

**U.S. Department of Interior  
Bureau of Land Management  
Roseburg District, Oregon**

**Environmental Assessment for the Swiftwater Field Office**

**Sutherlin Creek Crossing Access  
EA # DOI-BLM-OR-R040-2010-018-EA**

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# Chapter 1. Purpose and Need for Action

This chapter provides a brief description of the purpose and need for the proposed action being analyzed in this environmental assessment (EA).

## A. Introduction

On March 10, 2010, Douglas County submitted a request to the Bureau of Land Management (BLM) for a three-year unilateral road construction and road use permit (as described in Chapter 2). The 135 feet of new road would provide access for the removal of timber from Douglas County lands that are not covered under any existing reciprocal right-of-way or other agreement. The new road would be located in Section 19, T. 25 S., R. 4 W., Willamette Meridian (W.M.) in the Connectivity land use allocation and in the Lower North Umpqua River Watershed.

The original request was divided into two separate projects. The first project is a three year unilateral haul permit for the BLM road number 25-5-24.2 Segment A and 25-5-13.0 Segment B (Appendix A, pg. 27). The Douglas County Unilateral Right-of-Way (CX # DOI-BLM-ORR040-2010-CX), approved on March 4, 2010, addresses road use to facilitate unrelated Douglas County projects. The second project is the subject of this environmental assessment analyzing construction of a 135 foot road and a Unilateral Haul Permit to access timber by Douglas County or its contractor.

## B. Purpose and Need for Action

The 1995 Roseburg District *Record of Decision and Resource Management Plan* (ROD/RMP) recognized that the intermingled character of the O&C lands requires the cooperation between the Federal Government and owners of the intermingled lands, particularly with respect to timber access roads. The ROD/RMP (p. 69) provides that BLM-administered lands will be made available for needed rights-of-way where consistent with local comprehensive plans.

The purpose of the action is to provide the owners of private land (i.e. Douglas County) located in the NW ¼ SW ¼ of Section 19, T. 25 S., R. 4 W., W.M. with legal access across public land managed by the BLM. The need for the action is established by the BLM's responsibility under FLPMA to respond to a request for Right-of-Way Grant for legal access to private land with a segment of road to be constructed across public land. The BLM will decide whether or not to grant the right-of-way, and if so, under what terms and conditions.

Douglas County or the purchaser of their timber would build the road for the purpose of accessing timber lands owned by the county. The 135 foot spur road would be constructed through a forest stand estimated to be 140 years-of-age and would have a 30 foot clearing width (approximately 0.1 acres). After the three year unilateral permit expires, the proposed road would be decommissioned by water-barring, mulching the road surface with straw, and blocking with trench barriers. Based on 1995 ROD/RMP guidance (pg. 133), roads not needed for continued resource management will be "put to bed" using methods such as blocking, ripping, seeding, mulching, fertilizing, and water-barring. The proposed road in this project would be put to bed using such methods. Private locked gates at Fraser Canyon (25-5-24.0 road) and Bonanza Mine Road (25-4-8.0 road) would control access to the road system to which the proposed road would connect.

Douglas County plans to harvest an estimated 600 thousand board feet of timber from their lands (Land Department Request, March 10, 2010) at an undisclosed time in the future but presumably within the three year timeframe of the requested unilateral permit. Douglas County requested access across BLM to access a potential landing on their lands. An alternate route across private lands was disclosed to the BLM that entails

“construction of approximately a half mile of mid-slope road” (Sutherlin Creek Crossing Permit Alternate Route memo). Alternative access is available to the Douglas County; therefore, the road construction on BLM lands is not a “connected action” to the timber harvest on Douglas County lands.

## **C. Conformance**

This environmental assessment (EA) analyzes the environmental consequences of both the No Action alternative and the Proposed Action alternative, to explain the environmental effects of each in the decision-making process. In addition to the ROD/RMP, this analysis tiers to and incorporates by reference the assumptions and analysis of consequences provided by the following NEPA analyses:

- The *Final Supplemental Environmental Impact Statement (FSEIS) on Management of Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl* (USDA and USDI 1994);
- The *Final Supplement to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standard and Guidelines* (USDA and USDI 2007);

Implementation of the actions proposed in this analysis would conform to the requirements of the ROD/RMP, incorporating the standards and guidelines of the Northwest Forest Plan as amended.

## **D. Decision Factors**

Factors to be considered when selecting among alternatives will include:

- The nature and intensity of environmental impacts that would result from implementing the Action Alternative and the nature and effectiveness of measures to mitigate impacts to resources including, but not limited to, wildlife and wildlife habitat, soil productivity, water quality, air quality, and the spread of noxious weeds;
- Compliance with: management direction from the ROD/RMP; terms of consultation on species listed and habitat designated under the Endangered Species Act; the Clean Water Act, Clean Air Act, Safe Drinking Water Act, O&C Act, National Historic Preservation Act, and Special Status Species program.

## **E. Issues for Analysis**

The Sutherlin Crossing project developed with the initiation of the Interdisciplinary Team in October of 2010. The project was listed in the Roseburg District Quarterly Planning Updates for Fall, and Winter 2010; published September 3, 2010, and November 29, 2010 respectively.

The following issues were identified for detailed analysis:

- How will the construction of the road affect the establishment of new weed species populations and the proliferation of present populations?
- To what extent would the proposed action affect the northern spotted owl including effects: 1) during its critical breeding period, 2) to suitable habitat within the home range, core area, and nest patch, 3) to dispersal-only habitat within the home range, core area, and nest patch, and 4) to Critical Habitat?
- To what extent will the proposed action affect Bureau Sensitive and Bureau Strategic Botanical and Wildlife Species, Survey and Manage Species, and Land Birds?
- To what extent would the proposed action affect soil productivity, slope stability and sedimentation?
- How will each of the alternatives affect carbon storage through time, in the project area?

## Chapter 2. Discussion of Alternatives

This chapter describes the basic features of the alternatives being analyzed.

### **A. Alternative 1 - No Action**

The No Action Alternative provides a baseline for the comparison of the alternatives. This alternative describes the existing condition and continuing trends anticipated in the absence of the proposal but with the implementation of other reasonably foreseeable federal and private projects.

If the no action alternative were selected then the Swiftwater Field office would deny the requested authorization to construct a 135 foot new road (0.1 acre) on BLM administered lands. Douglas County would not have legal access across BLM-administered land at this location. Douglas County would need to seek other means to access their lands. It can be expected that Douglas County would access their lands through some other option. Douglas County's other option is "the construction of approximately a half mile of mid-slope road that would switch back across the County parcel, and possible downhill yarding." Sutherlin Creek would likely require a bridge for to cross Sutherlin Creek, potentially a "railroad car bridge." Potentially, Douglas County would harvest approximately 40 acres under an unspecified harvest prescription from their property in the NW1/4SW1/4, Section 19, T. 25 S., R. 4 W., W.M. It is presumed that Douglas County would abide by Oregon Forest Practices (OFP) for reforestation.

### **B. Alternative 2 - The Proposed Action**

The Swiftwater Field Office proposes to grant Douglas County's request for a three-year road-use permit and authorize the construction of approximately 135 feet of new natural surface road (0.1 acre clearing limit) with a 14 foot subgrade in Section 19, T. 25 S., R. 4 W., W.M. Construction would include removal of approximately 9 trees, 8 inches diameter at breast height (dbh) to 28 inches dbh. Fifty feet of the road would be constructed at a 13 percent grade and 85 feet would be constructed at less than five percent grade. The road would be outsloped with a 30 foot clearing width. This is a ridgetop road so culverts, crossdrains, and ditches are not required.

When the three year unilateral permit expires, the proposed road would be decommissioned by water-barring, mulching the road surface with straw, and blocking with trench barriers. Based on 1995 ROD/RMP guidance (pg. 133), roads not needed for continued resource management would be "put to bed" using methods such as blocking, ripping, seeding, mulching, fertilizing, and water-barring. The proposed road in this project would be put to bed using such methods. In addition, existing locked gates are expected to discourage unauthorized access; therefore the proposed road does not need to be blocked to discourage unauthorized access.

Project Design Features for the Douglas County Crossing would be consistent with Best Management Practices for construction described in the *Roseburg District Record of Decision and Resource Management Plan* (ROD/RMP, pgs. 134-138). This project is within the Connectivity Land Use Allocation and the proposed road construction would occur within a forest stand approximately 140 years old.

#### **a) Project Design Features**

##### ***1) To minimize sedimentation and protect soil productivity:***

Road construction, over-wintering, and decommissioning would be restricted to the dry season (normally May 15<sup>th</sup> to October 15<sup>th</sup>). The operating season could be adjusted if unseasonable conditions occur (e.g. an extended dry season beyond October 15<sup>th</sup> or wet season beyond May 15<sup>th</sup>).

2) ***To minimize sedimentation and protect soil productivity:***

The proposed project would be restricted to dry season hauling (normally May 15<sup>th</sup> to October 15<sup>th</sup>) because of the native surface road bed. The operating season could be adjusted if unseasonable conditions occur (e.g. an extended dry season beyond October 15<sup>th</sup> or an extended wet season beyond May 15<sup>th</sup>).

3) ***To prevent erosion and sedimentation:***

Prior to the wet season, over-wintering the road construction will be required. The road will be waterbarred, mulched with straw, and blocked to traffic.

4) ***To prevent and/or control the spread of noxious weeds:***

All heavy equipment would be required to remove all dirt and debris prior to entry on to BLM lands. This would include a thorough cleaning of the undercarriage (BLM Manual 9015-Integrated Weed Management).

5) ***To prevent and/or control the spread of noxious weeds:***

Bare soil throughout the project area would be reseeded with weed free native seed and straw used to prevent further spread of noxious weeds. BLM seed and straw would be available for use on this right-of-way project.

6) ***To protect air quality:***

There is no prescribed burning planned for the Sutherlin Crossing. Should it become necessary for prescribed burning to occur, all prescribed burning would have an approved "Burn Plan" and be conducted under the requirements of the Oregon Smoke Management Plan and done in a manner consistent with the requirements of the Clean Air Act (ODEQ & ODF, 1992).

7) ***To protect cultural resources:***

If any objects of cultural value (e.g. historic or prehistoric ruins, graves, fossils or artifacts) are found during the implementation of the proposed action that were not found during pre-project surveys, operations would be suspended until the site has been evaluated for implementation of appropriate mitigation.

8) ***To protect Special Status, and SEIS Special Attention Plants and Animals:***

Federally listed (Threatened or Endangered), or proposed, plants and animals and their habitats would be managed to achieve their recovery in compliance with the Endangered Species Act, approved recovery plans, and Bureau Special Status Species policies (1995 ROD/RMP, pg. 40-43). Bureau Sensitive species and their habitats would be managed so as not to contribute to the need to list, and to recover the species (1995 ROD/RMP, pg. 40-43).

If during implementation of the proposed action, any Special Status Species are found that were not discovered during pre-disturbance surveys; operations would be suspended as necessary and appropriate measures would be implemented before operations would resume.

(1) ***Wildlife***

The proposed project area occurs within suitable habitat for the northern spotted owl. There are no known, historic northern spotted owl nest sites or activity centers within 0.25 miles of the proposed project area. However, pre-project protocol surveys to confirm that spotted owls are not currently using the area have not been completed. Disruption of breeding/nesting behavior of owls as a result of forest removal and road construction would be minimized by restricting activities to that period outside of the critical breeding season (March 1 – September 30).

Restriction of road building activities from March 1 to September 30 for spotted owls would also minimize disruption of breeding/nesting behavior of Landbirds protected under the Migratory Bird Treaty Act.

(2) *Botany*

The project was considered for its affect on Special Status Species Plants known or suspected to occur in Douglas County. To address the above concerns surveys (EA, pg. 10) were conducted for species on the BLM Oregon State Office State director's Sensitive Species List including Federally Listed Species (Fungi, Non-vascular and Vascular Plants), the Oregon State Office State Director's Strategic Species List and appropriate Survey and Manage Species that are known or suspected to occur in Douglas. A complete list of Special Status Species Plants and survey findings can be found in Appendix F.

9) *To prevent and report accidental spills of petroleum products or other hazardous material and provide for work site cleanup:*

The operator would be required to comply with all applicable State and Federal laws and regulations concerning the storage, use and disposal of industrial chemicals and other hazardous materials. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Authorized Officer and the procedures outlined in the "Roseburg District Hazardous Materials (HAZMAT) Emergency Response Contingency Plan" would be followed. Hazardous materials (particularly petroleum products) would be stored in appropriate and compliant UL-Listed containers and located so that any accidental spill would be fully contained and would not escape to ground surfaces or drain into watercourses. Other hazardous materials such as corrosives and/or those incompatible with flammable storage shall be kept in appropriate separated containment. All construction materials and waste would be removed from the project area.

10) *Cultural Resources*

**To protect objects of cultural value:**

If any objects of cultural value (e.g. historic or prehistoric ruins, graves, fossils, or artifacts) are found during the implementation of the proposed action, operations would be suspended until the site has been evaluated to determine the appropriate mitigation action. Mitigation might include avoidance or systematic excavation of a portion of the site. Cultural resources will not be discussed further.

11) *Fire and Fuels Management*

The project area is inside the wildland urban interface boundary as identified in the Roseburg District Fire Management Plan. Douglas County or the purchaser of the timber would scatter downed fuels resulting from the road construction.

## **C. Resources that Would be Unaffected by Either Alternative**

a) **Resources Not in Project Area**

The following resources or concerns are not present and would not be affected by either of the alternatives: Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNAs), prime or unique farm lands, floodplains/wetlands, solid or hazardous waste, Wild and Scenic Rivers, and Wilderness.

The proposed action is consistent with Executive Order 12898 which addresses Environmental Justice in minority and low-income populations. The BLM has not identified any potential impacts to low-income or minority populations, either internally or through the public involvement process. No Native American religious concerns were identified by the team or through correspondence with local tribal governments.

There are currently no energy transmission, transport facilities, utility rights-of-way, and/or energy resources with commercial potential in proximity to the proposed road building location.

**b) Visual Resource Management**

The Visual Resource Management (VRM) classification for this area is Class IV. The basic elements of form, line, color and texture as required by the 1995 ROD/RMP (pg. 52) would be maintained under the proposed action.

## Chapter 3. Affected Environment & Environmental Consequences

This chapter discusses the specific resources potentially affected by the alternatives and the direct, indirect and cumulative environmental effects<sup>a</sup> of the alternatives over time. This discussion is organized by individual resource, and provides the basis for comparison of the effects between alternatives.

