recovery of fish habitat and connectivity, and improve water quality.

5) Management Actions/Direction:
The following is a list of management actions/directions within RRs applicable to the proposed action (USDI 1995).

Roads Management:
For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

- Restricting sidecasting as necessary to prevent the introduction of sediment to streams (p. 13).
- Reconstructing roads and associated drainage features that pose a substantial risk (p.13).
- Design and construct new culverts, bridges, and other stream crossings and improve existing culverts, bridges, and other stream crossings determined to pose a substantial risk to riparian conditions. New structures and improvements will be designed to accommodate at least the 100-year flood, including associated bedload and debris. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure (pp. 13-14).
- Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams (p. 14).

Watershed and Habitat Restoration:

- Design and implement watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and attains Aquatic Conservation Strategy objectives (pp. 16-17).

Fish and Wildlife Management:

- Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives (p. 17).

Aquatic Conservation Strategy Objectives
The site scale for this analysis is each individual repair or waste/borrow site. The watershed scale is the 5th field watershed that each repair or waste/borrow site is located in which include the North Fork Coquille River and Middle Fork Coquille River 5th field watersheds.

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.

Microclimate, water quality, stream bank stability, sediment regimes, and habitat provided for riparian-associated species are the watershed and landscape-scale features used for this analysis. Microclimate will be addressed under ACS objective 1; water quality under objectives 3 and 5; streambank stability and sediment regimes under objectives 4, 6, and 7; and providing habitat for riparian-associated species under objectives 2, 8, and 9.

<u>Site Scale and 5th Field Watershed Scale: Short- and Long-Term</u>
Microclimates found in riparian areas are important components of watershed and landscape-scale features needed to ensure the protection of the aquatic systems. Approximately 10 to15 myrtle, alder, and conifer trees, 16 to 20 inches DBH, and 120 feet tall, would be removed from the Honcho Creek BW1b borrow site, which are within a Riparian Reserve and approximately 290 feet from Middle Creek. Approximately 10 to 15 conifers, 10 inches DBH, and 30 feet tall would be cut at the Slide Creek WS8 waste site, which is within a Riparian Reserve and approximately 130 feet to an intermittent tributary to

Slide Creek and approximately 580 feet to Slide Creek. The removal of these trees would not affect microclimate at the site and watershed scale in the short- or long-term because of the small area (0.53 acres) affected, only 10 to 15 trees would be removed at each site, and the areas are well-shaded by numerous other trees.

Microclimates adjacent to the culvert replacement sites would remain unchanged in the short- and long-term at the site and watershed scale because no trees would be removed. There are no trees at the Honcho Creek fish-passage culvert site and there are small amounts of low-growing vegetation at the Honcho Creek non-fish-passage culvert site.

The replacement of culverts would restore natural drainage patterns and natural travel paths for aquatic organisms. The culvert replacements would maintain, and may restore or improve functions such as wood, nutrient, and sediment routing at the site scale in the short- and long-term. This effect would be immeasurable at the 5th field watershed scale because the site is such a small portion of the entire 5th field watershed.

2. *Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependant species.*

<u>Site Scale and 5th Field Watershed Scale: Short- and Long-Term</u>
Fish passage would be fully restored at the site scale in the short- and long-term at the Honcho Creek site by replacing the fish passage culvert and a non-fish bearing stream culvert. The improved connectivity would benefit all aquatic-dependent species that were previously impeded by the culverts. This effect would be less noticeable at the 5th field watershed scale because the site is such a small portion of the entire 5th field watershed.

3. *Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.*

<u>Site Scale and 5th Field Watershed Scale: Short- and Long-Term</u>
Increasing the hydrologic capacity of culverts reduces the potential for chronic and catastrophic erosion, and road failures which can degrade downstream habitats and channels as a result of sedimentation and/or channel scouring events (debris torrents, slides, etc.). Stream banks at the Honcho Creek culvert replacement sites would be exposed for a few months after the culvert installations while the native seed is growing. However, mulch would be placed on the banks while the seed is growing and the culvert replacements would improve stream bank conditions in the long-term. The culvert replacements would not affect shorelines, banks, and bottom configurations at the watershed scale in the short- or long-term because of the small amount of space the culverts occupy, which would be less than one tenth of an acre.

4. *Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.*

<u>Site Scale and 5th Field Watershed Scale: Short- and Long-Term</u>
Within the RRs, 10 to 15 trees, 16 to 20 inches DBH, and 120 feet tall would be removed at the Honcho Creek BW1B site and 10 to 15 trees, 10 inches DBH, and 30 feet tall would be removed at the Slide Creek WS8 waste site. Removing these trees would not result in an increase in water temperature at the

site or watershed scale in the short- or long-term because there would be ample trees remaining to provide shade.

Replacing the fish passage culvert at the Honcho Creek site has the potential to increase turbidity (fine sediment) during implementation at the site scale in the short-term. The turbidity increases would be largest at the work sites, last a few days while the equipment is working within the stream channel, and quickly decrease in magnitude within hours after work is completed for each day. Therefore, effects to fish-rearing habitat and fish distribution at this site would be immeasurable and short-term. Prior to implementing work at the culvert site, fish and other aquatic species would be removed and placed upstream of the work sites. Nets would be installed upstream and downstream of the site to prevent fish from re-entering the work area until the culvert installation is completed. Replacing the fish passage culvert would improve salmon and trout habitat in the long-term as road drainages improve and the potential for culvert failure and sediment reaching Honcho Creek is reduced. The culvert replacement would provide for improved stream flow and passage of sediment, organic materials, and aquatic organisms, thereby restoring natural drainage patterns.

The 24-inch culvert replacement at Honcho Creek would occur in a dry channel. The new culvert would more efficiently remove surface water from the road system, reduce the road drainage network, and allow sediment to filter onto stable, vegetated slopes.

For all of the proposed actions, project design features would be implemented to ensure water quality standards are being met long-term at the site scale. Equipment would be required to stay on the banks and out of the wetted channel to the greatest extent possible to minimize turbidity. Instream work would occur during the in-water work period, July 1 to September 15, when flows are low. Refueling of machinery would not occur in close proximity to stream channels, and contractors would be required to have spill prevention containment kits and countermeasure plans to minimize the likelihood of contamination reaching a waterway. When possible, streams would be diverted around construction sites where fishery or other important stream values are present. Waste material would be disposed of at a stable, non-hydrologically connected site and erosion control would be implemented to minimize sediment delivery to streams. Off-site soil movement would be prevented through use of filter materials (such as straw bales or silt fencing). Soil erosion control work would be completed during the same season disturbance occurs and prior to winter rains.

At the Honcho and Moon Creek sites, water quality at the watershed scale would not be affected in the short- or long-term as a result of the proposed actions due to the small area affected at this scale. At the Moon Creek site, water quality would be maintained at the site scale in the short-term because no fill or removal would occur below the ordinary high water mark and all of the instream wood would remain in place.

5. *Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.*

<u>Site Scale and 5th Field Watershed Scale: Short- and Long-Term</u>
Increasing the capacity of culverts can provide the necessary routing of sediment through the stream network and to the downstream reaches in a manner that is in balance with storm events and normal channel flows. There would be short-term site scale input of sediment in Honcho Creek related to the fish passage culvert replacement. This replacement would greatly reduce the risk of the road failing again and contributing large amounts of sediment into the creek. At the Moon Creek site, the boulders placed at the bank erosion site would reduce the risk of sediment continuing to enter Moon Creek.

The proposed actions would not produce excessive sediment or turbidity due to the proposed project design. Vegetation would quickly become re-established on the disturbed areas, which would reduce short-term and eliminate long-term erosion and sediment input. No long-term site or short- or long-term watershed scale effects would occur to the sediment regime due to the proposed actions. All of the proposed actions would decrease the amount of sediment delivered to stream channels in the long-term and at the site scale.

6. *Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetlands habitats to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.*

Site Scale and 5th Field Watershed Scale: Short- and Long-Term
The proposed actions would not alter the timing, magnitude, duration, or spatial distribution of peak, high, or low stream flows at the site or watershed scale in the short- or long-term. The replacement of culverts and cross-drain culverts would restore the natural patterns of sediment, nutrient, and wood routing.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Site Scale and 5th Field Watershed Scale: Short- and Long-Term
The proposed action alternatives would not affect the timing, variability, or duration of floodplain inundation or water table elevation in meadows or wetlands at the site or watershed scales in the short- or long-term. There are no meadows or wetlands within the project areas.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

Site Scale and 5th Field Watershed Scale: Short- and Long-Term
At the site scale, disturbed areas would be seeded with native seed and certified weed free mulch immediately after work is completed and before the winter rains. This vegetation will rapidly provide ground cover, reducing erosion. Over time, native plants and shrubs will colonize the area, thereby maintaining and restoring the species composition and structural diversity of plant communities in riparian areas. The species composition and structural diversity of plant communities in riparian areas would be maintained and restored in the long-term at the site scale. There would be no change to the species composition and structural diversity in the short- and long-term at the watershed scale.

