

## **Aquatic Species and Associated Habitat**

An Aquatic Biological Evaluation was completed as part of this analysis. The entire Biological Evaluation is incorporated by reference and is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the evaluation are summarized below.

Reference material is contained in the full biological evaluation.

### **Existing Conditions**

#### **Project Area Description**

Both Eightmile and Ramsey Creeks are on Oregon Department of Environmental Quality (ODEQ) 303d listed streams for sedimentation on and off Forest, including in the project area. Eightmile Creek is listed for stream temperature off Forest only, and Ramsey Creek is listed for stream temperature for both on and off Forest with the listed stream segment ending about two river miles downstream of the project area. Both Eightmile and Ramsey Creeks are perennial fish bearing streams with Federally listed as threatened winter steelhead trout and their critical habitat, Region 6 sensitive interior redband trout, and Region 6 Sensitive Survey and Manage Columbia dusksnail are present in the project area.

The Eightmile, and Ramsey Creek drainage systems are in the identified WUI as noted by the collaboration group, as well as the Wasco County Wildfire Protection Plan WUI extends over the entire project area. Treatments in Ramsey Creek below Forest road 4450 are to be limited to maintenance underburning on the upper ridgeline of the south facing slope of the drainage (Ramsey Underburn area of 2004), which is outside of riparian reserves. Some light thinning of small diameter fuels might occur, but would be limited to the upper slopes/benches off Forest Road 4400. Areas previously thinned through cable operations would be outside any mechanical treatment due to costs, feasibility of treatment for the future, and vegetation change on the lower slopes.

Treatment of the Ramsey Creek drainage above Forest Road 4450 would depend on vegetation structure and fire regime. Part of the area has already been treated through past activities, although fire has not played its historical role in these areas. Possible treatments could include vegetation removal and sale of material removed, mechanical or hand thinning, piling of residual fuels, consumption of piled fuels, and underburning where appropriate. Hand thinning/pruning, hand piling of residual fuels, and burning of the hand piles would occur in riparian reserves with the treatment being no closer than 60 feet from bankfull width (high water line) in perennial streams, and no closer than 30 feet from bankfull width in intermittent streams.

Treatment of the Eightmile Creek drainage would be similar to treatments identified in the Ramsey Creek drainage. Possible treatments could include vegetation removal and sale of material removed, mechanical or hand thinning, piling of residual fuels, consumption of piled fuels, and underburning where appropriate. Hand thinning/pruning, hand piling of residual fuels, and burning of the hand piles would occur in riparian reserves with the treatment being no closer than 60 feet from bankfull width (high water line) in perennial streams and no closer than 30 feet from bankfull width in intermittent streams.

Hanel Lake is a small private reservoir located in the center of Camp Baldwin owned and operated by the Cascade Pacific Council Boy Scouts of American (Boy Scouts). Hanel Lake has been stocked for at least 10 years with hatchery stock rainbow trout from both a private fish hatchery out of Sandy, Oregon, and over the last two years by the Oregon Department of Fish and Wildlife (ODFW). The lake is stocked in early May. The lake outlet is considered to be an intermittent tributary to Hesslan Canyon Creek (an intermittent tributary to Eightmile Creek). Hatchery fish have been caught in the outlet of Hanel Lake, but it is not believed that hatchery fish migrate to far from the outlet due to low water flows in the stream. The stream usually dries up in August and stays dry through September. No Federally listed as threatened species or their critical habitat, or Region 6 Sensitive and Survey and Manage aquatic species are known to be present in Hesslan Canyon Creek.

**Water Temperature**

Brazier and Brown (1973) state that, “Direct solar radiation can be transmitted, absorbed, or reflected.” Ice (2000) concluded, “Only direct solar radiation (not diffused) can possibly affect stream temperatures.” Increases of water temperature to the streams located in or downstream of the proposed action are of a concern due to both Ramsey and Eightmile Creeks are listed on the 2004 Oregon Department of Environmental Quality (ODEQ) 303(d) list for not meeting state stream temperature standards (see Table 3-31). Additional information on water temperature can be found in the hydrology of this Environmental Assessment (EA).

**Table 3-31:** 2006 Stream Temperature Summary for Ramsey Creek and Eightmile Creek. 7-day average maximum temperatures exceeding specified thresholds for Oregon sites.

Station No.	Stream Name	Days Deploy	Date Deployed	Date Pulled	Days >18° C <sup>1</sup>	Days >16° C <sup>2</sup>	Days >13° C <sup>3</sup>	Max 7-day Avg Max °C
ry1880	Ramsey Cr	180	4/28/2006	10/24/2006	N/A	52	9	19.7
ee2600	Eightmile Cr at Forest Service Boundary	151	5/25/2006	10/22/2006	N/A	3	0	16.4
ee4500	Eightmile Cr at Head of 44 Rd	166	5/10/2006	10/22/2006	N/A	0	0	10.1

<sup>1</sup> The 18.0° C threshold applies to salmon and trout rearing and migration use.

<sup>2</sup> The 16.0° C threshold applies to core cold-water habitat.

<sup>3</sup> The 13.0° C threshold applies to specific timeframes (see “Detailed Summaries by Monitoring Site”) for salmon and steelhead spawning use.

N/A indicates that this particular temperature value is not part of the standard for this stream.

**Sedimentation**

Ramsey and Eightmile Creeks are both listed on the 2004 ODEQ 303(d) list for their entire stream lengths for not meeting state stream sediment standards. In 2004, Ramsey Creek had very coarse gravel (32-64mm) and large cobble (128-256mm), which accounted for 28 percent and 19 percent respectively of the total count for Reach 1, which is outside of project area. Small cobble (64-128mm), sand (<2mm), and very coarse gravel (1.26-2.5mm) accounted for 19 percent, 19 percent, and 17 percent respectively of the total count for Reach 2, which is in the project area.

In 2004, Ramsey Creek habitat units were noted as having good potential spawning gravel along

the stream. These areas were most abundant between River Mile (RM) 5.9 to 6.2 (downstream of project area), RM 8.8 to 9.2 (in the project area), and RM 9.9 to 10.6 (in the project area). Areas with heavy silting were also noted. These areas were noted at RM 5.2, RM 6.3, RM 8.4, and RM 8.5.

A high percentage of the banks were noted as unstable in the 1997 Stream Survey of Ramsey Creek. These banks now appear to be stabilizing due to restoration work. Some of the banks are still bare, but are no longer eroding at the bases. In 2004, only 1.4 percent of the Ramsey Creek banks were identified as unstable.

Eightmile Creek in 1999 had fines less than 6 mm make up 28 percent of the count in Reach 1 (in the project area) and 39.3 percent in Reach 2 (in and upstream of project area). Fine sediment accumulations were observed throughout Reach 1. The major areas of deposition were behind debris jams and around other wood accumulations. The D50 (50 percent of total sediment, by size class) was 16 mm (coarse gravel) in Reach 1 and 7.9 mm (fine gravel) in Reach 2. For more information on sedimentation for this project area see both the watershed and soils sections.

**Large Woody Debris**

Large Woody Debris (LWD) is an important component to creating and maintaining the quality and quantity of fish spawning and rearing habitat in a stream by creating and maintaining pools. Large woody debris creates hiding cover for both juvenile and adult fish from predators, especially in debris jams (accumulation of 3 or more pieces of LWD). Large woody debris creates micro habitats for a multitude of aquatic macro invertebrates, which are an important food source for both pre smolts and resident salmonids. According to Buffington (1998), LWD helps create channel roughness, which helps deposit spawning gravels in high gradient mountain streams. Otherwise, these streams would only have inhospitable large bed load materials to salmonids because of high shear stresses.

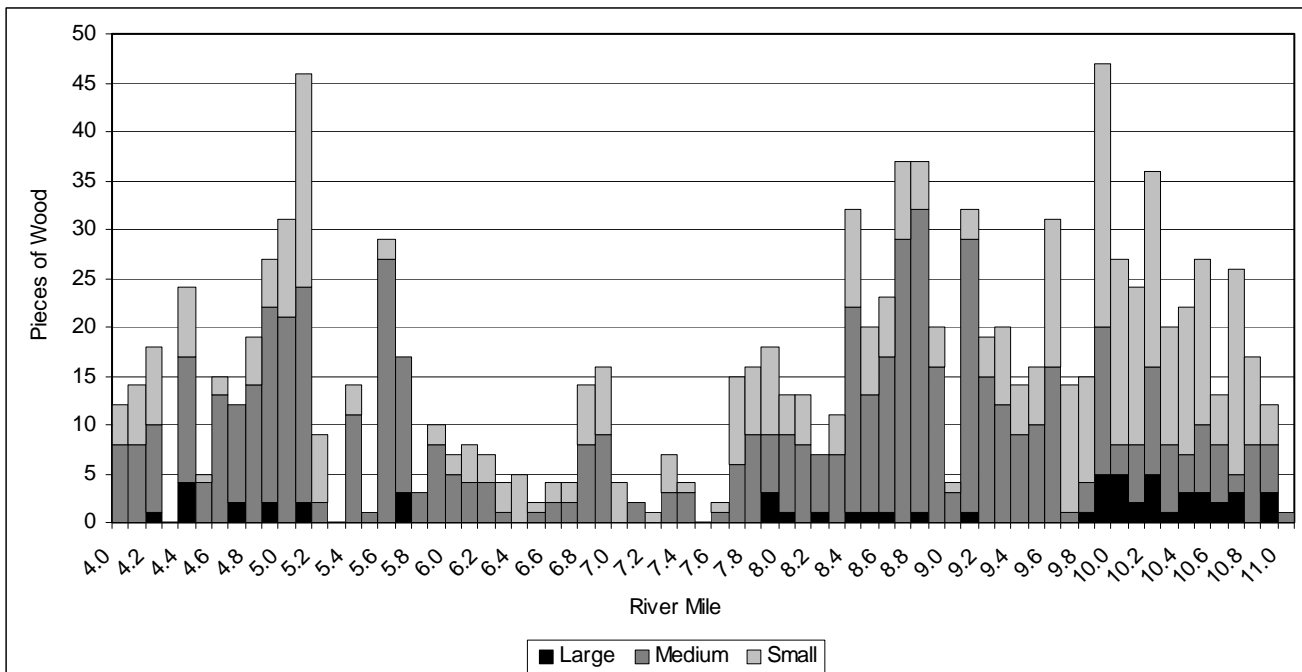
Definitions of woody debris size categories can be found in Table 3-32. Comparisons of the existing in-channel woody debris densities per mile to eastside Mt. Hood Land Resource Management Plan (LRMP), project implementation guide (PIG), and National Marine Fisheries Service (NOAA Fisheries) standards can be found below in Table 3-33 and are discussed further in this section. NOTE: Only woody debris that is within the bankfull channel and meets the size criteria below is counted.

**Table 3-32:** Definition of wood size classes east of the High Cascades.

Size	Diameter	Length
Small	>6 inches at 20 feet from large end	>20 feet or 2X the bankfull width
Medium	>12 inches at 35 feet from large end	>35 feet or 2X the bankfull width
Large	>20 inches at 35 feet from large end	>35 feet or 2X the bankfull width

**Table 3-33:** Existing number of in-channel woody debris and woody debris density vs. the LRMP, PIG, and NOAA standards (total of both medium and large size classes).

Stream	Reach	Measured / Corrected Length	Total Number of Pieces In-Channel			Density per Mile			Standard Density per Mile	
			Medium	Large	Total	Medium	Large	Total	LRMP	PIG/NOAA
*Ramsey	1	7732	145	11	156	99.3	7.5	107	106	20
Ramsey	2	13841	110	3	113	42.0	1.1	43	106	20
Ramsey	3	5114	79	7	86	81.4	7.2	89	106	20
Ramsey	4	15449	263	36	299	89.8	12.3	102	106	20
*Eightmile	1	25238	454	481	935	100.7	95.0	196	106	20
Eightmile	2	27720	268	144	412	27.4	51.1	79	106	20



**Figure 3-11:** Ramsey Creek wood distribution by River Mile in 2004.

In 2004, Ramsey Creek wood counts met PIG and NOAA woody debris standards in all four reaches. LRMP woody debris standards were met in Reach 1, but not in the other 3 reaches. Reaches 3 and 4 contained a significant amount of wood and came within 84 percent and 96 percent respectively of meeting LRMP standards. Reach 2 met only about 46 percent of the LRMP woody debris standard. For wood distribution by River Mile refer to Figure 3-11.

In 1999, Eightmile Creek met LRMP, PIG, and NOAA standards for woody debris density in Reach 1. The stream also met PIG and NOAA standards in Reach 2, but fell short of the LRMP standard. Wood numbers were high throughout the entire survey in all size categories. The accumulation of LWD in reach 1 is most likely due to the lack of wildland fires in the riparian reserves, as well as the stream reach has high levels of debris jams, which can reduce large and medium wood sizes to migrate downstream.

Both Ramsey and Eightmile Creek are within the Range of Natural variability (RNV) of 39 to 144 pieces of LWD per river mile, as established in the 1994 Mile Creeks watershed analysis.

Small sized wood comprised 40 percent of the countable wood in Ramsey Creek, and Fifty percent of the total wood in Eightmile Creek.

Wood was abundant along the surveyed length of Ramsey Creek and had the potential to provide excellent cover for fish. Under cut banks and overhanging bedrock ledges were common along the stream and could provide additional cover. Wood was the major source of cover in Eightmile Creek. The debris jams found in Eightmile Creek helped create diverse habitat.

**Pools**

High quality and quantity pools are an important habitat for all life stages of salmonids. Pool tails found on the downstream end of a pool can have high levels of gravel sized substrates, which adult salmonids like to spawn in. Pool tails typically have good subsurface hydraulic upwelling which allows for oxygenated rich water to reach the incubating eggs, and alevins. Pools are also, an important habitat for juvenile salmonids. Pools provide good hiding cover from predators, while allowing them to wait for food (typically aquatic macro invertebrates), which drifts downstream into the pools. See Table 3-34 for additional pool habitat information found in Ramsey Creek (2004 Level II survey) and Eightmile Creek (1999 Level II survey).

The major forces that appeared to be creating the pools in Ramsey Creek were identified in each pool unit. Wood was the primary pool forming force in Reaches 1, 3, and 4 with 70 percent, 68 percent, and 67 percent respectively. Boulders were the primary force in Reach 2 with 42 percent of the total. Step pools were present throughout the Eightmile Creek survey with the majority of these formed by debris jams. Pools were the dominant habitat.

Ramsey Creek met PIG pool standards in all four reaches. NOAA pool standards were met in all of the reaches with the exception of Reach 1. LRMP pool standards were not met in any reach.

Eightmile Creek did not meet LRMP standards for pool frequency. Reach 1 did have a number of primary pools but in this channel type a high number of deep pools would not be expected. The stream also did not meet NOAA or PIG standards for pool frequency.

**Table 3-34:** Existing number of pools; primary pools (pools >=3' depth) frequency vs. LRMP standard; and frequency of pools of all depths vs. the PIG and NOAA standards (shaded columns).

Stream	Reach	Measured Length	Avg. Bankfull Width	Avg. Width Wetted	Pool to Riffle Ratio	Total Number		Primary Pools per Mile	LRMP Std per Mile	Pools all Depths per Mile	NOAA Std per Mile	PIG Std per Mile
						Primary	All Depths					
*Ramsey	1	7732	14.2	11.2	1:1.8	3	74	<b>2.1</b>	<b>124</b>	50.7	70	56
<i>Ramsey</i>	2	<i>13841</i>	15.3	11.4	1:1.8	0	184	<b>0</b>	<b>115</b>	70.2	70	56
<i>Ramsey</i>	3	<i>5114</i>	15.4	14.1	1:1.2	2	75	<b>2.1</b>	<b>114</b>	77.3	70	56
<i>Ramsey</i>	4	<i>15449</i>	13.5	11.1	1:0.9	1	239	<b>0.3</b>	<b>130</b>	81.6	70	56
* <i>Eightmile</i>	1	<i>25238</i>	28.6	16.39	1:1.7	27	133	<b>5.65</b>	<b>61.53</b>	27.8	56	56
<i>Eightmile</i>	2	<i>27720</i>	11.28	11.17	1:3	2	76	<b>.38</b>	<b>102.9</b>	14.5	70	56

\*Ramsey Creek survey was completed in 2004 and Eightmile Creek survey was completed in 1999. *Italicized* stream reaches are those reaches that are present in project area.