### Issue or Resource affected

#### A. Noxious Weeds

**How will the construction of the road affect the establishment of new weed species populations and the proliferation of present populations?**

##### a) **Affected Environment**

BLM road number 25-5-24.2 has well established populations of Himalayan blackberry, Scotch broom, St. John's wort, Tansy ragwort, gorse and English hawthorn (Table 1). Ground disturbance in the project area is low, which has limited the introduction of noxious weeds or invasive plants into the area of analysis. Noxious weed presence for many of the species is very low, often represented by a single plant.

**Table 1. Noxious Weeds Species Present in the Project Area.**

Scientific Name	Common name	Acres of infestation
<i>Rubus armenicus</i>	Himalayan blackberry	< 0.01
<i>Cytisus scoparius</i>	Scotch broom	<0.01
<i>Hypericum perforatum</i>	St. John's wort	<0.01
<i>Senecio jacobaea</i>	Tansy ragwort	0.01
<i>Crateagus monogyne</i>	English hawthorn	Within ¼ mile of project

##### b) **Environmental Consequences**

###### 1) **Consequences Unique to the No Action Alternative**

Himalayan blackberry and Scotch broom populations would increase in the undisturbed native vegetation at a gradual rate over many years. Scotch broom has been found in stands with crown cover greater than 100% and Himalayan blackberry with crown areas below 80%. The stand where the proposed road is located has a crown area of less than 50% and these noxious weed populations would continue to grow (Knurowski personal observation, 1988 - present).

###### 2) **Consequences Unique to the Proposed Action Alternative**

Noxious weed populations would increase along the road due to disturbance and road construction. The proposed road begins in known populations of Himalayan blackberry, Scotch broom and English hawthorn. The seeds from these plants exist in the soil along the main road and would be pushed into the new construction area as the road is built. Weed populations are expected to increase in the area of disturbance and along the edges of the road. Under the Noxious Weed program the BLM would continue monitoring populations and treat populations as they arise.

<sup>a</sup> Cumulative effects are the impacts of an action when considered with past, present, and reasonably foreseeable future actions. (40 CFR 1508.7)

### c) **Cumulative Effects**

This project is expected to increase weed populations in the Sutherlin area by at approximately 0.2 acres because the native surface road would act as a prepared seed bed for proximate noxious weed seed sources (Knurowski, Personal Observation, 1988 - present). The noxious weed information in Table 1 represents the only data available for the acreage of noxious weed populations in this watershed. Field observations noted most of the roads in the Fraser Canyon area have populations of the weeds listed above and other species that are considered a low risk here (Knurowski, Personal Observation, 1988 - present).

## **B. Botany**

### **To what extent will the proposed action affect Bureau Sensitive and Bureau Strategic Botanical Species, and Survey and Manage Species?**

Botany surveys were conducted September 1, 2010. No Special Status Species Plants were found. Surveys were also conducted for Survey and Manage lichens, bryophytes and vascular species. None of the species on these lists were found. To determine whether fungi surveys would be needed for this project, the stand was evaluated for "old growth" characteristics as defined in the 2001 ROD glossary (USDA, USDI 1994a). The stand did not meet that definition of old growth in the following ways: this stand is 40 years younger than the 180 year age minimum recommended in the 2001 ROD, the canopy cover is low, no large trees are present in the area, and there are only minor indications of decadence. Information is not available about Special Status Species - Plants on the Douglas County parcel or the alternate route described in the no action alternative.

## **C. Wildlife**

### **To what extent will the proposed action affect the northern spotted owl including effects: 1) during its critical breeding period, 2) to suitable habitat within the home range, core area, and nest patch, 3) to Critical Habitat?**

### **To what extent will the proposed action affect Bureau Sensitive and Bureau Strategic Species, Survey and Manage Species, and Land Birds?**

#### **a) Affected Environment**

##### ***1) Threatened and Endangered Species***

The project is within suitable nesting, roosting, and foraging (NRF) habitat for the northern spotted owl (*Strix occidentalis caurina*) in a 15.7 acre stand originating around 1860. It is located within the home range (Western Cascades Province, 1.2 miles) of one historic owl site, Sunset View (IDNO 31000) but is outside the nest patch (300 meter radius), core (0.5 mile radius) and the 100-acre Known Owl Activity Center (KOAC). The habitat analysis for the Sunset View historic site is shown in Table 2. There are no current surveys of the area with the last surveys conducted in 1997. A pair of northern spotted owls was last confirmed at the site in 1997 and reproduction was last confirmed in 1996. The project does not occur within Designated Critical Habitat (2008) for the northern spotted owl.

The edge of the stand where the proposed road construction is located has previously been impacted by windstorms resulting in blown down trees. This has opened this portion of the stand, isolating the crowns of the overstory trees and increasing the size of an opening that currently exists on adjacent Douglas County lands north of the proposed road construction. Wind has damaged the crowns of the few remaining overstory trees within the proposed clearing limits of the road resulting in thin, open crowns giving the area approximately 30-35 percent crown closure. Suitable NRF habitat for spotted owls is generally defined as having a minimum of 40 percent crown closure (Thomas, et al. 1990). Crown closure in the remaining portion of the stand ranges from 60 to 100 percent, indicative of suitable nesting, roosting and foraging habitat for the spotted owl.

**Table 2. Habitat Analysis for Sunset View (IDNO. 31000)**

Northern Spotted Owl Site (IDNO)		Federal Land (acres)	Private Land (acres)	Habitat on Federal Lands Only (acres)	
				Suitable Habitat	Dispersal-Only Habitat
Sunset View (31000)	Home Range (1.2 mile) (2,895 acres)	830	2065	346 (42%)	95 (11%)
	Core Area (0.5 mile) (502 acres)	249	253	128 (51%)	32 (13%)
	Nest Patch ((300 meter) (70 acres)	58	12	18 (31%)	10 (17%)

**2) Bureau Sensitive and Bureau Strategic Species**

Tables addressing those species which are documented or suspected to occur within the Roseburg District and the project area are included in Appendix E. The bald eagle (*Haliaeetus leucocephalus*) is addressed here due to the potential effect of the project to suitable eagle nesting habitat.

The project is within suitable nesting/roosting habitat for the bald eagle and is within 1.25 miles of Plat I and Cooper Creek Reservoirs. There are numerous documented sightings of bald eagles in the area with nesting suspected within two miles of the reservoirs.

**3) Survey and Manage Species**

Analyses and/or surveys for the following Survey and Manage wildlife species under the 2001 *Final Supplemental Environmental Impact Statement (FSEIS) for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* were conducted for the proposed project:

- Birds: Great Gray Owl (*Strix nebulosa*)
- Mammals: Red Tree Vole (*Arborimus longicaudus*)
- Mollusks: Chace Sideband (*Monadenia chaceana*)
- Crater Lake Tightcoil (*Pristoloma articum crateris*)
- Oregon Megomphix (*Megomphix hemphilli*)
- Oregon Shoulderband (*Helminthoglypta hertleini*)

The results of GIS analysis of habitat availability and the results of field surveys that were conducted for the Survey and Manage species are summarized in Table 3. Protocol surveys for mollusk species were completed (following the *Survey Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan, Version 3.0, 2003*) and no target mollusk species were found within the proposed right-of-way. There are no natural openings greater than 10 acres within 200 meters of the project thus surveys for great gray owls are not required (*Survey Protocol for the Great Gray Owl within the Range of the Northwest Forest Plan, Version 3.0, January 12, 2004; p5, 13-14*). Since there are no known sites of Survey & Manage mollusk species or great grey owls and their habitat within the project area, these species will not be discussed further.

Approximately 4,900 feet of modified line transects were conducted (September – December 2010) on the 15.7 acre stand where the proposed project is located following the *Survey Protocol for the Red Tree Vole, Version 2.1* (Biswell et al., 2002). Thirty-eight arboreal structures that were not confirmed as to species were discovered. Brown resin ducts, indicative of past red tree vole use, were found at one location approximately 178 feet south of the proposed road. The tree nearest the location of the resin

ducts was climbed (February 2011) and no red tree vole nest material, either resin ducts or clippings, were found. Additionally, two other trees 150 feet southeast of the proposed road had arboreal structures. One was climbed and the structure confirmed as conifer debris with no indication of red tree vole use. The structure in the second tree was also confirmed as conifer debris that had fallen out of the tree when revisited. The remaining 36 trees with arboreal structures are located more than 180 feet from the proposed road and their origins were not confirmed by tree climbing.

Since there is evidence of past red tree vole use and there are 36 arboreal structures not confirmed as to species, a portion of the area would be managed as an “undetermined red tree vole site” and the site is assumed to be active for management purposes following the *Management Recommendations for the Oregon Red Tree Vole, Version 2.0* (USDA, USDI, 2000). The 36 arboreal structures identified are located in two distinct sites and a habitat area to protect the undetermined red tree vole sites has been delineated. The habitat area encompasses all 36 identified trees with unconfirmed structures with a minimum 180-foot (a site tree height distance) protective buffer (Appendix E; Figure E-1). The habitat area is approximately 31 contiguous acres including the 140 year old stand where the proposed road construction is located, a second 140 year old stand and portions of younger adjacent stands containing larger trees expected to provide habitat and connection for red tree vole use. The *Management Recommendations* (p.14) state that the habitat area should be equal to 1.0 acre for each undetermined nest tree thus 36 acres. However, remaining adjacent stands are only 30-40 years old or are located on private lands, thus unavailable or unsuitable for designation as red tree vole habitat. Therefore, the best available habitat for the red tree vole, 31 acres, has been delineated to protect the undetermined red tree vole site. None of the 36 unconfirmed, arboreal nest structures are located within 180 feet of the proposed road construction; therefore, the proposed road location was not included within the habitat area for the undetermined red tree vole site. In addition, as described previously, the portion of the stand (0.1 acre) within the clearing limits of the proposed road has thin, open conifer crowns that are isolated from the rest of the stand giving the area approximately 30-35 percent crown closure (q.v., pg. 11). Since red tree voles may spend the majority of their life in the canopy travelling from tree to tree (Biswell et al., 2002), the thin, isolated conifer crowns within the clearing limits of the proposed road are not well suited for use by red tree voles.

**Table 3. Survey and Manage Species Analyzed/ Surveyed for the Project.**

Species	General Habitat Requirements	Analysis/Survey Completed:	Species Detected in Project Area?
Red Tree Vole <i>Arborimus longicaudus</i>	Moist old-growth conifer forests w/ multi-layered canopies	4,900 feet of Modified Line Transects; completed Dec. 3, 2010; climbing of two trees Feb. 8, 2011.	Yes – brown resin ducts found
Oregon Shoulderband <i>Helminthoglypta hertleini</i>	Talus and rocky substrates, grassland, herbaceous vegetation	Survey of key features and sample areas (0.1 acres); two visits completed Nov. 15, 2010 and Dec. 2, 2010.	No
Oregon Megomphix <i>Megomphix hemphilli</i>	Hardwood leaf litter in moist conifer/hardwood forests	Survey of key features and sample areas (0.1 acres); two visits completed Nov. 15, 2010 and Dec. 2, 2010.	No
Chace Sideband <i>Monadenia chaceana</i>	Rocky areas, talus deposits; herbaceous vegetation and large woody debris	Survey of key features and sample areas (0.1 acres); two visits completed Nov. 15, 2010 and Dec. 2, 2010.	No
Crater Lake Tightcoil <i>Pristoloma articum crateris</i>	Perennially wet situations in mature conifer forests. Above 2,000 feet elevation.	Out of range – project elevation is 1,100 feet.	No
Great Gray Owl <i>Strix nebulosa</i>	Mature to old-growth mixed conifer forest within 200 meters of natural meadows	Natural openings over 10 acres in size are not present within 200m of project area	No

#### 4) *Land Birds*

Guidance for meeting agency responsibilities under the Migratory Bird Treaty Act and Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds” is provided by Instruction Memorandum OR-2008-050 (USDI BLM 2008c). The guidance identifies lists of “*Game Birds Below Desired Condition*”, the “*Birds of Conservation Concern*”, and eagles under the “*Bald and Golden Eagle Protection Act*” to be addressed during environmental analysis of agency actions and plans. Table E-2 (Appendix E) lists the species identified to be addressed on the Roseburg District and identifies those species expected to occur in the project area. The project would remove 0.1 acres of linear habitat with the potential loss of nesting and foraging habitat for some species. Species that use edges and openings would benefit while those preferring a closed stand condition would see a permanent loss of habitat.

### b) **Environmental Consequences**

#### 1) *Consequences Common to Both the No Action and the Proposed Action Alternatives*

Approximately 600 thousand board feet of timber would be harvested from Douglas County lands. Douglas County has indicated that they plan to harvest timber from Douglas County owned lands (Land Department Request, March 10, 2010) at an undisclosed time.

#### 2) *Consequences Unique to the No Action Alternative*

The proposed road construction would not occur and approximately 0.1 acres of suitable northern spotted owl and bald eagle habitat would not be removed. The stand would continue to function at its current level of use as habitat for Threatened /Endangered, Bureau Sensitive, Bureau Strategic and Survey and Manage wildlife species.

#### 3) *Consequences Unique to the Proposed Action Alternative*

##### (1) *Threatened and Endangered Species*

The proposed road construction would remove approximately 0.1 acres of suitable nesting, roosting and foraging (NRF) habitat for spotted owls. Effects to suitable spotted owl habitat for the Sunset View owl site are summarized in Table 4. All trees within the clearing limits of the proposed road (0.1 acres) have been surveyed for suitable nest structures, broken tops, and cavities and none were found. Therefore, no currently suitable northern spotted owl nest trees are expected to be removed by the proposed road construction.

The proposed road construction would create a linear opening in NRF habitat. Consultation with the U.S. Fish and Wildlife Service concluded that road construction through NRF habitat would cause local habitat fragmentation and associated edge effects to spotted owls (Biological Opinion; Tails #: 13420-2011-F-0012; pg. 63). However, consultation was completed prior to the availability of site-specific information for this project as presented previous in the affected environment (q.v., pg. 11). Since the portion of the stand where the road construction would occur has already been opened (i.e. 30-35 percent canopy cover) by wind damage, the effect on the habitat from the 30 foot-wide clearing associated with road construction would not markedly increase the degree of fragmentation or edge effects.

The loss of 0.1 acres of suitable habitat and the associated increase in edge effect from the road construction would not be expected to prevent the remaining stand from continuing to function as nesting, roosting and foraging habitat at its current capacity. The road would be decommissioned at the end of the three year permit period which would allow shrub and understory development, thereby reducing the edge effect of the road opening over time.

Road construction would be seasonally restricted during the critical breeding period (March 1 to September 30) to reduce the potential disturbance to nesting northern spotted owls within 0.25 miles of the project area.

