

Pre-Operations Report

Operation Name: The South Rock Railroad Alternate
County: Linn
Management Basin: Rock Creek

Table 1. Operation Areas, Types and Acres

Area	Type of Operation	Gross Acres	Net Acres
	MC	92	85
Total		92	85

I. PHYSICAL DESCRIPTION OF OPERATION AREA:

The operation is located within a temperate climate area. Typically the fall and winter seasons are wet. This area receives approximately 70 to 90 inches of rainfall per year. The operation is located within the *Tsuga heterophylla* Zone (Natural Vegetation of Oregon and Washington, Franklin & Dyrness, 1973).

The landform is moderate to very steep slopes near the middle of several tributary forks of Rock Creek below High Rock. The geology map shows most of the sale area in a large scale landslide deposit except for the west corner of the sale area which is underlain by rocks of sedimentary or volcaniclastic origin.

Pechuck soils make up the soil within the operation. Pechuck soil is a well-drained, colluvial soil. The elevation within the operation ranges from 1,760 feet to 2,880 feet. The slopes range from 5 to 80%. The average 50 year site index for Douglas-fir is 120 feet for the operation area.

II. CURRENT STAND CONDITION:

The operation is located within a 69 year-old stand currently classified as Closed Single Canopy. The overstory is a mix of Douglas-fir, western hemlock and western red cedar trees. Approximately 40% of the stand is infected with dwarf mistletoe. There are a few scattered big leaf maple and red alder trees in the overstory as well. What little understory is present consists of dwarf Oregon grape and sword fern. There are currently 20 snags per acre; 1,800 cubic feet per acre of sound down wood; and 7,900 cubic feet per acre of down wood in all decay classes. (SLI 2004)

Table 2. Stand Inventory Information

Area	Prescription	Stand ID ¹	Species	Age	DBH	BA	TPA	SDI	Acres ²
	MC	12726	DFWH	69	15	311	237	79	92

1 The source of stand inventory information is SLI from 2004.

2 The acres are based on GIS and include roads, streams buffers, reserve areas, etc.

III. DESIRED STAND CONDITION:

This operation is located in the Rock Creek Basin. Approximately 55 percent of this basin is planned for Complex Structure stands. (*Cascade District Implementation Plan, 2003*) This basin is dominated by mature, densely stocked stands of Douglas-fir mixed with varying amounts of western hemlock, western red cedar, noble fir, and hardwoods. The diversity of tree species in these stands present good opportunities for structure based management, especially where past management included commercial thinning. Stands that did not have previous density control have very high overstory densities, and are generally not good partial cut candidates. Many of the stands in this basin have high timber values and retain important structural components (snags, large old growth trees, large down logs, etc.) from legacy stands. This basin is an important part (2.5%) of the City of Salem's municipal watershed.

The Operation

The DFC for the operation (SLI type 12726) is General. Removal of mistletoe infected western hemlock is important for the operation to limit the spread of the mistletoe. Leave trees in the unit will be Douglas-fir and western red-cedar only.

The Anticipated Pathway for the Operation is:

- The unit will receive a modified clearcut and be replanted.
- The unit will be evaluated for a pre-commercial thinning in 10-15 years.
- When the stand is about 40 years of age, it will be evaluated for an initial commercial thinning. The opportunity to develop snags and down wood with this entry will be evaluated, and implemented if conditions are suitable.
- A second commercial thinning is planned when the overstory trees are about 80-years old.
- Regeneration Harvest is planned to occur when the overstory reaches approximately 100 years of age.

Table 3. Stand Structure Information

Area	Stand ID	Current	Post Harvest ¹	Desired Future	Acres
	12726	CSC	REG	GEN	92

¹ The stand is expected to develop into this condition in the five to ten years after this operation is completed.

IV. PROPOSED MANAGEMENT PRESCRIPTION:

The proposed management prescription is:

- Harvest all trees greater than 8 inches DBH.
- All defective, diseased, and undesirable trees less than 8 inches DBH will be felled.
- Leave approximately 5-7 green trees/acre in scattered clumps. No western hemlock trees will be used as green trees.
- Remove all western hemlock trees.
- The unit will be broadcast burned to prepare the site for planting. Slashing of sub-merchantable western hemlock will need to be done prior to burning the unit. This will ensure that the mistletoe is removed from the understory trees as well.
- The unit will be planted with a mix of species except western hemlock.
- No snags and down wood will be added at this entry. Following the completion of harvest, there will be at least 2 snags per acre and 600 cubic feet per acre of fresh down wood within the unit.