## **Presence of Proposed, Endangered, Threatened and Sensitive Fish and/or Aquatic Species in or Downstream of Action Area**

### **Threatened Species**

#### *Mid-Columbia River steelhead trout (NOAA)*

Mid-Columbia River steelhead trout and their critical habitat are present in the project area of both Ramsey and Eightmile Creeks. Winter steelhead in the Fifteenmile Creek basin are considered a unique run because they are considered the eastern most run of winter steelhead in the Columbia River basin, as well as they are considered to be a wild run due to there has never been a hatchery stocking program for steelhead in the Fifteenmile Creek basin by the ODFW. The Fifteenmile Creek basin steelhead are the only winter steelhead run in the entire Middle Columbia River ESU.

Adult winter steelhead spawning surveys have been conducted in the Fifteenmile Creek basin since 1985 by both Forest Service and ODFW personnel and the farthest adult steelhead redd observed in Ramsey Creek was in the survey reach between river miles 8.5 to 11 (upstream of the old Forest boundary to Forest Service Road 4450) and in the survey reach between river miles 26.5 and 29 (Forest Boundary to Lower Eightmile Creek campground) in Eightmile Creek. The believed upper limits of steelhead juveniles is at river mile 12.2 in Ramsey Creek and river mile 32 (Forest Service Road 4400) in Eightmile Creek. The upper limits of steelhead critical habitat are the same river miles as the upper limits for juvenile use in both drainages. See Figure 3-12 for detailed upper limits and critical habitat.

#### *Columbia River Bull Trout (USFWS)*

There is no evidence of Columbia River bull trout use in the planning area, or in the Fifteenmile Creek basin. Bull trout have been found in neighboring basins (Hood River and Lower Deschutes River), and therefore, will not be discussed any further.

### **Other Threatened Fish Species found on Mt. Hood National Forest**

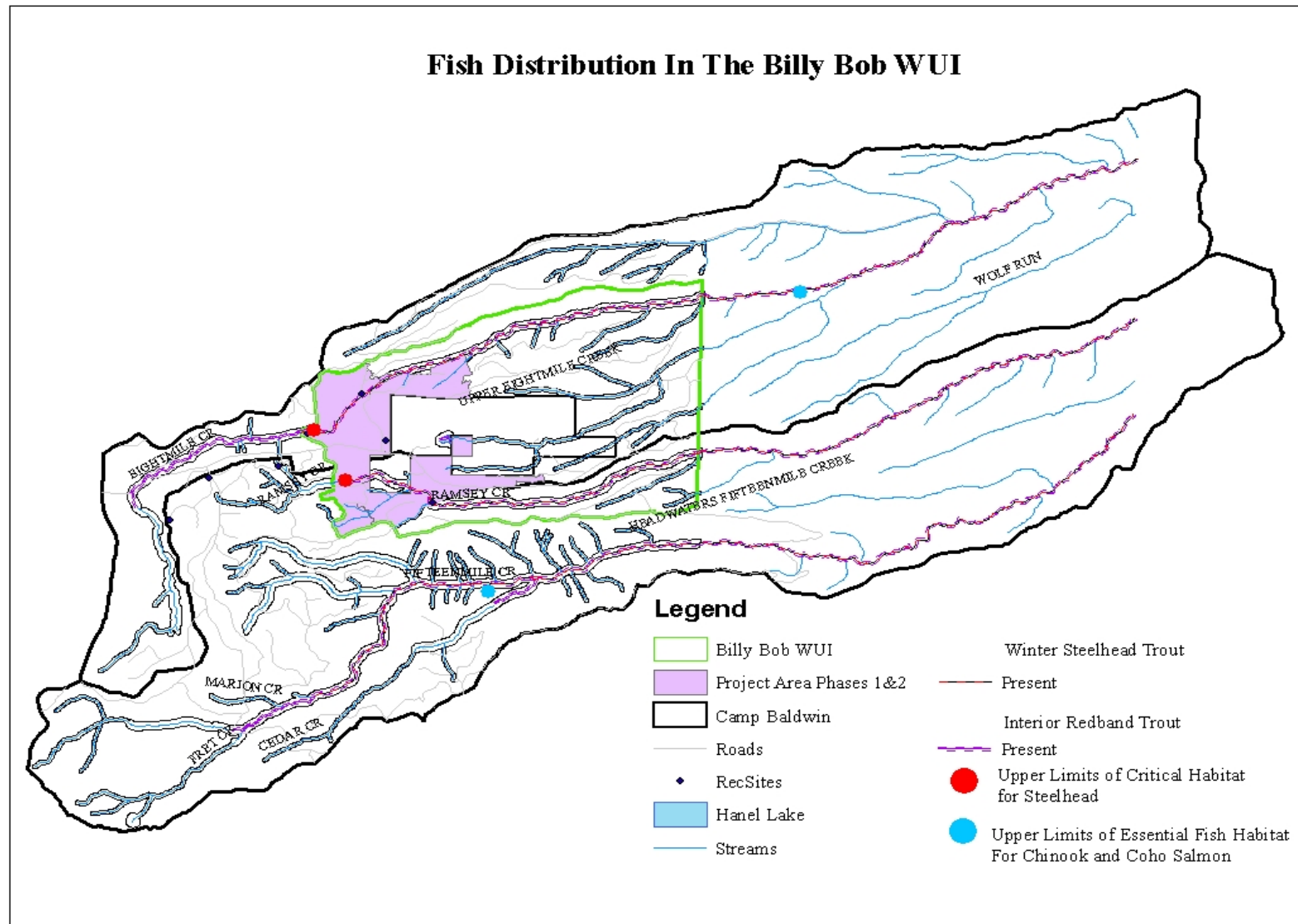
Lower Columbia River Steelhead, Chinook and Coho salmon, as well as Upper Willamette River Chinook salmon do reside on Mt. Hood National Forest, but do not reside in the project area or in the Fifteenmile Creek basin, and therefore, will not be discussed any further.

### **Forest Service Pacific Northwest Region (R6) Sensitive Aquatic Species**

#### *Interior Redband Trout*

Interior redband trout are present throughout the Oregon interior basins, which originally derived from the Columbia River system are well known to be hereditary resilient to high water temperatures, and interior redband trout have been found in water temperatures over 28 o C (Behnke R., 1992). Interior redband trout spawn in the spring with the fry leaving the gravel by July 15th. The resident rainbow-type trout, which are present in the both Ramsey and Eightmile Creeks, are believed by the Forest Service to be interior redband trout, but definitive genetic analysis has not yet confirmed this. This belief is due to the interior redband trout phenotypic characteristics that these rainbow-type trout possess in relation to known interior redband trout populations found in adjacent watersheds (White River and Deschutes River), such as prominent parr marks and distinguishing red lateral lines.





**Figure 3-12:** Fish Distribution for Winter Steelhead Trout and Essential Fish Habitat for Chinook and Coho Salmon

The known upper limits for the interior redband trout (rainbow-type trout) in Ramsey Creek is at about river mile 12.4 and in Eightmile Creek it is at river mile 34.5. Interior redband trout (rainbow-type trout) are present within the project area. Review Appendix 2 for further detailed information on interior redband distribution in the project area.

### **R6 Sensitive Survey and Manage Species**

#### *Columbia duskysnail and Basalt Juga*

The Columbia duskysnail *Lyogyrus* n. sp. 1. and Basalt Juga *Juga oreobasis* n. sp. 2 are Forest Service R6 Sensitive Survey and Manage species. Surveys were conducted during 1999, 2000, 2004 (informal survey), and 2006 at multiple locations in both Ramsey and Eightmile Creek drainages including in the planning area. Columbia duskysnails were found in Ramsey Creek during the 2006 surveys at Pebble Ford campground (upstream of the project area), and Forest Service Road 4450 stream crossing (in the project area). In 2004 Columbia duskysnails were found in an unnamed tributary flowing out of Bottle Prairie and into Eightmile Creek just downstream of Forest Service Road 4400 (upstream of the project area). Basalt Juga were not found during any of the surveys and have never been found on the Mt. Hood National Forest.

### **Essential Fish Habitat**

Chinook and coho essential fish habitat (EFH), as defined by NOAA (50 CFR Part 600) is: “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity”. Chinook and coho EFH as defined by NOAA is not present in the project area. In Eightmile Creek, the upstream EFH ends about RM 22.5, approximately 1.3 RM downstream of the Forest Boundary. Neither Chinook nor coho salmon have ever been documented in Ramsey Creek, and given the rearing and spawning habitat requirements for Chinook and coho salmon Ramsey Creek does not meet the EFH definition. Chinook salmon have been found at the Forest Boundary in Fifteenmile Creek with the upper limits believed to be at the Cedar Creek confluence with Fifteenmile Creek (about RM 45.5); Chinook and coho salmon EFH ending at about RM 46. No coho salmon have ever been seen on Forest and are believed to only use the lowest reaches of Fifteenmile Creek basin. Chinook and coho salmon smolts have been captured and released over the last 8 years upstream of the confluence to the Columbia River in Fifteenmile Creek by ODFW. See Figure 3-12 for further detailed information on EFH distribution near the project area

## **Environmental Effects**

### **No Action Alternative – Direct and Indirect Effects**

Consequences of the no action alternative to aquatic species and their habitat, such as water temperature, sediment, large woody debris, and pool quality and quantity, would be maintained or improve over time, unless a wildland fire occurs in either or both subwatersheds. The level of environmental consequences to aquatic species is difficult to determine. They would be based on size, location, time, and severity of the wildland fire to aquatic species and their habitat. A small ridgeline wildland fire in early spring may have no consequences to aquatic species. But, a large watershed scale wildland fire may have long-term consequences to aquatic species and their habitat by causing water temperatures to increase because degraded streamside shade, increase

sediment to the stream channel because of unstable soils, loss of long-term LWD because of loss of existing instream and floodplain LWD, and the loss of quality and quantity of pools because of increased sedimentation and loss of LWD in the stream channel and floodplain.

Overall, there would be no short or long-term direct and indirect effects to aquatic species or their habitat from the no action alternative. Water quality and habitat conditions would likely maintain their current trend without harvest activities. Water quality parameters such as stream temperature, sediment, LWD, and pools are expected to be maintained or improve over time in the project area, unless a high severity burn occurs. A high severity burn could increase both stream temperature and sediment, and decrease existing and future LWD, as well as pool quality and quantity in the stream channel. Although it is difficult to predict exactly where and to what extent a potential fire would burn in either Ramsey or Eightmile Creek subwatersheds, aquatic species could be affected by a severe burn in riparian areas. Depending on the amount, fine sediments (ash or soil erosion resulting from burning of vegetative ground cover) could cover spawning gravels and/or food-producing riffle areas. Waters (1995) states that suspended sediment entering redds can act like a sediment trap, and the entry of oxygen required for salmonid embryo and Alvin's development is prevented. Similarly, large quantities of fine sediments resulting from a severe fire could have a negative effect on aquatic mollusk habitat and could impact potential populations within seeps and streams in and downstream of the burned area. If water temperatures increase, salmonid spawning and egg incubation could be negatively affected, and temperatures exceeding 22°C place the fish at risk for mortality (Bjornn and Rieser 1991). Still, although there may be detrimental impacts to aquatic species if a severe fire occurs within the planning area, it is impossible to specify the level of impact given the multiple fire scenarios that could take place. Thus, the no action alternative is assumed to have no effects and no impacts on aquatic species.

If no action is taken in riparian reserves, stands may require a longer period of time to reach the size and quantity of large woody debris sufficient to sustain physical complexity, including pools, and stability of the riparian reserves and associated streams.

### **Proposed Action Alternative – Direct and Indirect Effects**

#### Water Temperature

Due to the proposed action design criteria, there should be negligible, if any, possibility of shade reduction to the stream channels. Therefore, shade reductions that would result in water temperature increases are not expected to occur in Ramsey and Eightmile Creeks, or their tributaries.

#### Sedimentation

Increases in sedimentation to the stream channels in the project area are of a concern since Ramsey and Eightmile Creeks are both listed on the 2004 ODEQ 303(d) list for their entire stream lengths for not meeting state stream sediment standards. The proposed activities with the greatest potential of producing sediment to the stream channels in the project are from ash created after underburning and burning slash piles as well as removing logs in the skyline corridors. Recent research has found that stream buffers provide effective protection against sediment delivery from logging activity. Rashin and others (2006) looked at 21 harvest sites that had a variety of treatments ranging from no buffers to buffers up to 66 meters wide. They found

that “Of 157 individual erosion features determined to deliver sediment to streams during either the first or second year following timber harvest, 94 percent were located within 10 m of the stream. Conversely, 74 percent of the 248 erosion features with no evidence of sediment delivery were greater than 10 m from streams. The sediment routing survey results indicate that when erosion is initiated by ground disturbing activities within 10 m (slope distance) of a stream, delivery of sediment was more likely than not.” The proposed action design criteria would provide protection from additional sediment inputs to the stream channels. Therefore, increases of fine sediment to the stream channel are not expected to occur in Ramsey and Eightmile Creeks, or their tributaries. Additional information on sediment issues can be found in both the hydrology and soils sections of the EA.

#### Large Woody Debris

Loss of existing LWD to the stream channel would not occur due to the proposed action design criteria. The proposed action design criteria would also allow for future LWD to stay within the RNV (39 to 144 pieces per mile) for stream channels in both Ramsey and Eightmile Creek drainages. The proposed action design criteria should allow for higher quality (larger trees) LWD to be available in the future for both the stream and floodplain due to the reduction of competition between smaller subdominant understory trees to existing dominate overstory trees in the riparian reserves. Therefore, levels of existing and future LWD are expected to remain within the RNV for both Ramsey and Eightmile Creeks, as described in the 1994 Mile Creeks watershed analysis.

#### Pools

The proposed activities with the greatest potential of reducing pool quality and quantity to the stream channels in the project are from ash created after under burning and burning slash piles as well as removing trees within the riparian reserve.

The proposed action design criteria would provide protection from additional sediment inputs to the stream channels, which could reduce pool quality and LWD would remain within RNV for both Ramsey and Eightmile Creeks. Therefore, pool habitats are not expected to change from existing levels in Ramsey and Eightmile Creeks, or their tributaries.

#### Interrelated or Interdependent Actions

The interrelated or interdependent actions of the proposed action are road maintenance of the primary haul routes in the planning area. Fine sedimentation is the primary concern with road maintenance and snow plowing to the stream channel and aquatic organisms. The proposed action design criteria would reduce the amount of fine sediment from entering the streams during implementation of the road maintenance and snow plowing. There is the potential of fine sediment entering the stream channel post snow plowing on native and gravel road systems. This occurs during a freeze thaw period when vehicle tires break through the snow/ice layer, which is left on the road after the plowing is completed. The newly exposed native or gravel road sections of the travel way become transport corridors for fine sediment to stream channels. This mainly occurs when a road has a steep approach with a stream crossing, such as on Forest Service road 4400-4440 at Lower Eightmile Creek Campground. Therefore, input of fine sediment to the stream channel are expected to periodically occur in Eightmile Creek at the Forest Service road 4400-4440 streams crossing, by increased vehicle traffic on snow plowed roads. Additional

information on sediment issues can be found in both the hydrology and soils sections of the EA.

### **Summary of Effects**

Short and long-term direct effects to aquatic species resulting from implementing the proposed action are likely to be negligible. This is due to no instream disturbances from the proposed activities occurring, as well as in the true stream influenced areas of those units, which are adjacent to streams.

No long-term indirect effects are expected to occur from implementing the proposed action. Short-term indirect effects from underburning and/or slash pile burning are not expected to occur due to the design criteria/mitigation measures in place, and the reasons described above in the sedimentation section of the proposed action. Short-term indirect effects from fine sediment entering the stream channel and increasing turbidity levels from road maintenance and snow plowing is expected to be minimal due to the design criteria/mitigation measures in place. Increased water turbidity levels can impair individuals from breathing. This breathing impairment to individual fish or mollusks near the stream crossing would be expected to last until the water current is able to flush the fine sediment downstream of the fish and mollusks or the fine sediment is able to settle to the stream bottom. Increases in fine sediment can impair feeding, reduce food availability, and reduce the quality and quantity of spawning and rearing habitat. All of these factors can negatively impact the productivity and survival rates of aquatic organisms. Project implementation would occur prior and during spawning activity.

Existing levels of both instream LWD and pools would be retained for both the short and long-term. Short- and long-term LWD recruitment of small size diameter trees would be reduced, but a long-term increase of medium and large size diameter LWD recruitment is expected to occur from implementing the proposed action.