**Table 4. Effects to Habitat for the Sunset View (IDNO 31000) Northern Spotted Owl Site**

Activity	Area of the activity (ac)	Available Federal NRF Habitat (ac) (Percent of total core area or home range)								Road Construction Occurs within:	
		Pre-Treatment				Post-Treatment				Core	Nest Patch
		Core Area (502 ac)	(%)	Home Range (2895 ac)	(%)	Core Area (502 ac)	(%)	Home Range (2895 ac)	(%)		
Sutherlin Creek Crossing	0.1	128	25	346	12	128	25	346	12	No	No

(2) Bureau Sensitive and Strategic Species

The proposed road construction would remove approximately 0.1 acres of suitable bald eagle habitat. All trees within the clearing limits of the proposed road (0.1 acres) have been surveyed for nest structures and none were found. Additionally, no large nest structures that would support eagle nesting were observed during red tree vole surveys of the 15.7 acre stand (see below). Therefore, no eagle nest trees are expected to be removed by the project. Eagles would be expected to continue to use the stand at current levels.

(3) Survey and Manage

The proposed road construction would not affect the undetermined red tree vole site since it is protected by a habitat area. No trees would be felled within the habitat area and all identified arboreal structures (i.e. potential red tree vole nests) are at least 180 feet within the habitat area. As discussed previously (q.v., pg. 13), the thin, isolated conifer crowns within the clearing limits of the proposed road are not well suited for red tree voles and the removal of these trees would not reduce the opportunities for nesting or travel between canopies in the remaining portion of the stand. The remaining 15.6 acres of the stand would continue to provide habitat at its current level for red tree voles.

(4) Land Birds

The project would remove 0.1 acres of nesting and foraging habitat, including large overstory trees, understory trees and shrubs, used by some species of landbirds (Table E-2 (Appendix E)). However the project would not prevent the remaining stand from functioning at its current capacity as nesting and foraging habitat for species using the area. Seasonal restrictions (March 1 to September 30) as identified in the Project Design Features would mitigate for the potential disturbance to nesting landbirds in the project area.

c) **Cumulative Effects**

Douglas County plans to harvest approximately 600 MBF of timber on approximately 40 acres of their lands in the reasonable and foreseeable future. If the proposed road on BLM lands is denied, Douglas County disclosed they would access and harvest their timber by constructing approximately 0.5 miles of a mid-slope road across private lands. Through review of aerial photos, the Douglas County stand to be harvested is suspected to function as dispersal, foraging, and possibly roosting habitat for northern spotted owls. The stand may also contain residual, larger trees that could provide nesting/roosting habitat for bald eagles and nesting habitat for northern spotted owls. The cumulative effects to wildlife habitat are summarized in Table 5.

**Table 5. Cumulative effects to wildlife habitat**

Species Affected	Alternative 1: No Action		Alternative 2: Proposed Action	
	Federal Lands	Non-Federal Lands	Federal Lands	Non-Federal Lands
Northern Spotted Owl: Dispersal, foraging, nesting, roosting habitat	No road construction in project area.	Harvest of 600MBF on 40 acres; 0.5 miles road construction.	135 feet of road construction; removal of 0.1 acres NRF habitat.	Harvest of 600MBF on 40 acres.
Bald Eagle: Nesting/roosting habitat	No road construction in project area.	Harvest of undetermined number of larger, residual trees on Douglas County lands.	Harvest of 6 overstory trees on BLM lands.	Harvest of undetermined number of larger, residual trees on Douglas County lands.

**D. Soils**

**To what extent would the proposed action affect soil productivity, slope stability and sedimentation?**

**a) Affected Environment**

The project area shows no previous impacts from harvest or other disturbances (except for wind-throw). Despite the fact that soil development has been unobstructed, the profile is moderately deep, with coarse gravel and cobbles on the surface with a thin duff layer. The slopes in the project area range between 40 and 55 percent. No tension crack, jackstraw trees or other signs of instability were noted during site visits. It should also be noted that Debris slide initiation is most common on slopes greater than 70 percent (Amaranthus, 1983).

**b) Environmental Consequences**

*1) Consequences Unique to the No Action Alternative*

If the proposed project is not approved then, no soil compaction or displacement would occur on BLM lands. Erosion would remain low and the soil would continue to develop slowly over time, as plant roots penetrate through the soil, organic matter becomes incorporated into the soil, and small animals burrow through the soil layers. The duff layer would increase with the accumulation of needles, twigs, and small branches, along with decomposing larger woody material, absent a fire of sufficient intensity to consume the material. Erosion would remain low due to a lack of disturbance, vegetation cover, the duff layer and large woody debris. Without construction, slopes are expected to remain stable due to no signs of instability.

*2) Consequences Unique to the Proposed Action Alternative*

The project proposed on BLM would impact approximately 0.1 acres. Approximately 0.03 acres of the cut and fill slopes were calculated to eventually revegetate over time. One hundred and thirty five feet of new construction would increase the road density by less than one percent in the 7<sup>th</sup> field watershed. The impacts of a natural surface road can be expected to remain on the landscape for a minimum of 40-50 years (Barner, personal observations). Erosion is low for natural surfaced roads during a summer haul. Seeding the exposed cut-slope will encourage vegetation which will filter sediment, reducing erosion.

**c) Cumulative Effects**

Currently there are no BLM proposed projects operating in the Fraser Canyon area and none are planned. Use of the haul route does not affect the soil resource as the roads in the haul route are gravel and dry season use. Construction of alternative access to the Douglas County parcel does not affect soil productivity on

BLM lands. Because there would be no additional impacts associated with this project to BLM land in the project area, there would be no cumulative impacts for soil productivity, erosion or slope stability.

In order to reach BLM land Douglas County may have to cross adjacent landowners. This road segment could be approximately 240 feet long. The impacts of this road section could be expected to be comparable to the impacts on the BLM section. Once Douglas County reaches their parcel, in order to harvest their timber, it is likely that they will create a landing. OFP states that landings larger than ¼ acre are typically unnecessarily large (Logan, 2002, pg. 66).

If the BLM does not approve the Sutherlin Crossing, Douglas County has indicated they would build a 0.5 miles of mid-slope road across private to access their timber (Sutherlin Creek Crossing Permit Alternate Route memo). It would be expected that Douglas County would follow the Oregon Forest Practices (OFP). OFP suggest avoiding side cast material and construction on unstable slopes (Logan, 90-92).

## **E. Hydrology and Fisheries**

**To what extent would the proposed action affect water quality, aquatic habitat, or aquatic species through sediment delivery to the streams (including listed fish and Special Status species)?**

### **a) Affected Environment**

The project area lies on the ridge between Fraser Canyon and Sutherlin Creek within the Sutherlin Creek Subwatershed (12 digit Hydrologic Unit Code (HUC)) of the Lower North Umpqua River Watershed (10 digit HUC). The nearest stream is approximately 600 feet downhill from the project area and the nearest fish-bearing stream is approximately 1,800 feet downhill from the project area.

### **b) Environmental Consequences**

#### ***1) Consequences Unique to the No Action Alternative***

If the proposed project is not approved, then the proposed road construction would not occur. There would be no effect to water quality, aquatic habitat, or aquatic species.

#### ***2) Consequences Unique to the Proposed Action Alternative***

Due to the distance of the project area from streams, ground disturbing activities will have no impact on water quality or water resources. Also, because of the distance from fish-bearing streams this project will have no mechanism for affecting Oregon Coast coho salmon (*listed Threatened*) or other aquatic Special Status Species. Water quality, aquatic habitat, and aquatic species related issues are eliminated from further analysis because there are no intermittent, perennial, or fish-bearing streams within the project area.

### **c) Cumulative Effects**

Since there is no impact to water quality or water resources from the proposed action, there would be no cumulative degradation of water quality in the Sutherlin Creek subwatershed or the Lower North Umpqua watershed stemming from the proposed action alternative. If the proposed road on BLM lands is denied, then a half mile of mid slope road is expected to be constructed across privately owned land and the Douglas County parcel in order to accomplish harvest. This route would cross Sutherlin Creek (Sutherlin Creek Crossing Permit Alternate Route Memo). It would be expected that Douglas County would follow the OFP in the construction of the road and crossing as well as the timber harvest actions. This road crossing will have no direct or indirect effects to Oregon Coast coho salmon (*federally Threatened*) or Bureau Sensitive fish species due to their absence from the proposed project area. The nearest population of coho salmon is 0.5 miles downstream from the project area. Oregon Revised Statutes 527.765 directs the State Board of Forestry to establish best management practices to ensure forest operations do not impair the achievement or maintenance of water quality standards for the State of Oregon.

## **F. Carbon Storage**

### **How will each of the alternatives affect carbon storage through time, in the project area?**

Climate change and greenhouse gas emissions have been identified as an emerging resource concern by the Secretary of the Interior (Secretarial Order No. 3226; January 16, 2009), the OR/WA BLM State Director (IM-OR-2010-012; January 13, 2010), and by the general public through comments on previous, recent analyses.

Forster et al. 2007 (pgs. 129-234), incorporated here by reference, reviewed scientific information on greenhouse gas emissions and climate change and concluded that human-caused increases in greenhouse gas emissions are extremely likely to have exerted a substantial warming effect on global climate. Literature, however, has not yet defined any specifics on the nature or magnitude of any cause and effect relationship between greenhouse gases and climate change.

The U.S. Geological Survey, in a May 14, 2008 memorandum (USDI USGS, 2008) to the U.S. Fish and Wildlife Service, summarized the latest science on greenhouse gas emissions and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location. Given this uncertainty, this analysis is focused on calculating greenhouse gas emissions and carbon storage, in the context of carbon release and sequestration.

Forests store carbon through photosynthesis, and release carbon through respiration and decay, affecting atmospheric concentrations of carbon dioxide, and thereby affecting global climate. Forest management can be a source of carbon emissions through deforestation and conversion of lands to non-forest condition, or store carbon through forest growth or afforestation (2008 Final EIS, pg. 220).

Values presented in this analysis, in terms of carbon stored and carbon released, are expressed as tonnes (metric tons). This is the unit of measure that is most commonly used in scientific literature to express carbon storage and release. One tonne of carbon is equivalent to 3.67 tons of carbon dioxide (U.S. EPA, 2005).

The 2008 Final EIS (pgs. 488-490), incorporated by reference, described current information on predicted changes in regional climate. That description concluded the regional climate has become warmer and wetter with reduced snowpack and continued change is likely. The description also concluded that changes in resource impacts as a result of climate change would be highly sensitive to specific changes in the amount and timing of precipitation, but those changes are too uncertain to predict at this time. Because of this uncertainty, it is not possible to predict changes in vegetation types and condition, wildfire frequency and intensity, streamflow, or wildlife habitat in the project area.

Even though a causal link between a specific project, such as Sutherlin Creek Crossing, and specific climate change effects cannot be made, the amount of carbon released can be estimated for this project. The stand type (existing old forest), project area (0.1 acres), and volume of timber that would be removed (2,500 board feet) were used to calculate the amount of carbon that would be released under the alternatives. The values presented in this analysis are estimates based on modeled outputs and should be considered approximations.

This analysis was modeled out to 100 years as was done for carbon analysis in the 2008 Final EIS. The net carbon balance for Sutherlin Creek Crossing was analyzed by calculating: the amount of carbon held in live trees and other components of the forest stands, the amount of carbon held in wood products and logging slash that gradually releases that carbon over time, and the amount of carbon released by the burning of fossil fuels and logging slash under the alternatives. The methodology used in the calculations to estimate the net carbon balance is described in *Appendix D: Carbon Storage Analytical Methodology*.

#### **a) Affected Environment**

Current global emissions of carbon dioxide total 6.8 billion tonnes of carbon (based on Denman et al. 2007) and current U.S. emissions of carbon dioxide total 1.7 billion tonnes (based on EPA, 2010; Table 2-3). In

2008, forest management in the United States resulted in the net carbon sequestration of 196 million tonnes of (based on EPA, 2010; Table 2-9), which represents an offset of approximately 11 percent of total U.S. carbon dioxide emissions.

On lands managed by the Salem, Eugene, Roseburg, Coos Bay, and Medford districts of western Oregon and on the Klamath Falls Resource Area of the Lakeview District there are 222 million tonnes of carbon currently stored in live trees (2008 Final EIS, pg. 221). For this same area, the amount of carbon stored in other than live trees (includes shrubs, brush, snags, woody debris, and organic carbon in the soil) is calculated at 195 million tonnes (2008 Final EIS, pg. 222).

Currently, there are 19.2 tonnes of carbon held within the Sutherlin Creek Crossing project area (0.1 acres). This carbon is held in either the pool of “standing, live trees” (6.1 tonnes) or in the pool of “other than live trees” (13.1 tonnes) (refer to *Current Condition* in Table 6). The amount of carbon currently held in the project area (19.2 tonnes) represents approximately 0.000005 percent of the total carbon stored on BLM administered lands in western Oregon (417 million tonnes) described previously.

In the 2008 Final EIS (pg. 538), the No Action Alternative (Northwest Forest Plan) would result in 596 million tonnes of carbon stored on BLM administered lands in western Oregon in the year 2106. The No Action Alternative described in the 2008 Final EIS (pg. 22) would be continued management under the six District resource management plans that were approved in 1995 and subsequently amended.

**b) Environmental Consequences**

*1) Alternative 1 - No Action*

Under the No Action Alternative, the stands in the proposed units would continue to develop and grow. Carbon would be released through the decay of snags, woody debris, and dead vegetation but it would also be sequestered as living, growing trees and other vegetation pull carbon dioxide from the atmosphere. The future growth of trees was not modeled for the Sutherlin Creek Crossing project and therefore the amount of additional carbon that would be sequestered was not estimated. However, it is assumed that over time the trees in the project area would sequester carbon and the amount of carbon stored on-site would increase beyond the 19.2 tonnes currently stored (Table 6).

In addition, wood products would not be produced from BLM timber, fossil fuels would not be consumed for the purposes of timber harvest on BLM lands, and there would be no burning of slash from BLM trees since none would be generated on BLM-administered lands or timber under the No Action Alternative. Consequently, there would be no carbon release from BLM sources or carbon storage in wood products from BLM timber (Table 6).

**Table 6. Carbon Storage in the Sutherlin Creek Crossing Project Area under Alternative 1: No Action Alternative.**

Time Step	Carbon Storage						Net Carbon Balance (tonnes)
	Standing, Live Trees* (tonnes)	Other Than Live Trees (tonnes)	Logging Slash (tonnes)	Wood Products (tonnes)	Fossil Fuels (tonnes)	Slash Burning (tonnes)	
Current Condition	6.1	13.1	0	0	0	0	19.2
+10 years	6.1	13.1	0	0	0	0	19.2
+20 years	6.1	13.1	0	0	0	0	19.2
+50 years	6.1	13.1	0	0	0	0	19.2
+100 years	6.1	13.1	0	0	0	0	19.2

\* Future growth of trees and future sequestration of carbon was not modeled for this project.

