

Appendices

"Now where did I put that.....?"

Appendix A. References

- Carey, M.S. and P.H. Hainline, 1979. Sweet Home in the Oregon Cascades. Calapooia Publications. Brownsville, OR.
- Connelly, K.P. and J.A. Kertis, 1992. Augusta Fire History. USDA Forest Service, Willamette National Forest. Unpublished report.
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- USDA Forest Service. 1985. Management of wildlife and fish habitats in forests of western Oregon and Washington, Part 1- Chapter Narratives. Pacific Northwest Region. Portland OR.
- Walker, George W. And Duncan, Robert A. 1989. Geologic Map of Salem 1° by 2° Quadrangle, Western Oregon. Miscellaneous Investigation Series, MAP I-1893, Department of Interior, U.S. Geological Survey.

Appendix B. List of Reports

Access and Travel Management, Marilyn Hubbard, 15 pages

Botany, Alice Smith, 29 pages

Fire History, Tim Bisby, 5 pages

Fisheries, Todd Buchholz, 28 pages

Heritage Resources, Tony Farque, 13 pages

Hydrology, Dave Halemeier, 61 pages

Recreation and Special Uses, Marilyn Hubbard, 9 pages

Soils and Geology, Doug Shank, 70 pages

Vegetation and Silviculture, Bill Porter, 31 pages

Wildlife, Todd Buchholz and Virgil Morris, 32 pages

Appendix C. Watershed Analysis Team

Core Team

Todd Buchholz - Fish Biologist
Dave Halemeier - Hydrologist
Marilyn Hubbard - Civil Engineer
Bill Porter - Silviculturist
Doug Shank - Geologist
Donna Short - Team Leader

Extended Team

Nancy Ashlock - Fire
Tim Bisby - Fire
Ed Dalton - Engineering Technician
Dean Devlin - Geographic Information Systems manager
Hope Ellington - Cartographer
Tony Farque - Archeologist
Katy Haberkorn - Recreation, Mining and Special Uses
Bob Korepta - Fire
Ken Loree - Silviculture
Brian McGinley - Recreation, Wild and Scenic Rivers
Dean Mills - GIS Digitizing
Virgil Morris - Wildlife Biologist
Wayne Shilts - Project Engineer
Alice Smith - Botanist
Gene Stalnaker - Information Manuscripting
Daren Utley - Forestry Technician and all-around great Helper
Joanne West - Public Affairs and Community Development

Other Forest Service Contributors

Karen Austin - Willamette NF/Siuslaw NF Wildlife Ecologist
Deigh Bates - Willamette NF Forest Hydrologist
Diana Bus - Central Cascades AMA Coordinator
Neal Forrester - Willamette NF Strategic Planning Coordinator
Sarah Greene - PNW Researcher
Cindy McCain - Willamette NF/Siuslaw NF Ecologist
Allison Reger - Willamette NF Analyst
Fred Swanson - PNW Researcher

The Watershed Analysis Team met with the Forest Supervisor on the following dates:

Issues and Key Questions - December 8, 1994
Resource Stories - March 3, 1995
Recommendations - April 7, 1995

Appendix D. Public Contacts

Adjacent Landowners

Campbell Group - Russ Anderson
Cascade Timber Consultants - Dave Furtwangler and Howard Dew
Guistina Resources - Pete Sikora
Guistina Land & Timber Co. - Steven Horvath
Rosboro Lumber Company - Steven Akehurst
Willamette Industries - John VanCleave

Other Agencies

U.S. Army Corps of Engineers - Bob Magne (District Biologist), Kim Larson, and Mike Posovich
U.S. Fish and Wildlife Service - Ray Bosch
Linn Soil and Water Conservation District - Jane Keppinger and Lorriane Stahr
Oregon Department of Fish and Wildlife - John Haxton
Oregon Department of Forestry - Lee Vaughn and Scott Proctor
Oregon State University Cooperative Extension Service - Fielding Cooley
Oregon State University College of Forestry - John Tappenier

Tribes

Confederated Tribes of Siletz - Delores Pigsley
Confederated Tribes of Grand Ronde - Mark Mercier
Confederated Tribes of Warm Springs - Charles Calica

