Bottleneck Late Successional Reserve Enhancement Project 1

Final Decision and Decision Rationale for Bottleneck Late Successional Reserve Enhancement Project 1

Environmental Assessment Number OR080-07-16

July 2010

United States Department of the Interior
Bureau of Land Management
Oregon State Office
Salem District
Marys Peak Resource Area

Township 7 South, Range 9 West, Sections 8 and 9 Willamette Meridian
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BLM
Salem District

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BLM/OR/WA/AE-09/075+1792

I. Introduction

The Bureau of Land Management (BLM) conducted an environmental analysis in February 2009 for the Bottleneck LSR Enhancement Project, which is documented in the *Bottleneck LSR Enhancement Environmental Assessment* (Bottleneck LSR Enhancement EA) (EA# OR080-07-16) and the associated project file. The proposed action is to perform density management on approximately 161 acres of 70-year-old stands within LSR (Late Successional Reserve) and RR (Riparian Reserve) LUAs (Land Use Allocations).

Based on public comments, in June 2010, BLM updated the February 2009 EA to address concerns about Carbon Sequestration and Climate Change, which became the *Revised Bottleneck LSR Enhancement Environmental Assessment and Finding of No Additional Significant Impact* (EA). The decision maker made the Finding of No Additional Significant Impact (FONASI) and Revised EA available for public review from June 30, 2010 to July 14, 2010.

The DR constitutes the BLM's final decision with regard to the 2009 and 2010 EAs, responds to comments concerning Carbon Sequestration and Climate Change received during the 2010 EA comment period, and reviews and affirms the Finding of No Additional Significant Impact.

The decision maker signed the Finding of No Additional Significant Impact (FONASI) on July 19, 2010. In this Decision Rationale (DR), the original EA will be called the 2009 EA and the Revised EA (June 2010) will be called the EA. The 2009 EA and the EA are incorporated by reference in this DR.

II. Decision

I have decided to implement Bottleneck LSR Enhancement Project 1 as described in the proposed action (EA pp. 7-13), hereafter referred to as the "selected action". The selected action is shown on the map attached to this Decision Rationale. This decision is based on site-specific analysis in the *Bottleneck LSR Enhancement Environmental Assessment* (EA # OR080-07-16), the supporting project record, management recommendations contained in the *Salmon-Neskowin Watershed Analysis* (USDA FS and USDI BLM, June 1999), as well as the management direction contained in the Salem District Resource Management Plan (May 1995), which are incorporated by reference in the EA.

<u>The following is a summary of this decision.</u>

- Approximately 5,370 feet of new road (predominantly near ridge top locations) will be constructed. Following harvest, all of the new construction will be decommissioned and blocked to vehicular traffic.
- Density management treatments will occur on approximately 161 acres of 70 year old stands within LSR and RR LUAs through a timber sale
- Within existing roads, rock application and culvert improvement will occur.
- The cutting and yarding of trees will be accomplished utilizing wheeled or tracked equipment operating off of the existing roadway and skyline yarding equipment.
- Larger accumulations of debris along existing roads will be either machine piled or hand piled. All machine and hand piles will be burned.
- All design features and mitigation measures described in the EA will be incorporated into the timber sale contract.

III. Compliance with Direction:

The Revised Bottleneck LSR Enhancement Project has been designed to conform to the following documents, which direct and provide the legal framework for management of BLM-managed lands within the Salem District:

- *Salem District Record of Decision and Resource Management Plan* (RMP), May 1995: The RMP has been reviewed and it has been determined that the Revised Bottleneck LSR Enhancement Project conforms to the land use plan terms and conditions (i.e., complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1). Implementing the RMP is the reason for doing this project (RMP p.1-3);
- *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (the Northwest Forest Plan, or NWFP), April 1994.
- *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001)

The analysis in the Revised Bottleneck LSR Enhancement Project EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (RMP/FEIS), September 1994. The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (NWFP/FSEIS), February 1994. In addition, the EA is tiered to the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M FSEIS, November 2000).

Survey and Manage Review

The Bottleneck LSR Enhancement Project 1 is consistent with court orders relating to the Survey and Manage mitigation measure of the Northwest Forest Plan, as incorporated into the Salem District Resource Management Plan.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Rey, et al.*, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of NEPA violations in the BLM and USFS 2007 Record of Decision eliminating the Survey and Manage mitigation measure. Previously, in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation had entered into a stipulation exempting certain categories of activities from the Survey and Manage standard (hereinafter "Pechman exemptions").

Judge Pechman's Order from October 11, 2006 directs: "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

> A. Thinning projects in stands younger than 80 years old:
> B. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
> C. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and
> D. The portions of project involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph."

