

CHAPTER 11. MANAGEMENT FINDINGS AND RECOMMENDATIONS

This section describes the types of actions or activities that the Bureau of Land Management (BLM) could implement in the Gordon Creek Watershed to improve conditions and positively influence trends. These findings and recommendations, along with the rest of this document, can help provide a base of resource information necessary to guide the agency in identifying site-specific projects and determining priorities for projects both within the Gordon Creek Watershed and in other similar watersheds.

Terrestrial

Findings:

Terrestrial Finding 1- Mature and Old-Growth (Late Seral or Late Successional) Forest Habitat: The analysis shows approximately 8.5 percent forests over 120 years of age across all federal lands in the Gordon Creek Watershed. The analysis of current conditions shows 5.5 percent late-seral forest on BLM lands. The watershed is dominated by closed mid-seral stands 41- to 80-years of age, which lack structure and characteristics of late-successional stands.

Terrestrial Finding 2 - Standing Dead and Down Large Woody Debris (LWD): There is a lack of information on the amount of LWD in the watershed. What information is available comes from stand exams conducted on BLM lands in the watershed. These indicate that there is generally a lack of LWD in younger stands (less than 80 years of age) on federal lands. Based on the stand exam information, there is a shortage of LWD in the early decay classes. Typically, there are low to moderate levels of large, soft LWD (20+ inches in diameter) from the previous stand present, which do not meet NFP requirements.

Terrestrial Finding 3 – Late Successional Reserve (LSR) Boundaries: There are no LSRs on BLM lands in the Gordon Creek Watershed. There are 86 acres of LSR on adjacent Forest Service lands in the watershed.

Terrestrial Finding 4 - Special Habitats: Based on stand exams conducted on BLM lands and GIS information, there are no significant special habitats present on BLM lands.

Terrestrial Finding 5 - Road Densities: There are approximately 65 total miles of road on all ownerships within the watershed. Currently, the average total road density across all ownerships is estimated at about 3.7 miles per square mile.

Of the 65 total road miles in the watershed, 28 miles are on federal lands (43 percent). Average total road density on federal lands is estimated at about 3.0

miles per square mile. Open road densities are low due to numerous locked gates, especially in the upper portion of the watershed.

Terrestrial Finding 6 - Special Status and Special Attention Plant

Species: There are three known populations of BLM special status plant species populations in the watershed: withered bluegrass (*Poa marcida*), *Racomitrium ryszardii*, and *Gymnopilus punctifolius*.

Terrestrial Finding 7 - Noxious Weeds: New invader and established infestations of noxious weed species are present along roadsides in the watershed. These noxious weeds will continue to invade native plant habitats if no action is taken. Noxious and invasive weeds will continue to be a concern over time because of the human use of the watershed, especially at lower elevations and in travel corridors.

Terrestrial Finding 8 - Special Status and Special Attention Animal

Species: Eleven Survey and Manage, Bureau Sensitive or Bureau Assessment species are documented or suspected to occur in the Gordon Creek Watershed: the Puget Oregonian (*Cryptomastix devia*), Malone jumping-slug (*Hemphillia malonei*), Oregon megomphix (*Megomphix hemphilli*), Cope's giant salamander (*Dicamptodon copei*), Cascade torrent salamander (*Rhyacotriton cascadae*), Oregon slender salamander (*Batrachoseps wrighti*), Larch Mountain salamander (*Plethodon larselii*), goshawk (*Accipiter gentilis*), Townsend's big-eared bat (*Corynorhinus townsendi*), fringed myotis (*Myotis thysanodes*), and red tree vole (*Phenacomys longicaudus*). In addition, the USFS Regional Forester's Sensitive Species List includes the evening fieldslug (*Deroceras hesperium*), basalt juga (*Juga n. sp. 2*), Columbia duskysnail (*Lyogyrus n. sp. 1*), Dalles sideband (*Monadenia fidelis minor*), and the Crater Lake tightcoil (*Pristiloma arcticum crateris*).

Terrestrial Finding 9 - Bald Eagles: Although bald eagles may visit the watershed, there are no known bald eagle nest sites in the Gordon Creek Watershed. Bald eagles are known to occur in adjacent areas in the Columbia River Gorge and the Bull Run watershed.