Others

Jack Barringer - retired Timber Services Company manager
Tom Bauman - local rock climber
David Bayles - Pacific Rivers Council
Terry Deacon - Lebanon Union High School science teacher
Dan Dean - Sweet Home City Manager
Shirley Hilts - Friends of Iron Mt.
George Ice - NCASI
Ken Kawazoe - Northwest Steelheaders
Pat Loveland - Santiam Wilderness Committee
Gary Marcus - Frontier Technologies
Bob Mealy - Long time Sweet Home resident
Ross Mickey - Northwest Forestry Association
Bob Ross - Friends of Iron Mt.
Woody Starr - Corvallis Environmental Center
Karen Strohmeier - Cascades Pacific Resource Conservation & Development Area, Inc.
Mark Stull - Central Oregon Paddlers Club

Methods of Public Contact

The South Santiam Watershed Analysis was listed as a project in the Sweet Home Ranger District's quarterly Schedule of Proposed Actions starting in July, 1994.

Draft copies of the Issues and Key Questions were mailed to the individuals listed above on February 7, 1995. The draft synopsis that contained the Characterizations, Issues and Key Questions, and Processes and Trends was mailed to these same individuals on March 17, 1995.

Ray Bosch (USFWS) met with the Core Team on March 14, 1995.

Bob Mealy met with the Core Team on March 29, 1995 to share his memories as a long-time resident of the area and retired Forest Service employee. His grandfather homesteaded here in 1873.

Tony Farque discussed the watershed analysis process at a meeting with tribal representatives of the Grande Ronde and Siletz in November, 1994. Ann Rogers made a presentation to representatives of the Warm Springs tribes on March 25, 1995. Tony Farque discussed this watershed analysis by phone with tribal representatives of the Siletz (February 27, 1995), Grande Ronde (March 9, 1995), and Warm Springs (March 27, 1995).

Rolf Anderson (District Ranger) made a presentation to the Santiam Wilderness Committee on March 15, 1995.

Bill Porter made a presentation to the Sweet Home Kiwanis Club at their March 29, 1995 meeting.

Todd Buchholz gave updates on the process at meetings with the U.S. Army Corps of Engineers on January 17 and January 31, 1995.

Todd Buchholz gave monthly updates on the process at meetings with the Linn Soil and Water Conservation District on December 13, 1994; January 12, 1995; and February 11, 1995.

The Issues and Key Questions were used by Fielding Cooley (OSU Extension) as an exercise during a Linn Watershed Council formation workshop on March 4, 1995.

Appendix E. Draft Late-Successional Reserve 215 Assessment

Introduction

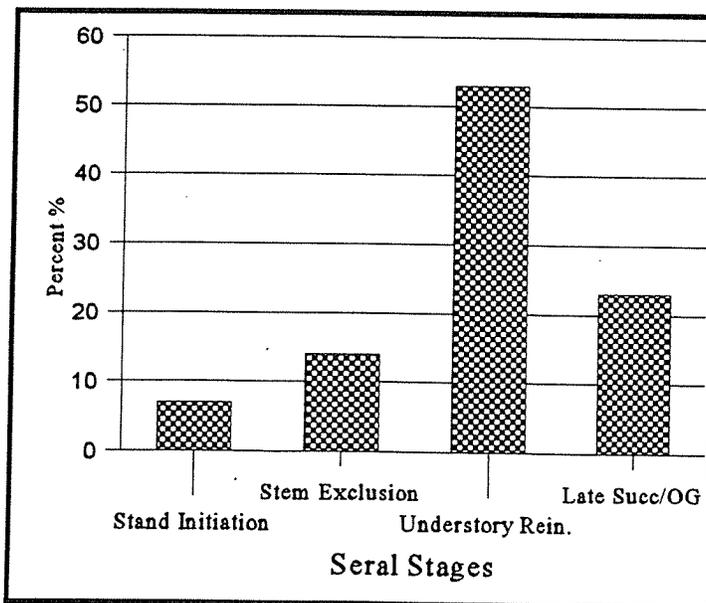
This draft Assessment has been developed in conjunction with the South Santiam Watershed Analysis. This Late-Successional Reserve (LSR) lies entirely within the South Santiam Analysis area. This Assessment reflects a distillation of the biological characterizations, issues, processes, trends and management recommendations, particular to this LSR, which were developed during that Analysis.