V. ESTIMATED TIMBER AND REVENUE INFORMATION:

Table 4. Timber and Revenue

Ownership		Sale Type	
BOF	CSL	Cash	Recovery
100%	0%	<input type="checkbox"/>	x
Planned Quarter:			

	Conifer	Hardwood	Total
Net Volume (MBF)	4,250	0	4,250
Stumpage Value (\$/MBF)	\$350	0	
Estimated Gross Value	\$1,487,500	0	\$1,487,500
		Project Costs:	\$15,200
		Estimated Net Value:	\$1,472,300

VI. TRANSPORTATION PLANNING AND HARVESTING:

Three spurs totaling approximately 1,600 feet will be constructed to harvest this operation. These will be pit run rocked, outsloped roads with a 16 foot road bed.

Table 5. Transportation Planning Summary (Miles).

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construct	0	0	0.3	0
Improve	0	0	0	0
Maintain	0	0	0	0
Close/Block	0	0	0	0
Vacate	0	0	0	0

*For determination of road class either use results of the Harvest and Habitat roads classifications, or if this information is not available then low use roads are spurs, medium use roads are collectors and high use roads are mainlines. Use these same criteria when comparing the total for all AOP sales to the IP plans.

VII. AQUATIC RESOURCES AND WATER QUALITY:

There are no streams containing listed fish within the operation. There are approximately 4 small, non-fish bearing streams and 1 medium, non-fish bearing stream located within the entire operation. These streams flow into Rock Creek. The overstory along the non-fish bearing streams consists of Douglas-fir, western red cedar and some hardwoods. These streams will be evaluated during sale layout to determine if they are potential debris flow tracks.

Management activities within riparian areas of streams will focus on achieving properly functioning aquatic and riparian habitat conditions over time. Riparian Management Areas (RMAs) will be established immediately adjacent to streams for the purpose of protecting aquatic and riparian resources and maintaining the functions and ecological processes of the streams. The Management Standards for Aquatic and Riparian Areas found in the *NWO State Forests Management Plan* (pg. J-1 – J-16) will be followed within these RMAs.

The following measures will be used to minimize impacts to streams: 1. No ground based equipment will be allowed within 25 feet of the non-fish bearing streams, 2. There will be seasonal restrictions as to when ground yarding and road construction will be allowed (i.e. during dry seasons), 3. Erosion control measures will be used on areas of soils exposed during road construction or improvement, 4. Road ditches will be disconnected from streams, 5. Road maintenance will be required during log hauling.

VIII. T&E SPECIES CONSIDERATIONS:

This operation was surveyed for Northern Spotted owls during the 2005 survey season with one response. It will be surveyed again in 2006. A portion of this operation is located within the Under Rock Northern Spotted owl site. A biological analysis (BA) will be drafted by an ODF biologist. This BA will be reviewed by both the Oregon Department of Fish and Wildlife and the US Department of Fish and Wildlife. The biological assessment and comments from both agencies will be reviewed by the District Forester, Program Director and the Area Director who will then determine how to proceed with the planned operations.

The operation area was checked against District knowledge for any listed plant location. The operation area was also checked against the Oregon Natural Heritage Program's database of known listed plant locations. No listed plant records were identified within the operation area.

IX. SLOPE STABILITY AND GEOTECHNICAL ISSUES:

The operation is not expected to significantly affect the stability of the very large landslide deposit. If tension cracks or other signs of instability are observed during field work for the sale the geotechnical specialist will be consulted. There are however bands of steep and very steep slopes throughout the sale area. The initial hazard and risk assessment from the geotechnical specialist is high. The geotechnical specialist will be consulted during sale layout to determine if a field visit is needed.

X. RECREATION RESOURCES:

There are no developed recreational resources located within the operation. However, hunting, horseback riding, and sight seeing occur within the area.

XI. CULTURAL RESOURCES:

Pre-operation reconnaissance revealed no visible cultural resource features or artifacts. If discovery is made, the cultural resource will be protected and field staff will consult with the Cultural Resource Specialist in Salem.

XII. SCENIC RESOURCES:

The operation can be seen from Highway 22 and some parts of Mill City. The stream buffers and scattered clumps of green trees should lessen the visual impacts of the unit.