Terrestrial Finding 10 - Nesting Spotted Owls and Spotted Owl

Habitat: There are approximately 200 acres of mature (more than 80 years old) conifer stands on BLM lands in the watershed. This is perhaps the best estimate of the current extent of suitable nesting, roosting, and foraging habitat for northern spotted owl on BLM lands. Less than 10 percent of BLM forests in the watershed are in mature and older forest seral stages. USFS lands in the watershed, by contrast, are skewed toward more advanced seral stages than BLM-administered forests. More than 50 percent of USFS forests are in mature or older forest condition. There has been one known pair of spotted owls from the Gordon Creek watershed, located during the 1990s. The activity center for the pair is located on the Mt. Hood National Forest. The recent status of this pair is unknown.

Terrestrial Finding 11 – Connectivity/Dispersal and the LSR Network:

Opportunities for dispersal for spotted owls are limited in the Gordon Creek Watershed. There are 2,612 acres of Matrix (GFMA) on BLM lands and 3,142 acres of Matrix on USFS lands. LSR accounts for 86 acres, and is found only on USFS lands. Matrix lands in the watershed do not appear to provide potential connectivity between LSR in the Bull Run Watershed Management Unit and other areas. The majority of LSR/wilderness is found to the east of the Gordon Creek Watershed.

Terrestrial Finding 12 – Critical Habitat for the Northern Spotted Owl:

The Gordon Creek Watershed does contain critical habitat designated by the USFWS for the spotted owl. Portions of Critical Habitat Unit OR-09 are located on Forest Service lands to the east of BLM lands in the watershed. All Forest Service lands within the watershed are in Critical Habitat with the exception of T.1S., R.5E, sections 23 and 24.

Terrestrial Finding 13 - Fire and Fuels: Opportunities to reintroduce fire into the ecosystem on BLM lands in the Gordon Creek Watershed may be desirable for several reasons. This would open up the stands, provide more and better huckleberry habitat, and provide more big game forage.

Recommendations:

Terrestrial Recommendation 1 - Density Management and Thinnings (Terrestrial Findings 1, 2, and 10) in the Riparian Reserve Land Use Allocation (LUA): Density management and thinnings should emphasize enhancement and restoration opportunities that target stands in Riparian Reserves to develop and maintain late seral forest stand characteristics.

Desirable stand characteristics include larger trees for a large green tree component and recruitment of large standing dead and down coarse woody debris in future stands, multi-layered stands with well developed understories, and multiple species that include hardwoods and other minor species.

Criteria for Density Management and Thinnings: Management objectives in all stands within the Riparian Reserve LUA are to develop and maintain late seral forest conditions, meet Aquatic Conservation Strategy (ACS) Objectives, and maintain and enhance existing habitat for the spotted owl. Density management would be prescribed primarily in mid-seral stands in the stem exclusion stage to encourage the development of late seral conditions.

Thinning of dense second growth stands will provide for the long-term maintenance and enhancement of stream shade. Younger, uniform stands, with trees tall enough to form a closed canopy above a stream can provide excellent shade. However, high-density stands develop unfavorable height-to-diameter ratios that increase the risk of blowdown and subsequent stream exposure to solar radiation. In addition, densely stocked stands delay the

establishment of understory trees and shrubs that can provide redundant layers of shade in the event that some or all of the overstory is lost due to disturbance. Near-term reductions in stream shade following thinning would be offset relatively quickly by increased tree growth and the development of multi-storied stands.

In young stands less than 30 years of age generally having less than commercial diameters, additional criteria for identifying and implementing projects include:

- Use a range of residual tree densities. Consider creating small isolated openings, each less than one acre in size.
- Stocking control: Control stocking to maintain growth of dominant trees and maintain health of the stand. Prescriptions will be determined on a site specific basis and may include a range of spacing densities for each site.
- Species composition control: favor minor species including hardwoods by increasing growing space around the stand.
- Retain developing understories that do not interfere with the development of dominant and co-dominant trees in the stand.
- Standing dead and down LWD recruitment: retain enough green tree capital for recruitment in future stands.