History and Inventory of Vegetative Conditions

This LSR lies within the western hemlock and Pacific silver fir vegetation zones (55% and 45% respectively). There are 34 forested plant association within these two series (Plant Association and Management Guide, Willamette Nation Forest 1987). One minor conifer tree series, Douglas-fir, and several related plant associations, are uncommon this far north on the Forest and has been designated as rare forested plant associations in the Special Habitats Management Guide (WNF 1992).

Dominant tree species include Douglas-fir, western hemlock, western redcedar, Pacific silver fir, noble fir, red alder, and bigleaf maple. Figure 1 describes the amount of each seral stage within the LSR. Most of the stand initiation and some stem exclusion stages are a result of clear-cut patch harvesting around the outer edges of the LSR (See Figure 2).

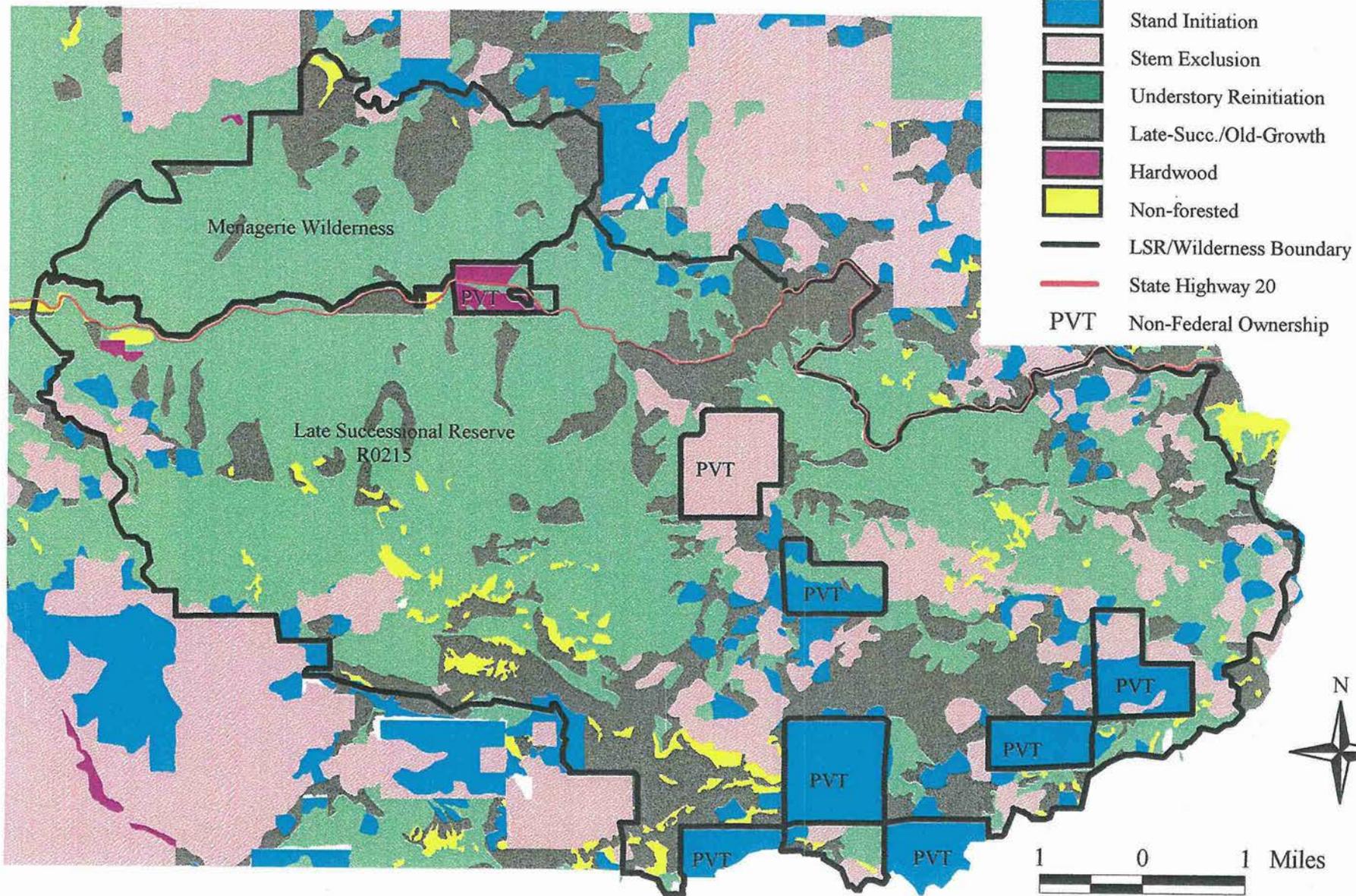
Figure 1: Seral Stage Distribution in LSR0215