### **Cumulative Effects**

There would be no cumulative effects to aquatic species and their habitat from the no action alternative because no treatments would occur where by there would be no effects.

Cumulative effects are defined differently under the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA). The NEPA definition encompasses a wider variety of foreseeable actions than the ESA definition, thus it is more all inclusive. Cumulative effects described below encompass all foreseeable future actions regardless of the agency or individual (the NEPA definition).

The scale of this analysis is the Headwaters of Fifteenmile Creek and Upper Eightmile Creek 6th field subwatersheds as are the locations of the majority of the proposed action areas and where effects to aquatic resources would most likely manifest themselves. Reasonably foreseeable actions in the two 6th field subwatersheds that would result in increased stream sedimentation (the primary possible impact from this proposed action) include:

- Instream and floodplain restoration projects (private, county, state, and federal)
- Road maintenance and snow plowing of roads (private, county, state, and federal)
- Timber harvest and associated activities (private, state, federal)

- Agriculture farming and ranching
- Irrigation ditch maintenance

All of the above activities could result in increased stream sedimentation, very likely at much higher levels than the proposed action. Ongoing agriculture and grazing would have the greatest effect in terms of a chronic sediment source. Although, the actual amount of erosion and subsequent sediment generation is difficult to predict, it is safe to assume that the amount would far exceed the amount generated from this project. This is not necessarily due to land management practices associated with agriculture and livestock grazing, but rather the sheer amount of these activities across the subwatershed compared to the proposed action. The other activities listed above would also contribute some fine sediment at times, depending on their location, project design, and implementation timing. Although, the potential sediment generated from the proposed action would contribute to the overall sediment load, both naturally and human caused, the amount would be minor compared to other sources.

Implementing the proposed action would have limited potential of effecting PETS species or their critical habitat located in and downstream of the proposed action and no effects to EFH due to the proximity of the proposed action to EFH. The potential impacts associated with increased sedimentation to PETS and their critical habitat would be short-term increases in water turbidity, which may cause individuals to move and find refuge at more desirable locations, such as the confluences of tributaries. A short-term impact to spawning habitat quality may occur from spawning gravels being covered by fine sediment. For individuals who are sedentary in nature, such as the Sensitive Survey and Manage Columbia dusksnails, they would not be able to escape the short-term pulses of increased sediment (turbidity), until the sediment moves past them. Due to this, these species may become physiologically stressed due to fine sediment covering the fishes gill filament whereby reducing the fishes ability to exchange gas (oxygen and carbon dioxide) to and from the fishes body, as well as covers potential food sources. Water temperatures, would be maintained and possibly improved over the long-term as the result of the Proposed Action due to stream side shading not being impacted by the Proposed Action. Both LWD and pool levels would be retained for both the short and long-term by implementing the Proposed Action.

Over the long-term, the proposed action should improve riparian conditions by improving tree health and increasing growth rates and by reducing the risk of a catastrophic wildland fire from occurring in the stream corridors.

## **Determination of Effect Including Essential Fish Habitat**

### **No Action Alternative**

The no action alternative in the Billy Bob Hazardous Fuels Reduction project would have a NE “No Effect” determination for federally listed as threatened Middle Columbia River ESU winter steelhead trout and their critical habitat. Forest Service Region 6 sensitive interior redband trout and R6 sensitive Survey and Manage Columbia dusksnail would have a NI “No Impact” determination. Chinook and coho salmon EFH would be a NA “Not Applicable” determination because EFH is not present in the project area and the no treatments would occur under the No Action Alternative.

**Proposed Action Alternative**

The proposed action in the Billy Bob Hazardous Fuels Reduction project would have a NLAA “May Affect, Not likely to Adversely Affect” determination for federally listed as threatened Middle Columbia River ESU winter steelhead trout and their critical habitat (see Table 3-35). A NA “Not Applicable” determination for EFH for Chinook and coho salmon is warranted because EFH is not present in the project area. This proposed project is part of the HFRA. The streamlined consultation process (including the Counterpart Regulations) as part of the HFRA is being utilized for this project]. Forest Service Region 6 sensitive interior redband trout and R6 sensitive Survey and Manage Columbia duskysnail would have a MIIH “May Impact Individuals or Habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species” determination. The may affect and may impact determination is based the potential detrimental effects to an individuals short-term physiological behavior or their spawning success. This is because short-term pulses of increased turbidity to the stream channel during and post proposed action implementation.

**Table 3-35:** List of Proposed, Endangered, Threatened, or Sensitive (PETS) Fish and Aquatic Mollusk Species

	Date of Listing	Suitable Habitat Present	Species Present	EFFECTS OF ACTIONS Alternatives	
				1	2
<b><u>Endangered Species Act Listing by ESU Threatened</u></b>					
<b>Lower Columbia River steelhead &amp; CH</b> ( <i>Oncorhynchus mykiss</i> )	3/98 1/06	No	No	NE	NE
<b>Lower Columbia River chinook &amp; CH</b> ( <i>Oncorhynchus tshawytscha</i> )	3/99 1/06	No	No	NE	NE
<b>Columbia River Bull Trout</b> ( <i>Salvelinus confluentus</i> )	6/98	No	No	NE	NE
<b>Middle Columbia River steelhead &amp; CH</b> ( <i>Oncorhynchus mykiss</i> )	3/99 1/06	Yes	Yes	NE	NLAA
<b>Upper Willamette River chinook &amp; CH</b> ( <i>Oncorhynchus tshawytscha</i> )	3/99 1/06	No	No	NE	NE
<b>Lower Columbia River coho</b> ( <i>Oncorhynchus kisutch</i> )	6/05	No	No	NE	NE
<hr/>					
<b>Interior Redband Trout (*)</b> ( <i>Oncorhynchus mykiss</i> spp.)	7/04	Yes	Yes	NI	MIIH
<b>Columbia dusky snail (+)</b> ( <i>Lyogyrus n. sp. 1</i> )	7/04 1/01	Yes	Yes	NI	MIIH
<b>Basalt Juga (+)</b> ( <i>Juga oreobasis n. sp. 2</i> )	01/01	Yes	No	NI	NI
<hr/>					
<b>Essential Fish Habitat For Chinook and Coho Salmon</b>	9/00	No	No	NA	NA

**Abbreviations/ Acronyms:**

<b>Endangered Species Act Abbreviations/ Acronyms:</b>		<b>Essential Fish Habitat Abbreviations/ Acronyms:</b>	
NE	No Effect	NA	Not applicable
NLAA	May Affect, Not Likely to Adversely Affect	NAA	Not Adversely Affected
LAA	May Affect, Likely to Adversely Affect	AE	Adverse Effects
<b>Regional Forester’s Sensitive Species List* and Survey and Manage + Abbreviations/ Acronyms:</b>			
NI	No Impact		
MIIH	May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species		



## Wildlife Resource

A Wildlife Biological Evaluation was completed as part of this analysis. The entire Biological Evaluation is incorporated by reference and is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the evaluation are summarized below.

Reference material is contained in the full biological evaluation.

### Existing Conditions

Two species of wildlife classified as threatened, endangered or proposed, have been listed as having the potential of occurring on or adjacent to the Barlow Ranger District of the Mt. Hood National Forest. There are twenty-one Region 6 (R6) Sensitive Species with potential to be found on the Barlow Ranger District. Additionally, Mt. Hood National Forest Management Indicator Species, Neotropical Birds and Survey and Manage Species have potential to be found on the Barlow Ranger District. See Table 3-36.

**Table 3-36:** Status of threatened, endangered, and proposed species; USDA Forest Service Region 6 (R6) Sensitive Species

Species	Habitat	Surveys	Presence
<b>Threatened, Endangered or Proposed</b>			
Bald eagle ( <i>Haliaetus leucocephalus</i> )	N <sup>1</sup>	-	-
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	Y <sup>1</sup>	Y <sup>2</sup>	N <sup>1</sup>
<b>R6 Sensitive Species</b>			
Oregon Slender salamander ( <i>Batrachoseps wrighti</i> )	Y	-	-
Larch Mountain salamander ( <i>Plethodon larselii</i> )	Y	-	-
Cope's giant salamander ( <i>Dicompodon copei</i> )	N	-	-
Cascade torrent salamander ( <i>Rhyocotriton cascadae</i> )	N	-	-
Oregon spotted frog ( <i>Rana pretiosa</i> )	N	-	-
Painted turtle ( <i>Chrysemys picta</i> )	N	-	-
Northwestern pond turtle ( <i>Clemmys marmorata marmorata</i> )	N	-	-
Baird's shrew ( <i>Sorex bairdii permiliensis</i> )	N	-	-
Pacific fringe-tailed bat ( <i>Myotis thysanodes vespertinus</i> )	N	-	-
Wolverine ( <i>Gulo gulo luteus</i> )	Y	-	-
Pacific fisher ( <i>Martes pennanti</i> )	Y	-	N
Horned grebe ( <i>Podiceps auritus</i> )	N	-	-
Bufflehead ( <i>Bucephala albeola</i> )	N	-	-
Harlequin duck ( <i>Histrionicus histrionicus</i> )	N	-	-
Peregrine falcon ( <i>Falco peregrinus anatum</i> )	N	-	-
Gray flycatcher ( <i>Empidonax righti</i> )	N	-	-
Puget oregonium ( <i>Cryptomastix devia</i> )	Y	-	-
Columbia oregonium ( <i>Cryptomastix hendersoni</i> )	Y	-	-
Dalles sideband ( <i>Monadenia fidelis minor</i> )	Y	-	-
Crater Lake tightcoil ( <i>Pristiloma arcticum crateris</i> )	Y	-	-
Evening fieldslug ( <i>Deroceras hesperium</i> )	Y	-	-
<b>Mt. Hood National Forest Management Indicator Species and Neotropical Birds</b>			
Mule Deer ( <i>Odocoileus hemionus</i> ) and Elk ( <i>Cervus elaphus nelsoni</i> )	Y	N	Y
Pileated Woodpecker ( <i>Dryocopus pileatus</i> ) Habitat Area (B-5)	N <sup>1</sup>	-	-
Pine Marten ( <i>Martes americana</i> ) Habitat Area (B-5)	N <sup>1</sup>	-	-
Merriam's Turkey ( <i>Meleagris gallopavo</i> )	Y	-	-

Species	Habitat	Surveys	Presence
Silver Gray Squirrel ( <i>Sciurus griseus griseus</i> )	Y	-	
Snag and Down Log Associated Species	Y	N	Y
Neotropical Migratory Birds	Y	N	Y
Survey and Manage Species List			
Great gray owl ( <i>Strix nebulosa</i> )	N <sup>1</sup>	-	-
Larch Mountain salamander ( <i>Plethodon larselii</i> )	Y	-	-
Puget oregonium ( <i>Cryptomastix devia</i> )	Y	Y <sup>3</sup>	-
Columbia oregonium ( <i>Cryptomastix hendersoni</i> )	Y	Y <sup>3</sup>	-
Dalles sideband ( <i>Monadenia fidelis minor</i> )	Y	Y <sup>3</sup>	-
Crater Lake tightcoil ( <i>Pristiloma arcticum crateris</i> )	Y	Y <sup>3</sup>	-
Evening fieldslug ( <i>Deroceras hesperium</i> )	Y	Y <sup>3</sup>	-

1. See narrative.

2. The last surveys were conducted in 1993. The Surveyor's Ridge Late Successional Reserve (LSR) portion of the project is being surveyed. No spotted owls were recorded in 2006. The surveys will be completed in 2007.

3. Surveys were completed in 2007.

The only species discussed below are those with habitat and presence within the project area. A discussion of other species can be in the wildlife report in the project file.

### Threatened, endangered and proposed species:

#### *Northern spotted owl*

Mature managed to old growth coniferous forest with multi-layered understory and crown closure of 70 percent or greater is the preferred nesting, roosting, and foraging habitat (NRF) of spotted owls in Oregon. Stands composed of greater than 11-inch diameter trees with greater than 40 percent crown closure provide dispersal habitat. Surveys conducted on the District since 1979 have revealed a number of documented sightings. All NRF (nesting, roosting and foraging) habitat on the Barlow Ranger District is considered 'unsurveyed' suitable habitat. If a spotted owl activity center is located in the project area, a seasonal operating restriction (March 1- July 15) would be placed in the area impacted.

Priority 1 areas of the Billy Bob project area contain 295 acres of NRF habitat and 320 acres of dispersal habitat. Priority 2 areas have 265 acres of NRF and 116 acres of dispersal habitat. The boundary of the 100-acre Late Successional Reserve (LSR) (activity center #1142) was moved outside Priority 1 areas and closer to the Forest Service Road 4430. The 100-acre LSR was moved because the owls were not occupying the habitat in the originally designated LSR. The habitat in the original LSR was fragmented by younger stands and the 4440 road. The LSR was moved to the west side of the road to include the historic activity center for a pair of spotted owls and to include more unfragmented suitable habitat. The number of acres remains the same for LSR #1142. Priority 3 areas would be doing maintenance underburning of previously burned areas. Habitat would not change in Priority 3 areas.

Baseline spotted owl information for the Mt. Hood National Forest can be found in the 2007-2008 Habitat Modification Biological Opinion (BO) for the Willamette Province (FWS reference: 1-7-06-F-0179).

**R6 Sensitive Species With Potential to Occur in or Adjacent to the Project Area:***Wolverine*

Wolverine tracks have been observed near the Highway 35 corridor. No denning habitat exists within or adjacent to the project area. The general area could be considered potential foraging or travel habitat by wolverine. However, wolverines are secretive animals and try to avoid humans. All of the existing road uses, precludes use of the area by wolverine, except to travel across the road from one point to another.

*Columbia oregonium, Crater Lake tightcoil, Puget oregonium, Dalles sideband, evening fieldslug (also Survey and Manage species)*

These species require down wood and tree canopy closure (60 to 100 percent) to maintain the microsite around the area where the individuals reside. This project would eliminate some habitat within the project area; however, a minimum of 110 linear feet of down woody material and 4 snags/acre would be retained. The populations of these species would persist. Priority 1 and 2 areas were surveyed during the spring 2007. All sites located will be protected by maintaining the micro site.

*Larch Mountain salamander (also Survey and Manage species)*

The Larch Mountain salamander is listed as a R6 Sensitive Species in 2000. Until recently, Larch Mountain salamander habitat has been considered to be shaded talus, usually with a litter and duff covering which is not present in the planning area. As such, no surveys had been conducted in the planning area before the fall of 2000. However, surveys north of the Columbia River have found this species within conifer habitat where litter, duff, and moisture conditions are sufficient. The surveyors indicated that even in those conditions, the substrate beneath the litter/duff tended to be an open, porous rocky material with talus-like characteristics. These conditions do not occur within any of the areas proposed for treatment in the planning area. Soil conditions are relatively tight with virtually no interstitial spaces suitable for salamanders to descend into as the summer heats and dries. Suitable moisture conditions in late summer for any salamander species would most likely be associated with large, decayed, down woody material.

*Oregon slender salamander (also Survey and Manage species)*

The Oregon slender salamander was listed as a R6 Sensitive Species in 2000. Oregon slender salamander habitat has variously been described as evergreen forests, older second-growth, and old growth Douglas fir with large numbers of large logs and stumps. It is also characterized as a species mostly associated with the westside of the Cascade Mountains of Oregon, (Leonard, et al 1993 and Corkran and Thoms 1996). This proposed project has current tolerance levels of 30 to 80 percent for snags and down wood material (DecAid wood advisory model). This equates to 2-6 percent cover of down wood for the project area and 6.7 to 25 snags/acre >10.0 in dbh (Eastside Mixed Conifer Forest, Small/Medium Trees Vegetation Condition).

This species requires down wood and tree canopy closure (50 to 100 percent) to maintain the microsite around the area where the individuals reside. This project would eliminate some habitat within the project area, however a minimum of 120 linear feet of down woody material and 4 snags/acre would be retained. The populations of this species would continue to persist within the project area.

Priority 1 and 2 areas were surveyed during the spring 2007. The down wood and snags retained post harvest would be sufficient for this species.

**Survey and Manage Species:**

See the sensitive species for discussion.