XIII. OTHER RESOURCE CONSIDERATIONS:

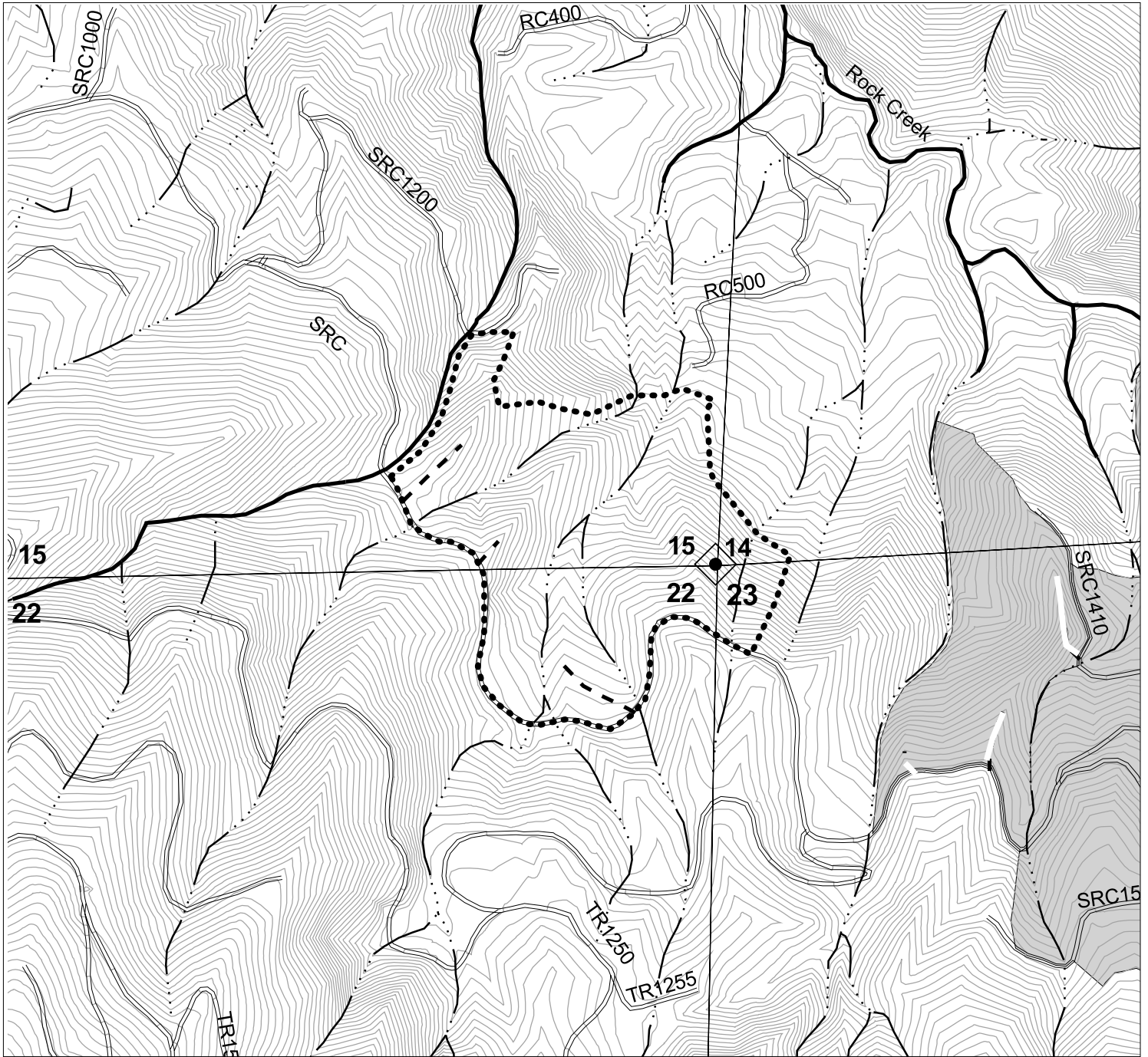
To protect air quality, the planned burn will comply with the Oregon Smoke Management Plan. The Smoke Management Plan is designed to reduce emissions from prescribed burning in western Oregon and to minimize smoke intrusions into designated population areas.

XIV. LMCS:

The operation contains Focused Stewardship, Visual. See Section XII, Scenic Resources, for the management guidelines to be utilized.

The operation contains Focused Stewardship, Aquatic and Riparian Habitat for four perennial Type N stream. See Section VII, Aquatic Resources and Water Quality, for the management guidelines to be utilized.