In 30 to 80 year old aged stands: These age classes generally provide the greatest opportunities for acceleration of tree diameter growth and understory development through density management. Criteria for identifying projects include:

- Maintain average 40 to 50 percent crown closures. Use a wide range of residual tree densities. Consider creating small isolated openings, each less than one acre in size, as an element of project design to meet density management objectives where appropriate.
- Stocking control: Highest priority are overstocked even-aged stands of over 55 Relative Density (Curtis, 1982). Relative density is a measure that estimates stocking density of stands using stand basal area and tree diameters.
- Species composition control: maintain minor species in treatment areas including hardwood.
- Enhance developing understories where present by reducing overstory stocking to allow for understory growth.
- Understories can be developed by natural regeneration, and planting in openings or beneath density management treatments.
- Standing dead and down LWD recruitment: retain enough green tree capital for recruitment in future stands.

- These projects can be implemented through commercial timber sales. Logs may be removed if standing dead and down LWD recruitment goals and ACS objectives are met to the degree possible.

Mature stands 80 to 150 years of age: With regard to density management and thinning in mature stands, age is a less important factor than the forest structure present. Late seral characteristics may be lacking in some stands due to timber management activities in the past that simplified forest structure. Past timber management practices such as salvage operations targeting dead, down and dying trees may have removed important elements of late seral forest and habitat suitable for the spotted owl. High stocking levels may delay the attainment of late seral forest conditions in some stands due to small tree sizes and poor understory development.

In stands where late seral characteristics are lacking, treatments to create structure and reduce high stocking levels could occur. The primary objectives of such treatments would be to create standing dead and down LWD, develop layering of understory vegetation, and increase diameter growth and structure of the residual trees. Criteria for identifying projects include:

- Enhance suitable spotted owl habitat conditions using density management silviculture treatments. Maintain minimum of 40 to 50 percent crown closures.
- Highest priority are single story overstocked even-aged stands that do not qualify as habitat suitable for the spotted owl and that currently lack components of late seral structure, such as standing dead and down large woody debris, large limby and cull trees, and multilayered canopies.
- Species composition control: Manage for species diversity in treatment areas.
- Enhance developing understories where present by reducing overstory stocking to allow for understory growth.
- Understories can be developed by natural regeneration or planting in openings or beneath density management treatments.
- Projects can be implemented through commercial timber sales or topping and falling contracts to create standing dead and down LWD. Logs may be removed if standing dead and down large woody debris goals are met to the degree possible.

Terrestrial Recommendation 2 - Standing Dead and Down LWD (Terrestrial Findings 1 and 2): Implement Northwest Forest Plan (NFP) and Salem District Resource Management Plan (RMP) standards and guidelines for green tree retention for the recruitment and development of standing dead and down LWD and to contribute to the development of late seral forest stand characteristics. Protect existing material and leave additional

green trees in future harvest units to make up for deficiencies in current conditions.

Criteria. Leave trees should be more than 12 inches dbh and represent the current range of conifer species, size, and diameter. In GFMA, leave six to eight green trees per acre for recruitment of standing dead and down LWD and development of a large green tree component in future stands. Leave additional green trees in areas where standing dead and down LWD do not meet NFP and Salem District RMP standards. Typically, up to four additional trees per acre are left in areas where standing dead and down LWD are lacking. Create enough large, hard standing material to meet the 40 percent level of potential cavity dwelling wildlife populations. It is anticipated that natural decay, falldown, and blowdown of green tree retention will meet or exceed NFP requirements for down LWD.

Riparian Reserves. Treatment objectives in these allocations would be for individual tree growth and stand structure enhancement for the purposes of accelerating late seral forest development in younger age classes. Landscape level considerations include connectivity for species, past management and natural disturbances such as fire, insects, and disease. When decayed logs are deficient, compensation in sound logs can be achieved over time. In general, small snags will not persist as long as large snags, nor provide the same wildlife habitat. Leaving trees to grow and become snags later is appropriate in early to mid seral stands.

Terrestrial Recommendation 3 - Road Densities: Reduce disturbance effects to wildlife by reclaiming and decommissioning unnecessary roads to reduce road densities in the watershed. Where roads cannot be decommissioned, close and storm-proof unnecessary roads. Allow motorized vehicle use on designated roads only, to reduce disturbance effects to wildlife. Future commercial thinning projects will provide opportunities to reconstruct or maintain roads that will be required for future thinning entries and decommission or close those roads that will not be needed in the future. A roads analysis will be completed during the assessment of those stands as they become commercial in size and volume.