## 2) *Alternative 2 – The Proposed Action*

Under the proposed action, road construction would occur and (q.v., pg. 4-5) and carbon would consequently be released from harvest-related sources. Based on a preliminary cruise of the project area (D.Wright, pers. comm., Jan. 12, 2011), 2,500 board feet of timber would be removed from within the clearing limits of the proposed road. Consequently, 6.1 tonnes of carbon would be moved from the standing, live tree pool into:

- the “logging slash” pool (i.e. 2.7 tonnes; Table 7),
- the “wood products” pool as pulpwood and saw logs (i.e. 3.0 tonnes; Table 7),
- the “slash burning” pool which would release carbon into the atmosphere (i.e. less than 0.1 tonne, Tables 7),
- or would be immediately released into the atmosphere following harvest (i.e. 0.5 tonnes).

Based on (Smith et al., 2006), 13.5 percent of the gross saw log carbon and 14.8 percent of the gross pulpwood carbon would be immediately released into the atmosphere following harvest (for Sutherlin Creek Crossing this would be 0.5 tonnes of carbon). In addition, it is estimated that 10 gallons of fossil fuel would be consumed during the harvest and hauling of BLM timber from the project area and 15 gallons of fossil fuel would be consumed during road construction of the 135 foot long segment on BLM-administered land. It is estimated that the consumption of 25 gallons of fossil fuels (Appendix D, Tables D5) would release 0.1 tonne of carbon as a direct consequence of the proposed road construction (Table 7).

Logging slash that would not be burned and wood products would store less carbon over time as these sources decay and expel carbon into the atmosphere. Logging slash and wood products would decay and expel carbon at rates from Smith et al. (2006) and DOE (2007) as presented in the 2008 Final EIS (Appendix D, Tables D-2 and D-3). Over the course of 100 years following harvest, 2.9 tonnes of carbon would be emitted from logging slash and wood products or an average of 0.3 tonnes of carbon per year (Table 8).

There would be no sequestration of carbon since it is assumed that the proposed road would remain in an unvegetated state for the foreseeable future once constructed. The net carbon balance would be reduced to a third of its current level of 19.2 tonnes to 6.6 tonnes in 100 years following road construction. It is assumed that the amount of carbon held in “other than live trees” would be reduced from the level reported for old existing forest (130.9 tonnes/acre; 2008 Final EIS, Table C-2) to only the amount of organic soil carbon for stand establishment (38.3 tonnes/acre, 2008 Final EIS, Table C-2). The underlying assumption behind this is that all snags, understory vegetation, down wood, forest litter and duff layers would be removed within the clearing limits of the project.

**Table 7. Carbon Storage in the Sutherlin Creek Crossing Project Area under Alternative 2: The Action Alternative.**

Time Step	Carbon Storage						Net Carbon Balance (tonnes)
	Standing, Live Trees* (tonnes)	Other Than Live Trees (tonnes)	Logging Slash (tonnes)	Wood Products (tonnes)	Fossil Fuels (tonnes)	Slash Burning (tonnes)	
Current Condition	6.1	13.1	0	0	0	0	19.2
Harvest Time (0 years)	0	3.8	2.7	3.0	(0.1)	(< 0.1)	9.4
+10 years	0	3.8	2.2	2.8	0	0	8.8
+20 years	0	3.8	1.9	2.6	0	0	8.4
+50 years	0	3.8	1.2	2.4	0	0	7.4
+100 years	0	3.8	0.5	2.3	0	0	6.6

\* Future growth of trees and future sequestration of carbon was not modeled for this project.

Direct carbon emissions resulting from the proposed action would be 0.6 tonnes of carbon from the burning of fossil fuels, slash burning, and the immediate release of carbon from timber at the time of harvest (Table 8). Direct emissions would constitute less than 0.000000001 percent of annual global carbon emissions and less than 0.000000003 percent of annual U.S. carbon emissions (Table 8). The amount of carbon that would be emitted from wood products and logging slash slowly over 100 years would be 0.3 tonnes per year (Table 8). The average amount of carbon emitted annually from wood products and logging slash would constitute less than 0.000000004 percent of global and less than 0.00000002 percent of U.S. carbon emissions (Table 8).

**c) Cumulative Effects**

As discussed above under Alternative 1: No Action, the only release of carbon from BLM lands would be through the gradual decay of snags, woody debris, and dead vegetation that occur on BLM lands. As discussed under Alternative 2: Proposed Action, 0.6 tonnes of carbon would be expected to be directly released from the proposed road construction in Sutherlin Creek Crossing (Table 8).

However, additional carbon release would be reasonably foreseeable from adjacent Douglas County lands through the anticipated harvest of 600 MBF on up to 40 acres of timber on their lands under either alternative. The BLM does not have further details regarding the stand type, harvest prescription (e.g. thinning or clearcut), or reforestation plans. Without these details, estimating the amount of carbon released from the foreseeable harvest of timber or sequestration from reforestation on Douglas County lands is speculative. For comparison, 600 MBF of timber would be expected to contain 1,472 tonnes of carbon using the same methodology to estimate the amount of carbon in standing, live trees (Appendix D: Carbon Storage in Standing, Live Trees). Using the same assumption as for the BLM timber in Appendix D, harvest of 600 MBF of Douglas County timber would immediately release 113 tonnes of carbon and another 3 tonnes would be released through consumption of fossil fuels for timber haul.

If the requested road construction on BLM lands is denied (i.e. No Action Alternative), then it is also reasonably foreseeable that approximately 0.5 miles of road on private lands would be constructed instead (q.v., pg. 4-5). The 0.5 mile of foreseeable road construction on private lands is estimated to emit one tonne of carbon using the same methodology for estimating fossil fuel consumption for road construction (Appendix D: Carbon Release in Fossil Fuels, Steps 2-3).

**Table 8. Cumulative Effects of Carbon Emissions & Storage.**

<i>Project Contribution to Carbon Emissions...</i>	<b>Alternative 1: No Action</b>	<b>Alternative 2: Proposed Action</b>
<b>Direct Carbon Emission from Sutherlin Creek Crossing</b> (tonnes)	0	0.6
<b>Direct Carbon Emissions from reasonably foreseeable non-federal actions<sup>a, b</sup></b> (tonnes)	117 <sup>a</sup>	116 <sup>b</sup>
<b>Average Annual Off-gassing of Wood Products and Slash from Sutherlin Creek Crossing over 100 years</b> (tonnes)	0	0.3
<b>Annual Global Carbon Emissions</b> (tonnes)	6,800,000,000	
<b>Current Annual U.S. Carbon Emissions</b> (tonnes)	1,700,000,000	
<i>Project Contribution to Carbon Sequestration...</i>	<b>Alternative 1: No Action</b>	<b>Alternative 2: Proposed Action</b>
<b>Average Annual Carbon Sequestration in Sutherlin Creek Crossing</b> (tonnes)	> 0 <sup>c</sup>	0
<b>Annual Net Carbon Sequestration by Forest Management in the U.S.</b>	196,000,000	

(tonnes)		
<i>Project Contribution to Carbon Storage in 100 years...</i>	<b>Alternative 1: No Action</b>	<b>Alternative 2: Proposed Action</b>
<b>Carbon Stored by Sutherlin Creek Crossing in 100 years</b> (tonnes)	> 19.2 <sup>c</sup>	6.6
<b>Carbon Stored on BLM Administered lands in western Oregon in 100 years</b> (tonnes)	596,000,000	

<sup>a</sup>Non-federal actions under the No Action Alternative include 600 MBF of timber harvest and 0.5 mile of road construction.

<sup>b</sup>Non-federal actions under the Proposed Action Alternative include 600 MBF of timber harvest.

<sup>c</sup>Future growth of trees and future sequestration of carbon was not modeled for this project but carbon sequestration is assumed to occur as trees continue to grow under the No Action Alternative.

## Chapter 4. Contacts, Consultations, and Preparers

### A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with certain federal and state agencies (40 CFR 1502.25).

- a) **Threatened and Endangered (T&E) Species Section 7 Consultation** - The Endangered Species Act of 1973 (ESA) requires consultation to ensure that any action that an Agency authorizes, funds or carries out is not likely to jeopardize the existence of any listed species or destroy or adversely modify critical habitat.
- 1) A Biological Opinion was received from the USFWS (Roseburg District BLM Fiscal Year 2011-2013 Timber Sales and other activities [Tails#: 13420-2011-F-012]) dated December 28, 2010. The Biological Opinion states (pg. 63) that the direct loss of NRF habitat due to road construction would result in adverse effects to northern spotted owls due to habitat fragmentation and edge effects. The Opinion also states that the removal of habitat by road construction is not expected to preclude the remainder of the stand from fulfilling its current habitat function. However, the USFWS concluded in their Biological Opinion (pg. 82, Ref. No. 13420-2011-F-012) that the Roseburg District's timber sale program and associated activities (which include the Sutherlin Crossing project) "are not likely to jeopardize the continued existence of the northern spotted owl because the proposed action is not likely to adversely affect the ability of Late-Successional Reserves/ Managed Owl Conservation Areas/Late-Successional Management Areas or designated critical habitat ...to provide for viable clusters of reproducing northern spotted owls."
- 2) The Swiftwater fisheries staff has determined that this project would have no mechanism for an effect on Oregon Coast coho salmon. The proposed action would have no direct effects on the Oregon Coast coho salmon and will not destroy or adversely modify designated critical habitat. In addition, project design features would ensure that no indirect effects to Oregon Coast coho salmon or their habitat would occur. Therefore it has been determined that the proposed action would have "no effect" on the proposed species. In addition the Swiftwater fisheries staff has determined that the proposed action "Will Not Adversely Affect" EFH for coho or Chinook salmon in Sutherlin Creek or its tributaries (EA, pg. 17).
- b) **Cultural Resources Section 106 Compliance** – Compliance with Section 106 of the National Historic Preservation Act under the guidance of the 1997 National Programmatic Agreement and the 1998 Oregon Protocol has been documented with a Project Tracking Form dated August 17, 2010. A "No Effect" determination was made. It has been determined that there would be no effect to scientific, cultural, or historical resources.

### B. Public Notification

1. A letter was sent to two **adjacent landowners**. No comments were received.
2. Notification was provided to affected **Tribal Governments** (Confederated Tribes of Grand Ronde, Confederated Tribes of Siletz, and the Cow Creek Band of Umpqua Tribe of Indians). No comments were received.
3. The **general public** was notified via the *Roseburg District Planning Update* (Fall 2010 and Winter 2010) which was sent to approximately 150 addressees. These addressees consist of members of the public that have expressed interest in Roseburg District BLM projects. Comments were received from one local organization requesting additional information about the project.

4. This EA, and its associated documents, would be provided to certain **State, County and local government** offices including: USFWS, NMFS, Oregon Department of Environmental Quality, and the Oregon Department of Fish and Wildlife. If the decision is made to implement this project, it will be sent to the aforementioned State, County, and local government offices.

5. A 30-day **public comment period** would be established for review of this EA. A Notice of Availability would be published in *The News-Review*. The public comment period will begin with publication of the notice published in *The News-Review* on March 1, 2011 and end close of business March 30, 2011. Comments must be received during this period to be considered for the subsequent decision. This EA and its associated documents will be sent to all parties who request them. If the decision is made to implement this project, a notice will be published in *The News-Review* and notification sent to all parties who request them.

## **C. List of Preparers**

### **Core Team**

Charles White	Project Lead / Roads and Rights-of-Way
A.C. Clough	Management Representative
Jeff McEnroe	Fisheries
Alexandra Barner	Soils
Daniel Dammann	Hydrology
Krisann Kosel	Fuels Management
Melanie Roan	Wildlife
Rex McGraw	Carbon Storage
Jeffrey Wall	Planning & Environmental Coordinator / EA Preparer
Trixy Moser	Silviculture
Julie Knurowski	Botany/Noxious Weeds

### **Expanded Team (Consulted)**

Isaac Barner	Cultural Resources
Erik Taylor	Recreation / Visual Resources Management

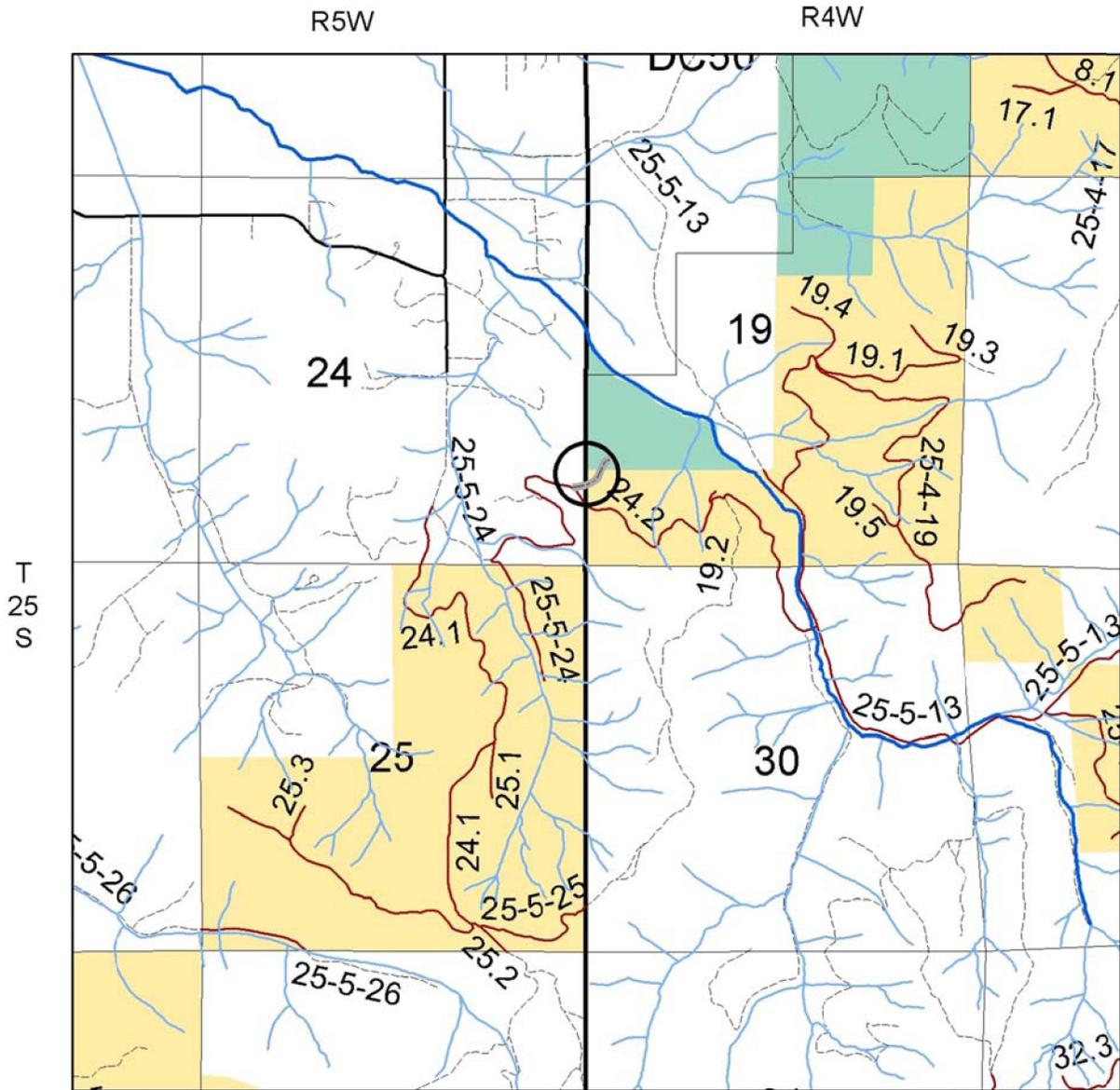
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# Appendix A