The operation contains Special Stewardship, Aquatic and Riparian Habitat for one medium Type N stream. See Section VII, Aquatic Resources and Water Quality, for the management guidelines to be utilized.



**SOUTH ROCK RAILROAD (ALT)
 --TOPOGRAPHY--
 FY '07 SALE PLAN
 NORTH CASCADE DISTRICT**

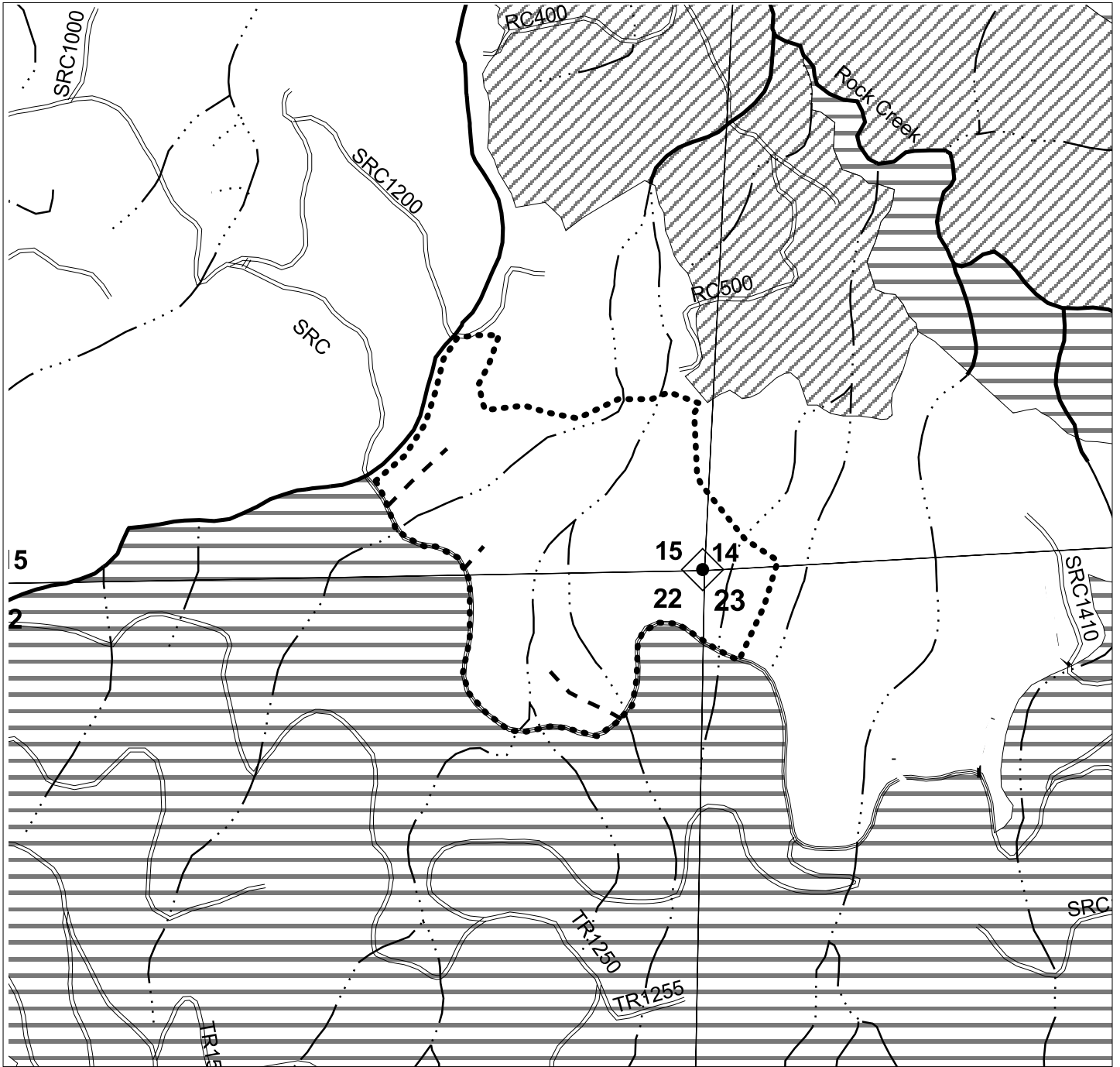
Approximate Net Acreage:
 85 (MC)