Removing trees at the waste and borrow sites would not affect the species composition or structural diversity of plant communities in riparian areas in the short- or long-term at the site or watershed scale because only a small percentage (a total of 1.43 acres) of the most common tree species would be removed at each site.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

Site Scale and 5th Field Watershed Scale: Short- and Long-Term
Replacing the fish passage culvert at the Honcho Creek site would restore access for aquatic invertebrate and vertebrate species at the site scale in the short- and long-term. Juvenile and adult fish could move through the site throughout the year during low or high flows. The culvert replacement would not have an

effect at the watershed scale in the short- or long-term because of the small amount of space the culvert occupies within the 5th field watershed.

Resources not Analyzed in Detail

Botany

No Threatened or Endangered, Bureau Sensitive, or Survey and Manage plant species have been located or are suspected to be found in any of the project areas. The botanist reviewed or surveyed all of the proposed sites that include tree removal. Most of the areas that would be affected are within the road prism that has already been impacted.

Cultural Resources

Records search and field survey did not reveal any known cultural resources in the vicinity of these proposed project areas.

The District Archaeologist conducted field surveys for six of the 21 project locations that would involve ground disturbance outside the area disturbed by previous roadwork. These surveys did not reveal cultural resources.

Port-Orford-cedar

All drainages within the project area are considered as infested with Port-Orford-cedar disease. Three sites, Johns Creek, Weaver, and Slide Creek, have the Port-Orford-cedar near the sites, but none of the trees appeared to have symptoms of the disease. Due to the infestation, management activities would conform to the guidelines specified in the *2004 Final Supplemental Environmental Impact Statement (FSEIS) for Management of Port-Orford-Cedar in Southwest Oregon* where applicable (USDI 2004).

The BLM would implement Management Practices from the 2004 Final Supplemental Final Environmental Impact Statement (FSEIS) for Management of Port-Orford-cedar in Southwest Oregon (USDA and USDI 2004) and it's Record of Decision (USDI 2004). These management practices are in place so the infection does not spread to other Port-Orford-cedar and include:

- Disease prevention measures would be implemented for Port-Orford-cedar including the use of surfaced roads, drainage structures to divert water, and dirt material disposed of in waste areas. Operations would be suspended if projected rain would saturate soils to the extent that there is a potential or movement of sediment from the road.
- Prior to entering BLM lands, mechanized equipment would be power washed to remove all dirt, mud, and vegetative material prior to access to BLM lands.
- Because Port-Orford-cedar is present near the Johns Creek, Weaver, and Slide Creek sites, mechanized equipment that leaves the surfaced road and contacts bare soils, would be washed prior to leaving BLM lands.
- Operations would be suspended if any rain saturates soils to the extent that there is a potential for movement of sediment from the road.

The FEIS for *Management of Port-Orford-Cedar in Southwest Oregon* explains that areas within 50 feet of streams or roads were determined to be at high risk of infection, and those areas greater than 50 feet away from roads and streams were determined to be at low risk of infection by Port-Orford-cedar root disease (*Phytophthora lateralis*) (p. 3&4-42). The answer to all three questions in the risk key provided in the 2004 FSEIS (pp. 2-18) which gives direction for assessing risk and controlling spread of *P. lateralis*, was "no." Because of this low risk, there is no requirement for additional Port-Orford-cedar management practices.

Noxious Weeds

The BLM is required to develop a noxious weed risk assessment when it is determined that an action may introduce or spread noxious weeds or when known habitat exists (USDI 2007). The project file for this analysis contains the completed assessment. Prevention measures identified because of this assessment not already applied on district lands as part of routine activities (USDI 1997) have been incorporated into the project design features to minimize the potential for introducing weeds to the project area and/or spreading existing weed infestations.

The risk of spreading noxious weeds due to the project activities is low to medium, except the Camp Creek repair is rated as high. The following actions, have been incorporated into the project design features, and would be taken to avoid or minimize weed spread associated with project activities:

- Mechanized equipment to be used on any construction site would be power washed with clean water to remove all dirt, mud, and vegetative material prior to access to BLM lands.
- Mechanized equipment used at the Camp Creek repair site would require washing at an off-site commercial facility after leaving Camp Creek Road and before entering another construction site. A District-approved native grass seed mix, fertilizer, and mulch would be applied to bare ground, including cut and fill slopes, ditch lines, borrow and waste sites, apply a during the optimum time for establishment and prior to winter rains, primarily September 1 to October 30.

Climate Change

Over the 20th century, the Pacific Northwest has grown warmer and wetter (Karl et al. 2009). Annual-average temperature rose 1.5˚ Fahrenheit (F) and annual precipitation increased by 11 percent over the region. It is forecasted by modeling that the temperature will, increase another 3 to 10˚F during this century (Karl et al. 2009). This degree of change is expected to result in impacts to species compositions (fish, wildlife, forests, and plants) and ecosystem function and processes, including snowpack, stream flow regimes, and sea level (Karl et al. 2009).

The road repairs and associated work would release approximately13.2 metric tons of carbon dioxide equivalent (MT CO_{2e}) from the use of heavy equipment and result in a decrease of 3.6 MT carbon storage from clearing 1.4 acres of trees. The values were calculated using the greenhouse gas estimation toolkit developed by the Medford District BLM. The carbon dioxide release is equivalent to 1,480 gallons of gasoline consumed (EPA website). The 1.4-acre decrease in carbon storage is a very small percentage (0.0000046) of the approximately 300,000-forested acres managed by the Coos Bay BLM. However, the repairs would allow for shorter haul routes, which could reduce future carbon emissions.

The project would be over a short duration (less than 1 year), with negligible greenhouse gas emissions and storage loss. The scope and scale of the activity is not large enough to warrant further analysis since it is less than 25,000 MT CO_{2e}. The CEQ identified this amount as an indicator for when quantitative analysis of greenhouse gas emissions might be useful to a decision-maker (USDI 2014 *Draft*). The value of 25,000 MT CO_{2e} does not indicate significance for environmental effects, but simply matches the minimum standard used in the Clean Air Act for reporting emissions from stationary sources.

Hazardous Materials

The contract administrator would monitor for solid and hazardous waste spills. When applicable, the BLM would apply the *Coos Bay District Hazardous Materials Contingency Plan and Spill Containment Plan for Fisheries and Riparian Operations* if a release threatens to reach surface waters or is in excess of reportable quantities.

Drinking Water Protection

Oregon Department of Environmental Quality prepares Source Water Assessments for public water supplies in Oregon. Two of the project sites, Honcho Creek and Moon Creek, are adjacent to stream channels. These sites are within the headwaters of the North Coquille River and the upper extent of the described Drinking Water Protection Area (DWPA) watershed for the city of Myrtle Point (Public Water System # 4100551). Managed forestlands in the DWPA are listed as one of the potential contaminant sources in the Source Water Assessment (Oregon DEQ Website). Activities that could have potential impacts are road maintenance. This project does not include pesticide use. Fertilizer would be applied to disturbed areas to aid grass germination and prevent soil erosion. However, there would be a negligible effect to water quality and no effect to downstream drinking water. Forest fertilization, studies have shown that neither drinking water standards nor aquatic toxicity thresholds are exceeded in most applications (Hicks et al. 1991). Further, the project sites are upstream of and outside the DWPA boundary, described as an estimated 8-hour travel time from the intake or approximately 16 miles upstream from the public water system intake of Myrtle Point (Oregon DEQ website – source assessment brochure). There is no nitrogen problem (Oregon Public Health Website).

Environmental Justice

The BLM does not know these areas to be used by, or proportionately used by, minority or low-income populations for specific cultural activities at greater rates than the general population. This includes their relative geographic location and cultural, religious, employment, subsistence or recreational activities that may bring them to the action area. Thus, BLM concludes that no disproportionately high or adverse human health or environmental effects would occur to Native Americans and minority or low-income populations from implementing the project.

Unaffected Resources

None of the following critical elements of the human environment area located within the project area or within a distance to be affected by implementation of either alternative.

- Air Quality
- Areas of Critical Environmental Concern
- Farmlands, Prime or Unique
- Floodplains (as described in Executive Order 11988)
- Wild and Scenic Rivers
- Wilderness Values

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Wellman, R. E., Gordon, J. M., and Moffatt, R. L., 1993, Statistical summaries of streamflow data in Oregon: Volume 2, annual low and high flow, and instantaneous peak flow: U.S. Geological Survey Open File Report 93-63, p. 406.