**Mt. Hood National Forest Management Indicator Species and Neotropical Birds:***Deer and Elk:*

The Billy Bob Hazardous Fuels Reduction Project Area is classified as summer (western one third of project area) and winter range (eastern two thirds of project area) for black-tail deer and Rocky Mountain elk, and is inhabited by both during the summer and winter periods. The scope of this project is that road densities would remain the same as current conditions. A seasonal operating restriction (restricting harvest and fuels treatment activities) for winter range would be implemented with this project from December 1 through April 1 for Units 1-9, 18-20, 33, 35, and 45.

*Pine Marten and Pileated Woodpecker Habitat:*

The Billy Bob Hazardous Fuels Reduction Project Area has several stands with trees larger than 20 inches dbh which are suitable for pileated woodpeckers to nest in. The majority of the planning area has trees that average only 11-16 inches dbh which are too small for pileated woodpecker nesting trees. The fuels reduction project would reduce the canopy closure below the 60 percent in Priority 1 areas and retain 60 to 70 percent in Priority 2 areas. Priority 1 areas would not likely support canopy closure sufficient to support these species. Priority 2 areas would retain sufficient canopy closure for these species.

*Merriam's Turkey*

Two subspecies of wild turkey (Merriam's and Rio Grande) are found on both the Hood River and Barlow Districts. Both subspecies are generally associated with the pine/oak vegetation type. Turkeys feed on acorns, conifer seed, insects and grass/forbs. Turkey nest sites are closely associated with mixed-conifer stands. Roost trees are large diameter (> 20 inch diameter at breast height) ponderosa pine and Douglas-fir.

*Western Gray Squirrel*

Western gray squirrels can be found from the Columbia River Gorge south to the Confederated Tribes of Warm Springs Reservation. This squirrel is closely associated with pine/oak vegetation. Nests are generally of two types: large twig and leaf nests constructed with a roof for winter use and rearing of young, and looser leaf nests constructed as temporary nests, summer nests or alternative nests (Foster, 1992). Western gray squirrels feed on hypogeous fungi, conifer seeds and acorns.

*Snag and Down Log Associated Species:*

Snags (standing dead trees) and down logs are essential components in forests. Many wildlife species depend on them for survival. The M. Hood National Forest Land and Resource Management Plan (LRMP) (FW-215, 216, 217) recommends a 40 percent biological potential (0.9 snags/acre) for cavity nesting species across the landscape and a 60 percent biological potential (1.35 snags /acre) in new timber harvest units (Thomas et al, 1979). The planning area

meets the 40 percent level. The majority of the mature stands within the planning area exceed the 100 percent biological potential (2.25 snags/acre). This proposed project has current tolerance levels of 30 to 80 percent for snags and down wood material (DecAid wood advisory model). The majority of the project area falls into the “Eastside Mixed Conifer Forest, East Cascades/Blue Mountains, Small/Medium Trees Vegetation Condition” as described in the DecAID tool. This zone contains 6.7 to 25 snags/acre >10.0 in dbh and 2-6 percent cover for down wood.

In the Mile Creeks watershed, snag and down woody debris density and conditions were taken from the 1995 Current Vegetation Survey (CVS). In order to have an adequate sampling intensity, the Middle Columbia-Hood subbasin was used as the ‘representative area’ (264,769 acres with 85 CVS plots), of which the Mill Creek Watershed forms a portion. Vegetation stratification was by ecological zone (Eastside Douglas-fir, Grand fir/ponderosa pine, Pacific Silver fir/ Mountain hemlock); seral stage (early, middle, late); and history (managed or unmanaged). Portions of the project falls within each of the above ecological zones.

The Mile Creek watershed was analyzed using DecAid. DecAid is a planning tool intended to help advise and guide managers as they conserve and manage snags, partially dead trees and down wood for biodiversity (Mellen, 2003). Refer to the website listed in the Literature Citations for more detail and for definition of terms. This advisory tool focuses on several key themes prevalent in recent literature concerning this subject and are as follows:

- Decayed wood elements consist of more than just snags and down wood; such live trees with dead tops or stem decay;
- Decayed wood provides habitat and resources for a wider array of organisms and their ecological functions than previously thought; and,
- Wood decay is an ecological process important to far more organisms than just terrestrial vertebrates.

DecAid is an advisory tool to help managers evaluate effects of forest conditions and existing or proposed management activities on organisms that use snags and down wood. DecAid also can help managers decide on snag and down wood sizes and levels needed to help meet wildlife management objectives (such as the Mt. Hood National Forest LRMP and the Northwest Forest Plan). This tool is not a wildlife population simulator nor is it an analysis of wildlife population viability.

A critical consideration in the use and interpretation of the DecAid tool is that of scales of space and time. DecAid is best applied at scales of sub-watersheds, watersheds, sub-basins, physiographic provinces, or large administrative units such as Ranger Districts or National Forests. DecAid is not intended to predict occurrence of wildlife at the scale of individual forest stands or specific locations. It is intended to be a broader planning aid not a species or stand specific prediction tool.

The DecAid analysis tool can be used to evaluate wildlife objectives for certain species where there is sufficient data to predict tolerance levels. For Mile Creek watershed, two species warrant determining objectives and using DecAid to evaluate in relation to the historic range of

variability. Black-backed woodpeckers require large amounts of snags and down wood because of their dependence on fires and insect outbreaks. Pileated woodpeckers are a management indicator species for the Forest. DecAid indicates that the Mile Creek watershed currently meets the 80 percent tolerance level (29.2 snags per acre) for black-backed woodpeckers based on CVS data. CVS data indicates that there is an average of 29.1 snags per acre in the unmanaged stands in the watershed. The snag objective for the treatment area is 4 snags per acre. This exceeds the 30 percent tolerance level for black-backed woodpeckers (2.5 snags per acre).

DecAid indicates that the Mile Creek watershed currently meets the 50 percent tolerance level (30.2 snags per acre) for Pileated woodpeckers based on CVS data. CVS data indicates that there is an average of 29.1 snags per acre in the unmanaged stands in the watershed. The snag objective for the treatment area is 4 snags per acre. This does not meet the 30 percent tolerance level for pileated woodpeckers (14.9 snags per acre).

The overall objective for the project is to reduce the fuel loads for this area which makes meeting the snag and down wood tolerance level objectives for these snag associated species a lower priority. However, there is other unmanaged habitat in the watershed that meets the 80 percent tolerance level for black-backed woodpeckers and the 50 percent tolerance level for pileated woodpeckers.

The Northwest Forest Plan Record of Decision (ROD) recommends 120 linear feet of down logs per acre greater than 16 inches in diameter within the matrix management areas in Eastern Oregon. This project would eliminate some habitat within the project area, however a minimum of 120 linear feet of down woody material and 4 snags/acre would be retained. The populations of this species would continue to persist within the project area.

*Neotropical Migratory Birds:*

The project area currently contains all seral stages of habitat from early seral to late seral habitat and currently supports the species associated with these seral stages.

**Environmental Effects**

**Table 3-37: Effects for Threatened, Endangered and Sensitive Wildlife Species**

<b>Species</b>	<b>Proposed Action</b>
<b>Threatened and Endangered Species</b>	
Bald Eagle <sup>1</sup>	No Effect
Northern Spotted Owl	MEILTAA
<b>R6 Sensitive Species</b>	
Larch Mountain Salamander	No Impact
Oregon Slender Salamander	MII
Wolverine	MII
Pacific fisher <sup>1</sup>	No Impact
Crater Lake tightcoil	No Impact
Puget oregonium	No Impact
Columbia oregonium	No Impact
Dalles sideband	No Impact
Evening fieldslug	No Impact

Species	Proposed Action
<b>Survey and Manage Species</b>	
Larch Mountain Salamander	No Impact
Great Gray Owl <sup>1</sup>	No Impact
Crater Lake tightcoil	No Impact
Puget oregonium	No Impact
Columbia oregonium	No Impact
Dalles sideband	No Impact
Evening fieldslug	No Impact

<sup>1</sup> See discussion in wildlife report

MEILTAA—May Effect and Is Likely To Adversely Affect

ME-NLTAA—May Effect-Not Likely To Adversely Affect

MII- May Impact Individuals, but are not likely to impact populations, nor contribute to a potential loss of viability of the species

**Threatened, endangered and proposed species:**

**Northern Spotted Owl**

*Direct and Indirect Effects of the No Action Alternative*

There would be No Effect to spotted owls as no habitat would be altered or removed.

*Direct and Indirect Effects of the Proposed Action Alternative*

The tree removal activities on 300 acres which downgrade or remove habitat may affect and likely to adversely affect spotted owls. The tree removal activities on 701 acres which degrade habitat and disturbance related activities would have a may affect and not likely to adversely affect on spotted owls. The effects to spotted owls for this project were consulted on with the US Fish and Wildlife Service through formal consultation on FY 2007-2008 projects within the Willamette Province that have the potential to adversely affect spotted owls, due to habitat modification and disturbance (FWS reference: 1-7-06-F-0179).

*Cumulative Effects of the Proposed Action Alternative*

The analysis area is bordered on the south by the Billy Bob project boundary, on the west by Forest Road 17, on the north by the Forest Boundary, on the east by the Forest Boundary. This area includes the East and West Fivemile Timber Sales (Fivemile Planning Area) plus the planned North Fork Mill Planning area.

- The Fivemile Planning Area degraded 250 acres of NRF, removed 100 acres of dispersal habitat, and degraded 150 acres of dispersal habitat.
- The North Fork Mill Planning Area is adjacent to this project, however no specific information is available to analyze the effects on spotted owls. The proposed plan is to treat existing plantations and previously harvested areas. This project area is in the early stages of planning.

The *Status and Trends in Demography of Northern Spotted Owls* (Anthony et.al., 2004) states that the spotted owl numbers have fallen by roughly half over the past decade in parts of Washington, and the Confederated Tribes of the Warm Springs Reservation (CTWS) located in Oregon, and that they have dwindled by nearly a quarter in sections of Oregon’s Coast and

Cascade ranges. In only a few areas are owls maintaining their numbers. This report stated that determining the cause of this decline is beyond the scope of this study, and they could only speculate among the numerous possibilities, including competition from Barred Owls, loss of habitat from wildfire, timber harvest including lag effects from prior harvest, poor weather conditions, and defoliation from insect infestations. The *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney et al. 2004) indicated that population declines of the spotted owl over the past 14 years were expected, they concluded that the accelerating downward trends on some study areas in Washington where little timber harvest was taking place suggest that something other than timber harvest is responsible for the decline.

Cumulatively, Fivemile Planning Area, City of The Dalles timber harvest, The Dalles Watershed FuelBreak, and Billy Bob Hazardous Fuels Reduction projects impact spotted owl habitat negatively. All projects downgrade, remove or degrade habitat. The purpose of the Billy Bob Hazardous Fuels Reduction project is to protect the Wildland Urban Interface (WUI) from catastrophic wildfire. This would also protect the spotted owl habitat within the Billy Bob project area causing a positive cumulative effect.

## **R6 Sensitive Species:**

### **Wolverine**

#### *Direct and Indirect Effects of the No Action Alternative*

Human disturbance would continue from recreational and administrative uses. There would be no change in the use patterns of wolverines with this alternative. This alternative would have **no** impact on wolverines.

#### *Direct and Indirect Effects of the Proposed Action Alternative*

There would be no change in the use patterns of wolverines with this alternative. Wolverines are not likely utilizing the area because of the recreational uses throughout the year. The additional human activities associated with this alternative may impact individuals, but are not likely to impact populations, nor contribute to a potential loss of viability of this species.

#### *Cumulative Effects of the Proposed Action Alternative*

The cumulative effects area of consideration is the Miles and Mill Creek Watersheds. The past, present and future activities described above were considered in this cumulative effects analysis. There would be no measurable change in cumulative effects since wolverines are not likely utilizing the area because of the recreational uses throughout the year.

### **Columbia oregonium, Crater Lake tightcoil, Puget oregonium, Dalles sideband, evening fieldslug, Larch Mountain Salamander, Oregon Slender Salamander**

#### *Direct and Indirect Effects of the No Action Alternative*

There would be no impact to the species or habitat with this alternative.

#### *Direct and Indirect Effects of the Proposed Action Alternative*

There would be no impact to the species or habitat with this alternative. All micro sites would be protected. In addition, the ROD recommends 120 linear feet of down logs per acre greater than 16 inches in diameter within the matrix management areas in Eastern Oregon. This project would



eliminate some habitat within the project area, however a minimum of 120 linear feet of down woody material and 4 snags/acre would be retained. The populations of these species would continue to persist within the project area.

#### *Cumulative Effects of the Proposed Action Alternative*

The cumulative effects area of consideration is Billy Bob Hazardous Fuels Reduction project area. These species have a very small home range, which is less than 100 meters. The fuels reduction project would impact the habitat for these species by reducing snags (hazard trees) and down wood (firewood). There would be no measurable change in cumulative effects because of the small home range for these species and the retention of down wood and snags.

#### **Survey and Manage Species:**

See sensitive species for effects. The majority of the species listed under survey and manage are also listed under the R6 Sensitive Species list.

#### **Mt. Hood National Forest Management Indicator Species:**

##### **Deer and Elk:**

#### *Direct and Indirect Effects of the No Action Alternative*

There would be no change from current conditions with this alternative.

#### *Direct and Indirect Effects of the Proposed Action Alternative*

The proposed project would convert 560 acres of thermal cover to optimal cover, convert 436 acres to forage and retain 152 acres of forage. The open road density would remain the same. This project would create some long term forage areas which are becoming limited on summer range (lack of timber harvest). The project area would have cover forage ratio of 49 percent cover and 51 percent forage. The optimal cover forage ratio is 40 percent cover and 60 percent forage. This project would improve habitat for deer and elk.

#### *Cumulative Effects of the Proposed Action Alternative*

The analysis area is bounded on the south by the Billy Bob project boundary, on the west by Forest Road 17, on the north by the Forest Boundary, on the east by the Forest Boundary. This area includes the East and West Fivemile Timber Sales (Fivemile Planning Area), plus the planned North Fork Mill Planning area.

- Fivemile Planning Area has 63 percent cover and 37 percent forage for the summer range, plus 50 percent cover and forage for winter range post harvest. Open road densities for the Fivemile Planning Area would be 1.3 miles/square mile in summer range and 1.5 miles/square mile in winter range.
- The North and South Fork Mill area has 56 percent cover and 44 percent forage. The North Fork Mill Area has 5.03 miles/square mile.

This project would have 49 percent cover and 51 percent forage post harvest. The optimum cover forage ratio is 60 percent forage and 40 percent cover (Thomas, 1979). The Forest Plan Standard and Guidelines FW-208 recommends 2.5 miles/square mile on summer range and 2.0

miles/square mile on winter range. The Fivemile planning area meets or exceed the Standards and Guidelines. The North Fork Mill Planning Area currently is well above (5.03 miles/square mile) the Standards and Guidelines, however if the road closure plan is implemented then this would reduce road densities and move towards the Forest Plan Standards and Guidelines.

Cumulatively, there would be no significant change in cover forage ratios and the overall roads densities for the area would be reduced.

#### **Pine Martens and Pileated Woodpeckers:**

##### *Direct and Indirect Effects of the No Action Alternative*

There would be no change in habitat with this alternative.

##### *Direct and Indirect Effects of the Proposed Action Alternative*

Tree removal would reduce snags, down wood and canopy closure for these species. Currently, the proposed project area is between 30 and 80 percent snag and down wood levels as outlined in the DecAID Advisor. The 30 percent levels are generally associated with previously harvested areas and the pine/oak habitat. The 80 percent levels are generally located in the western portion of the project area and the 100 acre LSR. The project does not impact any designated pine marten or pileated woodpecker habitat areas (B5) designated in the Mt. Hood Forest Plan. The proposed project would reduce snags and down wood below the 30 percent level in the project area; however, based on professional judgement, adequate snags and down wood will still persist within the watershed since the project area is a small portion of the watershed.

##### *Cumulative Effects of Proposed Action Alternative*

The analysis area is bounded on the south by the Billy Bob project boundary, on the west by Forest Road 17, on the north by the Forest Boundary, on the east by the Forest Boundary. This area includes the East and West Fivemile Timber Sales (Fivemile Planning Area), plus the planned North Fork Mill Planning area.

- The Fivemile Planning Area retained snags and down wood at the 30 to 50 percent levels. The proposed project would reduce snags and down wood below the 30 percent level.
- The North Fork Mill Planning area would retain snags and down wood at the 30 to 50 percent levels.

Cumulatively, there would be no major impact on these species as adequate snags and down wood would be retained within the cumulative effects area.