Portions of Sections 14, 15, 22 and 23
 T10S, R3E W. M.
 Linn County, OR

- South Rock Railroad
- Roads
- New Road Construction
- Streams
- FISH
- NONFISH
- UNKNOWN
- 20 foot Contours
- South Rock Creek



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**SOUTH ROCK RAILROAD (ALT)
--DESIRED FUTURE CONDITION--
FY '07 SALE PLAN
NORTH CASCADE DISTRICT**

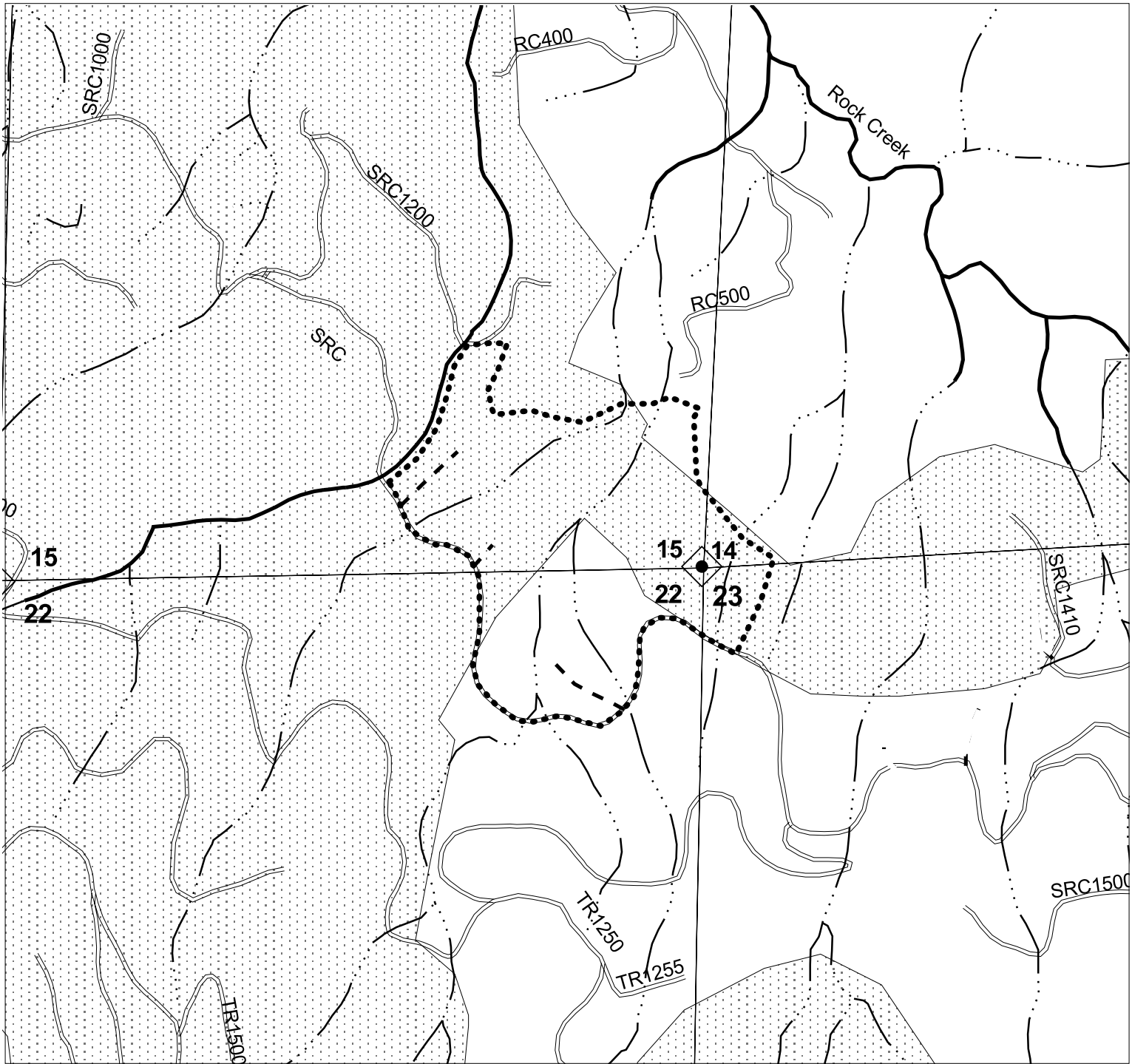
Approximate Net Acreage:
85 acres (MC)