Appendix A Common Road and Road Repair Terms

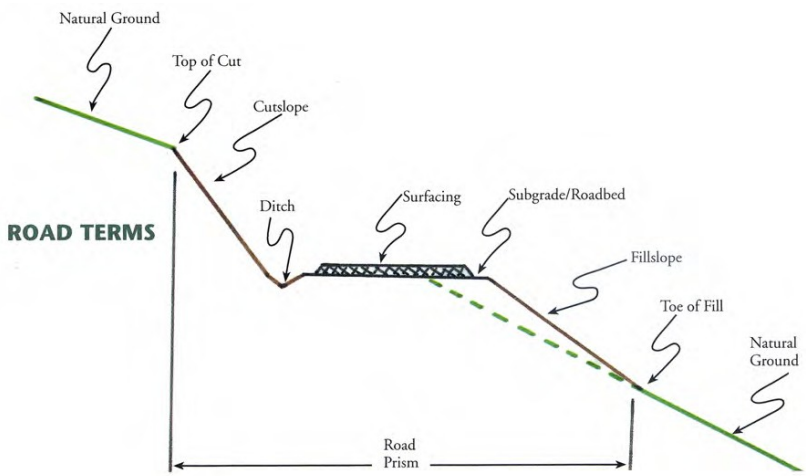


Figure 1: from Oregon Department of Forestry (2000b)

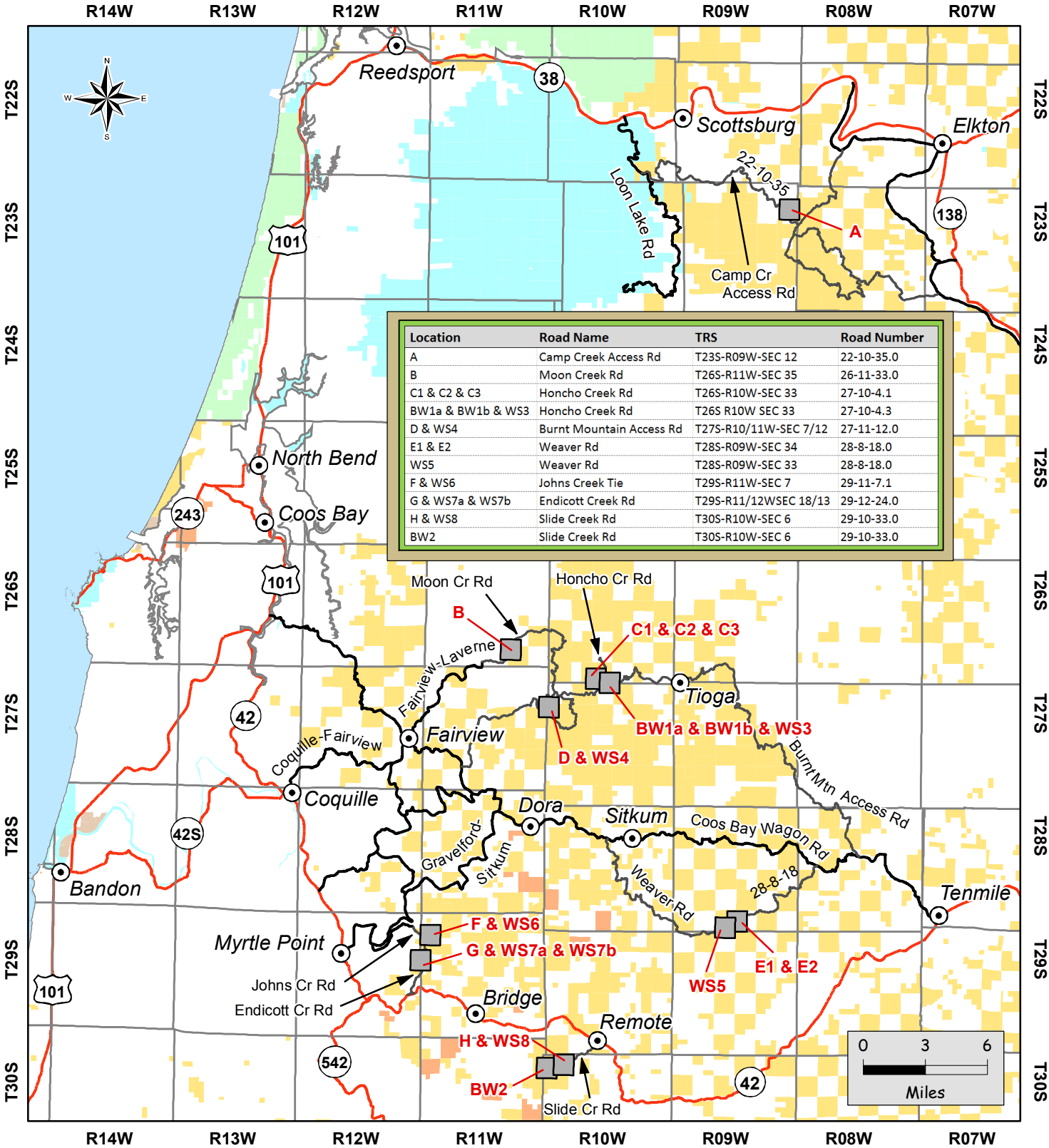
Most of the road term definitions are from Oregon Department of Forestry, 2000a.

Road Prism – Cross section of roadway from the top of the excavated area (cut) to the toe of the fill.
Cutslope- Slope created by excavation into the natural hill slope. The cutslope is steeper than the natural slope.
Fillslope – Excavated material placed below the road and intended to serve as part of the road.
Sidecast – Unconsolidated excavated material pushed to the slope below the road. Sidecast material is generally not used as part of the road and are steeper than the natural slope.
Ditch – Trench constructed at the toe of a cutslope and intended to keep water off the road surface. Ditch water is drained down slope along the road to some point of relief or cross-drain.
Landing – An area constructed for logging equipment and log handling operations. Landings may be at the end of roads, or constructed as wide spots in the road. They are typically wider than the rest of the logging road.
Ridge road – Ridge roads are located on or near the ridgeline (most or all of the road on the top one-third of the slope.)
Midslope road – A road located between a ride and stream channel.
Valley road – Any road that generally parallels a stream in places, usually in the former riparian area of the stream.
Cross-drain culvert - A culvert installed in a stream channel intended to carry stream flow under the road.
Stream crossing culvert - A culvert installed under and across a road to carry ditch water to the downslope side of a road
Soil nailing - New approach to road stabilization on steep slopes include the use of steel rods driven into the underlying bedrock called soil nails. The use of launched soil nails is a superior alternative to rock fill or other means, due to less weight on the slope, penetration of the nails with the bedrock producing structural integrity with the high tensile strength of the nails. An array of nails with sprayed on concrete (shotcrete) at the surface along the road fill to hold them in place, would provide soil stabilization and reinforcement of the road fill.
Shotcrete – is a concrete sprayed onto a vertical slope to for stabilization
Endhaul – to move excavated material produced during road construction to a disposal (waste) area.
Waste area – is a stable disposal area used for depositing excess road excavation (endhaul) material.
Borrow area – describes an area where soil will excavated to be used as backfill in road construction.

Appendix B Maps

2012 Storm Damage - ERFO Repairs

DOI-BLM-OR-C000-2014-0001-EA



Location	Road Name	TRS	Road Number
A	Camp Creek Access Rd	T23S-R09W-SEC 12	22-10-35.0
B	Moon Creek Rd	T26S-R11W-SEC 35	26-11-33.0
C1 & C2 & C3	Honcho Creek Rd	T26S-R10W-SEC 33	27-10-4.1
BW1a & BW1b & WS3	Honcho Creek Rd	T26S R10W SEC 33	27-10-4.3
D & WS4	Burnt Mountain Access Rd	T27S-R10/11W-SEC 7/12	27-11-12.0
E1 & E2	Weaver Rd	T28S-R09W-SEC 34	28-8-18.0
WS5	Weaver Rd	T28S-R09W-SEC 33	28-8-18.0
F & WS6	Johns Creek Tie	T29S-R11W-SEC 7	29-11-7.1
G & WS7a & WS7b	Endicott Creek Rd	T29S-R11/12WSEC 18/13	29-12-24.0
H & WS8	Slide Creek Rd	T30S-R10W-SEC 6	29-10-33.0
BW2	Slide Creek Rd	T30S-R10W-SEC 6	29-10-33.0

- Individual Map Areas
- Highway
- County Road
- Paved Road
- BLM Administered Land
- Bureau of Indian Affairs
- U.S. Forest Service
- Other Federal Lands
- State of Oregon Lands
- Private or Other Lands