## Appendix A Project Vicinity Map



### Legend

#### Land Management

- Bureau of Land Management
- Douglas County

#### Streams

- Major Streams
- 1st, 2nd and 3rd Order Streams

#### Road Ownership

- Bureau of Land Management
- County Road
- Private Road
- Road to be Constructed



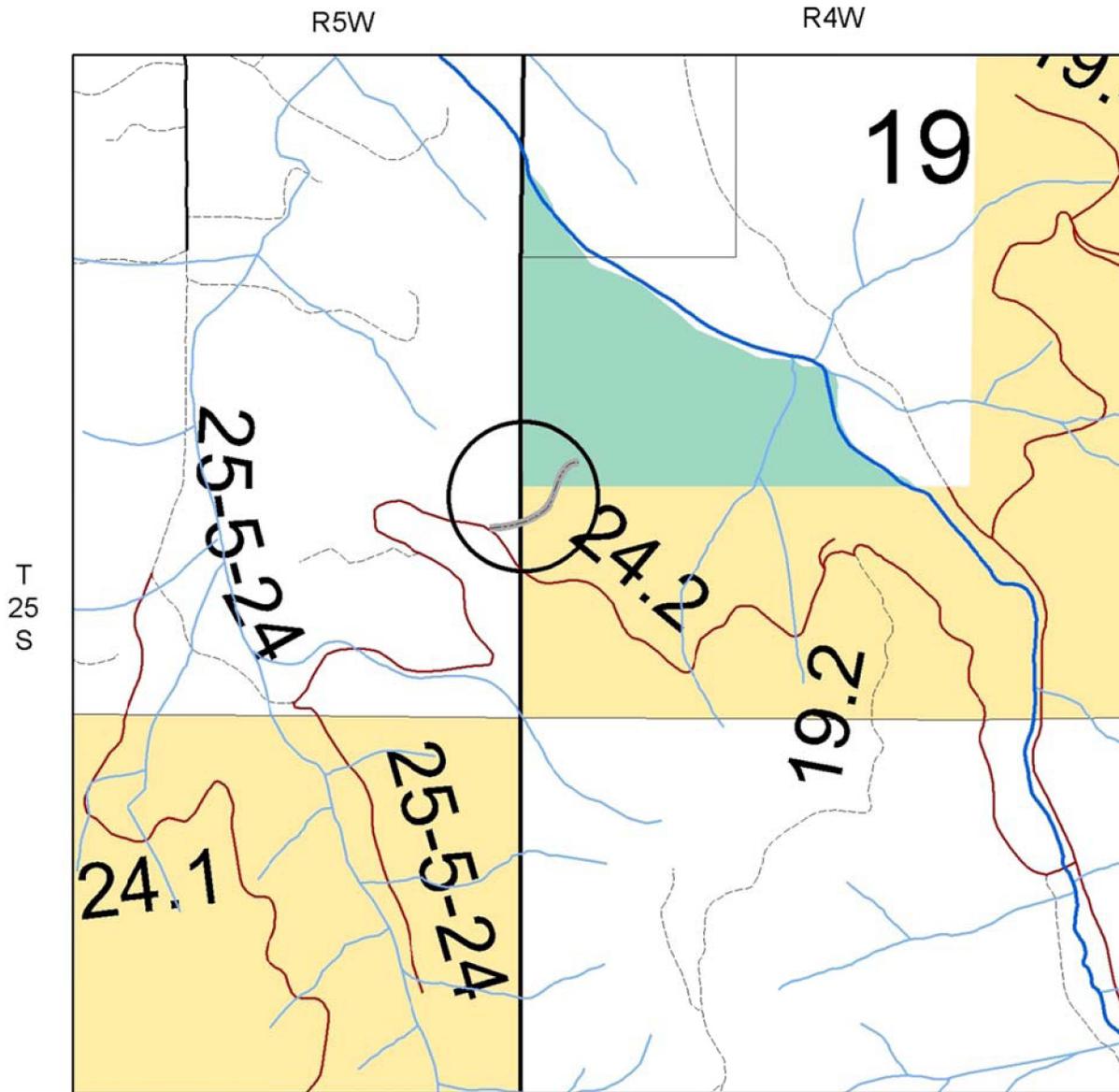
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Swiftwater Field Office  
777 Garden Valley Blvd.  
Roseburg, Oregon 97470



# Appendix B

## Appendix B Project Area Map



### Legend

#### Land Management

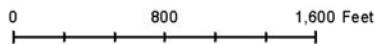
- Bureau of Land Management
- Douglas County

#### Major Streams

- Major Streams
- 1st, 2nd and 3rd Order Streams

#### Road Ownership

- Bureau of Land Management
- County Road
- Private Road
- Road to be Constructed



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## Appendix C Aquatic Conservation Strategy Assessment

**Project:** Sutherlin Creek Crossing  
**Prepared By:** Dan Dammann  
**Date:** October 29, 2010

The Aquatic Conservation Strategy (ACS) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The ACS must strive to maintain and restore ecosystem health at watershed and landscape scales to protect habitat for fish and other riparian-dependent species and resources and restore currently degraded habitats. This approach seeks to prevent further degradation and restore habitat over broad landscapes as opposed to individual projects or small watersheds. (Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, pg. B-9).

### *ACS Components:*

#### *(1) Riparian Reserves (ACS Component #1)*

The ROD/RMP (pg. 24) specifies Riparian Reserve widths equal to the height of two site potential trees on each side of fish-bearing streams and one site-potential tree on each side of perennial or intermittent non-fish bearing streams, wetlands greater than an acre, and constructed ponds and reservoirs. The height of a site-potential tree for the Lower North Umpqua Watershed has been determined to be the equivalent of 180 feet. (North Bank Watershed Analysis, pg. 1-3). The proposed road construction is not in the riparian reserves and would not result in the disturbance of riparian reserves.

#### *(2) Key Watersheds (ACS Component #2)*

Key Watersheds were established “as refugia . . . for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species [ROD/RMP, pg. 20].” There are no key watersheds within the Lower North Umpqua 5<sup>th</sup> field Watershed.

#### *(3) Watershed Analysis (ACS Component #3) and other pertinent information:*

In developing the project, the Lower North Umpqua Watershed Assessment and Action Plan (Partnership for the Umpqua Rivers July 2003) was used to evaluate existing conditions, establish desired future conditions, and assist in the formulation of appropriate alternatives. The Lower North Umpqua Watershed Assessment and Action Plan is available for public review at the Partnership for the Umpqua Rivers (PUR) or the Roseburg District office or can be viewed under “Assessments” on the PUR website at <http://www.umpquarivers.org/index.php/assessments>.

Existing watershed conditions are described in the Watershed Description of the Lower North Umpqua Watershed Assessment and Action Plan (pg. 10-32). The effects to aquatic resources are also described in the EA.

#### *(4) Watershed Restoration (ACS Component #4)*

This project does not involve watershed restoration and will not adversely affect watershed function. Since 1994 approximately 3 miles of instream restoration projects have been completed in the Lower North Umpqua Watershed. Other restoration projects are planned in the watershed and will be implemented as budgets and staff time allow.

### ***Range of Natural Variability within the Watershed:***

Based on the dynamic, disturbance-based nature of aquatic systems in the Pacific Northwest, the range of natural variability at the site scale would range from 0-100% of potential for any given aquatic habitat parameter over time. Therefore, a more meaningful measure of natural variability is assessed at scales equal to or greater than the 5<sup>th</sup> field watershed scale. At this scale, spatial and temporal trends in aquatic habitat condition can be observed and evaluated over larger areas, and important cause/effect relationships can be more accurately determined.

Natural disturbance events to aquatic systems in the Pacific Northwest include wildfires, floods, and landslides. The dominant physical process responsible for change in Northwest forests is fire. The frequency and intensity of fires are variable and dependant on landform and climate. In general, low intensity surface fires are more prevalent than intense, stand replacing fires. (BLM Addendum for Lower North Umpqua Watershed Assessment pg 207).

Timber harvesting and road construction over the past 50 years have substantially increased the frequency and distribution of landslides, erosion, and sediment delivery above natural levels in the Lower North Umpqua Watershed. However, there is a downward trend in landslide incidence over the last 50 years that is associated with improved management practices. (BLM Addendum for Lower North Umpqua Watershed Assessment, pg 223) On BLM land, future landslides, mostly during large storm events, are expected to deliver large wood and rock fragments to lower-gradient streams because of BLM Riparian Reserves. These events would more closely resemble landslides within relatively unmanaged forests. These disturbance events are the major natural sources of sediment and wood to a stream system and are very episodic in nature.

Due to the dynamic nature of these disturbance events, stream channel conditions vary based on the time since the last disturbance event. This results in a wide range of aquatic habitat conditions at the site level. Site level habitat conditions can be summarized by Oregon Department of Fish and Wildlife (ODFW) habitat surveys. Surveys have been conducted throughout the Lower North Umpqua mostly in the third through sixth-order streams. An overview of the surveys indicates that over 80% of the stream reaches are rated as poor for large woody material. While this condition is considered typical at any given site scale, it is considered atypical for most streams to be devoid of wood at the larger 5<sup>th</sup> field scale. Therefore, at this larger scale, aquatic habitat conditions are considered to be outside the range of natural variability.

Stream temperatures vary naturally in this watershed as a result of variation in geographic location, elevation, climate, precipitation, and distance from the source water (Lower North Umpqua Watershed Assessment and Action Plan, pgs 81-85). Stream temperatures also naturally vary as a response to the natural disturbance events mentioned in the previous paragraphs, as well as current practices on private forest, agricultural, and residential properties. Due to the large amount of riparian clearing that has occurred over the last 150 years (converting forest into farmland), coupled with management-induced channel widening, irrigation withdrawals, and loss of gravels, it is likely that stream temperature increases have been greater over larger spatial and temporal scales than observed naturally.

Changes in stream flow can result from consumptive withdrawals and effects of land use activities on storm water runoff, infiltration, storage and delivery. Commercial and domestic withdrawals are common along the Lower North Umpqua River. There is evidence that previous management has heavily influenced stream channels throughout the Lower North Umpqua River Watershed (Lower North Umpqua Watershed Assessment and Action Plan, pg 68). Over the last 150 years, much of the lower elevation forest land has been converted to farmland. Many tributaries within the Lower North Umpqua River have also been cleaned (had large wood removed) or salvage logged.

**Table C-1. Individual Aquatic Conservation Strategy Objective Assessment.**

ACS Objective	Site/Project Scale Assessment	5 <sup>th</sup> Field Watershed Scale Assessment
	<p><u>Scale Description:</u> This project is located in the Cooper Creek Reservoir 7<sup>th</sup> field drainage. This drainage is roughly 16,700 acres in size. The BLM manages approximately 1,640 acres in this drainage (10%). The proposed road construction represents 0.0005% of the total drainage area, and 0.005% of the BLM-managed lands in the drainage.</p>	<p><u>Scale Description:</u> This project is located in the Lower North Umpqua 5<sup>th</sup> field watershed. This watershed is roughly 106,300 acres in size. The BLM manages approximately 12,400 acres in this watershed (12%). The proposed road use and construction represent 0.00008% of the total watershed area, and 0.0007% of the BLM-managed lands in the watershed.</p>
<p><b>1.</b> 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.</p>	<p>The new road construction impacts such a small portion of the drainage and is located on a ridge top that watershed and landscape-scale features would not be impacted. Therefore attainment of this objective at the drainage scale would not be prevented.</p>	<p>This project would not prevent attainment of this objective at the watershed scale also.</p>
<p><b>2.</b> Maintain and restore spatial and temporal connectivity within and between watersheds</p>	<p>Within the drainage, the proposed project would have no influence on aquatic connectivity. Therefore this treatment would maintain the existing connectivity condition at the site scale.</p>	<p>Within the watershed, the proposed project would have no influence on aquatic connectivity. Therefore this treatment would maintain the existing connectivity condition at the watershed scale.</p>
<p><b>3.</b> Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations</p>	<p>In-stream flows would not be influenced by this project and there would be no disturbance to stream channels and stream banks (EA, pg. 17). Therefore, this treatment would maintain the physical integrity of the aquatic system at the site scale.</p>	<p>This treatment would also maintain the physical integrity of the aquatic system at the watershed scale.</p>
<p><b>4.</b> 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.</p>	<p>As sated above, disturbance to stream channels and stream banks would not occur with this project. Sediment contribution from the road would be negligible due to the approximately 600 feet distance to the nearest stream and lack of any direct connection to a stream. (EA, pg. 17). Additionally, stream shading would not be impacted. Therefore, this project would maintain the existing water quality at the site scale.</p>	<p>Based on the information discussed at the site scale, this project would also maintain water quality at the watershed scale.</p>
<p><b>5.</b> Maintain and restore the sediment regime under which aquatic ecosystems evolved.</p>	<p>As mentioned above, disturbance to stream channels and stream banks would not occur with this project. . Sediment contribution from the road would be negligible (EA, pg 17). Therefore, this project would maintain the existing sediment regime.</p>	<p>This project would maintain the existing sediment regime at the watershed scale as well.</p>

ACS Objective	Site/Project Scale Assessment	5 <sup>th</sup> Field Watershed Scale Assessment
<p><b>6.</b> Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.</p>	<p>New road construction area would be very small and on a ridge top where it would not extend the drainage network or contribute to a potential increase in peak flow. The existing roads would not be altered in any way that would change water flow in the drainage. Therefore, this treatment would maintain stream flows within the range of natural variability at the site scale.</p>	<p>At the larger watershed scale, this treatment would also maintain stream flows within the range of natural variability.</p>
<p><b>7.</b> Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and woodlands.</p>	<p>As discussed in #6 above, this project would maintain stream flows within the range of natural variability at the site scale. Therefore, it would also maintain stream interactions with the floodplain and respective water tables at the site scale.</p>	<p>At the watershed scale, this project would also maintain stream interactions with the floodplain and respective water tables within the range of natural variability.</p>
<p><b>8.</b> 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.</p>	<p>The proposed project has no effect on riparian stands or vegetation. Therefore this project would have no effect on plant species composition and structural diversity at the site scale.</p>	<p>The proposed project would have no effect on riparian stands or vegetation at the larger watershed scale.</p>
<p><b>9.</b> Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</p>	<p>This project would have no effect on maintaining and restoring riparian habitat. The scope of the project is too small to have any effect on riparian populations at the site scale.</p>	<p>This project would have no effect on maintaining or restoring riparian habitat on the larger watershed scale.</p>

**ACS Summary:**

Based upon the information listed above, the proposed action would meet Aquatic Conservation Strategy objectives at the site and watershed scale. The scope of the project is too small to inhibit any ACS objectives or prevent attainment of them on BLM lands. Therefore, this action is consistent with the Aquatic Conservation Strategy, and its objectives at the site and watershed scales.