Common understory species include vine maple, rhododendron, sword fern, salal, huckleberries, Oregon grape, beargrass, and numerous grasses and forbs.

The 1911 fire burned about 3000 acres in the northeast portion of the LSR. This resulted in a large contiguous patch of forest which is just transitioning into the understory reinitiation stage with tree ages between 35 to 80 years old and average stand ages around 65 years old. Stand densities in many of these stands are high enough that competition mortality is taking place. "Doghair" type densities occur in a few of the stem exclusion stage stands. These stands are slow in achieving the vertical stratification which many stands reach by this stage in their development.

Figure 2: Seral Stages in LSR 0215



Parts of the Sevenmile Burn of 1911 were planted between 1915 and 1917. This is one of the first recorded large scale reforestation projects in Oregon. It is possible that the seed used for these early plantings was obtained from off-site stocks. Many of the planted trees did not survive to form the existing stands we see today. There are some patches of slow growing anemic looking trees which could be progeny of off-site seed. It is also possible that nutrient deficiencies due to frequent hot fires caused these patches of anemic trees .

Special Habitats

The occurrence of special habitats (non-forested communities) and their distribution across the landscape is important for biodiversity of plant and animal species. Standard and guideline FW-211 directs us to protect these habitats and their ecotones. Limited special habitat inventory and mapping in the LSR has been accomplished to date. Some sites were inventoried in the course of surveying the Sevenmile thinning project. Mapping special habitats on to base maps for GIS is underway but far from completion. The following is a qualitative assessment of the occurrence and distribution of special habitats in the watershed.

The distribution of special habitats other than rock outcrops is skewed toward higher elevations. Most of the larger special habitats are associated with old Cascade peaks such as the Jump Off Joe area in Sevenmile subwatershed. Some of these peaks host a wide array of community types and thus provide habitat for a great diversity of plants and animals. Special habitats are rarer at low elevations on the west end of the watershed. .

Dry rock gardens are associated with some of the more prominate rocky areas such as Two Girls. Moist rock gardens are less common but are found on Two Girls, and scattered other locations. Sitka alder communities are common on the north slopes of old Cascade peaks in the watershed. Vine maple/rocky soil associations sometimes occur with Sitka alder but are also found alone; two locations of this community are on the south-facing slopes of Two Girls and Soapgrass Mountain. The only site of the dry beargrass/red fescue community known to occur in the watershed is on Soapgrass Mountain.

Many of the wetter communities are rare or uncommon in the South Santiam watershed. Bogs, with their characteristic *Sphagnum* and sundew (*Drosera* sp.) communities, are found only in and around Gordon Meadows where western toads, Northwestern salamanders and tree frogs are abundant. A sphagnum bog is found in upper Gordon Lake but it has not developed the diverse community found in the Gordon Meadows bogs. Lakes, ponds, sedge meadows and wet meadows are also relatively uncommon. Most occur in flatter portions of the LSR, such as the Gordon Meadows/Lakes area.

Scattered mesic meadows are found in the LSR but are not common. Fire may have played an important part in maintaining such meadows.

Late-Successional/Old-Growth Associated Species Known to Exist in this LSR

LSR0215 is much like any other temperate forest ecosystem in that its mix of plant and animal species is determined by the interaction of a broad matrix of factors which are constantly changing over time and space. Table 1 lists the old-growth dependant species known to be in the LSR. Late-Successional associated species listed in FEMAT, such as elk, flying squirrels, etc are know to inhabit the LSR. Specific location information for these species is on file at the Sweet Home Ranger District.

Table 1: Late-Successional/Old-Growth dependent species known to be in LSR0215.