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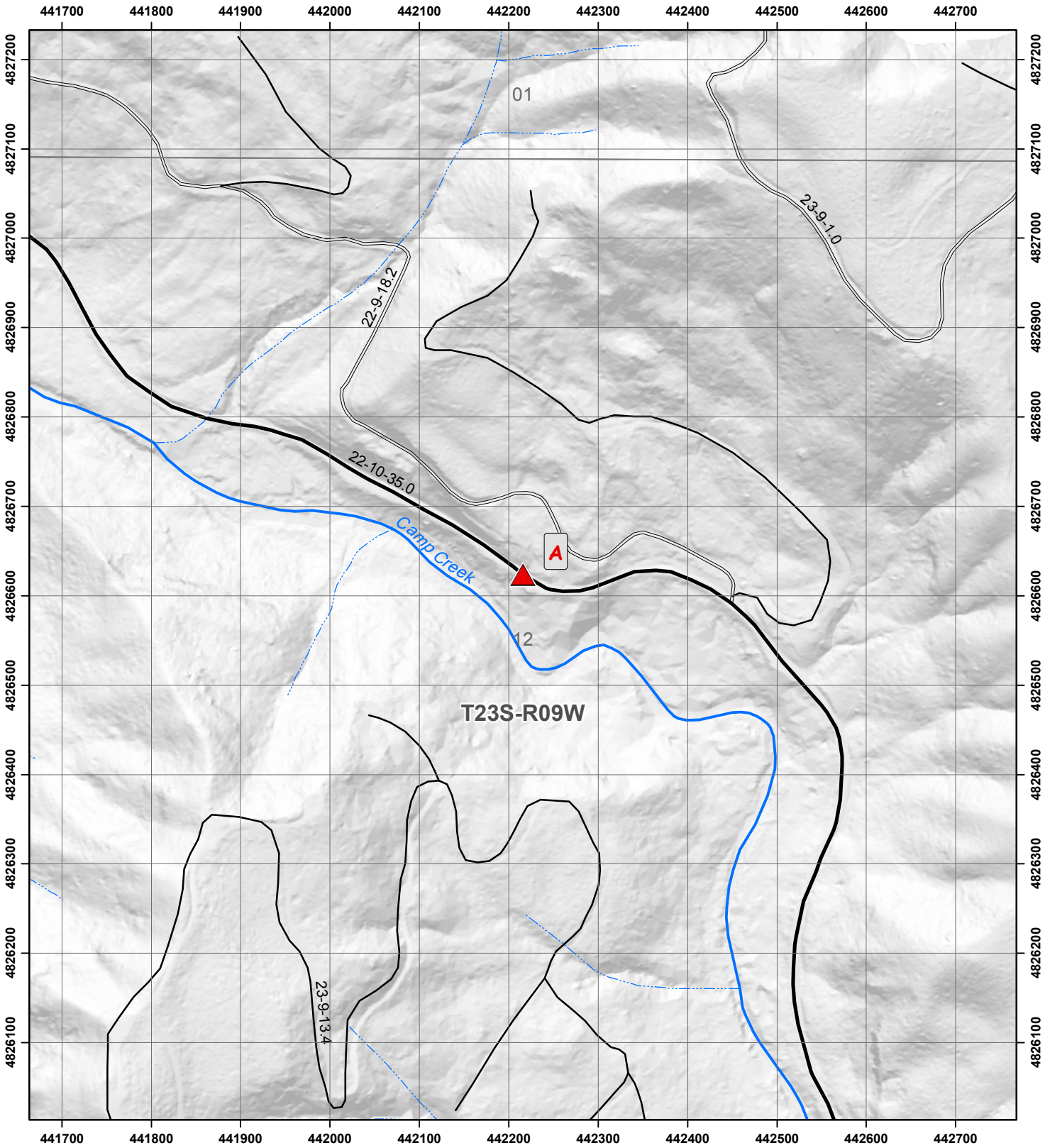
ERFO Location Maps - Locations For A

General Area:
Camp Creek Access Rd



Repair Site
Borrow Site
Waste Site
Perennial
Intermittent
County Road
Paved Road
Gravel Road
Unknown Surface

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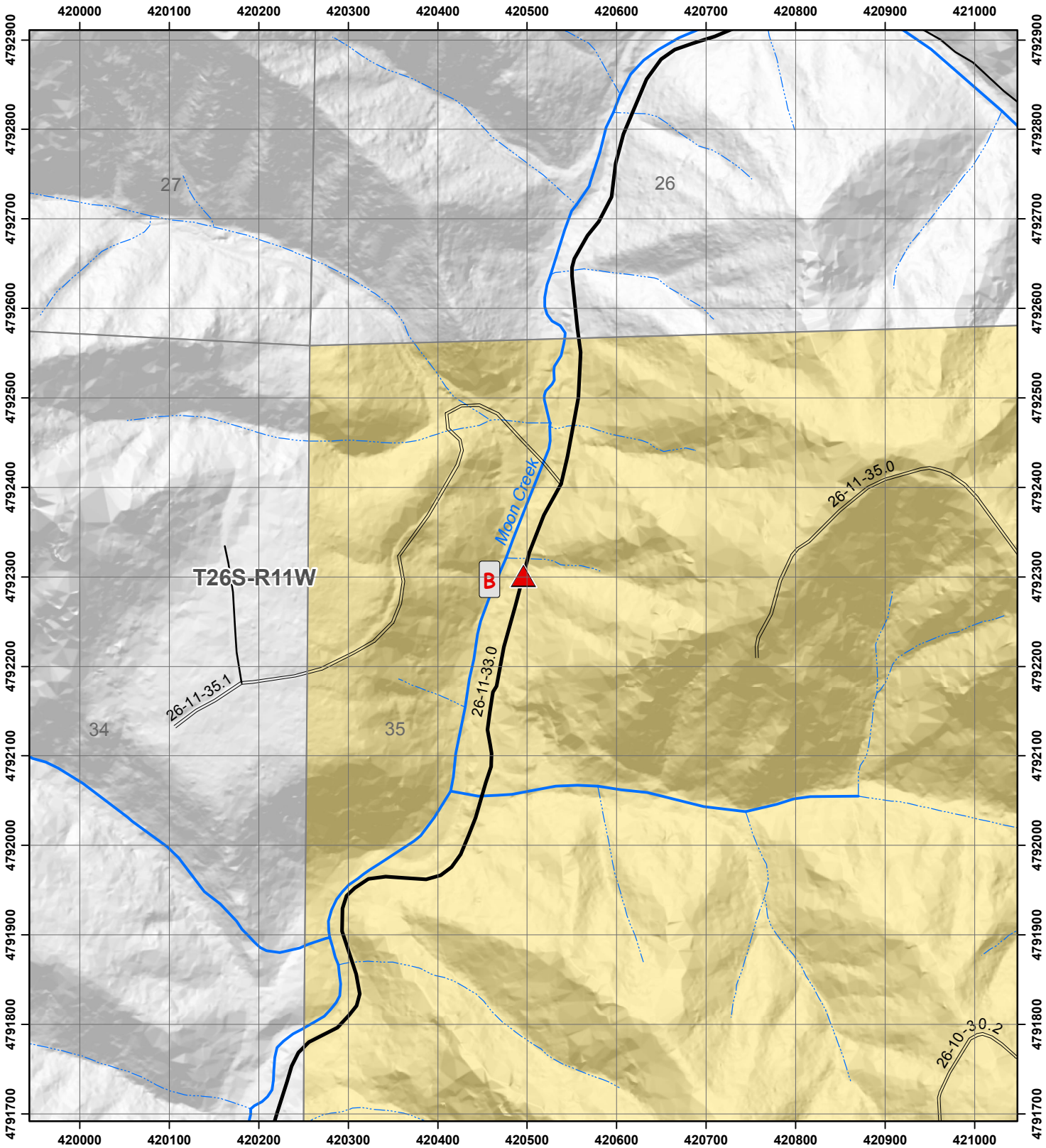
ERFO Location Maps - Locations For B