Portions of Sections 14, 15, 22 and 23
T10S, R3E W. M.
Linn County, OR

- South Rock Railroad ALT
- Roads
- New Road Construction
- Streams
- FISH
- NONFISH
- UNKNOWN
- Desired Future Condition
- LYR
- OFS











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SOUTH ROCK RAILROAD (ALT)
--KEY RESOURCES--
FY '07 SALE PLAN
NORTH CASCADE DISTRICT

Approximate Net Acreage:
 85 acres (MC)

Portions of Sections 14, 15, 22 and 23
 T10S, R3E W. M.
 Linn County, OR

-  South Rock Railroad ALT
-  Roads
-  New Road Construction
-  Streams
-  FISH
-  NONFISH
-  UNKNOWN
-  Visual

1000 0 1000 Feet



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SUBJECT: Preliminary Biological Assessment The South Rock Railroad timber sale (Alternate): potential impacts to Under Rock northern spotted owl site.

TO: Jerry Chetock

FROM: Rod Krahmer and Matt Gostin

DATE: 17 January 2006

Executive Summary

The Oregon Department of Forestry (ODF) has proposed The South Rock Railroad timber sale (Alternate) in the Santiam State Forest during Fiscal Year (FY) 2007. The South Rock Railroad timber sale consists of one 92 acre modified clearcut unit (Figure 1). A portion of the unit is located within the 1.2 miles of the Under Rock northern spotted owl (NSO) site, a threatened species. The South Rock Railroad timber sale will impact 43 acres of suitable NSO habitat. Approximately 481 acres of suitable owl habitat will remain within 0.7 miles and 1313 acres of suitable owl habitat will remain within 1.2 miles of the Under Rock NSO following administration and implementation of The South Rock Railroad timber sale. Total acres of suitable spotted owl habitat within 0.7 miles of the Under Rock NSO site is 4% lower than USFWS recommendations to reduce potential risk of incidental 'take', however, the proposed timber sale action will avoid any additional loss of suitable owl habitat within 0.7 mile circle. Total acres of suitable spotted owl habitat within 1.2 miles of the Under Rock NSO is 11% higher than USFWS recommendations to reduce potential risk of incidental 'take'. The South Rock Railroad timber sale poses a 'low' risk to the continued viability of the Under Rock NSO site, and is consistent with the department's legal and policy mandates to maintain existing NSO sites on ODF lands.

Purpose

The ODF has proposed The South Rock Railroad timber sale in the Santiam State Forest located in Linn County, Oregon. The South Rock Railroad timber sale is in the FY 2007 operations plan of the North Cascade District. Since The South Rock Railroad timber sale is considered located within the provincial home range of the Under Rock NSO site, a Biological Assessment (BA) is needed to evaluate impacts of the proposed timber sale to the owl site. The NSO is a state and federally listed 'threatened' species by the Oregon Department of Fish and Wildlife (ODFW) and the U.S. Fish and Wildlife Service (USFWS), respectively.

Policy Direction

The Northwest Oregon State Forests Management Plan provides management direction for all Board of Forestry Lands and Common School Forest Lands in northwest Oregon.

The resource management goals and strategies are intended to achieve the greatest permanent value through a system of integrated resource management. This plan is guided by legal and policy mandates. The ODF's management activities are conducted in compliance with all state and federal environmental laws, including the state and federal Endangered Species Act (ESA), respectively. 'Take' of threatened or endangered species is prohibited under Section 9 of the federal ESA. The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Such acts may include significant habitat modifications or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. The policies and procedures for lands managed by the ODF in northwest Oregon are to avoid 'take' of NSO. 'Take' avoidance is accomplished on lands managed by the ODF in the North Cascade District through the application of the rescinded federal incidental take guidelines (USFWS 1990).

The USFWS recommends the following stepwise approach to avoid or reduce the risk of incidental take in the Oregon Cascades province:

1. Conduct NSO surveys during the breeding season and prior to any harvest activity according to protocols endorsed by the USFWS;
2. Avoid any harvest activity which results in less than 70 acres of the best available suitable NSO habitat encompassing the nest site and/or activity center of a pair of spotted owls;
3. Avoid any harvest activity which results in less than 500 acres of suitable NSO habitat within a 0.7 mile radius (1000 acres) of a nest site and/or activity center; and
4. Avoid any harvest activity which results in less than 1182 acres of suitable NSO habitat within a 1.2 mile radius (2955 acres) of nest site and/or activity center.