Following the Court's December 17, 2009 ruling, the Pechman exemptions are still in place. Judge Coughenour deferred issuing a remedy in his December 17, 2009 order until further proceedings, and did not enjoin the BLM from proceeding with projects (including timber sales). Nevertheless, I have reviewed the Bottleneck LSR Enhancement Project 1 in consideration of both the December 17, 2009 and October 11, 2006 order. Because the Bottleneck LSR Enhancement project entails thinning only in stands less than 80 years old, I have made the determination that this project meets Exemption A of the Pechman Exemptions (October 11, 2006 Order), and therefore may still proceed to be offered for sale even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage Record of Decision since the Pechman exemptions would remain valid in such case. The first notice for sale will appear in the newspaper on July 28, 2010.

Northern Spotted Owl (NSO) Status Review

"The following information was considered in the analysis of the Bottleneck LSR Enhancement Project 1 proposed activities: a/ *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney et al. 2004); b/*Status and Trends in Demography of Northern Spotted Owls,* 1985-2003 (Anthony et al. 2004); c/ *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and *Northwest Forest Plan – The First Ten Years* (1994-2003): d/ *Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft* (Lint, Technical Coordinator, 2005).

The Salem District analyzed reports regarding the status of the northern spotted owl and although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, the reports identified greater than expected NSO population declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California."

The reports did not find a direct correlation between habitat conditions and changes in NSO populations, and they were inconclusive as to the cause of the declines. Lag effects from prior harvest of suitable habitat, competition with barred owls, and habitat loss due to wildfire were identified as current threats. West Nile Virus and Sudden Oak Death were identified as potential new threats. Complex interactions are likely among the various factors. This information has not been found to be in conflict with the NWFP or the RMP (Evaluation of the Salem District Resource Management Plan Relative to Four Northern Spotted Owl Reports, September 6, 2005).

Compliance with the Aquatic Conservation Strategy

On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the U. S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA-Fisheries) and USFS and BLM (Agencies) in *Pacific Coast Fed. of Fishermen's Assn. et al v. Natl. Marine Fisheries Service, et al and American Forest Resource Council,* Civ. No. 04-1299RSM (W.D. Wash)((PCFFA IV). Based on violations of the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the Court set aside:

- The USFWS Biological Opinion (March 18, 2004),
- The NOAA-Fisheries Biological Opinion for the ACS Amendment (March 19, 2004),
- The ACS Amendment Final Supplemental Environmental Impact Statement (FSEIS) (October 2003), and
- The ACS Amendment adopted by the Record of Decision dated March 22, 2004.

Previously, in *Pacific Coast Fed. Of Fishermen's Assn. v. Natl. Marine Fisheries Service,* 265 F.3d 1028 (9th Cir. 2001)*(PCFFA II),* the United States Court of Appeals for the Ninth Circuit ruled that because the evaluation of a project's consistency with the long-term, watershed level ACS objectives could overlook short-term, site-scale effects that could have serious consequences to a listed species, these short-term, site-scale effects must be considered. Section 10.0 of the EA shows how the Bottleneck LSR Enhancement

Project 1 meets the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II.

Existing Watershed Condition

The Bottleneck LSR Enhancement Project 1 area is in the Salmon River 5th-field watershed which drains into the Salmon River. Six percent of the Salmon River watershed is managed by BLM, 70 percent is private and 24 percent is managed by the U. S. Forest Service. Approximately 33 percent of the total BLM managed lands consist of stands greater than 80 years old; and approximately 27 percent of BLM-managed lands are located in riparian areas (within 100 feet of a stream)

Review of Aquatic Conservation Strategy Compliance:

The project meets the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II [complies with the ACS on the project (site) scale]. The following is an update of how this project complies with the four components of the Aquatic Conservation Strategy. The project will comply with:

Component 1 – Riparian Reserves: by maintaining canopy cover along all streams and wetlands will protect stream bank stability and water temperature. Riparian Reserve boundaries will be established consistent with direction from the *Salem District Resource Management Plan*. No new road construction will occur within RMP Riparian Reserves;

Component 2 – Key Watershed: by establishing that Bottleneck LSR Enhancement Project 1 is not within a key watershed;

Component 3 –Watershed Analysis: The *Salmon-Neskowin Watershed Analysis* (SNWA, see USDA-FS and USDI-BLM, 1999) describes the events that contributed to the current condition such as early hunting/gathering by aboriginal inhabitants, road building, agriculture, wildfire, and timber harvest. The following are watershed analysis findings that apply to or are components of this project:

Bottleneck LSR Enhancement Project 1: Early commercial thinnings may be viable treatment options in stands whose ages range from 30 to 79 years Early commercial thinnings will encourage stand variability and spacing variability. This in turn will favor the development of large limbs on some trees and will hasten the development of desirable characteristics within the stand. Late commercial thinnings may help move densely stocked stands from the competitive exclusion stage into the understory reinitiation phase. (SNWA p. 64).