General Area:
Moon Creek Rd



Repair Site
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Gravel Road
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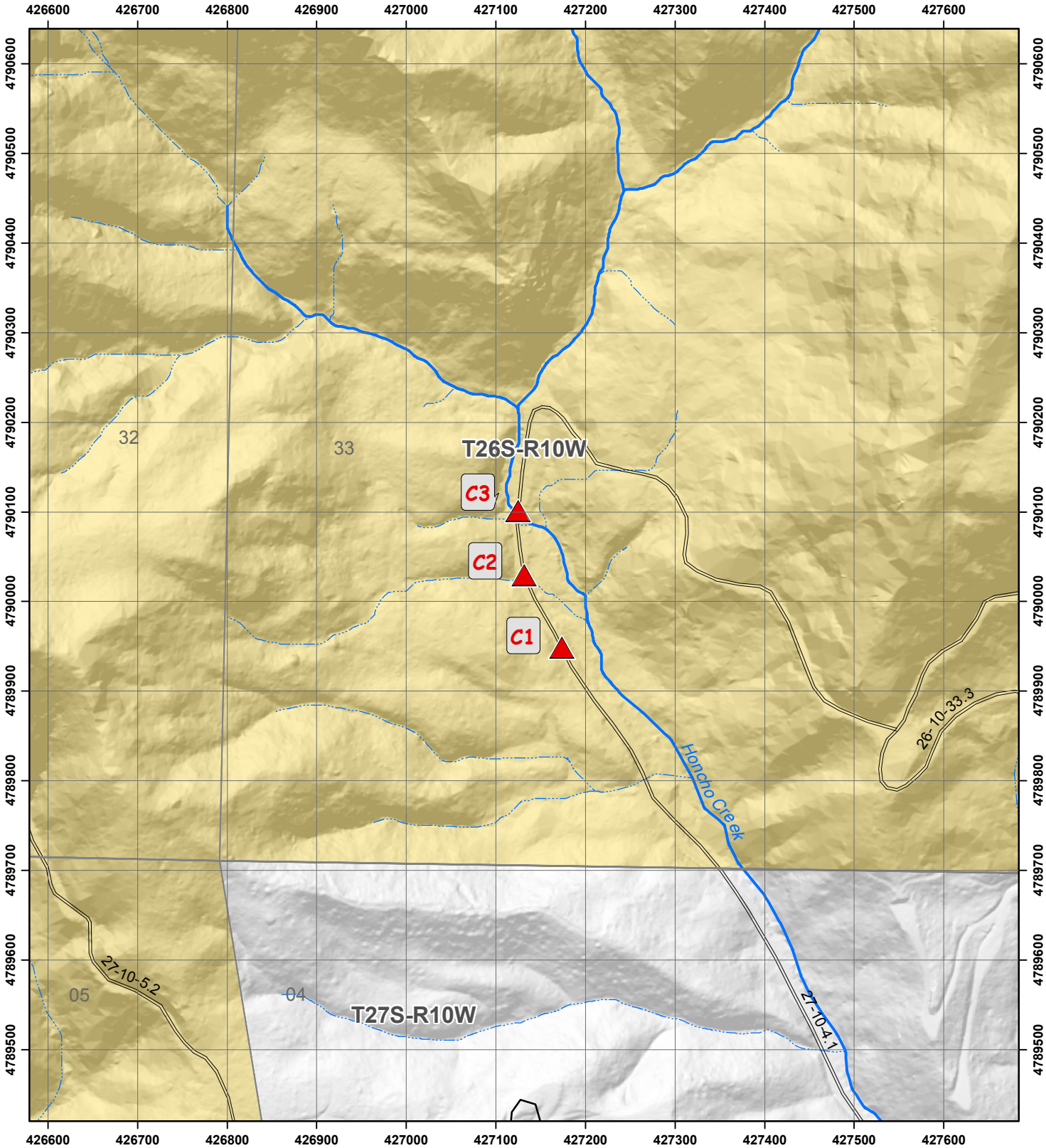
ERFO Location Maps - Locations For C1 & C2 & C3

General Area:
Honcho Creek Rd



Repair Site
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Gravel Road
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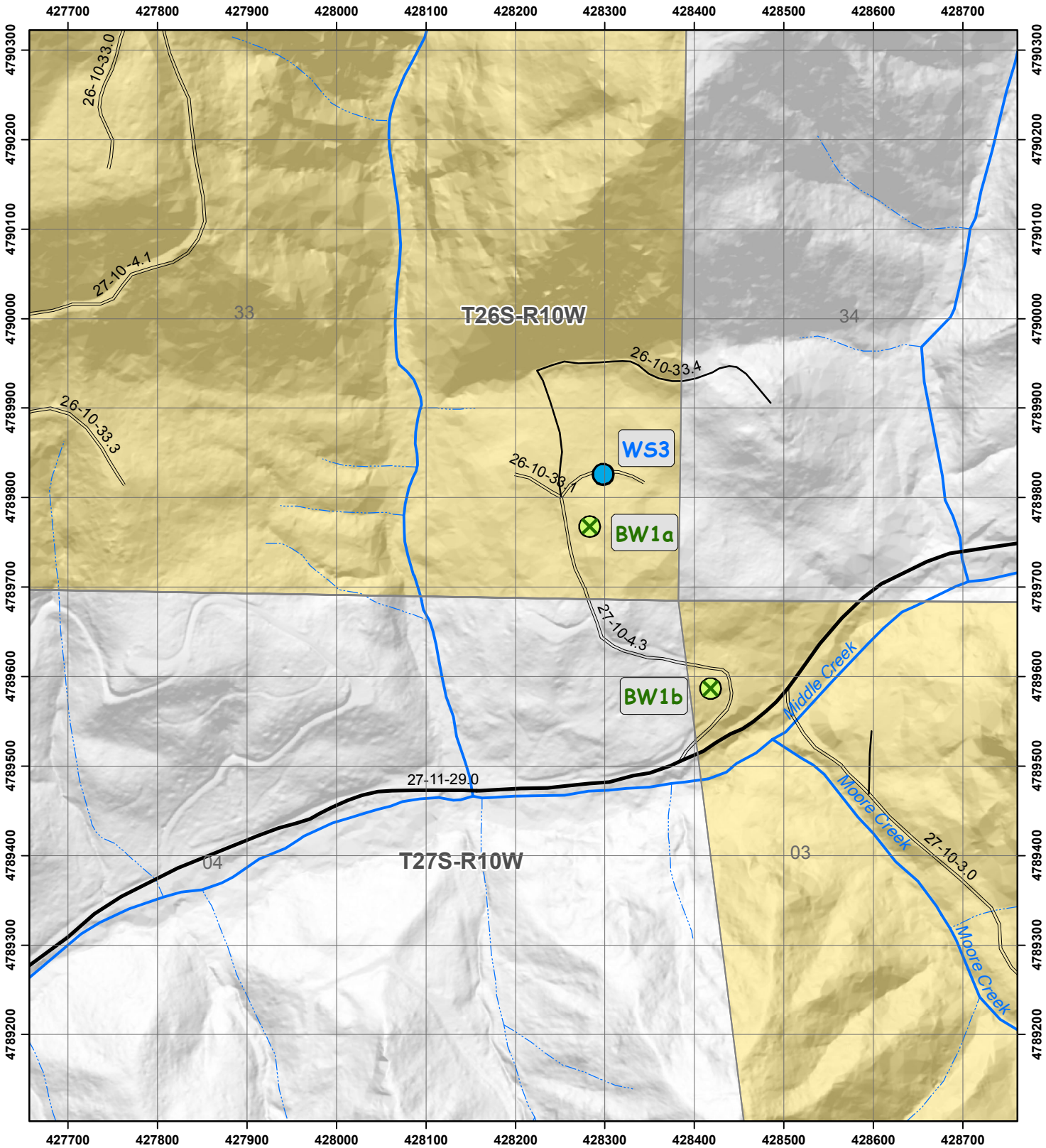
ERFO Location Maps - Locations For BW1a & BW1b & WS3

General Area:
Honcho Creek Rd



- Repair Site
- Borrow Site
- Waste Site
- Perennial
- Intermittent
- County Road
- Paved Road
- Gravel Road
- Unknown Surface