#### **Wild Turkey and Western Gray Squirrel**

##### *Direct and Indirect Effects of the No Action Alternative*

There would be no change in habitat for these species with this alternative.

##### *Direct and Indirect Effects of Proposed Action Alternative*

For wild turkeys and gray squirrels, forage does not appear to be the limiting factor for these species within the project area. Adequate forage would be available in the stands adjacent to and within the project area. Roost and nest trees would be impacted by tree removal activities. Some

reduction in the number of potential roost trees would occur within the project area; however, the majority of large ponderosa pine and Douglas fir trees would be maintained. These large trees would still supply roost sites and forage for turkeys and squirrels. Turkey nest sites would be minimally impacted by this project as nests are generally found on slopes greater than 30 percent slope. The majority of this project area is located on slopes less than 30 percent slope. Gray squirrel nest sites would be negatively impacted by this project as tree canopies need to connect for squirrels.

#### *Cumulative Effects of Proposed Action Alternative*

The cumulative effects area of consideration is Billy Bob Hazardous Fuels Reduction Project boundary. Gray squirrels have a relatively small home range of .25 miles or less. Wild turkeys have a larger home range approximately 1 mile during the spring nesting season. Cumulatively, there would be a minor impact on these species. Wild turkeys and squirrels would still forage in the project area. Turkey nest sites would be minimally impact as the majority of the habitat within the project is less than 30 percent slope. Gray squirrel nest sites would be negatively impacted by the openness of the Priority 1 area. The Priority 2 area would be better habitat for gray squirrels as the canopy closure would be higher.

#### **Snag and Down Log Associated Species:**

##### *Direct and Indirect Effects of the No Action Alternative*

There would be no change in habitat with this alternative.

##### *Direct and Indirect Effects of the Proposed Action Alternative*

Tree removal would reduce snags, down wood and canopy closure for these species. Currently, the proposed project area is between 30 and 80 percent snag and down wood levels as outlined in the DecAID Advisor. The 30 percent levels are generally associated with previously harvested areas and the pine/oak habitat. The 80 percent levels are generally located in the western portion of the project area and the 100-acre LSR. The proposed project would reduce snags and down wood below the 30 percent level in the project area; however, based on professional judgement, adequate snags and down wood will still persist within the watershed since the project area is a small portion of the watershed.

#### *Cumulative Effects of Proposed Action Alternative*

The analysis area is bounded on the south by the Billy Bob project boundary, on the west by Forest Road 17, on the north by the Forest Bounday, on on the east by the Forest Boundary. This area includes the East and West Fivemile Timber Sales (Fivemile Planning Area) plus the planned North Fork Mill Planning area.

- The Fivemile Planning Area retained snags and down wood at the 30 to 50 percent levels.
- The North Fork Mill Planning area would retain snags and down wood at the 30 to 50 percent levels.

The proposed project would reduce snags and down wood to the 30 percent level. Cumulatively, there would be no major impact on these species as adequate snags and down wood would be retained within the cumulative effects area.

### **Neotropical Migratory Birds:**

#### *Direct and Indirect Effects of the No Action Alternative*

There would be no change in habitat with this alternative.

#### *Direct and Indirect Effects of the Proposed Action Alternative*

Tree removal would create an additional 300 acres of early seral habitat for those bird species. This would be a positive benefit for these species as more habitat would be available to them.

Bird species dependent upon late-seral habitat, would have a reduction in habitat of 300 acres from the existing condition. This would impact these species negatively, however adequate habitat would still persist within the Mile Creeks Watershed.

Bird species dependent upon riparian habitat would not see much of a change in their habitats because the riparian vegetation is being maintained or protected within the project area.

Species dependent upon mid-seral stands would have a reduction in 436 acres from the existing condition. This would impact these species negatively, however adequate habitat would still persist within the Mile Creeks Watershed.

#### *Cumulative Effects of Proposed Action Alternative*

The analysis area is bordered on the south by the Billy Bob project boundary, on the west by Forest Road 17, on the north by the Forest Boundary, on the east by the Forest Boundary. This area includes the East and West Fivemile Timber Sales (Fivemile Planning Area), plus the planned North Fork Mill Planning area and Billy Bob project area.

Cumulatively, there would be an increase in early seral habitat and a reduction in late seral habitat. The riparian areas would remain the same. The mid-seral habitat would decrease slightly. There would still be adequate habitat for all bird species within the cumulative effects area.

## Aquatic Conservation Strategy

In order for a project to proceed, “a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives” (NWFP ROD B-10). The nine objectives are listed on page B-11 of the ROD. The effects analysis has focused on key parameters or indicators that make up elements of the nine Aquatic Conservation Strategy (ACS) objectives, to determine if the Billy Bob Hazardous Fuel Reduction project will restore, maintain, or degrade these indicators. Once this determination has been made, the indicators should be examined together to make a final determination of whether the project is consistent with the Aquatic Conservation Strategy Objectives. Indicators pertinent to this project include water temperature, sediment, large woody debris, pool quantity, pool quality, and general condition of riparian reserves. The following section summarizes the environmental effects analysis from the previous sections in order to assess how this project compares to the Aquatic Conservation Strategy.

### Northwest Forest Plan ACS Components:

The Northwest Forest Plan contains an Aquatic Conservation Strategy that was developed to “restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands” (ROD page B-9). This strategy contains four separate components established to aid in meeting the above stated goal. The four components are:

- 1) Riparian Reserves
- 2) Key Watersheds
- 3) Watershed Analysis
- 4) Watershed Restoration

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

Riparian Reserves are defined as “lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use” (ROD pg B-12). Riparian Reserves were established in the Mile Creeks Watershed Analysis (September, 1994). The Mile Creeks watershed (approximately 239,000 acres) has been subdivided into the Five Mile Creek and Fifteenmile Creek 5th field watersheds as a result of a Region-wide watershed re-mapping effort subsequent to the completion of the Mile Creeks watershed analysis. Approximately 85 % of these 5th field watersheds is privately held, and not managed by the USDA Forest Service and therefore not subject to the Aquatic Conservation Strategy.

The Northwest Forest Plan Record of Decision (pg. 9) specifies default 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 streams in the Mile Creeks Watershed (page 108, Mile Creeks Watershed Analysis) has been determined to be:

- 125 feet – Subalpine Fire/Mt. Hemlock strata
- 125 feet – Moist Grand Fir strata

- 125 feet – Dry Grand Fir/Douglas-fir strata
- 100 feet – Ponderosa Pine/Oregon White Oak strata

This project is designed to accelerate the development of late seral characteristics in the Late Successional Reserves and Riparian Reserves.

### **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, page B-18].” The Five Mile and Fifteenmile Creek 5th field Watersheds have been designated as Tier 1 Key Watersheds. As Key Watersheds, these areas are subject to several specific standards and guidelines identified on page C-7 of the ROD.

### **Watershed Analysis (ACS Component #3)**

In developing the project, the Mile Creeks Watershed Analysis was used to evaluate existing conditions, establish desired future conditions, and assist in the formulation of appropriate alternatives. The Mile Creeks Watershed Analysis can be viewed under “Publications” on the Mt. Hood National Forest website at: <http://www.fs.fed.us/r6/mthood/publications/>.

Existing watershed conditions are described in the Hydrology and Fisheries sections of Chapter 3 and in the Mile Creeks Watershed Analysis. The short and long term effects to aquatic resources are also described in these sections of the EA.

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

One of the benefits of this project is to accelerate tree growth in Riparian Reserves, and speed attainment of late-seral stand conditions. Therefore, the Riparian Reserve and LSR portions of the proposed action are considered to be a watershed restoration project.

Additionally, since 1994, numerous stream enhancement and watershed restoration projects that were identified in Mile Creeks Watershed Analysis on pages 5 and 6, and Table V.B.2, pages 119 through 128 have been implemented.

### *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 to 100 percent 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 5th 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.

The range of natural condition for peakflows, baseflows, stream temperature, channel morphology, floodplain function, sedimentation, in channel large woody debris, large woody debris recruitment potential, aquatic migration and dispersal, riparian migration and dispersal, viability and genetic conservation of a unique stock of wild, winter steelhead, aquatic vertebrate diversity, riparian vertebrate diversity, and riparian vascular plant diversity in the Upper Eightmile and Headwaters of Fifteenmile Mile Creek 6<sup>th</sup> field watersheds is described on pages

51 through 60 of the Mile Creeks Watershed Analysis.

In both the Upper Eightmile and Headwaters of Fifteen Mile Creek 6<sup>th</sup> field watersheds, large woody debris accumulation and potential large woody debris recruitment in riparian and aquatic ecosystems is below the range of desired conditions as a result of past timber harvest and large wood removal both fish bearing and non-fish bearing streams to protect roads and culverts.

Peakflows in both of the projects Mile Creek 6<sup>th</sup> field watersheds, based on modeling, were predicted to be approximately 3 to 11 percent (Eightmile) and 2 to 8 percent (Fifteenmile) above hydrologically mature pre-disturbance conditions as a result of past management activities.

### Northwest Forest Plan ACS Objectives

In order for a project to proceed, a decision maker must find that the proposed management activity is consistent with the Aquatic Conservation Strategy objectives (1994 ROD B-10). This section provides an analysis for that purpose.

The nine objectives are listed on page B-11 of the ROD. The effects analysis located in Chapter 3 has focused on key parameters or indicators that make up elements of the nine Aquatic Conservation Strategy objectives, to determine if the project will restore, maintain, or degrade these indicators. Once this determination is made, the indicators are examined together to ascertain whether the project is consistent with the objectives. The following tables (table 1 and 2) display the individual indicators and the effect the action alternatives have on those indicators at the 5th and 6th field watershed scale in tabular and narrative format. Fifth field watersheds are generally large in size (40,000 acres to 250,000 acres), while 6th field watersheds are smaller (5,000 acres to 40,000 acres).

**Table 3-38:** Individual ACS Indicator Table. ACS indicators and effect of the alternatives on indicators.

Individual Indicator Table	Effects of the Actions No Action Alternative			Effects of the Actions Proposed Action		
	Restore <sup>1</sup>	Maintain <sup>2</sup>	Degrade <sup>3</sup>	Restore	Maintain	Degrade
Water Quality: Temperature		X			X	
Sediment		X			X	
Chemical Contamination		X			X	
Habitat Access: Physical Barriers		X			X	
Habitat Elements: Substrate		X			X	
Large Woody Debris		X			X	
Pool Frequency					X	

Individual Indicator Table	Effects of the Actions No Action Alternative			Effects of the Actions Proposed Action		
	Restore <sup>1</sup>	Maintain <sup>2</sup>	Degrade <sup>3</sup>	Restore	Maintain	Degrade
Pool Quality		X			X	
Off-channel Habitat		X			X	
Refugia		X			X	
<u>Channel Condition &amp; Dynamics:</u> Width/Depth ratio		X			X	
Streambank Condition		X			X	
Floodplain Connectivity		X			X	
<u>Flow/Hydrology:</u> Peak/base flows		X			X	
Drainage Network Increase		X			X	
<u>Watershed Conditions:</u> Riparian Reserves		X		X		

<sup>1</sup> "Restore" means the action(s) will result in acceleration of the recovery rate of that indicator.

<sup>2</sup> "Maintain" means that the function of an indicator does not change by implementing the action(s) or recovery will continue at its current rate.

<sup>3</sup> "Degrade" means to change the function of an indicator for the worse.

The following summarizes the Individual Indicator Table:

- The proposed project would treat vegetation in Riparian Reserves to restore them to a more natural vegetation state. This would result in more natural function of the riparian area.
- Indicators other than those described in the proceeding paragraph would be maintained as outlined in the effects analysis above.

The following table takes the individual indicators above and combines them for a total assessment for each ACS Objective.



**Table 3-39: Individual ACS Objective Assessment at Multiple Scales**

ACS Objective	Site/Project Scale Assessment <sup>1</sup>	5 <sup>th</sup> Field Watershed Scale Assessment <sup>2</sup>
<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>This project would meet this objective because of the protection that the Riparian Reserves provide. Specific prescriptions for Riparian Reserves have been developed for this project and those prescriptions are intended to maintain or enhance the development of a diverse, healthy riparian area while protecting it with a variety of mitigation and project design criteria. No new road crossings of perennial streams or wetlands are proposed, which would maintain the current level of aquatic habitat fragmentation. Some temporary crossings of ephemeral channels may be constructed and removed immediately after project completion. These crossings will not result in any long-term aquatic habitat fragmentation.</p>	<p>This treatment would also speed attainment of this objective at the watershed scale for the same reasons as described for the site/project scale assessment.</p>
<p><b>2.</b> Maintain and restore spatial and temporal connectivity within and between watersheds</p>	<p>The project would maintain spatial and temporal connectivity within and between watersheds. Nothing proposed with this project would reduce the spatial and temporal connectivity.</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>This project would meet this objective through mitigation measures, project design criteria and the protection provided by Riparian Reserves. Mitigation measures and project design criteria aimed at reducing soil compaction and erosion, establishment of “no-touch” areas next to perennial and intermittent streams, prescriptions for Riparian Reserves that are intended to maintain or enhance the development of a diverse, healthy riparian area and the lack of any new crossings on perennial streams would greatly reduce risks of sedimentation, increased peak flow, and</p>	<p>This treatment would also maintain the physical integrity of the aquatic system at the watershed scale the same reasons as described for the site/project scale assessment.</p>

ACS Objective	Site/Project Scale Assessment <sup>1</sup>	5 <sup>th</sup> Field Watershed Scale Assessment <sup>2</sup>
	resulting bank erosion and channel bed scour.	
<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>This project would meet this objective through mitigation, project design criteria and protection provided by Riparian Reserves which would maintain stream temperature. Mitigation measures and project design criteria aimed at reducing erosion would maintain the overall sediment levels in the long term. These measures are discussed in detail in the soil, water and fisheries analysis above.</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>This project would meet this objective through mitigation measures and project design criteria such as establishment of “no-touch” areas next to perennial and intermittent streams, keeping new temporary roads and landings out of Riparian Reserves, removing or breaching snow berms to avoid accumulation or channelization of erosive melt water on roads after snowplowing, and protection provided by Riparian Reserves.</p>	<p>This project would maintain the existing sediment regime at the watershed scale as well the same reasons as described for the site/project scale assessment.</p>
<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>This project would meet this objective through mitigation measures, project design criteria and protection provided by Riparian Reserves. As described in the watershed section of this report, this project would maintain the Watershed Impact Area well below the 25% Management Plan Standard and Guide which shouldn’t result in any peak flow increase</p>	<p>As discussed at the site scale, thinning treatments would not reduce canopy closure to an extent that could potentially influence in-stream flows. Therefore, 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>This project would meet this objective through mitigation measures, project design criteria and protection provided by Riparian Reserves. Mitigation measures and project design criteria such as establishment of “no-touch” areas next to perennial and intermittent</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>

ACS Objective	Site/Project Scale Assessment <sup>1</sup>	5 <sup>th</sup> Field Watershed Scale Assessment <sup>2</sup>
	streams, keeping new temporary roads and landings out of Riparian Reserves and maintaining the Watershed Impact Area well below the 25% Management Plan Standard and Guide would protect the integrity of the floodplains while minimizing the potential for increased peak flows. Floodplains are extremely limited in this area due to the steep nature of the landscape.	
<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>This project would meet this objective through protection provided by Riparian Reserves. Treatments within the Riparian Reserves are aimed at producing a more natural vegetative composition and density that has been lost through many decades of fire suppression.</p>	<p>The proposed treatment is designed to return riparian stands to a more natural density and growth trajectory. Therefore this treatment would serve to restore plant species composition and structural diversity at the larger watershed scale as well.</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>The project would meet this objective with mitigation measures, protection provided by Riparian Reserves and vegetative treatments that are designed to simulate a more natural disturbance regime within the area.</p>	<p>The desired future condition for this project is to develop an uneven-aged stand with canopy closure that would allow fire behavior to change from crown fire to surface fire, and to have stand species composition reflecting Condition Class 1 (ponderosa pine, white oak, and dry-climate Douglas-fir). Implementation of this project will help achieve the long-term goal of creating adequate habitat to support riparian-dependent species at the site and watershed scales.</p>

1. Scale Description: This project is located in the Upper Eightmile Creek and Headwaters of 15 Mile Creek 6<sup>th</sup> field watersheds.
2. Scale Description: This project is located in the Five Mile Creek and Fifteenmile Creek 5<sup>th</sup> field. These combined 5<sup>th</sup> field watersheds are roughly 239,000 acres in size. The Forest Service manages about 15% of these watersheds.