## Appendix D Carbon Storage/Release Analytical Methodology

**Project:** Sutherlin Creek Crossing  
**Prepared By:** Rex McGraw  
**Date:** January 31, 2011

### Analysis of Carbon Storage

It is recognized that there is considerable variety available in the scientific literature regarding the quantitative measures and additional factors that may be used in calculating carbon storage that can influence the outcome of this analysis. However, the methodology described here provides a consistent means to compare the relative effects of the alternatives considered in Sutherlin Creek Crossing and not necessarily the absolute amount of carbon that would be stored or released under the alternatives.

The analysis of carbon storage modeled the amount of carbon stored in the forest and harvested wood products, and the amount of carbon released into the atmosphere to harvest those wood products. The analysis divided carbon storage/release into six pools:

- Standing, Live Trees
- Other Than Live Trees
- Wood Products
- Slash Burning
- Logging Slash
- Fossil Fuels

The carbon in these six pools was summed at each time step to calculate the Net Carbon Balance by alternative.

### Carbon Storage in Standing, Live Trees

The carbon pool of “Standing, Live Trees” represents the live trees that are currently within the project area. Even though the live trees present in the project area would be expected to continue growing, thereby sequestering additional carbon from the atmosphere; that subsequent growth was not modeled since this analysis focused primarily on the release of carbon over time.

1. Standing, live tree carbon was derived in this analysis using estimated volume from a preliminary cruise of the trees within the clearing limits of the proposed road (i.e. 2,500 board feet from D. Wright, pers. comm., Jan. 12, 2011).
2. Standing tree volumes measured in board feet per acre were converted to cubic feet using a conversion factor of 6.00 board feet/cubic foot (2008 Final EIS, Appendices-28).
3. The cubic foot tree volumes per acre were converted to pounds of biomass using a conversion factor of 35 pounds of biomass/cubic foot (2008 Final EIS, Appendices-28, Table C-1). Biomass was assumed to be Douglas-fir in this analysis.
4. The pounds of biomass per acre derived from tree volumes were expanded to a total biomass for entire trees (including branches, bark, roots, etc...) per acre by multiplying by 1.85 (2008 Final EIS, Appendices-28).

5. The expanded biomass for entire trees in the project area was converted to pounds of carbon per acre by multiplying by 0.50 (2008 Final EIS, Appendices-28).
6. Pounds of carbon in whole trees in the project area were converted to tonnes of carbon in whole trees per acre by dividing by 2200 (2008 Final EIS, Appendices-28). The result is shown in Tables 6 and 7 as “Standing, Live Trees”

### Carbon Storage in Forests Other than Live Trees

The carbon pool of “Other than Live Trees” represents shrubs, brush, snags, woody debris, and organic carbon in the soil within the project area.

1. Carbon in other than live trees for the project was derived by multiplying the acreage by the tonnes of carbon per acre shown in Table D-1 (which was adapted from Table C-2 in the 2008 Final EIS, Appendices-29). Under the “current condition”, the stand in Sutherlin Creek Crossing was 140 years old. The stand was regarded as “existing old forest” and the corresponding tonnes of carbon were used in the calculations of other than live tree carbon. It is this product that is presented in Tables 6 and 7 as “Other Than Live Trees”.

**Table D-1. Forest Ecosystem Carbon (Excluding Live Trees) By Structural Stage\*.**

Age of Stand(s)	Structural Stage	Tonnes of Carbon per Acre
5-34 years	Stand Establishment	67.8
35-94 years	Young	70.3
95-124 years	Mature	88.2
≥ 125 years	Developed Structurally Complex	94.8
> 125 years	Existing Old Forest	130.9

\* adapted from 2008 Final EIS, Appendices-29.

### Carbon Storage in Wood Products

The carbon pool of “Wood Products” represents the amount of carbon that would be converted from standing, live trees into either saw logs or pulpwood, collectively referred to as wood products under the proposed action. There would be no BLM carbon pool of wood products under the No Action Alternative since wood products would not be generated from BLM timber.

1. The tonnes of carbon in whole trees were derived previously in Steps 1-6 under “Standing, Live Trees” for the time steps used in this analysis. The tonnes of carbon in whole trees at “current condition” were assumed to be tonnes of carbon in whole trees that would be harvested.
2. The tonnes of carbon in whole trees that would be harvested were converted to tonnes of carbon in saw logs by dividing by 1.85 (2008 Final EIS, Appendices-28). *Note:* this reversed the calculation that expanded biomass of harvested logs into the biomass of whole trees performed previously (derived in Step 4 of “Standing, Live Trees”).
3. At harvest time, 13.5 percent of the saw log’s carbon would immediately be released Smith et al. (2006); but afterwards the carbon in saw logs would be gradually released over time. The tonnes of carbon held in saw logs were then decayed over time by multiplying the tonnes of carbon in saw logs harvested by the values shown in Table D-2 which were adapted from the 2008 Final EIS, Appendices-30 and Smith et al. (2006).

4. Additional tonnes of carbon held in pulpwood (e.g. chips) were derived by multiplying the tonnes of carbon in saw logs (derived in Step 2 above) by five percent (2008 Final EIS, Appendices-30). *Note:* Pulpwood tonnage is five percent *in addition to* the saw logs not five percent *of* the saw logs.
5. At harvest time, 14.8 percent of the pulpwood’s carbon would immediately be released Smith et al. (2006); but afterwards the carbon in pulpwood would be gradually released over time. The tonnes of carbon held in pulpwood were then decayed over time by multiplying the tonnes of carbon in pulpwood by the values shown in Table D-2 which were adapted from the 2008 Final EIS, Appendices-30 and Smith et al. (2006).
6. The sum total of the tonnes of carbon immediately released from saw logs (derived in Step 3 above) and from pulpwood (derived in Step 5 above) represent the total amount of carbon released by “Wood Products” at harvest time. The sum total of the tonnes of carbon held in saw logs (derived in Step 3 above) and held in pulpwood (derived in Step 5 above) at each time step represent the amount of carbon stored in “Wood Products” as shown in Table 7.

**Table D-2. Fraction of Carbon Remaining or Captured as an Alternative Energy Source\*.**

<b>Timestep</b>	<b>Saw Logs</b>	<b>Pulpwood</b>
Harvest Time (0 years)	0.865	0.852
+10 years	0.796	0.730
+20 years	0.761	0.691
+50 years	0.702	0.655
+100 years	0.651	0.645

\* These fractions include; wood products in use, wood products in the landfill, and wood products emitted as energy in lieu of fossil fuels (adapted from 2008 Final EIS, Appendices-30 and Smith et al., 2006).

### **Carbon Release in Slash Burning**

The carbon pool of “Slash Burning” represents the amount of slash generated by the proposed harvest of timber within the road clear limits that is consumed through prescribed pile burning. There would be no BLM carbon pool of slash burning under the No Action Alternative since logging slash would not be generated from BLM timber and therefore not burned.

1. The reported amount of slash, in tons of biomass per acre, which was scheduled for prescribed burning in 42 commercial thinning and/or density management units within the Swiftwater Resource Area was available for this analysis (K.Kosel, pers. comm., 2009). The tons of slash biomass per acre were converted to tonnes of biomass per acre by using a conversion factor of 0.909 tons/tonne.
2. It was assumed that prescribed fire would consume 90 percent of the slash scheduled for burning (K.Kosel, pers. comm., 2009); thereby releasing carbon. The tonnes of slash biomass per acre consumed were derived by multiplying the tonnes of slash biomass per acre by 0.90.
3. The tonnes of slash biomass consumed per acre were converted to tonnes of carbon released per acre by using a conversion factor of 0.50 tonnes of biomass/tonne of carbon.
4. Within the Swiftwater Resource Area, it was calculated that an average of 0.382 tonnes of carbon would be released per acre of commercial thinning and/or density management unit scheduled for piling and burning using prescribed fire. *Note:* The value calculated for commercial thinning and/or density management was used in this analysis. Even though this project involves removal of all vegetation within

the clearing limits, and not just thinning of the vegetation, an estimate that better approximates the amount of slash burned is not presently available.

5. The tonnes of carbon that would be released under the proposed action were derived by multiplying the acreage of the project by 0.382 tonnes per acre (derived in Step 4 above) and are shown in Table 7 as “Slash Burning” at harvest time.

### Carbon Storage in Logging Slash

The carbon pool of “Logging Slash” represents the limbs, fine branches, leaves/needles, stumps, and roots of trees that are left on-site in the proposed units after harvest operations that are not consumed during slash burning. There would be no BLM carbon pool of logging slash under the No Action Alternative since logging slash would not be generated from BLM timber.

1. The tonnes of logging slash remaining on-site was calculated by subtracting the following three amounts of carbon from the total tonnes of carbon in whole trees that would be harvested from the project (derived in Step 2 under “Wood Products”):
  - the tonnes of carbon immediately released from wood products (derived in Step 7 of “Wood Products”),
  - the tonnes of carbon stored in wood products at harvest time (derived in Step 7 of “Wood Products”), and
  - the tonnes of carbon released from slash burning (derived in Step 5 under “Slash Burning”).
2. The tonnes of logging slash on-site were then multiplied by the fraction of Douglas-fir slash remaining at each time step as shown in Table D-3 (based on Janisch et al., 2005). This represents the amount of carbon stored in “Logging Slash” as it decayed and released carbon over time as shown in Table 7.

**Table D-3. Decay Rates of Carbon from Douglas-fir Slash\*.**

Timestep	Fraction of Carbon Remaining in Douglas-fir Slash
Harvest Time (0 years)	1.000
+10 years	0.852
+20 years	0.726
+50 years	0.449
+100 years	0.202

\* based on Janisch et al. 2005.

### Carbon Release in Fossil Fuels

The carbon pool of “Fossil Fuels” represents the amount of carbon that would be released through the consumption of gasoline and diesel fuel by various activities under the proposed action such as: timber falling, timber yarding, log hauling, and road construction. There would be no BLM carbon pool of fossil fuels under the No Action Alternative since no harvest-related or road construction activities would occur on BLM administered lands.

1. The gallons of fuel that would be consumed during harvest operations (i.e. timber felling and yarding) were estimated based on the production rates and fuel efficiencies shown in Table D-4. For the fossil fuels portion of the analysis, the analytical assumption that was used was that the entire project would be yarder with a skidder and a loader would handle logs at the landings.

**Table D-4. Fossil Fuel Consumption during Harvest Operations.**

Equipment	Production Rate <sup>a</sup> (acres/day)	Fuel Efficiency <sup>b</sup>		Fuel Consumed (gallons)	
		(gallons/hour)	(gallons/day)	No Action Alternative	Proposed Action Alternative
Chainsaw (gasoline)	0.4	-	1	0	< 1
Rubber Tired Skidder (diesel)	2	4.8	40.8	0	2
Loader (diesel)	1	4.5	38.25	0	4

<sup>a</sup> based on experience of BLM Contract Administrators and Crusier/Appraisers.

<sup>b</sup> based on World Forestry Institute (1997).

- For the hauling of logs, this analysis assumed an average log-truck load of 4,000 BF (based on experience of BLM Contract Administrators and Crusier/Appraisers) and a fuel efficiency of 6.0 miles per gallon. The timber volume used was based preliminary cruise information as discussed previously in Step 1 of “Standing, Live Trees”. It was also assumed that the length of haul (round-trip) was 40 miles. It was estimated that the amount of diesel consumed during log hauling for this project would be 4 gallons.

For road construction it was assumed that 588 gallons of diesel would be consumed per mile (5,280 feet) of road constructed and 73 gallons per mile of road renovated, maintained, or improved (Loeffler et al., 2009). For rock hauling, the amount of rock to be hauled was calculated assuming 14 foot wide rock roads with a rock depth of 10 inches. Round trip rock haul was assumed to be 40 miles, and truck capacity is assumed to be 10 yards. It was estimated that the amount of diesel consumed during road work activities for this project would range from be 15 gallons.

- The gallons of fuel that would be consumed by harvest operations (derived in Step 1), log hauling (derived in Step 2), and road construction (derived in Step 3) were summed to provide the total fuel consumption for the project (Table D-5). The total gallons of fuel that would be consumed were converted to tonnes of carbon that would be released using the conversion factors shown in Table D-5. The total amount of carbon that would be released by the proposed action is shown in as “Fossil Fuels” in Table 7.

**Table D-5. Total BLM Fossil Fuel Consumption and Associated Carbon Release under Alternative 1: Proposed Action.**

Fuel Use	Fuel Consumption (gallons)	Pounds CO <sub>2</sub> per Gallon <sup>a</sup>	CO <sub>2</sub> Released <sup>b</sup> (tonnes)	Carbon Released <sup>c</sup> (tonnes)
Harvest Operations (gasoline)	< 1	19.4	< 0.1	< 0.1
Harvest Operations (diesel)	6	22.2	< 0.1	< 0.1
Log Hauling (diesel)	4	22.2	< 0.1	< 0.1
Road Construction and Rock haul (diesel)	15	22.2	0.2	< 0.1
<b>Total</b>	-	-	<b>0.3</b>	<b>0.1</b>

<sup>a</sup> based on experience of BLM Contract Administrators and Crusier/Appraisers.

<sup>b</sup> conversion rate of 2,200 pounds per tonne (2008 Final EIS, Appendices-28).

<sup>c</sup> One tonne of carbon is equivalent to 3.67 tons of carbon dioxide (U.S. EPA, 2005).

## Appendix E Bureau Sensitive & Bureau Strategic Wildlife Species

**Project:** Sutherland Creek Crossing  
**Prepared By:** Melanie R. Roan

**SSSP List Date:** July 26, 2007 (IM-OR-2007-072)  
**Date:** December 9, 2010

The following table includes those species which are documented or suspected to occur within the Roseburg District BLM. Those Bureau Sensitive or Bureau Strategic species which are suspected or documented to occur within the project area are detailed below.