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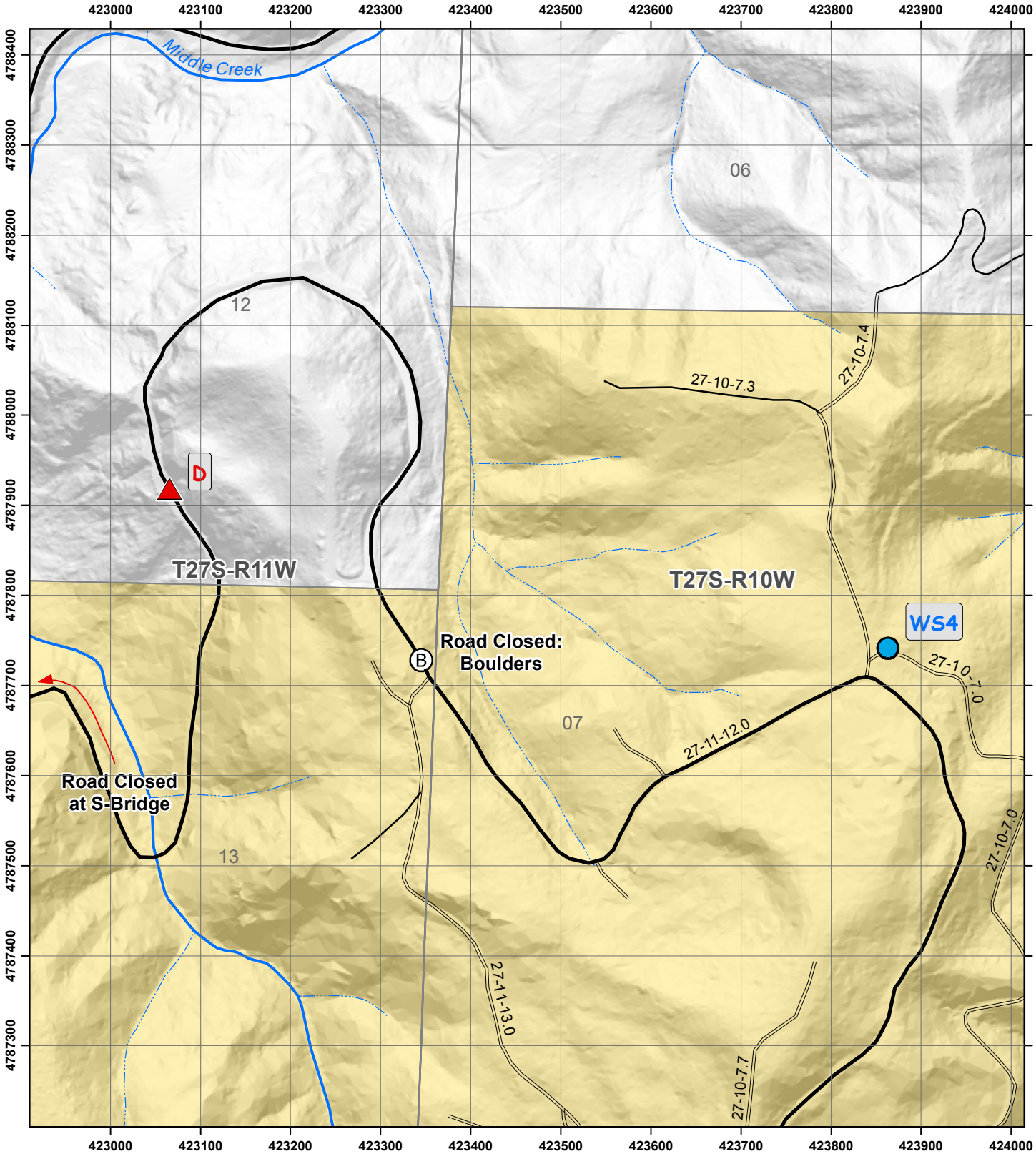
ERFO Location Maps - Locations For D & WS4

General Area:
Burnt Mountain Access Rd



Repair Site
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Waste Site
Perennial
Intermittent
County Road
Paved Road
Gravel Road
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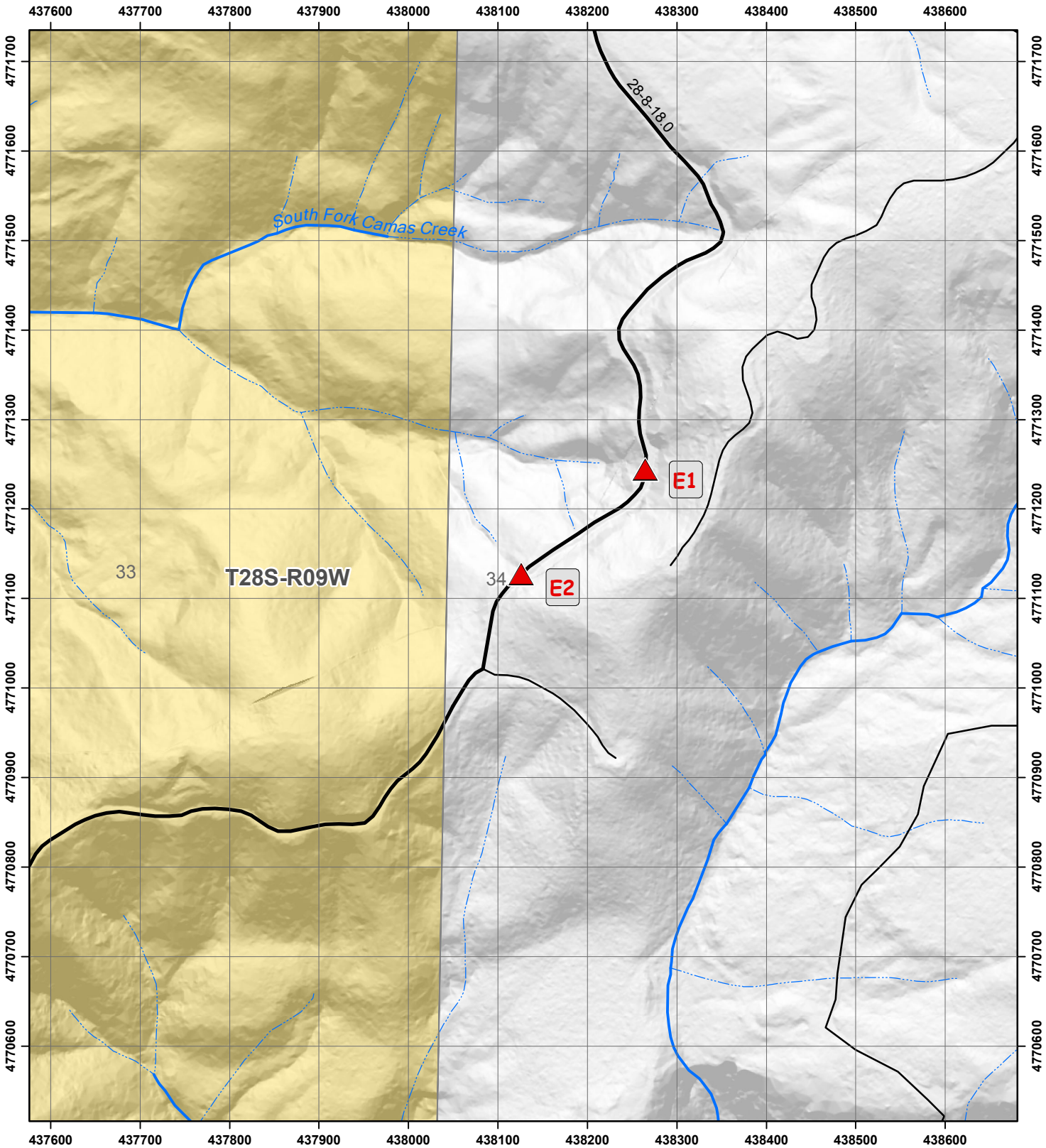
ERFO Location Maps - Locations For E1 & E2

General Area:
Weaver Rd



Repair Site
Borrow Site
Waste Site
Perennial
Intermittent
County Road
Paved Road
Gravel Road
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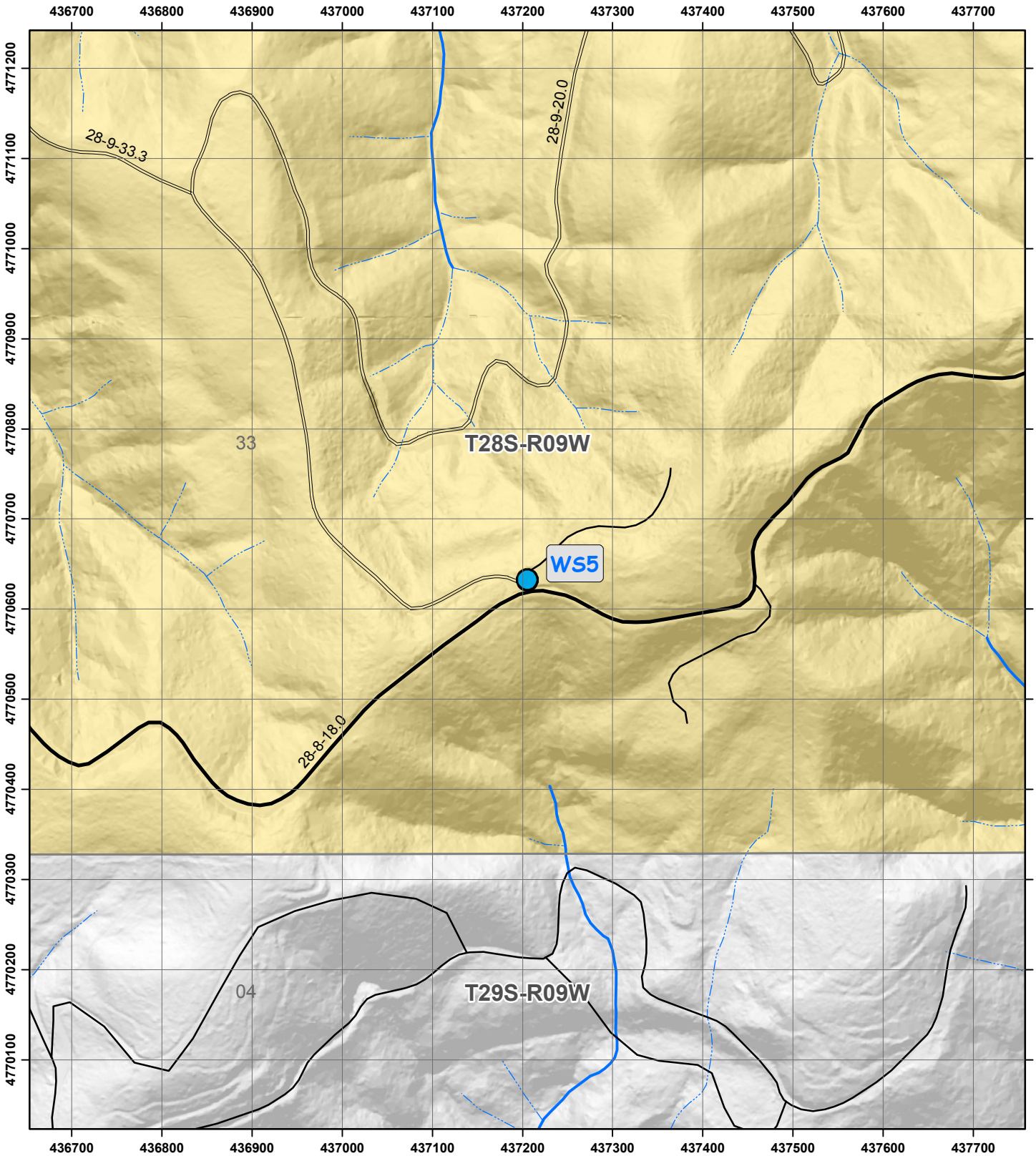
ERFO Location Maps - Locations For WS5