## Botanical Species

A Botanical Biological Evaluation was completed as part of this analysis. The entire Biological Evaluation is incorporated by reference and is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the evaluation are summarized below.

Reference material is contained in the full biological evaluation.

### Existing Conditions

#### Suitable Habitat

Suitable habitat was identified for 39 of the 75 Special status species that are within range of the Mt. Hood National Forest. The potential for presence of suitable habitat was based on information in species management guides, and local site data for species that have been documented on the Mt. Hood National Forest. Other sources used include the Oregon Natural Heritage Database of rare species, the Mt. Hood National Forest sensitive species plant database, the Interagency Species Management System (ISMS), scientific literature, aerial photos, topographic maps, and knowledge provided by individuals familiar with the area.

#### Known Sites Within in the Project Area

There are no known sites for Special status species in the project area or within 1 mile of the project area. One lichen species, *Bryoria tortuosa*, formerly listed as Survey and Manage (and currently not on the list of R6 Sensitive Species) is known from several sites near the eastern edge of the project area. The species was dropped from Survey and Manage because it has been found in forests younger than 80 years. The species has not been added to the R6 Sensitive plant list because it does not meet Oregon Natural Heritage Program criteria for rarity in Oregon.

#### Survey Results

Field surveys for Special status species were conducted by 2 Forest Service botanists during May and June 2007. Surveys focused on the verification of suitable habitat for 26 species prefield review. (17 vascular plants, 4 bryophyte species, 4 lichen species, and 1 fungi) Surveys also included search for botanical species formerly listed as Survey and Manage under the Northwest Forest Plan (since 1996) and also for some species that are known to be uncommon or rare in Oregon (according to the Oregon Natural Heritage Program), but which are not currently listed by the Regional Forester as R6 Sensitive.

Suitable habitat is present for 39 of the 75 species suspected to occur in the project area. No Special status species were found.

#### Surveys Not Conducted – Survey and Manage Fungi

There are 19 special status fungi species that are within range of the Mt. Hood National Forest. Pre-disturbance surveys are only required for *Bridgeopurus nobilissimus* (if suitable habitat might be affected by project activity). Surveys are not required for the other 18 fungi species currently under direction of the Northwest Forest Plan because surveys are “not practical” (2001 ROD S&G-9). If suitable habitat is suspected for listed fungi, it is assumed that the species are likely present.

Surveys for special status fungi, except *B.nobilissimus*, are not considered practical because the presence of fruiting bodies (e.g., mushrooms and truffles) varies year to year, which would require multi-year surveys to detect presence in suitable habitat. Surveys for *B.nobilissimus* are practical because the species produces perennial fruiting bodies on stumps, snags, and live trees.

A complete description of the methodology for field surveys can be found in the Biological Evaluation for botanical species in the project record.

## **Environmental Effects**

### **No Action – Direct, Indirect and Cumulative Effects**

There are no known R6 Sensitive plants and Survey and Manage botanical species in or near the project area. The proposed project would have no measurable short-term and long-term direct or indirect effects, or cumulative effects on Special status botanical species or their habitat as a result of no action.

### **Proposed Action – Direct, Indirect and Cumulative Effects**

There are no known R6 Sensitive plants and Survey and Manage botanical species in or near the project area. The proposed project would have no measurable short-term and long-term direct or indirect effects, or cumulative effects on Special status botanical species or their habitat as a result of proposed action.

### **Risk Assessment**

The determination of risks to populations of sensitive plants takes into consideration the size, density, vigor, habitat requirements, location of the population and habitat, and the consequence of an adverse effect on the species as a whole within its range and within the Mt. Hood National Forest. Discussions of the rationale for effects determination and risk assessment is contained in the Biological Evaluation. It is not included here because no Special status species were found in the project area.

## Invasive Plant Species

A more detailed invasive plant report is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the report are summarized below. Reference material is contained in the full specialists report.

### Existing Conditions

Invasive non-native plants occur throughout the planning area; most notable are noxious weeds and some grass species. These plant species can inhabit and negatively alter native plant communities and ecosystems.

Direction for management of invasive plants in national forest and grasslands of the Pacific Northwest is included in a 2005 environmental impact statement (EIS) that focused primarily on preventing and managing invasive plants.

The invasive plant species below that are of concern and are legally recognized as noxious weeds, meaning laws have been developed by the state of Oregon to restrict their spread and effect on the environment. Noxious weeds are defined by the Oregon State Weed Board “as exotic, non-indigenous, species that are injurious to public health, agriculture, recreation, wildlife or any public or private property”. The following noxious weeds below are identified by the Oregon Department of Agriculture (ODA) and are known to occur within or a short distance (1 mile or less) from this planning area (See Table 3-40).

**Table 3-40:** Noxious Weed Ratings in the Planning Area

"A" rated weeds	"B" rated weeds	"T" rated weeds
	Diffuse knapweed ( <i>Centaurea diffusa</i> )*	Spotted knapweed ( <i>Centaurea maculosa</i> )*
	Spotted knapweed ( <i>Centaurea maculosa</i> *)	

\* These species are currently being treated with herbicides on the Barlow RD portion of this planning area, per the “1998 Barlow Ranger District Noxious Weed Treatment EA”.

An “A” rated weed has an economic importance, and is known to occur in the state in small enough infestations to make eradication practical. The recommended action is to subject infestations to intensive control when and where found. A “B” rated weed has an economic importance which is regionally abundant, but which may have limited distribution in some counties and is subject to intensive control or eradication, where feasible on a case-by-case basis. A “T” rated weed is a priority noxious weed on which ODA will implement a statewide management plan.

Several non-native grass species were introduced in commercial seed mixes used by the Forest Service for erosion control and wildlife/livestock forage uses. These seed mixes were used for a long time as a means of site restoration efforts after timber harvesting. The efforts were

identified specifically to revegetate landings, slash piles, and skid trails. These areas now sometimes exhibit a monoculture of these species in certain areas. Conversion of these areas back to a more native vegetation type mix would take a long time and would be quite costly. This practice of using non-native seed mixes has not been implemented since 1993, when the Forest Service issued policy regarding the use of native plants (FSM #2470/2600, 1-7-1993).

The following is a list of those non-native grass species known to occur within or near (1 mile or less) of this planning area, according to field observations: Orchard grass (*Dactylis glomerata*), Soft brome (*Bromus mollis*), Tall fescue (*Festuca arundinacea*), Perennial ryegrass (*Lolium perenne*), Timothy grass (*Phleum pratense*), Meadow foxtail (*Alopecurus pratensis*), Intermediate Wheatgrass (*Agropyron intermedium*), and Kentucky bluegrass (*Poa pratensis*). There are some non-native “early seral invader” type grass species that are also opportunistic and have established in this planning area because of past soil disturbance from timber sales, and recreation. The creation of bare ground from these types of activities is where these species can gain a foot hold. These species are, Cheatgrass (*Bromus tectorum*), Barren brome (*Bromus sterilis*), Bulbous bluegrass (*Poa bulbosa*), and Voodoo grass (*Ventenata dubia*).

The current noxious weed treatment program in this planning area involves the use of herbicides along the 44, 4430, 4440, 4450, 4460, and 4421 roads. The species of concern for treatment has been Diffuse knapweed and some isolated Spotted knapweed plants. This treatment has proven effective in reducing the infestation along these roads. The treatments were monitored this last season, and determined to need treating this upcoming field season (2007).

There are several case studies on the Barlow Ranger District pertaining to noxious weed treatments that have varying levels of success. In the early 1990s, a population of toadflax along the 44 road within this planning area was found during monitoring and it was eradicated with an active manual treatment (hand pulling) program. Scotch broom has been documented on the old Bear Springs District in the early 1980s. Recent monitoring indicates this noxious weed is not growing in size due to manual treatments (hand pulling). In the early 1980s, houndstongue originated near the Keeps Mill seed orchard and there was no active control at that time when the infestation was small. Houndstongue now has expanded its range westward, now totaling over 214 acres.

## **Environmental Effects**

### **No Alternative – Direct and Indirect Effects**

There would be no new ground disturbances within the planning area other than what is already occurring. The projects associated with this hazardous fuels reduction project such as; vegetation treatments, temporary road, skid trail and landing construction, prescribed fire, plus the design/mitigation measures would not be implemented, thus there would not be an increase in the cost of monitoring and treating weeds under the current noxious weed treatment program. There would be no new weed populations established or spread in the forested landscape from these activities. The rate of spread would be expected to continue at the same level.

### **No Alternative – Cumulative Effects**

The potential analysis area for invasive plants/noxious weeds is as far as humans, wildlife, or

vehicles range from the proposed activity area. There would be no cumulative contribution to the introduction and spread of invasive plants/noxious weeds within this planning area other than what is occurring already.

Assumptions include: U.S. Forest Service has only a slight influence on movement of humans, livestock, wildlife, or vehicles in or out of the planning area. Once a small infestation is detected, the rate of spread can be controlled. Mitigation and an active treatment program can control the rate of spread. Herbicides are the most cost effective method for controlling the spread of noxious weeds.

Anticipated activities projected within the next five years occurring within this general area outside of the private land located within the forest boundary are; road maintenance, trail maintenance, South Fork of Mill Timber Sale, Prescribed Fire Treatments, Barlow Noxious Weed Treatment Program, and the Mt. Hood NF Invasive Treatment Program. Anticipated activities projected to occur within the next five years within this private land owned by the Boy Scouts or the private land owner next to the Boy Scouts would be any logging activities.

All of these projects would to a certain degree present potential opportunities for noxious weeds/invasive species to become established or spread by their activities, except for the Barlow Noxious Weed Treatment Program and the Mt. Hood NF Invasive Treatment Program. These two projects would actively be reducing the populations of noxious weeds and invasive species.

Past and current ground disturbing activities such as timber harvesting, road construction and maintenance, trail construction and maintenance, dispersed recreation, wildlife (deer/elk), Forest Service contractors, and fire suppression activities have all contributed to the establishment and spread of invasive species/noxious weeds in this planning area. The recreational and economic land uses (hunting, hiking, off-road vehicle use/OHV, mushroom harvesting, and firewood gathering) are also known vectors of weed seed dispersal. All these activities are likely to continue into the reasonably foreseeable future in this area.

### **Proposed Alternative – Direct and Indirect Effects**

The activity of cutting trees, temporary road building, and landing construction would cause a reduction in canopy and stems, which would provide favorable light conditions for invasive species establishment. Harvest activities (yarding material), deep ripping, and grapple piling, can expose and compact soils which would provide a seedbed for invasive species establishment. Once piles are burned, soil conditions are favorable again for these species to get established.

The proposed action would increase the cost for the Barlow Ranger District to implement their current weed management program, since this activity would add additional acres needing monitoring and treatment to the district's existing program.

The proposed action could potentially increase the need for treatment and potentially the increased use of herbicides. There are stringent standards and guidelines in place whenever herbicides are utilized on the Barlow Ranger District per the 1998 Noxious Weed Treatment EA. The Region 6 Invasive Plant EIS (2005) and the Mt. Hood NF Invasive Plant EIS expected to be ready to implement by late 2007, identify additional standards and guidelines pertaining to the



application of herbicides used anywhere on the Mt. Hood National Forest.

Many actions have and would contribute to the risk of weed spread on this district. Conceivably 1,000 acres would become more susceptible to an invasive plant/noxious weed establishment opportunity from the activity involved with mechanical treatments and 3,000+ acres from underburning. These new populations would be a source of seed to outside areas.

The proposed action would potentially increase the spread of non-native grass species that are known to occur within 1 mile of this planning area. These non-natives are opportunistic and the creation of bare ground would provide for this. The general public would still have access to this entire planning area, so this vector for seed dispersal would still exist.

There are three situations that would create the potential or contribute to the risk of invasive species establishment or spread from implementing the design criteria/mitigation measures associated with this project. The first would be the creation of bare ground from the activity of mechanical slash piling for fuels treatments with a grapple piler/excavator. The second would be noxious weed seed introduction from the equipment used to do this work along with any other equipment used for rehabilitation work, such as reclaiming temporary roads, skid trails, and landings. The third source could potentially come from the use of contaminated seed used to treat any area identified for rehabilitation for erosion control measures.

It is still not clear whether seeding after fire has positive, neutral, or negative effects on nonnative plant invasions during the recovery process after fire, and this is an area of needed research. The practice of seeding with nonnative grasses to reduce erosion after fire can have some negative consequences. Native plant cover was reduced by 47 percent in areas that were seeded with nonnative grasses and a legume, versus areas that remained unseeded in an eastern Cascades forest (Schoennagel and Waller 1999). In addition to providing nonnative competition, the artificial seeding disrupted the natural recolonization by native species.

### **Proposed Action Alternative – Cumulative Effects**

The potential analysis area for invasive plants/noxious weeds is as far as humans, wildlife, or vehicles range from the proposed activity area. The focus of this analysis is the role of activities on the Barlow Ranger District and its cumulative contribution to the introduction and spread of invasive plants/noxious weeds when added to the effects of this proposal.

Assumptions include: U.S. Forest Service has only a slight influence on movement of humans, livestock, wildlife, or vehicles in or out of the planning area. Once a small infestation is detected, the rate of spread can be controlled. Mitigation and an active treatment program can control the rate of spread. Herbicides are the most cost effective method for controlling the spread of noxious weeds.

Anticipated activities projected within the next five years occurring within this general area outside of the private land located within the forest boundary are; road maintenance, trail maintenance, South Fork of Mill Timber Sale, Prescribed Fire Treatments, Barlow Noxious Weed Treatment Program, and the Mt. Hood NF Invasive Treatment Program. Anticipated activities projected to occur within the next five years within this private land owned by the Boy

Scouts or the private land owner next to the Boy Scouts would be any logging activities.

All of these projects would to a certain degree present potential opportunities for noxious weeds/invasive species to become established or spread by their activities, except for the Barlow Noxious Weed Treatment Program and the Mt. Hood NF Invasive Treatment Program. These two projects would actively be reducing the populations of noxious weeds and invasive species.

Past and current ground disturbing activities such as timber harvesting, road construction and maintenance, trail construction and maintenance, dispersed recreation, wildlife (deer/elk), Forest Service contractors, and fire suppression activities have all contributed to the establishment and spread of invasive species/noxious weeds in this planning area. The recreational and economic land uses (hunting, hiking, off-road vehicle use/OHV, mushroom harvesting, and firewood gathering) are also known vectors of weed seed dispersal. All these activities are likely to continue into the reasonably foreseeable future in this area.

### **Noxious Weed Risk Assessment**

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that would be undertaken during project implementation (FSM 2081.03, 11/29/95). The overall goal is to “retain native vegetation consistent with site capability and integrated resource management objectives to suppress invasive plants and prevent their establishment and growth.” This objective is intended to result in adequate protection of growing conditions for maintenance of native vegetation.

The Billy Bob Hazardous Fuels Reduction Project was given a Moderate to High risk ranking. After inventory and some field inspection of the proposed areas along the identified roads, diffuse knapweed (*Centaurea diffusa*) is documented along portions of the 44, 4421, 4421-150, 4421-160, 4421-170, 4430, 4430-140, 4440, 4440-120, 4440-130, 4450 and the 4460. The 44, 4421, 4430, 4440, 4440-120, 4450, and 4460 roads are currently being treated with herbicides under the Barlow Ranger District noxious weed treatment program for the 2007 field season. The mitigation measures identified below if implemented should be adequate for preventing the spread or establishment of any new noxious weed sites.

## Recreation and Trails

A more detailed recreation and trail report is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the report are summarized below. Reference material is contained in the full specialists report.

### Definitions of Terms

The Mt Hood Forest Plan classifies trails in three Visual Quality Objective (VQO) levels. On page Four-115 and 116 in the Forest Wide Standards and Guidelines. The definitions are as follows:

1. Level I include the Pacific Crest National Scenic Trail (PCNST) and National Recreation Trails, as well as trails within and going to and from National Scenic Areas, A2 Wilderness, and A4 special Interest Areas.
2. Level II trails are all trails not classified as Level I or Level III.
3. Level III trails are used primarily for fire protection and administrative uses, as well as low recreational use trails and trails used primarily for “putting on miles”. Examples include power line corridor trails, old roads used as trails, and trails associated with equestrian, mountain bicycles, or motorcycles.