Category	Species
Wildlife	Northern spotted owl
	Red-backed vole
Moonwort	<i>Botrychium minganense</i>
False Truffles	<i>Leucogaster microsporus</i>
	<i>Rhizopogon inquinatus</i>
Vascular Plants	<i>Allotropia virgata</i>

Northern spotted owl

There are fourteen known owl sites in the LSR. Owl site locations are on file at the Sweet Home Ranger District office.

Red-backed vole

Vole skulls have been found in northern spotted owl pellets in the southern portions of the LSR by researchers from the HJ Andrews experimental forest.

Moonworts

B. minganense is associated with western red-cedar in small seeps or adjacent to streams. One small population is located in the southeast portion of the LSR.

Truffles

R. inquinatus found just west of Tombstone Pass and near the Longbow Organizational Camp along the South Santiam River. *L. microsporus* has been identified in the Sheep Creek area.

Vascular Plants

A. *virgata* is documented at three locations in the watershed, two are in this LSR.

History and Description of Current Land Uses

Humans have utilized the LSR for thousands of years. Two major Native American trails run through the LSR with many known and suspected pre-historic sites scattered throughout the area (see Heritage Resource Report, South Santiam Watershed Analysis). The Santiam Wagon Road facilitated movement of first livestock (1860') Meadows, then homesteaders (1860-80's), fire suppression (early 1900's-present) and eventually incursions into National Forest lands for timber harvest and recreation (late 1950's-present).

The predominate land use in the LSR since the 1940's has been timber harvest in the mature forested areas. This is followed by developed and dispersed recreation along the South Santiam River and the State Highway travelway. Upland areas accessed by the existing forest road system provide considerable dispersed recreation. The timber harvest activity began in the late forty's and early fifty's with about twelve hundred acres harvested per decade. Harvest blocks have not been evenly distributed across the LSR, but are associated with the forest road system. The reforestation history of the approximately 4500 acres which have been harvested in the LSR is similar to other reforested areas in the South Santiam Watershed.

What started as the South Santiam Wagon Road became State Highway 20. Four campgrounds, (Trout Creek, Yukwah, Fernview, and House Rock) and the Longbow Organization Camp are accessed by the highway and adjacent to the South Santiam River and within the LSR. Several barrier free fishing platforms, and the Walton Ranch wildlife refuge are also adjacent to the River.

Three major forest road systems access the west end (Rd.2032), middle (Rd.2044), and East end (Rd.1500) of the LSR. Large portions of land between these roads are unroaded. These road systems provide dispersed recreation opportunities and access trail heads for the Gordon Meadows, Jumpoff Joe and other National Forest trail systems (see Recreation Report, in the Analysis). Remnant portions of the South Santiam Wagon Road skirt the north side of the LSR south of the River. This Historic Road provides opportunities for hiking, horse and historic automobile use.

Some special uses occur within the LSR and include; Falls Creek Hydroelectric project, Pacific Power and Light power lines, Fernview summer home tract, and Oregon Department of Transportation maintenance and storage yards or the most obvious.

Fire Management Plan

Fire has been an integral component of Western Cascades ecology in the South Santiam for many centuries. The Fire History and Silviculture Reports with the South Santiam Watershed Analysis provide considerable information on fire frequency, recurrence, and associated stand conditions. Coupled with the "natural fire", Native American habitation/use has been documented in this

watershed for over 8000 years. Native Americans likely used fire as a tool to manipulate vegetation for a variety of purposes (see Heritage Resource Report in the watershed analysis). With that as a background, the following principles will control the fire management objectives for this Late Successional Reserve.

The following recommendations will be developed in accordance Forest Plan and National Environmental Policy Act procedures. All fuels prescriptions will be written to meet the various interdisciplinary objectives.

1. Fire is a natural component of Western Cascades ecology and has played a major role in shaping the forested landscape we see in the LSR today. However, continued suppression of unplanned starts will stay in effect.
2. Late successional and old growth forest stand characteristics are low in abundance due to the fire history. Understory reinitiation stands predominate the LSR. Many sites in the LSR are deficient in large down woody material.
3. Planned starts in untreated areas are not generally feasible in most of the area due to topography and aspect. Planned starts in understory reinitiation stands could hasten the development of these stands to the late successional stage. Consequently, planned ignition in untreated areas will be considered only on a site specific basis.
4. Planned starts in high elevation meadows, Walton Ranch and the Wausau track managed pasture sites, may occur to maintain or improve special habitats or meet other resource objectives.
5. Thinning may take place in stem exclusion and understory reinitiation areas to promote late successional stand characteristics. Prescribed fires may take place in these areas to reduce fuel loads, or enhance late successional structure in these managed stands. Development of fuel breaks should be considered in both the layout and the fuels treatment in these areas.