General Area:
Weaver Rd



Repair Site
Borrow Site
Waste Site
Perennial
Intermittent
County Road
Paved Road
Gravel Road
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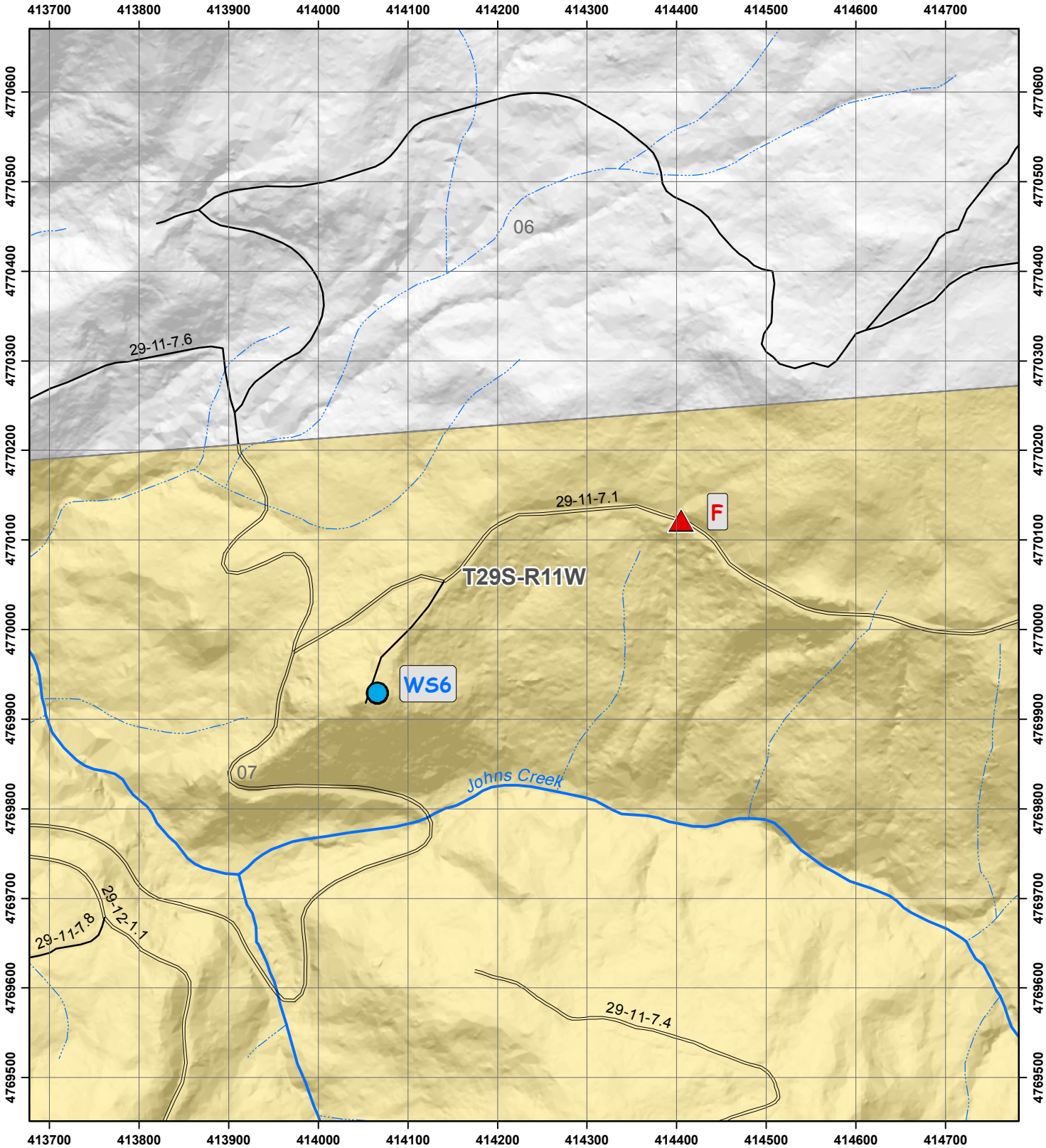
ERFO Location Maps - Locations For F & WS6

General Area:
Johns Creek Tie



Repair Site
Borrow Site
Waste Site
Perennial
Intermittent
County Road
Paved Road
Gravel Road
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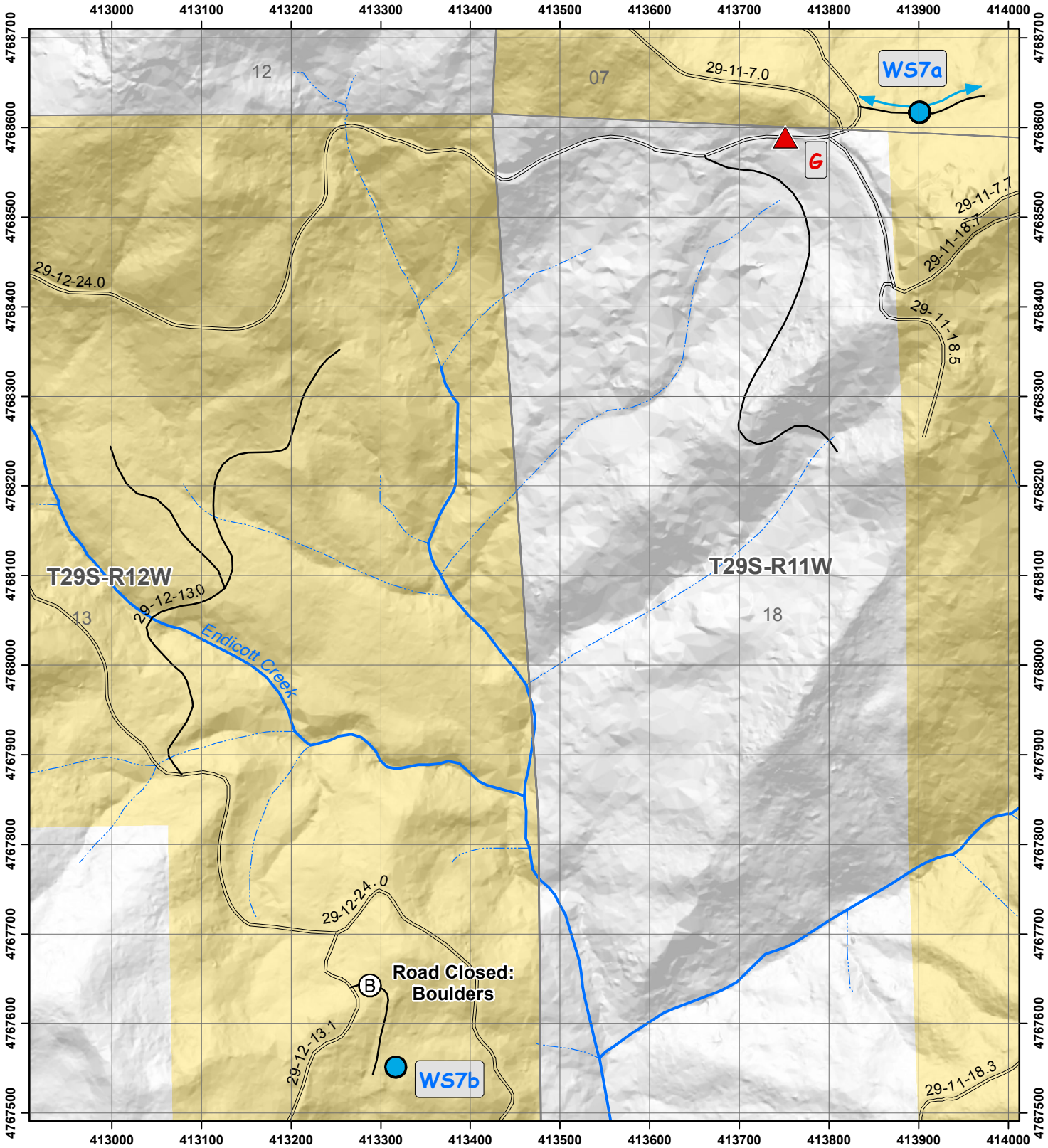
ERFO Location Maps - Locations For G & WS7a & WS7b