The Forest Plan also defines the VQO by distance zone for all levels of trails as follows in Table 3-41 on page Four-116.

**Table 3-41:** Visual Quality Objectives (VQOs) for all levels of trails

Trail Sensitivity Level	Visual Quality Objective per Distance Zone			VQO Allowed within C1 for 20% of trail length
	Near Foreground (first 660 feet from trail)	Far Foreground (next 660 feet)	Middleground (1320 feet to 5 miles)	
I	Retention	Partial Retention	Modification	Partial retention
II	Partial Retention	Modification	Modification	Modification
III	Modification	Modification	Modification	N/A

Visual Quality Objective Ratings can be briefly described as follows (not from the Forest Plan):

- **Retention:** This visual quality objective provides for management activities which are not visually evident. Under retention activities may only repeat form, line, color, and texture which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
- **Partial Retention:** Management activities are visually evident, but subordinate to the characteristic landscape when managed according to the partial retention visual quality objective. Activities may repeat form, line, color, or texture common to the characteristic

landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.

- **Modification:** Under the modification visual quality objective management activities may visually dominate the original characteristic landscape. However, activities of vegetative and land form alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type.

## Existing Conditions

The three trails located in the vicinity of treatment units are the Eightmile Loop Trail #459, the Eightmile Trail #459A, and a very small segment of trail #683 (approximately 250 feet between the Underhill Site and the 4450 road). All trails are classified as Level II with a VQO objective of Partial Retention in the Forest Plan. The project area has three recreation facilities; Eightmile Campground, Lower Eightmile Campground, and the Underhill Site. Use levels in the campgrounds are the highest on summer weekends, holidays and during fall hunting seasons. The campgrounds often fill to capacity during high use periods. The Underhill site currently receives only occasional use.

Approximately 0.25 trail miles (#459) are located on the east side of Forest Road 4430 within proposed treatment areas. Another 0.5 trail miles (#459A) are located between Eightmile Campground and Lower Eightmile Campground. Including the short segment of Trail #683 a total of 0.75 miles of trail affected by the proposed activity.

The timber stands located in the vicinity of the trails contain a great variety of tree species and age classes. Due to the lack of natural fire, more brush and true fir trees are present in undisturbed stands than in historic conditions. Mistletoe, root rot, and insects are causing mortality and health decline in many of the trees. The timber stands in both campgrounds have many diseased and dying trees as well as ladder fuels from small trees and branches (see Figure 3-13).

Approximately 1,250 feet of the Eightmile Trail #459A is bordered by plantations in two old clearcut units. These plantations dominate the landscape with evidence of human influence, and most currently do not meet Partial Retention due to the uniformity of age classes and species present and the close spacing of trees.

The Columbia Gorge Power Sleds groom snowmobile trails on Forest Roads 44 past the Billy Bob snow park and road 4430 during CFR closures for winter recreation. Billy Bob is the only East side snow park to access the trails system. All other snow parks that access groomed snowmobile trails are on Highway 26 and 35.



**Figure 3-13:** A photo showing overstocked stands, as well as mistletoe present in the tree in the center of the photograph. Mistletoe is prevalent in some stands and is targeted for removal to reduce fire spread risk, as well as reducing the risk of infection spreading to regeneration. This is a typical situation in both Campgrounds and along the trails within the project area.

## **Environmental Effects**

### **No Action – Direct and Indirect Effects**

There is no data concerning the current visual quality condition of the trails in this planning area. A walk through survey of the trails in the planning area was done and an estimated 30 percent of the total trail distance currently does not meet Partial Retention due to the presence of the two previously mentioned plantations from clear cuts along trail #459A. Over time they may thin themselves naturally and achieve a less managed appearance. The unmanaged stands along trail #459A that are experiencing overstocking and insect and disease issues would continue to experience mortality and accumulate more down woody material. This would most likely degrade the visual quality even if no evidence of human actions is present. A catastrophic wildfire, which is more likely with the no action alternative, would degrade the visual quality of the area for decades. As mentioned, the campgrounds have stands with excessive fuels and mortality from insects and disease and would be more prone to fire. Hazard trees that are a threat to public safety are removed from campgrounds at the start of every season and this practice would continue.

### **Proposed Action – Direct and Indirect Effects**

The proposed action is to thin and prune the stands adjacent to the trails and in all three recreation sites. The prescribed VQO for Level II trails of Partial Retention in the foreground would probably be met within 1 year. The activities planned with the project would thin the plantations in the foreground of the trail #459A and improve visual quality over time by diversifying the stand and decreasing the time required for the trees to reach mature size classes. The effects on dispersed and developed recreation in the area would be very minor, consisting of making facilities or small areas of the forest unavailable for a few days at a time. If a particular campground or trail is not available for a period of a few days, then there are numerous campgrounds and trails in the area that can be used. Activities in the campgrounds would occur before Memorial Day or after Labor Day to reduce the impact on users. A recreation representative would assist in marking the campgrounds so as to retain screening between sites where possible and still meet fuels reduction objectives. These impacts would be far outweighed by the reduction in the risk of catastrophic fire over the long term. The effects to the trail infrastructure would be mitigated by reconstructing the trail tread to Forest Service standard post-activity; however, it is expected there would be no mechanical impacts to the trails tread and drainage from project operations. One of the mitigating measures calls for retaining sufficient dense vegetation in a ring around the campgrounds to prevent the formation of user created OHV trails.

The proposed action allows for snow plowing on roads where conditions permit, but prohibits plowing of Forest Roads 44 past the Billy Bob snow park and road 4430 during CFR closures for winter recreation. The roads are maintained as snowmobile trails by the Columbia Gorge Power Sledgers. By not plowing Roads 44 and 4430 the proposed action would have no effect on snowmobile activities.

**Proposed Action – Cumulative Effects**

As is mentioned in the Desired Future Condition section, the long term effect on the visual quality of the scenery from all three trails should be to improve the existing condition and reduce the risk of catastrophic wildfire that would degrade visual quality for decades. The possible negative cumulative effects for this project are the repeated entries to maintain appropriate quantities fuels. The repeated entries should be subject to the same mitigating measures; however it should be possible to achieve Partial Retention VQOs in all re-entries within one year of the activity since the scale of activity would be reduced because the mechanical removal of large amounts of fuels should not be necessary.

The Dalles Watershed Fuel Break project would also be working in the vicinity of trails and campgrounds to the north of the project area. There are still adequate facilities available if both of the projects area operating simultaneously.

## Visual Quality

A more detailed visual quality report is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the report are summarized below. Reference material is contained in the full specialists report.

### Definitions of Terms

The Forest Plan defines the Visual Quality Objectives (VQO) by distance zone for viewsheds as follows in Table 3-42 on page Four-111 and Four-223:

**Table 3-42:** Visual Quality Objectives (VQOs) for viewsheds

Visual Quality Objective per Distance Zone		
Foreground (first half mile)	Middleground (0.5 to 5 miles)	Background (beyond 5 miles)
Retention	Partial Retention	Partial Retention

Visual Quality is rated from the designated viewer position. In the case of this viewshed it is rated as viewed from Forest Road 44.

Visual Quality Objective Ratings can be briefly described as follows (not from the Forest Plan):

- Retention:** This visual quality objective provides for management activities which are not visually evident. Under retention activities may only repeat form, line, color, and texture which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
- Partial Retention:** Management activities are visually evident, but subordinate to the characteristic landscape when managed according to the partial retention visual quality objective. Activities may repeat form, line, color, or texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.
- Modification:** Under the modification visual quality objective management activities may visually dominate the original characteristic landscape. However, activities of vegetative and land form alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type.
- Maximum Modification:** Management activities of vegetative and landform alterations may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middle ground, they may not appear to completely borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or contain detail which is incongruent with natural occurrences



as seen in foreground or middle ground.

## **Existing Conditions**

The project affects approximately 3 miles of the Dufur Mill Road (Forest Road 44) scenic viewshed. Units 4, 5, 7, 8, 9, 19, 35, 36 and 45 are adjacent to the road (see Figures 3-14, 3-15 and 3-16). Although a larger portion of the project is considered as in the viewshed and designated land allocation B2 (Scenic Viewshed) in the Forest Plan, only the near to middle foreground is visible from the designated viewer position (Forest Road 44) because the ground is flat. The viewer can only see as far as vegetation allows, which for most of the area is 100 feet or less past the clearing limit as demonstrated in the photos in Figures 3-14, 3-15 and 3-16. The area is not visible as middle ground or background from other areas on the road.

The timber stands located in the vicinity could be best classified as mixed conifer. The stands contain a great variety of tree species and age classes. In many areas, there are large ponderosa pines and Douglas firs present in the stands, though many are obscured by roadside regeneration screening and brush and smaller trees that have grown up in the stands. Due to the lack of natural fire, more brush and true fir trees are present in undisturbed stands than in historic conditions. Although the stands are not representative of historic landscape conditions, they technically meet retention or partial retention visual quality objectives for the most part because of lack of evidence of direct human activity. They do, however, show the effects of the lack of natural fire which is an indirect effect of the human activity of fire suppression. It could be argued that form, line, color and texture are not those of the characteristic landscape, even though no management activities are evident.

The stands also contain a large amount of mistletoe infected trees which are passing the disease on to the regeneration. Root rot is also prevalent in the area and is causing mortality in the stands. All these factors add up to a forest that is very prone to catastrophic fire which would most likely consume or kill many of the large ponderosa pine and Douglas fir present in the stands. The most likely ignition point for human caused fires is the foreground along Forest Road 44 because it is the most traveled route in the project area.



**Figure 3-14:** A typical view of the proposed treatment area as seen from Forest Road 44.



**Figure 3-15:** Another typical view showing younger open-grown trees with full branching growing in the road clearing screening views of the forest stands.



**Figure 3-16:** A third typical view of the project area showing dense brush and small shade tolerant trees.

## Existing Conditions

### No Action – Direct and Indirect Effects

If left unmanaged there would continue to be mortality in the stands due to root rot, mistletoe and other natural agents. It is more likely that a catastrophic wildfire may cause a stand replacement burn as the stands continue to accumulate dead and down woody material as well as brush and more ladder fuels. Depending on the suppression methods used and the intensity of burn, a fire could degrade the visual quality to a great extent.

If left untreated at the current time, it is likely some treatment would be needed in the next 10 to 20 years as more fuels accumulate and trees die of disease and the fire danger continues to increase. A vegetation treatment in a decade or two could have a more intensive and long lasting impact on the visual quality. If the large remnant trees from historic stands are allowed to completely die before treatment, or are consumed in a fire, the opportunity for restoring an historic character would be lost for many decades.

Many of the trees along the road are beginning to encroach on the clearing limits and affect sight distance. They would need to be removed from the clearing limits, most likely by mechanical brushing. Mechanical brushing often leaves mangled limbs and stubs evident on small trees and brush in the clearing limits, showing obvious signs of human activity. It is possible to mitigate

these effects with hand pruning or complete tree or shrub removal, however current road management budgets only allow for machine brushing of the most critical and most traveled roads on the Forest to provide for public safety. One of those roads is Forest Road 44. If mechanical brushing is done on the types of young full crowned trees as shown in Figure 3-15 the result would be a setting that would not meet the VQO of retention for many years.

### **Proposed Action – Direct and Indirect Effects**

The proposed action would remove most of the smaller trees and brush as well as disease infected larger trees in the stand. Larger health trees would remain, as well as isolated islands of small trees or brush. The result would be a view that has the appearance of Figure 3-17 for much of the 3 miles of the road. Pruning would also occur to reduce ladder fuels. The viewer would not only see the stands adjacent to the road, but be able to view similar treatments ¼ mile or more in from the road in many areas. Management activities could visually dominate the landscape over much of the area for 5 to 10 years until they are not visually evident. Underburning may assist in bringing about a natural appearing landscape more rapidly by consuming fuels and stumps left from vegetation management.

Experience has shown it is not possible to attain the visual quality objective of retention when such large quantities of fuel need to be removed. Even if landings, skid trails, and temporary roads are not evident, stumps, slash and disturbed ground make management activities obvious. The trade off for not meeting visual quality for a 5 to 10 year period is that a long-term improvement can be achieved much more quickly by treating all of the stands right up in to the visible foreground now.

Mitigation to hide most skid roads, landings and slash piles from the foreground view would aid in meeting objectives; however, given the prescribed treatments, the views in the project area would most likely only meet the visual quality objective of partial retention, with many areas only meeting modification following treatment, not retention as prescribed in the Forest Plan. With careful implementation and management, it should be possible to meet partial retention over most of the project area within 5 years, and retention over most of the area in 10 years or less.

Forest Plan Scenic Viewshed Standard B2-015 on page Four-224 states the “Unacceptable changes in form, line, color, and/or texture resultant from Management activities should be corrected within the first year after the activity occurs.”

Forest Wide Visual resource Management Standard FW-556 on page Four-113 states “The prescribed VQO should be achieved within one year after completion of any project activities.”



**Figure 3-17:** This photo is an approximation of the tree density that would be left following treatment. In the first few years following the project the ground would appear more disturbed, more stumps would be visible and more slash may be present. Slash piles would also be evident until burned. The project area will most likely resemble this photo in 5 years and much of the area should meet the VQO of partial retention within that time period.

The proposed action would require exceptions to these two standards in order to treat the hazardous fuel for this project and to move the area toward the desired future condition more quickly. Any attempts to leave smaller trees, shrubs, or a screening of vegetation throughout the foreground Forest Road 44 in order to better meet the VQO of retention would most likely result in many of those trees and shrubs being consumed or killed in underburning operations, and the project would not meet the overall purpose and need for action. Brown needle and dead smaller trees in the foreground would also prohibit meeting retention VQO. Treating the foreground differently than the remainder of the stand would create an unnatural appearance; it would also require another vegetation management entry to achieve the desired future condition. Retaining more vegetation in the foreground would also leave fuels present in the area more likely to have a human caused fire ignition and not meet all the objectives of the project. Mitigation measures/design criteria do call for leaving small islands of trees or shrubs for visual diversity, but these would be spaced and be able to be protected during underburning operations.

The proposed action would also remove the smaller trees and brush in the clearing limits of the road. This would allow views into the forest from Forest Road 44, and prevent the visual problems associated with mechanical brushing described in the no action alternative. Underburning and mechanical removal of small trees and brush would maintain this more open appearance in the long term.

The trade off for 5 to 10 years of disturbance that does not meet the retention VQO is the long term outcome of this project that would result in a landscape that more closely resembles historic conditions with fire resistant large trees with park-like wider spacing, large visible trunks and low ground cover. This is the type of landscape that can be viewed on Forest Road 44 to the east of the project area where similar management activities have already occurred. A view from that area is in Figure 3-17. The resulting stand would be easier to maintain in the VQO of retention long term than the current stand because it would receive periodic underburning and not require the mechanical removal of large quantities of fuels. Management activities that required removal of larger trees could be planned to meet retention within one year because no major removals of brush, smaller trees, and diseased trees should be required.

### **Proposed Action – Cumulative Effects**

The area considered for cumulative effects is the portion of Forest Road 44 from Brooks Meadows to the Forest boundary to the east. This stretch of road is approximately 11 miles long. Vegetation management activities have occurred over much of the road the last several decades. A formal survey of this stretch of road has not been done to classify what sections currently meet visual quality objectives. An estimate is that 4 miles of the road meet partial retention, mostly the western portion of the section. One recent salvage cut near the 5-mile lookout road fits in the maximum modification category. The remainder of the road meets retention or partial retention judged solely on the criteria of the evidence of human activity. No other projects are currently planned within the view of Forest Road 44. Many of the areas currently meeting partial retention from past vegetation management activities are recovering and would meet retention within the next decade.

The desired future condition of the project is to develop an uneven-aged stand with canopy closure that would allow fire behavior to change from crown fire to surface fire, and to have stand species composition reflecting Condition Class 1 (ponderosa pine, white oak, and dry-climate Douglas-fir). Achieving this desired future condition would enable meeting the overall goals of the land allocations within the project area. As detailed in the proceeding sections, all the project area should meet the VQO of retention within a decade. The other areas within the section of Forest Road 44 that only meet Partial Retention currently due to past management should also meet retention within a decade. The combination of these two factors would significantly raise the percentage of the area that meets the VQO of retention.

## **Heritage Resources**

A more detailed heritage resources report is located in the project record, located at the Barlow Ranger District. The analysis and conclusions of the report are summarized below. Reference material is contained in the full specialists report.