Improvements in road construction practices have decreased road-related sedimentation impacts. Problems are avoided by confining roads to stable soils and ridge top locations, maintaining road surfaces, and cleaning, replacing, and installing culverts, using specially designed cable logging systems instead of building midslope roads, and using construction techniques such as end-hauling and full bench construction.

Terrestrial Recommendation 4 - Noxious Weeds (Terrestrial Finding 7): Use the principles of integrated weed management to eradicate, control, and prevent the spread of established and new invader noxious weed infestations. Integrated weed management means using all suitable methods (cultural, physical, biological, chemical) in a compatible manner to reduce weed populations. Past management efforts to eradicate the knapweed

infestations included hand pulling of the plants. This method has not been effective at any of the sites. Chemical treatments followed by hand pulling and establishing competitive native vegetation may be more successful. Control established infestations primarily by biological control agents and by revegetating disturbed ground with desirable species. Make biological control releases in the Gordon Creek Watershed as new agents become available. Encourage washing of ground disturbing equipment off-site to limit the spread of all exotic and noxious weed species.

Terrestrial Recommendation 5 - Fire and Fuels (Terrestrial Finding13):

Opportunities to reintroduce fire into FS lands in Gordon Creek Watershed would open up the stands, provide more and better huckleberry habitat, and provide more big game forage.

Aquatic Findings:

Aquatic Finding 1 - Large Woody Debris (LWD): Generally, LWD is lacking in some streams in the watershed.

Aquatic Finding 2 - Stream Flows: *Low Flows* – water use in Gordon Creek is over-allocated during the summer, leading to potential conflicts between in-stream needs and consumptive uses.

Peak Flows – The available evidence does not suggest that there has been an increase in peak flow in the Gordon Creek Watershed associated with road drainage. The relatively low density of road stream crossings (1.7 per mi) in the watershed suggests that the road network may have a relatively small impact on peak flow.

Aquatic Finding 3 - ODEQ 303(d) Listing: In the Oregon Department of Environmental Quality's 303(d) List Of Water Quality Limited Waterbodies, also known as the *303(d) Report*, Gordon Creek is listed as water quality-limited for summer stream temperature.

Aquatic Finding 4 - Stream Temperatures: Summer water temperatures in Gordon Creek were above the standard (64°F) for extended periods of time at all temperature gaging stations. Because the data represent a seven-day running average, it is apparent that water temperatures are high for extended periods of time during the summer. In early summer, water temperatures generally increase in a downstream direction, which is expected.

Aquatic Finding 5 - Slope Stability/Mass Wasting Processes: Slope gradients for nearly two thirds (63%) of the watershed are less than 20 percent and slope gradients for 93% of the watershed are less than 50 percent (Table 3-4). The geology, soils, and slope gradient throughout most of the Gordon Creek Watershed suggest a low frequency of mass wasting.

Aquatic Finding 6 - Fisheries: Anadromous fish spawn within the watershed. In-stream restoration projects would generally be intended to benefit anadromous salmon and resident populations of cutthroat and rainbow trout.

Although it is unlikely that physical stream channel conditions have been uniformly or substantially altered from reference conditions throughout the Gordon Creek Watershed, the lower reaches of Gordon Creek and some tributary reaches may benefit from in-stream restoration. The lower portion of Gordon Creek has been identified as an anchor habitat for coho salmon by the Sandy River Basin Working Group (SRBWG 2006), and is important for winter steelhead, as well. Restoration recommendations include LWD and side channel enhancement, carcass enrichment, riparian zone rehabilitation, sedimentation reduction, noxious weed control, and increased law enforcement to reduce poaching.

Aquatic Finding 7 – Stream Types: Steep conditions are most apparent at the edges of the stream network, such as along the headwater streams at the higher elevations of Larch Mountain, and along first-order tributary streams of Gordon Creek. Very steep headwater (VH) and steep narrow valley (SV) stream types account for 66% of the total channel habitat types and are usually not suitable sites for fish enhancement projects.