Survey Information

Kingfisher Ecological, Inc., conducted surveys for northern spotted owls in all potential owl habitat in and around planned timber sales and known owls sites in the ODF Cascade District. Potential spotted owl habitat was surveyed in accordance with the protocol for surveying proposed management activities that may impact NSO (USFWS 1992). The Under Rock NSO site was established in 2002, when a pair was found at this site; they fledged two young. The Activity Center (AC) was placed at the location where the first juvenile was found. In 2003, the historic pair was found to be non-nesting. The historic pair nested in 2004, but failed to produce young. The AC was moved to the 2004 nest tree. In 2005, the historic male and an unidentified female attempted to nest in a new tree, but they failed to produce young. The AC remains at the 2004 nest tree (Figure 1). Barred owls were detected in 2002 and 2003 (Kingfisher Ecological, Inc. 2005).

Habitat Information

Current stand condition. The unit is located within a 99 year-old stand currently classified as Closed Single Canopy (CSC). This stand type occurs when new trees, shrubs, and herbs no longer appear in the stand, and some existing ones begin to die from shading and competition, in a process called stem exclusion. The overstory is a mix of Douglas-fir, western hemlock and western red cedar trees, with scattered big leaf maple and red alder. Average stand characteristics include:

- Diameter breast height (DBH)=15.
- Basal area (BA)=311.
- Trees per acre (TPA)=237.
- Stand density index (SDI)=79.

Approximately 40% of the stand is infected with dwarf mistletoe. The understory is sparse and consists of Oregon grape and sword fern. There are currently 20 snags per acre; 1800 cubic feet per acre of sound down wood; and 7900 cubic feet per acre of down wood in all decay classes.

Desired stand condition. The desired future condition for this stand is General. Removal of western hemlock infected with mistletoe is important to limit its' spread. The anticipated pathway for this stand is:

- Unit will receive a modified clearcut.
- Unit will be evaluated for a pre-commercial thinning in 10-15 years.
- Unit will be evaluated initial commercial thinning in 40 years. The opportunity to develop snags and down wood will also be evaluated and implemented if needed.
- Unit will be evaluated for a second commercial thinning in 80 years.
- Regeneration harvest planned to occur in 100 years.

Sale Prescription

The proposed management prescription for the timber sale area is:

- Unit will receive a modified clearcut. After timber harvest, the unit is expected to have the following average stand characteristics: DBH=24, BA=22, TPA=6, and SDI=4.
- Leave 5-7 green trees per acre in scattered clumps. Leave trees in the unit will be Douglas-fir and western red cedar only.
- Remove all infected western hemlock.
- Unit will be broadcast burned to prepare the site for planting.
- Unit will be planted with a mix of species except western hemlock.
- Snags and down wood will be added at this entry.

Impact Assessment

For the purposes of ESA compliance, the USFWS (1990) describes suitable NSO habitat as stands that exhibit the following characteristics:

- moderate to high canopy closure;
- a multi-layered, multi-species canopy dominated by large overstory trees
- a high incidence of large trees with large cavities, broken tops, and other indications of decadence;
- numerous large snags;
- heavy accumulations of logs and other woody debris on the forest floor; and
- considerable open space within and beneath the canopy.

These attributes are usually found in mature and old conifer forests, but are sometimes found in younger forests, especially those that contain remnant large trees or patches of large trees from earlier stands. It is important to note that the age of forests is not as important a factor in determining habitat suitability as are vegetational and structural components (USFWS 1990).

In ODF's experience, NSO occur in some forest stands that are less than 80 years old. Several studies have investigated NSO home range and habitat use in young forests on ODF lands in western Oregon (Islam et al. 1997, Anthony et al. 2000, Tappeiner et al. 2000, Glenn et al. 2004). Islam et al. (1997) investigated the relationship between demography of NSO and habitat characteristics at the landscape level on ODF lands, and reported that the minimum diameter of the dominant conifer trees in stands of NSO habitat should be at least 18 inches and stands should also contain about three size classes and have variation in stem density within the stand. Anthony et al. examined habitat in owl home ranges on ODF lands in the Northern Coast Range (NCR) of Oregon and Elliott State Forest (ESF) in south-central Oregon Coast Range. Individual owls in the NCR study area selected mature forest and hardwood forest, and avoided young and pole stands. At ESF, owls selected mixed-age conifer, mature conifer, old conifer, and hardwood forest, and avoided young and pole. Owls were also found close to conifer-hardwood ecotones more often than expected in both study areas. At NCR, Tappeiner et al. 2000 reported that nest and forage sites had larger trees, lower tree densities, and more hardwood stems than low use sites, and that higher owl success (combination of site occupancy and reproduction indices) was positively correlated with average tree size and negatively correlated with tree density. Glenn et al. 2004 reported that individual owls on their study areas in the NCR and ESF varied greatly in habitat use patterns and appeared to be using different strategies for surviving in younger forests. In younger, or less structurally diverse landscapes, the use of hardwoods was more frequent than in landscapes dominated by older conifer forest. Hardwoods may contribute structural diversity and prey base than are otherwise in short supply in relatively young, homogenous landscapes lacking remnant old-forest structures.