### **Existing Conditions**

Heritage resource surveys were conducted on a planning area scale in preparation for the proposed mechanical treatment areas. Survey methodologies were conducted in compliance with the 2004 Programmatic Agreement (PA) between Region 6 of the Forest Service, the State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP). All survey methodology and findings were documented in Heritage Resource Report 2007/060601/0005.

Areas proposed for only maintenance underburning and no mechanical treatment were documented within Heritage Resource Report 2007/060601/0006. For these areas, existing fire control lines or natural barriers would be reused, there would be no new ground disturbance, and no combustible heritage resources would be included. These activities are excluded from case-by-case review because they have little or no potential to affect historic resources (Stipulation III.A.26).

According to the 1995 Ethnographic Study of the Mt. Hood National Forest, there are no designated traditional use areas within the proposed project area. Fieldwork by the Inter-Disciplinary Team has revealed that huckleberries exist in only occasional small, isolated patches throughout the area and do not offer any significant potential for enhancement. The project area appears to be too warm, dry, and low in elevation for successful promotion of huckleberry plants. The only other known traditional native plant communities within the project area consist of western red cedar. The Confederated Tribes of Warm Springs were consulted about the proposed project with no objections or concerns raised by the tribes.

The Underhill Cabin/Mill 661EA0028 is the site of an historic sawmill and cabin dating to the 1930's. The mill site consists of a rectangular depression, scattered lumber, tin cans, and the remains of a cast iron wood stove. The mill site is situated just downslope from a small campground and brass plaque commemorating the mill site and land donation to the U.S. Forest Service. Since the last visit to the site in 1996, a split-rail cedar fence that once enclosed the mill site has been partially removed and apparently used for firewood. The cabin site consists of a collapsed four-room wooden frame structure, 9.0 gauge telephone wire, and a cast iron stove. A split rail cedar fence also encloses the cabin site. The cabin site is situated downslope from the mill site on a terrace just above Ramsey Creek. The cabin site lies outside of the current proposed project area.

The Ramsey Creek Obsidian Flake 661IS0037 is an obsidian flake and chert angular waste located within a modern dispersed hunting camp situated on a stream terrace along Ramsey Creek.

The Lower Eightmile Ditch and Log Structure 661EA0104 consists of a saddle-notched log framework and adjacent ditch. A revisit to the site for this current project proved negative for the log structure. The structure may have completely deteriorated since its initial documentation 25 years ago, or downed timber may be obscuring the feature. One isolated tin can was located and collected from the approximate area of the cabin. The “ditch” documented during the initial investigation of the site was found to resemble a trail. The feature originates within the Lower Eightmile Campground, and continues approximately 400 meters to the ENE where it is apparently obliterated in a previous timber harvest area.

The Mid-Eightmile Stripped Cedar Tree 35WS244 (661NA0168) consists of a single peeled dead cedar tree. A revisit to the site for this current project proved negative for the tree. The tree has probably fallen since its initial documentation in 1991, and numerous fallen trees in the area are probably obscuring the tree.

The Eightmile Swamp Stripped Cedar Tree 35WS245 (661NA0169) consists of a single peeled dead cedar tree. A revisit to the site for this current project revealed that the tree had fallen since its initial documentation in 1991. All bark had completely sloughed off of the tree, and a second tree had fallen across the peeled cedar tree. Although four levels of chop marks were originally documented, only three levels of chop marks were observed during the site revisit.

The Lower Eightmile Campground Trash Scatter 661EA0190 consists of two depressions and scattered surface artifacts within the Lower Eightmile Campground. The artifacts included clear and brown bottle and jar glass, a baking powder lid, amethyst glass, and transfer and decal decorated white ironstone. A revisit to the site for this current project proved negative for the amethyst glass, the baking powder lid, and any ceramics. However, an additional depression was noted at the site.

The 4440 Road Insulators 661EA0348 consists of 12 ceramic insulators, two peg mountings for insulators, three wire mountings for insulators, and one blazed tree along north-trending Forest Development Road 4440. A telephone line is first shown along the 4440 road on a 1935 Mt. Hood National Forest Map.

The Wolf Run West Ditch 661EA0344 consists of an historic ditch. The ditch was constructed in 1884 to provide water to Wards Mill, and was later adapted for domestic and irrigation purposes. Portions of the ditch were abandoned after segments of the ditch were relocated in 1964. A possible footbridge and portions of a possible vehicle bridge were located within the abandoned ditch alignment.

The Heart Blaze site 661EA0345 consists of a dead fir tree with an inscription in the shape of a heart, inscribed initials, and a nearby can dump. The can dump consists of glass fragments and tin cans, and includes both modern and older cans. The site is situated adjacent to an abandoned segment of the Wolf Run West Ditch 661EA0344.

The 44 Road Insulators 661EA0346 consists of 57 insulators along east-west trending Forest Development Road 4400. A telephone line is first shown along the 4400 road on a 1935 Mt. Hood National Forest Map.



The 44 Road Can Dump 661EA0347 consists of approximately 100 cans, license plates, glass, and other miscellaneous metal that appears to date to 1920. The can dump may be associated with the Underhill Mill site (661EA0028) situated approximately 100 yards to the west.

## Environmental Effects

### Methodology for Effects Analysis

Direction for surveys for protecting, documenting effects, and consulting on heritage resources comes from various laws, regulations and policies. The most important are summarized below.

- **The National Historic Preservation Act (NHPA) of 1966, as amended**

This Act requires Federal agencies to consult with American Indian Tribes, state and local groups before nonrenewable cultural resources, such as archaeological and historic structures, are damaged or destroyed. Section 106 of this act requires federal agencies to review the effects project proposals may have on the cultural resources in the analysis area.

- **36 CFR Part 800 – Protection of Historic Properties**

**800.1 Purposes.** (a) *Purposes of the section 106 process.* Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Council a reasonable opportunity to comment on such undertakings. The procedures in this part define how Federal agencies meet these statutory responsibilities. The section 106 process seeks to accommodate historic preservation through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

**800.5 Assessment of Adverse Effects.** (1) *Criteria of adverse effect.* An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

When applying the criteria of effect and adverse effect, there are three possible findings:

- **No Effect:** There is no effect of any kind, neither harmful nor beneficial, on the historic properties.

- **No Adverse Effect:** There could be an effect, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the National Register.
- **Adverse Effect:** There could be an effect, and that effect could harm characteristics that qualify the property for inclusion in the National Register.

#### **No Action Alternative – Direct and Indirect Effects**

Current management would remain unchanged under this alternative. There would be no effect to heritage resources under Alternative 1, other than the natural process that are already occurring.

#### **Proposed Action – Direct and Indirect Effects**

Potential impacts to heritage resources could result from activities associated mostly with the use of heavy machinery during the proposed commercial harvest operations and machine piling activities. Combustible heritage resources could be impacted by the proposed underburning. Additional activities associated with this project include approximately 35.50 miles of routine road maintenance that may include: brushing, ditch cleaning and shaping, culvert cleaning, gravelling, deep patching, blading and/or reshaping. Ditch spoil would be deposited in previously disturbed areas. Roads may be pre-treated for invasive plants by hand removal, mowing, or chemical treatment. Snowplowing may occur, if weather conditions permit. No road widening would occur. All of these associated activities would be limited to the existing road prisms, would only affect previously disturbed ground, and are generally accepted as having no potential to cause effects to heritage resources (Stipulations III (C) 2, 4 and 5 of the 2004 Programmatic Agreement).

Heritage Resource Reports 2006/060601/0005 and 2006/060601/0006 documented the survey methodology, findings and recommendations for archaeological resources associated with this proposed project. These reports concluded with findings of no effect for impacts to archaeological resources. Each of the archaeological resources is discussed in turn below.

The portion of the Underhill Cabin/Mill 661EA0028 within the proposed project area consists of a rectangular depression, scattered lumber, tin cans, and the remains of a cast iron wood stove. The site is situated within an area scheduled for prescribed burning and hand thinning. Forest Development Road 4450 and Forest Development Road 4400 would be used as fire control lines in the area of the site. However, a fire control line constructed with hand tools or a wet line would be completed around the mill remains to exclude the feature from burning activities. The hand thinning would be accomplished using hand tools, such as chainsaws and pruning implements. No trees would be removed. Prescribed burning and hand thinning would have no effect on the site.

The Ramsey Creek Obsidian Flake 661IS0037 is an isolated find near Ramsey Creek. The general area of the find was inspected for this project with no additional cultural materials located, despite excellent (75 percent) ground visibility. No activities are proposed in the vicinity of the isolate. The proposed project would have no effect on the isolated find.

The Lower Eightmile Ditch and Log Structure 661EA0104 consists of a saddle-notched log framework and adjacent “ditch”. Although the “ditch” was relocated, the log framework was not relocated. The site is located within a riparian area with no proposed activities in the vicinity of the site. Mitigation measures for the ditch fall within the guidelines established by the Programmatic Memorandum of Agreement for Historic Water Transportation Ditches for the Wallowa-Whitman National Forest (1984). The programmatic agreement is being adopted for the Mt. Hood National Forest to determine the effects on this site. The site would be designated with a 50-foot buffer on both sides of the ditch for the exclusion of heavy machinery. Any trees felled within the buffer zone should be felled directionally away from the ditch. Existing skid trails and roads within the buffer zone can be re-used. No new road construction or new skid trails can occur within the buffer zone. Previous disruptions in the ditch may be skidded across with the approval of the archaeologist. Hand constructed fire control line may be constructed within the buffer zone, but mechanical fire control line may not be constructed within the buffer zone. Hand constructed fire control line or wet line would be constructed around the two combustible features of the ditch to exclude them from burning activities. With these restrictive measures, the proposed thinning and low-temperature burning would have no effect on the site.

The Mid-Eightmile Stripped Cedar Tree 35WS244 (661NA0168) consists of a single peeled dead cedar tree that has apparently fallen and become obliterated or obscured since its initial documentation. The site is located within a riparian area with no proposed activities in the vicinity of the site. Available information about the tree has been collected during previous documentation. The site offers no further research potential and does not contain any characteristics that would make it eligible for inclusion on the National Register of Historic Places. No protective measures are recommended or required for ineligible sites. The proposed project would have no effect on the site.

The Eightmile Swamp Stripped Cedar Tree 35WS245 (661NA0169) consists of a single peeled dead cedar tree that has fallen since its initial documentation. The site is located within a riparian area with no proposed activities in the vicinity of the site. The proposed project would have no effect on the site.

The Lower Eightmile Campground Trash Scatter 661EA0190 consists of two depressions and scattered surface artifacts within the Lower Eightmile Campground. The site is located within an area scheduled for hand thinning. Hand thinning would be accomplished with hand tools such as chainsaws and pruning implements. No trees would be removed. The proposed project would have no effect on the site.

The 4440 Road Insulators 661EA0348 consists of 17 trees with ceramic insulators, a blaze, or insulator mounts. The site passes through areas proposed for thinning and prescribed burning. All of the trees are mature ponderosa pine or fir trees, which would remain unaffected by the proposed low temperature burn. Each tree was flagged and would be avoided during any tree removal or felling operations. Prescribed burning and tree harvest would have no effect on the site.

The Wolf Run West Ditch 661EA0344 consists of an abandoned historic ditch with the remains of a possible vehicle bridge and a possible footbridge. The site passes through areas scheduled

for thinning and prescribed burning. Mitigation measures for the Wolf Run West Ditch fall within the guidelines established by the Programmatic Memorandum of Agreement for Historic Water Transportation Ditches for the Wallowa-Whitman National Forest (1984). The programmatic agreement is being adopted for the Mt. Hood National Forest to determine the effects on this site. A 50-foot buffer would be flagged on both sides of the ditch for the exclusion of heavy machinery. Any trees felled within the buffer zone should be felled directionally away from the ditch. Existing skid trails and roads within the buffer zone can be re-used. No new road construction or new skid trails can occur within the buffer zone. Previous disruptions in the ditch may be skidded across with the approval of the archaeologist. Hand constructed fire control line may be constructed within the buffer zone, but mechanical fire control line may not be constructed within the buffer zone. Hand constructed fire control line or wet line would be constructed around the two combustible features of the ditch to exclude them from burning activities. With these restrictive measures, the proposed thinning and low-temperature burning would have no effect on the site.

The Heart Blaze site 661EA0345 consists of an inscribed dead fir tree and nearby trash dump. The site is situated within an area proposed for commercial thinning and prescribed burning. A 100-foot buffer for the exclusion of heavy machinery would be flagged around the site. Existing roads, trails, and graveled areas within the site can be reused. Trees harvested in the vicinity of the site shall be felled directionally away from the site. There are no combustible remains at the site. The proposed project would have no effect on the site.

The 4400 Road Insulators 661EA0346 consists of 57 insulators along east-west trending Forest Development Road 4400. The site passes through areas proposed for thinning and prescribed burning. All of the trees are mature ponderosa pine or fir trees, which would remain unaffected by the proposed low temperature burn. Each tree was flagged and would be avoided during any tree removal or felling operations. Prescribed burning and tree harvest would have no effect on the site.

The 44 Road Can Dump 661EA0347 consists of tin cans, glass fragments, stoneware, and other metal cultural artifacts. The site is situated within an area scheduled for prescribed burning and hand thinning. Forest Development Road 4450 and Forest Development Road 4400 would be used as fire control lines in the area of the site. There are no combustible remains at the site. The proposed hand thinning would be accomplished using hand tools such as chainsaws and pruning implements. No trees would be removed. Prescribed burning and hand thinning would have no effect on the site.

### **Proposed Action – Cumulative Effects**

Heritage Resources would be avoided during the implementation of any other type of foreseeable projects with no indirect or direct effects. As such, there would be no cumulative effects to Heritage Resources, other than the natural processes that are already occurring.

## **Social Impact Analysis/Environmental Justice**

On February 11, 1994, President Clinton issued the Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898). This order directs agencies to identify and address disproportionately high and adverse human health or environmental effects of projects on certain populations. In accordance with this order, the proposed activities have been reviewed to determine if they would result in disproportionately high and adverse human and environmental effects on minorities and low-income populations.

The community of Dufur is 12 air miles east of the Billy Bob Hazardous Fuels Reduction Project area. Camp Baldwin Boy Scout Camp and other private properties are located adjacent to the project area. Other communities that may have an interest in the proposal would include Hood River, Parkdale, and Odell to the North; The Dalles to the Northeast; Maupin, Madras, Redmond, and Bend to the south; and Sandy, Gresham and Portland to the West. Census data confirm that the larger communities have minorities and low-income populations that may be affected by proposed activities. However, no specific concerns regarding minorities or low-income populations or communities were identified during the public information process. The Camp Baldwin Boy Scout Camp and other private landowners have requested that the Forest Service implement a fuels reduction project to better protect their lands. Throughout the planning process, the Forest Service worked with the landowners to ensure the project met their goals and objectives and did not negatively impacted their lands or users.

The Billy Bob Hazardous Fuels Reduction Project area that is on National Forest System lands is located on usual and accustomed land for the Confederated Tribes of Warm Springs (as is all of the Mt. Hood National Forest). The Treaty of 1855 granted the Confederated Tribes of the Warm Springs (CTWS) the right of “usual and accustomed” gathering of traditional native plants and “special interest” use. According to the Ethnographic Study of the Mt. Hood National Forest (French et al. 1995), no traditional use areas have been identified in this planning area. No activities are proposed that would preclude any granted rights. Fieldwork by the Inter-Disciplinary Team has revealed that huckleberries exist in only occasional small, isolated patches throughout the area and do not offer any significant potential for enhancement. The project area appears to be too warm, dry, and low in elevation for successful promotion of huckleberry plants. Therefore, the proposal to implement fuels reduction project would not have any adverse affect on members of the CTWS.

Although there is no formal tracking system, it is evident to Mt. Hood National Forest front desk staff and special-forest product personnel that many of the foliage/greenery permits are sold to low-income individuals and minorities. The fuels reduction project is not expected to affect these users because the majority of the disturbance is not in areas where permit harvesting is concentrated. It is likely that the Billy Bob Hazardous Fuels Reduction project will generate more special forest products as the area is treated and new vegetation grows (e.g., firewood opportunities). Therefore, the proposal to implement fuels reduction is not expected to have any negative affect on special forest product gatherers.

**Financial Efficiency Analysis**

The value of the commercial fuels reduction units is expected to cover the cost of treatments in non-commercial units. Stewardship contracting allows this type of trading goods for services.