Treatment Criteria

The following criteria, governing potential management activities in the LSR during the next decade, are based on seral stage classifications developed during the Analysis.

1. All seral stages will be managed to maintain or enhance Aquatic Conservation Strategy objectives for Riparian Reserves.
2. Stand Initiation areas: Management will be directed to enhancing over story growth and native species diversity common to early seral plant communities. Harvest of Special Forest Products will be neutral or beneficial to the above criteria and carried out where appropriate.

3. Stem Exclusion areas: Management activities will enhance tree diameter growth, stand structure diversity and insure native species diversity during thinning operations. Harvest of Special Forest Products will be neutral or beneficial to the above criteria and carried out where appropriate.
4. Understory Reinitiation areas: Management activities will speed the development of Late Successional/Old-Growth structure in those areas that are in the early phases of understory reinitiation stage and are less structurally diverse. The stagnant 60-year old stands in Sevenmile subwatershed are a good example of this situation. Harvest of certain Special Forest Products may be appropriate in specific areas especially when a Product is common to Stand Initiation and Stem Exclusion areas.
5. Late Successional/Old-Growth areas: Management activities will take place only in site specific areas to create critical, missing structural components. Harvest of Special Forest Products is generally not appropriate in Late Successional/Old-Growth areas.

Treatment Areas

Realizing that our crystal ball is murky at best, other projects may come along which are not covered in this discussion. Given that, employing the above criteria and considering the conclusions developed in the Analysis, the following areas were identified which could be treated through site specific management activities. For a more in-depth discussion for each area, see the Analysis. Proper NEPA documentation will of course be completed prior to any projects starts.

Projects within this LSR that should be implemented in the next ten years:

1. Because of their small size and locations existing uses such as roads, Falls Creek power plant, campgrounds and fishing platforms, as well as any foreseeable changes to them will not affect the functioning of this LSR.

Roads: Many of the roads within the LSR are cost-share and will remain open. Other roads are required to access proposed projects. Consequently road management objectives will be governed by other factors than overall LSR objectives.

2. Gordon Meadows improvements.
3. Sevenmile Environmental Assessment Planning Area.
4. Stand manipulation in Stand Initiation and Stem Exclusion stands.
5. Land exchange in T14S, R05E, Sections 5 and 9.
6. Snag creation in those Sevenmile area stands which are stagnant.

7. Channel restoration projects in the South Santiam River.

Monitoring and Evaluation

Monitoring and evaluation within the LSR is based on the work developed for the Sevenmile Environmental Assessment, and is fully discussed in that document on file at the Sweet Home Ranger District. What follows is a brief synopsis of that discussion.

Implementation (IM), Effectiveness (EM) and Validation (VM) monitoring will check to see if we meet the management objectives for this LSR.

Silviculture Monitoring

1. Are the stand densities within the ranges we said they would be? (IM)
2. How did each different prescription tend toward late-successional structure ? (EM)
3. How long does it take to get canopy closure after thinning? (EM)

Botany/Wildlife Monitoring

1. Were snags and down wood retained (numbers, distribution, and class correct)? (IM)
2. Were Riparian Reserve widths managed as identified above and in the Analysis? (IM)
3. Do the thinning prescriptions result in accelerated development of late-successional species habitat? (EM)
4. Does wildlife tree creation result in effective wildlife trees for cavity dependant species?(EM)
5. Are non-native and noxious plant control measures effective?(EM)

LSR Monitoring

1. Do the treatment criteria involving Riparian Reserves meet the Aquatic Conservation Strategy objectives for the maintenance and or restoration of aquatic, riparian and terrestrial habitats? (EM)

References

USDA Forest Service. 1994. South Fork McKenzie watershed analysis. Blue River, OR.

South Santiam Watershed Subwatershed Overlay