Habitat determinations within 1.2 miles of the Under Rock NSO nest site were made by ODF wildlife biologists and foresters using results of NSO research on ODF lands,

information about forest stand age and average stand diameter on ODF lands from the department’s computerized forest inventory system databases (Figure 2), aerial photo interpretation, and ground-truthing. Based upon these findings, NSO habitat (Figure 3) for this assessment was defined as:

- Forest stands greater than 18 inches average DBH provided suitable habitat for NSO.
- Forest stands between 12-17 inches average DBH provided suitable or non-suitable habitat for NSO depending on the presence/absence of structural characteristics needed to accommodate owls. ODF biologists, using professional judgment, determined the suitability of habitat for these stands by considering stand density, structural diversity, and tree diversity. Extremely dense stands may preclude spotted owl use because of the difficulty for owls to maneuver through the stand. Stands lacking in vertical and horizontal diversity and tree species diversity may provide poor habitat for prey species and/or few perching/hunting opportunities for spotted owls.
- Forest stands less than 12 inches average DBH provided non-suitable habitat for NSO.

Forest habitat in the timber sale area is dominated by a mature, densely stocked stand of Douglas fir, mixed with varying amounts of western hemlock, western red cedar, and hardwoods. Tree size/density, tree diversity, and structural diversity are adequate to provide nesting, roosting, and foraging opportunities for northern spotted owls. Therefore, forest habitat in The South Rock Railroad timber sale area is considered suitable NSO habitat. Approximately, 481 acres of suitable owl habitat occurs within 0.7 miles, and 1356 acres of suitable owl habitat occurs within 1.2 miles of the Under Rock NSO (Table 1).

Table 1. Acres of suitable and non-suitable northern spotted owl (NSO) habitat within 0.7 miles and 1.2 miles of Under Rock NSO.

<u>Landowner</u>	<u>0.7 mile radius</u>		<u>1.2 mile radius</u>	
	<u>Suitable</u>	<u>Non-suitable</u>	<u>Suitable</u>	<u>Non-suitable</u>
ODF	481	499	1303	545
BLM	0	0	53	0
Other	0	0	0	0
TOTAL	481	499	1356	545

The South Rock Railroad timber sale will impact and modify 0 acres of suitable owl habitat within 0.7 miles and 43 acres within 1.2 miles of the Under Rock NSO AC (Figure 3). Thus, 481 acres of suitable owl habitat will remain within 0.7 miles and 1313 acres of suitable owl habitat will remain within 1.2 miles of the Under Rock NSO AC following administration and implementation of The South Rock Railroad timber sale.

Risk Assessment

The South Rock Railroad timber sale poses a 'low' risk to the continued viability of the Under Rock NSO site. Total acres of suitable spotted owl habitat are 4% lower than the USFWS recommendations to reduce potential risk of incidental 'take' within 0.7 miles, and 11% higher than USFWS recommendations to reduce potential risk of incidental 'take' within 1.2 miles of the Under Rock NSO nest site, respectively. The South Rock Railroad timber sale is planned in accordance with USFWS recommendations to avoid incidental 'take' under the federal ESA. Specifically, The South Rock Railroad timber sale will avoid timber harvest which:

- results in less than 70 acres of the best available suitable owl habitat encompassing the AC.
- results in any additional loss of suitable NSO habitat within a 0.7 mile radius of the AC; and
- results in less than 1182 acres of suitable NSO habitat within a 1.2 mile radius of the AC.

The proposed The South Rock Railroad timber sale action is consistent with ODF's legal and policy mandates to maintain existing NSO sites on ODF lands.

Consultation with ODFW

Comments to be provided by Charlie Bruce

Literature Cited

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