**Bureau Sensitive Species.** BLM districts are responsible to assess and review the effects of a proposed action on *Bureau Sensitive* species. To comply with Bureau policy, Districts may use one or more of the following techniques:

- a. Evaluation of species-habitat associations and presence of potential habitat.
- b. Application of conservation strategies, plans, and other formalized conservation mechanisms.
- c. Review of existing survey records, inventories, and spatial data.
- d. Utilization of professional research and literature and other technology transfer methods.
- e. Use of expertise, both internal and external, that is based on documented, substantiated professional rationale.
- f. Complete pre-project survey, monitoring, and inventory for species that are based on technically sound and logistically feasible methods while considering staffing and funding constraints.

When Districts determine that additional conservation measures are necessary, options for conservation include, but are not limited to: modifying a project (e.g. timing, placement, and intensity), using buffers to protect sites, or implementing habitat restoration activities (IM-OR-2003-054).

**Strategic Species.** If sites are located, collect occurrence data and record in corporate database.

**Table E-1. Bureau Sensitive & Bureau Strategic Wildlife Species**

Species	General Habitat Requirements	Present in Project Area?	Impacts to Species	
			No Action	Proposed Actions
<b>BUREAU SENSITIVE</b>				
American Peregrine Falcon <i>Falco peregrinus anatum</i>	Cliffs, rock outcrops; open habitats for hunting birds. Closest known nest site is located approx. 13.3 miles south.	No Nesting Habitat	No Effects	No measurable effect to foraging habitat.
Bald Eagle <i>Haliaeetus leucocephalus</i>	Late successional forests with multi-canopies, generally within two miles of a major water source. Closest major water source is within 1.3 miles of project in vicinity of numerous documented sightings during nesting season.	Suspected nest / roost sites	No Effects	Surveys of the project area and surrounding stand did not identify structures able to support nesting bald eagles.
Chace Sideband <i>Monadenia chaceana</i>	Rocky areas, talus deposits; herbaceous vegetation and large woody debris	Suspected	Surveys completed – none found	

Columbian White Tailed Deer <i>Odocoileus virginianus leucurus</i>	Bottomlands, oak/hardwood forests; cover for fawning.	No Habitat	No Effects	
Crater Lake Tightcoil <i>Pristiloma arcticum crateris</i>	Perennially wet areas in late seral forests above 2,000ft elevation and east of Interstate-5; seeps, springs, riparian areas.	Out of Range	No Effects	
Fisher <i>Martes pennanti</i>	Natal and foraging habitat consists of structurally complex forests; mature open forests with large live trees, snags, and down wood; nearest sighting in 1978, 15.0 miles northeast of project (ORNHIC, 2009).	Documented	No Effect	No effects to suitable natal and foraging habitat.
Foothill Yellow-legged Frog <i>Rana boylei</i>	Low gradient streams/ponds; gravel/cobble, bedrock pools.	No Habitat	No Effect	No effects
Fringed Myotis <i>Myotis thysanodes</i>	Late-successional forest features (e.g. snags or trees with deeply furrowed bark, loose bark, cavities), caves, mines, bridges, rock crevices.	Suspected	No Effect	Potential loss of roosting habitat through removal of larger trees.
Green Sideband <i>Monadenia fidelis beryllica</i>	Coast Range, riparian forests at low elevations; deciduous trees & shrubs in wet, undisturbed forest.	Out of Range	No Effect	No Effects
Harlequin Duck <i>Histrionicus histrionicus</i>	Mountain Streams in forested areas on west slope of the Cascade Mountains.	Out of Range	No Effects	
Lewis' Woodpecker <i>Melanerpes lewis</i>	Open woodland habitat near water; open woodland canopy and large diameter dead/dying trees, snag cavities.	No Habitat	No Effects	
Northwestern Pond Turtle <i>Clemmys marmorata marmorata</i>	Ponds, low gradient rivers; upland over-wintering habitat, CWD.	No Habitat	No Effects	
Oregon Shoulderband <i>Helminthoglypta hertleini</i>	Talus and rocky substrates, grassland, herbaceous vegetation	No Habitat	Surveys completed – none found	
Oregon Vesper Sparrow <i>Poocetes gramineus affinis</i>	Open habitats such as grasslands, meadows, farmlands.	No Habitat	No Effects	
Pallid Bat <i>Antrozous pallidus</i>	Usually rocky outcroppings near open, dry open areas; occasionally near evergreen forests.	No Habitat	No Effects	

Purple Martin <i>Progne subis</i>	Snags cavities in open habitats (e.g. grasslands, brushlands, open woodlands); foraging habitat over forest stands.	Foraging Habitat	Removal of 0.1 acre of potential foraging habitat	
Rotund Lanx <i>Lanx subrotundata</i>	Major rivers and large tributaries with cold, well-aerated water and rocky substrate.	Out of Range	No Effects	
Scott's Apatanian Caddisfly <i>Allomyia scotti</i>	High-elevation (>4,000ft), cold streams in the mountainous regions of Oregon.	Out of Range	No Effects	
Spotted Tail-dropper <i>Prophyaon vammattae pardalis</i>	Mature conifer forests in the Coast Range; associated with significant deciduous tree/shrub component.	Out of Range	No Effect	
Townsend's Big-eared Bat <i>Corynorhinus townsendii</i>	Late-successional forest features (e.g. snags or trees with deeply furrowed bark, loose bark, cavities), caves, mines, buildings, bridges, tunnels. Documented roosting in mine adit 2.8 miles from project.	Documented	No Effect	Potential loss of roosting habitat through removal of larger trees.
Western Ridgemussel <i>Gonidea angulata</i>	Creeks, rivers, coarse substrates; Umpqua R. and possibly major tributaries.	Out of Range	No Effects	
White-Tailed Kite <i>Elanus leucurus</i>	Open grasslands, meadows, emergent wetlands, farmlands, lightly wooded areas; wooded riparian habitats close to open hunting; tall trees and shrubs.	No Habitat	No Effects	
<b>BUREAU STRATEGIC</b>				
Broadwhorl Tightcoil <i>Pristiloma johnsoni</i>	Moist forest sites, typically with deciduous component; Coast/Cascades in WA, Coast Range in OR, as far south as Lane County.	Out of Range	No Effects	
Klamath Tail-Dropper <i>Prophyaon sp. nov.</i>	Moist, open areas along streams or springs in Ponderosa Pine forests; as far North as Crater Lake.	Out of Range	No Effects	
Merlin <i>Falco columbarius</i>	Coniferous forests adjacent to open habitats, along forest edges; project within winter range.	Suspected	No Effect	No measurable effect to winter foraging habitat.
Pristine Springsnail <i>Pristinicola hemphilli</i>	Shallow, cold, clear springs/seeps; strongly spring-influenced streams, slow-moderate flow; Umpqua River drainage.	Out of Range	No Effects	

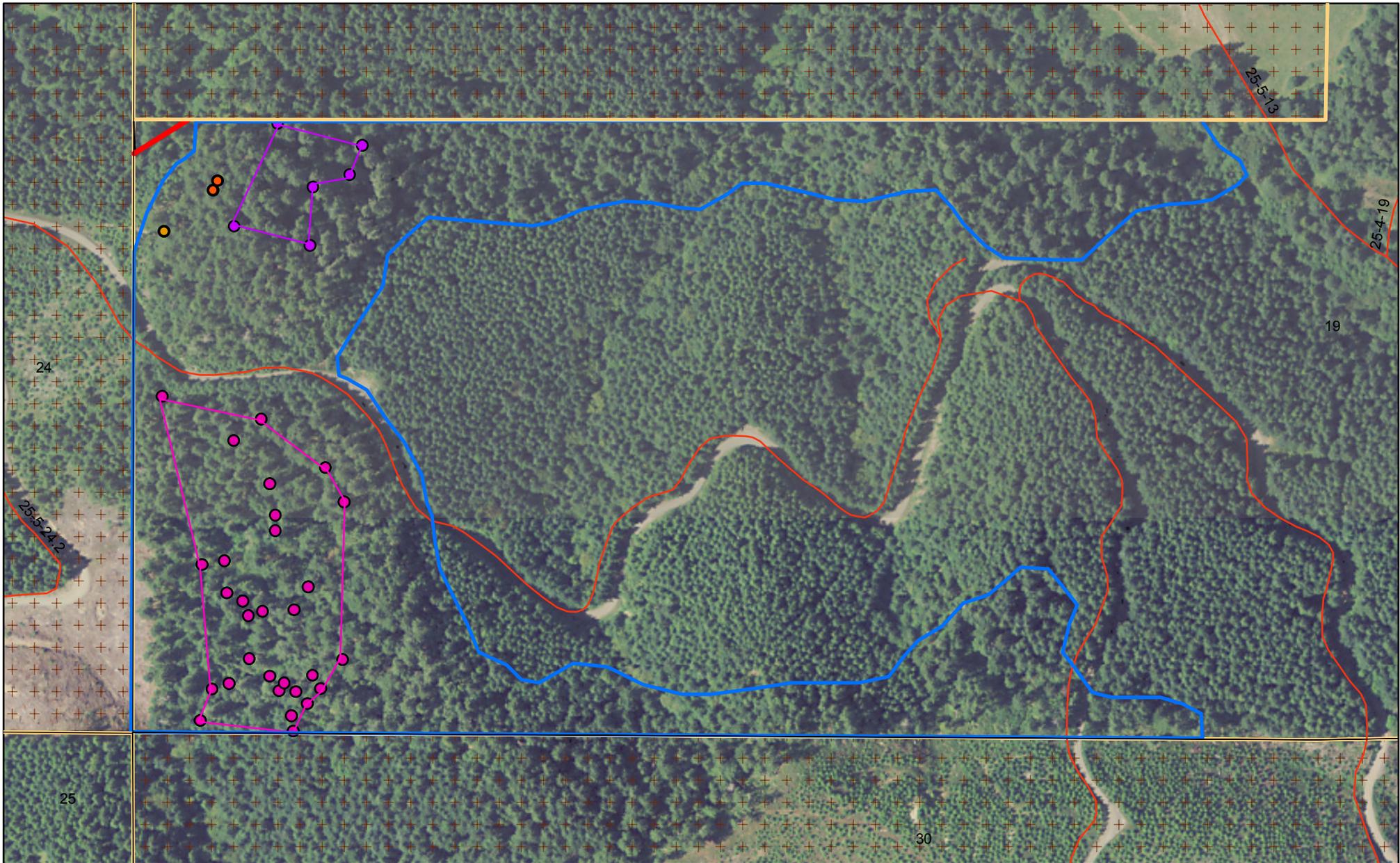
Oregon Giant Earthworm <i>Driloleirus macelfreshi</i>	Deep, moist, undisturbed soils of riparian forests.	Out of Range	No Effects
<b>EAGLE PROTECTION ACT</b>			
Golden Eagle <i>Aquila chrysaetos</i>	Associated with open and semi-open habitats. On the Roseburg District, primarily documented to nest in large conifer trees within late-seral forests near open habitats (e.g. meadows, valleys, and clearcuts). Documented nesting within 1.0 mile of project area.	Suspected – No documented sightings in the project area.	Surveys of the project area and surrounding stand did not identify structures able to support nesting golden eagles.

**Table E-1: Landbirds Expected to Occur in the Sutherlin Crossing Project Area**

Species - Common Name	Forest Condition	Habitat Attribute	Expected to Occur in the Project Area
Acorn Woodpecker	Oak Woodland	Large Oaks - Cavities; Large Pines	
Allen's Hummingbird	Coast Range - Riparian	Shrubs/Scrub	<b>Yes</b>
American Kestrel	All habitats	Cavities	<b>Yes</b>
American Widgeon	Marsh/Grassland	Grassy clumps	
Ash-throated Flycatcher	Oak Woodland	Large Oaks - Cavities	
Bald Eagle	Mature/Old-growth, within 2 miles of high order streams and ponds	Large diameter trees	<b>Yes</b>
Band-tailed Pigeon	Unique, Mature/ Old-growth	Mineral Springs	<b>Yes</b>
Bewick's Wren	Early-seral	Native shrub understory	
Black Swift	Unique	Waterfalls	
Black-capped Chickadee	Forest	Cavities	<b>Yes</b>
Black-throated Gray Warbler	Forest	Deciduous canopy trees	<b>Yes</b>
Brown Creeper	Old-growth /Mature	Large trees	<b>Yes</b>
Bullock's Oriole	oak woodlands	Large canopy trees	
Bushtit	Woodland	Hardwood/brush understory	<b>Yes</b>
Chipping Sparrow	Oak Woodland	Herbaceous cover	
Common Nighthawk	Grass / early seral	Short grass - bare ground	
Cooper's Hawk	All Forest	Structurally diverse Patches	<b>Yes</b>
Downy Woodpecker	Deciduous forest	Cavities; Snags	
Hammond's flycatcher	Mature/Young	Open Mid-story	<b>Yes</b>
Harlequin Duck	Riparian	Older Forests, Shrubs and down wood	
Hermit Warbler	Conifer. Mature/Young	Closed canopy	<b>Yes</b>
House Wren	Oak Woodland	Native shrub understory	
Hutton's Old-growth ireo	Young/Mature/ Old-growth	Deciduous subcanopy/understory	<b>Yes</b>
Lark Sparrow	Grass - Savannah	Scattered Shrubs	

<b>Species - Common Name</b>	<b>Forest Condition</b>	<b>Habitat Attribute</b>	<b>Expected to Occur in the Project Area</b>
Lesser Goldfinch	Oak Chaparral/Woodlands	Herbaceous Interspersion	
Lewis' Woodpecker	Oak Savannah / Woodland	Large Snags	
Lincoln's Sparrow	Unique	Montane Wet Meadows	
Mallard	Marsh/Aquatic/Streams	Emergent Vegetation	
Marbled Murrelet	Coast Range - Old-growth	Large diameter trees with large platform structures	
Merlin	Riparian/Open	Cavities	<b>Yes</b>
Mourning Dove	Grass/Shrub	Edges; Shrubs; Near Water	<b>Yes</b>
Nashville Warbler	Oak Woodland, early seral hardwoods	Native shrub understory	
Northern Harrier	Grass - Savannah	Wet prairie/Grassland	
Northern Spotted Owl	Mature/ Old-growth	Large diameter trees/ Snags/ habitat diversity	<b>Yes</b>
Olive-sided Flycatcher	Early-seral	Residual canopy trees	
Orange-crowned Warbler	Early-seral	Deciduous vegetation	
Oregon Vesper Sparrow	Grass - Savannah	Scattered shrubs/bunchgrass	
Pacific-slope Flycatcher	Mature/Young	Deciduous canopy trees	<b>Yes</b>
Peregrine Falcon	Unique	Cliffs / rock outcrops	
Pileated woodpecker	Mature/ Old-growth	Large Snags	<b>Yes</b>
Purple Finch	Mature forests	Edges/Openings	<b>Yes</b>
Purple Martin	Early Seral	Snags with cavities, Assoc. with water	
Red crossbill	Old-growth /Mature	Conifer Cones	<b>Yes</b>
Ring-necked Duck	Aquatic	Emergent vegetation	
Red-shouldered Hawk	Deciduous forest	Structurally diversity	
Rufous Hummingbird	All Forests	Canopy diversity / Nectar-producing plants	<b>Yes</b>
Swainson's Thrush	Riparian	Dense shrub understory	
Tree Swallow	Riparian	Open water Snags with cavities	
Varied Thrush	Mature/ Old-growth	Mid-story tree layers	<b>Yes</b>