General Area:
Endicott Creek Rd



Repair Site
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Waste Site
Perennial
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County Road
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Gravel Road
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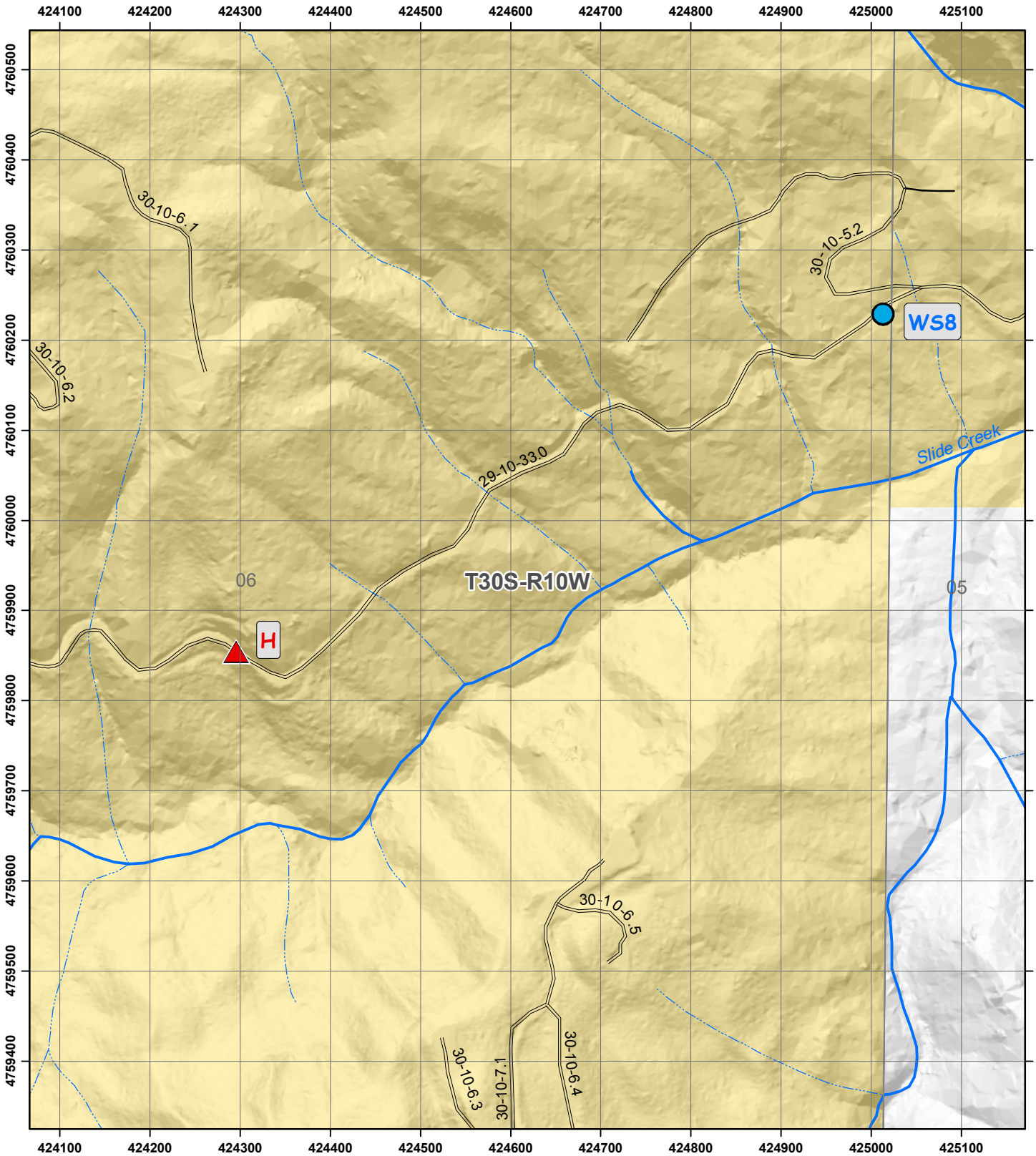
ERFO Location Maps - Locations For H & WS8

General Area:
Slide Creek Rd



Repair Site
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County Road
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Gravel Road
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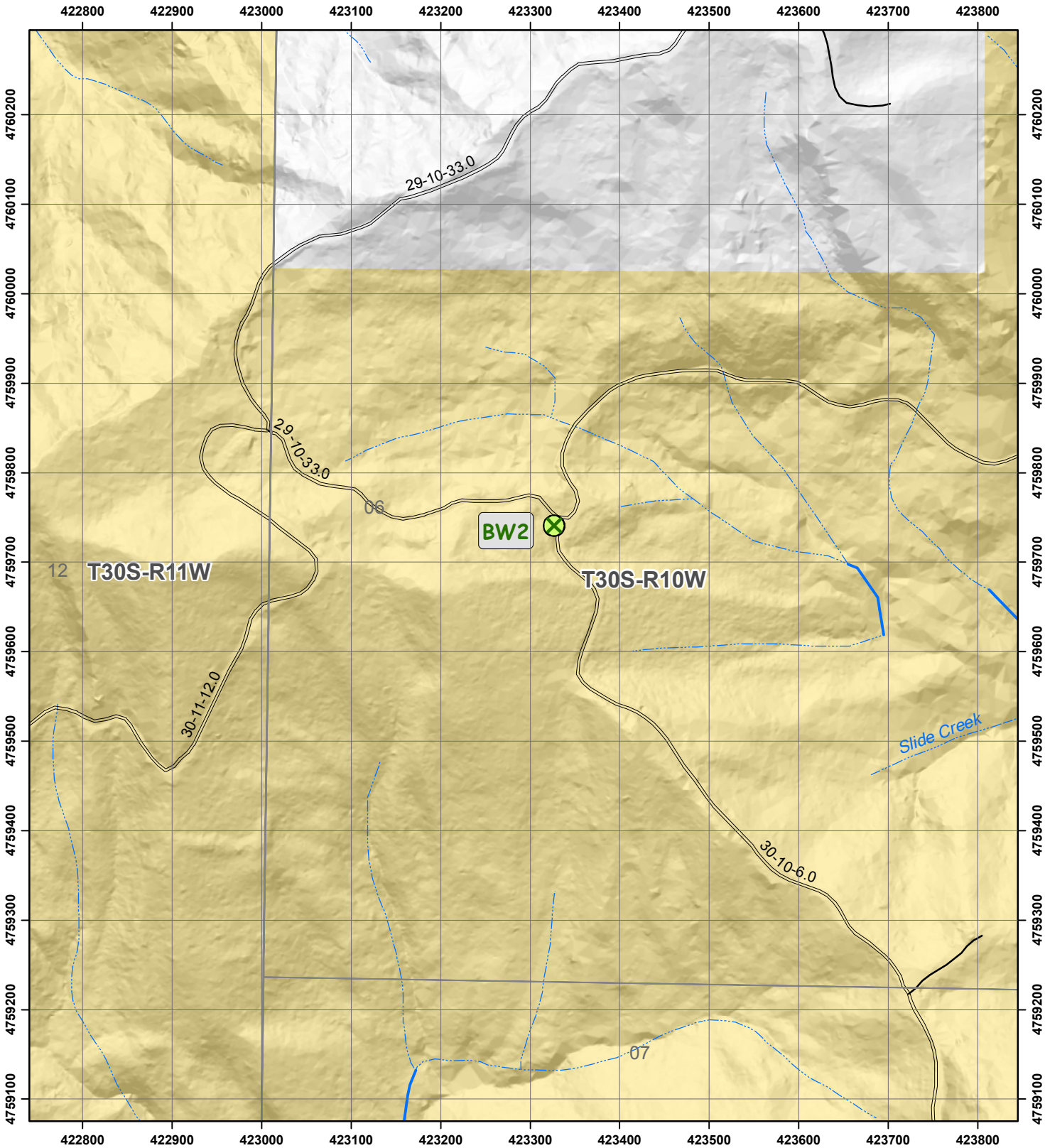
ERFO Location Maps - Locations For BW2

General Area:
Slide Creek Rd



Repair Site
Borrow Site
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County Road
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