Recommendations:

Aquatic Recommendation 1 - Riparian Condition and LWD on Federal Lands (Aquatic Finding 1): Actively manage Riparian Reserves to achieve Aquatic Conservation Strategy Objectives on federal lands. Plan and implement riparian silvicultural projects designed to accelerate growth of riparian conifers to improve potential for LWD recruitment on federal lands. Criteria for treatment are included under Recommendation 1 and 2 of the Terrestrial Section. Improve and restore riparian habitat through planting and seeding with native vegetation. Activities could include planting, density management, thinnings, road decommissioning, culvert replacement and removal and erosion control in Riparian Reserves, such as seeding or planting.

The lower reach of Gordon Creek was recognized as an anchor habitat for coho salmon by the Sandy River Basin Working Group. Their recommendations included investigating the feasibility of initiating a LWD enhancement project on Gordon Creek (SRBWG 2006).

Aquatic Recommendation 2 - Riparian Condition and LWD on Non-Federal Lands (Aquatic Finding 1): Improve riparian conditions, and promote large conifer development in riparian areas through density management and thinnings. Work with the other landowners in the watershed to improve riparian condition and overstory by implementing projects designed to accelerate growth of riparian conifers to improve

potential for LWD recruitment. Placing large logs and rootwads in channels may work in some areas to improve fish habitat and stream structure.

Aquatic Recommendation 3 - Stream Flows (Aquatic Finding 2):

Cooperate with Oregon Department of Fish and Wildlife to ensure in-stream flows are protected in summer and fall during extremely low flow years.

Aquatic Recommendation 4 - Water Quality (Aquatic Finding 5):

Cooperate with state and private landowners to improve water quality. Improve drainage from existing roads and replace culverts that do not meet 100-year flood standards, to reduce loss of roads during large storms and addition of sediments to streams. Divert runoff away from unstable slopes and stabilize slide areas by planting native grasses and other plants.

Aquatic Recommendation 5 - ODEQ 303(d) Listing (Aquatic Finding 3):

A Water Quality Restoration Plan (WQRP) for BLM lands within the watershed will be provided in the BLM land management plan revision which is currently under development.

Aquatic Recommendation 6 - Stream Temperatures (Aquatic Finding 4):

Work with other landowners to increase effective stream shade, expand the temperature monitoring network, and identify causes of high water temperatures.

Aquatic Recommendation 7 - Soils, Slope Stability and Mass Wasting (Aquatic Finding 5):

Address erosion problems and restoration actions during forest management project planning. Stabilize slides where possible, by seeding, diverting water from unstable slopes, installation of erosion matting, and unweighting slides at the top. Improve road drainage and replace culverts where needed. Improve riparian cover where possible. Restore vegetative cover on bare slopes. Work on joint projects with other landowners to improve upland conditions on lands in all ownerships.

Human Uses

Findings:

Human Uses Finding 1 - Timber Management: For BLM lands, timber harvest activities will continue to occur at various levels in compliance with the Salem District guidelines relative to the land use allocations in the Gordon Creek Watershed. Timber harvest activities will include regeneration harvest, thinnings, density management, salvage operations, sanitation harvest, and management of the endemic western hemlock dwarf mistletoe. Such activities will be conducted according to the NFP. Timber harvest is also expected to continue on private industrial forest lands in the watershed.

Human Uses Finding 2 – Roads and Access: Roads in the watershed were closed to motorized vehicles in 1993.

Human Uses Finding 3 - Off-highway Vehicle Use: Off-road use by four wheel drive vehicles, all terrain vehicles, and motorcycles is not compatible with resource management objectives on BLM-administered lands in the Gordon Creek Watershed because of concerns associated with erosion, vegetation damage, water quality, and fisheries and wildlife disturbance. Though not expressly authorized, use of private forest land by off-road vehicles may currently occur unless access to the area is physically restricted.

Recommendations:

Human Uses Recommendation 1 – Timber Management in the Matrix Land Use Allocation (Human Uses Finding 1): For BLM lands, apply silvicultural treatments in developing timber stands in the Matrix LUA to meet RMP timber management objectives so that:

- Marketable timber sales can be offered that will contribute to a sustainable supply of timber for local, regional, and national economies and contribute to community stability, as reflected in the Salem District allowable sale quantity (ASQ).
- A desirable balance can be achieved between wood volume production, quality of wood, and timber value at harvest;
- A healthy forest ecosystem can be maintained with habitat that supports plant and animal populations and protects riparian areas and water resources.