<b>Species - Common Name</b>	<b>Forest Condition</b>	<b>Habitat Attribute</b>	<b>Expected to Occur in the Project Area</b>
Vaux's swift	Old-growth	Large snags	<b>Yes</b>
Western Bluebird	Early-seral	Snags	
Western Grebe	Aquatic	Lakes and Ponds	
Western Meadowlark	Grass - Savannah	Large patches of grassland	
Western Screech Owl	All Forests	Cavities	<b>Yes</b>
Western Wood-pewee	All Forests	Canopy Edges/Openings	<b>Yes</b>
White-breasted Nuthatch	Oak Woodland	Large patches with Large Oaks, cavities	
White-tailed Kite	Grass/Woodlands	Trees/Tall Shrubs	
Willow Flycatcher	Early Seral	Shrubs	
Wilson's Warbler	Mature/Young	Deciduous understory	<b>Yes</b>
Winter Wren	Young/Mature/ Old-growth	Forest floor complexity	<b>Yes</b>
Wood Duck	Riparian	Trees/Cavities	
Wrentit	Early Seral	Dense shrub understory/ Edges	
Yellow Warbler	Deciduous Riparian	Subcanopy-tall shrubs	
Yellow-breasted Chat	Early Seral /Riparian	Shrubs	



**Legend**

Confirmed Non-Red Tree Vole	roads
Resin Duct Location	Ownership
Unconfirmed Nest Structures Site 1	Federal
Unconfirmed Nest Structures Site 2	Non-Federal
Proposed Road	RTV Habitat Area



No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.



## Appendix F Botany Summary

Project Name: Sutherlin Creek Crossing

Project Type: Road Construction

Location: T25S R04W Sec. 19

Prepared By: Julie Knurowski

Date: December 1, 2010

The following tables include those species which are documented or suspected to occur within the Roseburg District BLM. The following species are suspected or documented to occur within the project area as detailed in **Table F-1** and may be further discussed in the body of the decision, as appropriate. The following list was derived from the August 2007 USDI Bureau of Land Management – Oregon State Office. The State Director’s Sensitive Species List includes Federally Listed Species, Fungi, Non-vascular and Vascular Plants.

**Table F-1. Bureau Sensitive & Bureau Strategic Botany Species.** BLM districts are responsible to assess and review the effects of a proposed action on *Sensitive Species* and *Strategic* species. To comply with Bureau policy, Districts may use one or more of the following techniques:

- a. Evaluation of species-habitat associations and presence of potential habitat.
- b. Application of conservation strategies, plans, and other formalized conservation mechanisms.
- c. Review of existing survey records, inventories, and spatial data.
- d. Utilization of professional research and literature and other technology transfer methods.
- e. Use of expertise, both internal and external, that is based on documented, substantiated professional rationale.
- f. Complete pre-project survey, monitoring, and inventory for species that are based on technically sound and logistically feasible methods while considering staffing and funding constraints.

When Districts determine that additional conservation measures are necessary, options for conservation include, but are not limited to: modifying a project (e.g. timing, placement, and intensity), using buffers to protect sites, or implementing habitat restoration activities (IM-OR-2003-054).

**Table F-1. Bureau Sensitive & Bureau Strategic Botany Species**

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<b>Threatened &amp; Endangered Species</b>						
<i>Lupinus sulphureus</i> ssp. <i>kincaidii</i> Kincaid's lupine (T)	Yes	Yes	No	Surveys performed, not detected.	September 1, 2010	N/A
<i>Plagiobothrys hirtus</i> Rough popcorn flower (E)	Yes	No	No	No habitat present.	September 1, 2010	N/A
<b>Sensitive Species</b>						
<i>Chiloscyphus gemmiparus</i> Liverwort	Yes	No	No	No habitat present.	N/A	N/A
<i>Diplophyllum</i>	Yes	No	No	No habitat present	N/A	N/A

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<i>plicatum</i> Liverwort						
<i>Entosthodon fascicularis</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Gymnomitrium concinnatum</i> Liverwort	Yes	No	No	No habitat present.	N/A	N/A
<i>Helodium blandowii</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Meesia uliginosa</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Schistostegia pennata</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Tayloria serrata</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Tetraphis geniculata</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Tetraplodon mnioides</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Tomentypnum nitens</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Tortula mucronifolia</i> Moss	Yes	No	No	No habitat present	N/A	N/A
<i>Trematodon boasii</i> Moss	Yes	No	No	No habitat present.	N/A	N/A
<i>Bryoria subcana</i> lichen	No	No	No	No habitat present	N/A	N/A
<i>Calicium adpersum</i> lichen	Yes	No	No	No habitat present	N/A	N/A
<i>Chaenotheca subroscida</i> Lichen	Yes	No	No	No habitat present	N/A	N/A
<i>Dermatocarpon meiophyllizum</i> Lichen ( <i>D.luridum</i> )	Yes	No	No	No habitat present	N/A	N/A
<i>Hypogymnia duplicata</i> Lichen	No	No	No	No habitat present	N/A	N/A

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<i>Lobaria linita</i> Lichen	Yes	No	No	No habitat present	N/A	N/A
<i>Pannaria rubiginosa</i> Lichen	No	No	No	No habitat present	N/A	N/A
<i>Pilophorus nigricaulis</i> Lichen	Yes	No	No	No habitat present	N/A	N/A
<i>Steriocaulon spathuliferum</i> Lichen	Yes	No	No	No habitat present	N/A	N/A
<i>Bridgeoporus nobilissimus</i> Giant polypore fungus	No	No	N/A	No habitat present.	N/A	N/A
<i>Cudonia monticola</i> Fungi	Yes	No	N/A	No habitat present	N/A	N/A
<i>Dermocybe humboldtensis</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Gomphus kauffmanii</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Helvella crassitunicata</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Leucogaster citrinus</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Otidea smithii</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia californica</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia dissiliens</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia gregaria</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia olivacea</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia oregonensis</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia pseudofestiva</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<i>Phaeocollybia scatesiae</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia sipei</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Phaeocollybia spacidea</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Pseudorhizina californica</i> Fungus	Yes	No	N/A	No habitat Present	N/A	N/A
<i>Ramaria amyloidea</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Ramaria gelatiniaurantia</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Ramaria largentii</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Ramaria rubella</i> var. <i>blanda</i> fungi	Yes	No	N/A	No habitat present	N/A	N/A
<i>Ramaria spinulosa</i> var. <i>diminutiva</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Rhizopogon chamalelotinus</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Rhizopogon exiguus</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Sowerbyella rhenana</i> Fungus	Yes	No	N/A	No habitat present	N/A	N/A
<i>Adiantum jordanii</i> California maiden-hair	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Arabis koehleri</i> var. <i>koehleri</i> Koehler's rockcress	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Arctostaphylos hispidula</i> Hairy manzanita	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Asplenium septentrionale</i>	Yes	No	N/A	No habitat present.	N/A	N/A

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
Grass-fern						
<i>Bensoniella oregana</i> Bensonia	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Botrychium minganense</i> Gray moonwort	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Calochortus coxii</i> Crinite mariposa-lily	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Calochortus umpquaensis</i> Umpqua mariposa-lily	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Camassia howellii</i> Howell's camas	Yes	No	N/A	No habitat present	N/A	N/A
<i>Carex comosa</i> Bristly sedge	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Carex gynodynamis</i> Hairy sedge	Yes	No	No	No habitat present.	N/A	N/A
<i>Carex serratodens</i> Saw-tooth sedge	Yes	No	No	No habitat present.	N/A	N/A
<i>Cicendia quadrangularis</i> Timwort	Yes	No	No	No habitat Present	N/A	N/A
<i>Cimicifuga elata</i> Tall bugbane	Yes	No	No	No habitat present	N/A	N/A
<i>Cypripedium fasciculatum</i> Clustered lady slipper	<b>Yes</b>	<b>No</b>	No	No habitat present	N/A	N/A
<i>Delphinium nudicaule</i> Red larkspur	<b>Yes</b>	<b>No</b>	<b>No</b>	No habitat present	N/A	<b>N/A</b>
<i>Epilobium oregonum</i> Oregon willow-herb	<b>Yes</b>	<b>No</b>	<b>No</b>	No habitat present	N/A	<b>N/A</b>
<i>Eschscholzia caespitosa</i> Gold poppy	<b>Yes</b>	<b>No</b>	<b>No</b>	No habitat present.	N/A	<b>N/A</b>
<i>Eucephalus vialis</i> Wayside aster	<b>Yes</b>	<b>Yes</b>	<b>No</b>	Surveys performed, not detected.	N/A	<b>N/A</b>
<i>Horkelia</i>	<b>Yes</b>	<b>No</b>	<b>No</b>	No habitat present	N/A	<b>N/A</b>

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<i>congesta</i> ssp. <i>congesta</i> Shaggy horkelia						
<i>Horkelia tridentata</i> ssp. <i>tridentatae</i> Three-toothed horkelia	Yes	No	No	No habitat present	N/A	N/A
<i>Iliamna latibracteata</i> California globe-mallow	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Kalmiopsis fragrans</i> Fragrant kalmiopsis	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Lathyrus holochlorus</i> Thin-leaved peavine	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Lewisia leana</i> Lee's lewisia	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Limnanthes gracilis</i> var. <i>gracilis</i> Slender meadow-foam	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Lotus stipularis</i> Stipuled trefoil	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Meconella oregana</i> White fairypoppy	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Pellaea andromedifolia</i> Coffee fern	Yes	No	No	No habitat present	N/A	N/A
<i>Perideridia erythrorhiza</i> Red-rooted yampah	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Polystichum californicum</i> California sword-fern	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Romanzoffia thompsonii</i> Thompson's mistmaiden	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Schoenoplectus subterminalis</i> Water clubrush	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Scirpus</i>	Yes	No	N/A	No habitat present.	N/A	N/A

Species	Within species range?	Habitat Present?	Species Present?	Reason for concern or no concern	Surveys Completed	Mitigation Measures
<i>pendulus</i> Drooping rush						
<i>Sisyrinchium hitchcockii</i> Hitchcock's blue-eyed grass	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Utricularia gibba</i> Humped bladderwort	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Utricularia minor</i> Lesser bladderwort	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Wolffia borealis</i> Dotted water-meal	Yes	No	N/A	No habitat present.	N/A	N/A
<i>Wolffia columbiana</i> Columbia water-meal	Yes	No	N/A	No habitat present.	N/A	N/A

<sup>1</sup> Surveys are considered not practical for these species (Category B) or their status is undetermined (Category E or F) based on the 2003 Annual Species Review (IM-OR-2004-034).

**Table F-2. USDI Bureau of Land Management – Oregon State Office State Director’s Strategic Species List.** Surveys are conducted for Oregon State Office State Director’s Strategic Species List species. To enable an early warning for species which may become Threatened or Endangered in the future, Districts are encouraged to collect occurrence data on species for which more information is needed to determine status within the state. Until status of such species changes, Oregon State Office State Director’s Strategic Species List species will not be considered as Special Status Species for management purposes (IM-OR-2003-054).

Scientific Name	Roseburg Occurrence?	Occurrence in the Project Area?
<b>Bryophytes</b>		
<i>Cephaloziella spinigera</i>	Suspected	None Observed
<i>Grimmia anomala</i>	Suspected	None Observed
<i>Scouleria marginata</i>	Suspected	None Observed
<b>Fungi</b>		
<i>Cazia flexiascus</i>	Suspected	None Observed
<i>Choiromyces alveolatus</i>	Suspected	None Observed
<i>Clavariadelphus subfastigiatus</i>	Documented	None Observed
<i>Endogone oregonensis</i>	Documented	None Observed
<i>Glomus pubescens</i>	Suspected	None Observed
<i>Gymnomyces monosporus</i>	Documented	None Observed
<i>Helvella elastica</i>	Documented	None Observed
<i>Hygrophorus albicarneus</i>	Suspected	None Observed
<i>Mycena quinaultensis</i>	Suspected	None Observed
<i>Nolanea verna</i> var. <i>isodiametrica</i>	Suspected	None Observed
<i>Plectania milleri</i>	Suspected	None Observed
<i>Psathyrella quercicola</i>	Suspected	None Observed
<i>Ramaria abietina</i>	Documented	None Observed
<i>Ramaria botrytis</i> var. <i>aurantiiramosa</i>	Suspected	None Observed
<i>Ramaria concolor</i> <i>F.tsugina</i>	Suspected	None Observed
<i>Ramaria conjunctipes</i> var. <i>sparsiramosa</i>	Documented	None Observed
<i>Ramaria coulterae</i>	Suspected	None Observed
<i>Ramaria rubribrunnescens</i>	Suspected	None Observed
<i>Ramaria suecica</i>	Documented	None Observed
<i>Ramaria thiersii</i>	Suspected	None Observed
<i>Rhizopogon brunneiniger</i>	Suspected	None Observed
<i>Rhizopogon clavitisporus</i>	Suspected	None Observed
<i>Rhizopogon flavofibrillosus</i>	Documented	None Observed
<i>Rhizopogon variabilisporus</i>	Suspected	None Observed
<i>Sarcodon fuscoindicus</i>	Documented	None Observed
<b>Lichens</b>		
<i>Buellia oidalea</i>	Suspected	None Observed
<i>Lecanora pringlei</i>	Suspected	None Observed
<i>Lecidea dolodes</i>	Suspected	None Observed
<i>Leptogium rivale</i>	Documented	None Observed
<i>Leptogium teretiusculum</i>	Documented	None Observed
<i>Peltula euploca</i>	Suspected	None Observed
<i>Vezeadaea stipitata</i>	Documented	None Observed
<b>Vascular Plants</b>		

Scientific Name	Roseburg Occurrence?	Occurrence in the Project Area?
<i>Camissonia ovata</i>	Suspected	None Observed
<i>Frasera umpquaensis</i>	Suspected	None Observed
<i>Piperea candida</i>	Documented	None Observed