Component 4 – Watershed Restoration:
Bottleneck LSR Enhancement Project 1 will restore watershed conditions by providing a gradual transition in structural characteristics of the treated stands that will more closely resemble late-seral forest. This project will also promote stand diversity, provide more light to accelerate growth of selected conifers and promote species diversity.

This project has been reviewed against the ACS objectives at the project or site scale with the following results. The no action alternative does not retard or prevent the attainment of any of the nine ACS objectives because this alternative will maintain current conditions. The Proposed Actions do not retard or prevent the attainment of any of the nine ACS objectives for the following reasons.

Table 1: Project' Consistency with the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	**Project 1 – Mid-Seral Enhancement**
1. 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..	Does not prevent the attainment of ***ACSO 1***. Addressed in Text (*EA section 3.1.1*). In summary: **No Action Alternative:** The No Action alternative would maintain the development of the existing vegetation and associated stand structure at its present rate. The current distribution, diversity and complexity of watershed and landscape-scale features would be maintained. Faster restoration of distribution, diversity, and complexity of watershed and landscape features would not occur. **Proposed Action Alternative:** Species diversity will be increased, as thinning will target Douglas-fir, increasing the relative proportion of the other tree species. Furthermore, treatment will promote the establishment of seedlings, which are likely to include hardwood, western hemlock and western red cedar (EA.p. 23). Treatment includes variable density thinning, creation of small gaps around "wolf" trees, and retention of small clumps. This will increase spatial and structural diversity of the stand. Some trees will experience no competition and grow very full crowns. Some trees will remain at close spacing and retain closed canopy conditions. Thinning around "wolf" or legacy trees in Project 1 will increase growth and vigor of the remaining trees and prevent loss of lower crown due to competition (EA p. 23).
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	Does not prevent the attainment of ***ACSO 2***. Addressed in Text (*EA sections 3.1.1 and 3.1.3*). In summary: **No Action Alternative:** The No Action alternative would have little effect on connectivity except in the long term within the affected watershed. **Proposed Action Alternative:** Long term connectivity of terrestrial watershed features will be improved by enhancing conditions for stand structure development. In time, the Riparian Reserve LUA will improve in functioning as refugia for late successional, aquatic and riparian associated and dependent species. Both terrestrial and aquatic connectivity will be maintained, and over the long-term, as the Riparian Reserve LUA develops late successional characteristics, lateral, longitudinal and drainage connectivity will be restored.. No stream crossing culverts will be used that will potentially hinder movement of aquatic species; therefore no aquatic barriers will be created. Both terrestrial and aquatic connectivity will be maintained, and over the long-term, as Riparian Reserves develop late successional characteristics, lateral, longitudinal and drainage connectivity will be restored. Renovation of the transportation system will not affect spatial connectivity.

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Mid-Seral Enhancement
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	Does not prevent the attainment of ***ACSO 3***. Addressed in Text (*EA sections 3.1.4*). In summary: **No Action Alternative:** It is assumed that the current condition of physical integrity would be maintained. **Proposed Action Alternative:;** Project 1 is unlikely to affect stream channel stability and function as all field identified streams and wet areas will be protected with a minimum 55-foot SPZ. No yarding will occur across streams. No bank stabilizing vegetation will be removed.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	Does not prevent the attainment of ***ACSO 4***. Addressed in Text (*EA section 3.1.4*). In summary **No Action Alternative:** It is assumed that the current condition of the water quality would be maintained. **Proposed Action Alternative** Increases in stream temperature as a result of this action are unlikely. All tributary reaches in the project area will have a 55-foot primary shade zone distance based on the hill slope of the area. Trees located within this primary shade zone will not be harvested thus helping to maintain the existing thermal regime of the tributary by maintaining greater than 80 percent effective stream shade. At stream heads, where groundwater and surface water interfaces, stream temperatures are relatively insensitive to change and are likely consistently below ODEQ temperature standards. The channels are generally shaded by alder, conifer, ferns and brush. Stream shading varies between dense canopy (greater than 80 percent angular canopy density) cover by conifers to open canopy (50 to 60 percent angular canopy density) at flatter reaches (Brazier and Brown 1972). The flatter stream reaches were those that had discontinuous flow where there was no surface flow. Based on field observations, aerial photo reviews of streams completed for the analysis of this EA between 2006 and 2009 , and modeling runs for the project area, current streamside vegetation and valley topography appears adequate to shade surface waters during summer base flow and it is likely that stream temperatures consistently meet the Oregon state standard (18 degrees Celsius) for these waters (EA p. 43) Sedimentation and stream turbidity: see No. 5 below Road renovation practices are intended to reduce the likely deposition of road fill material into adjacent streams.

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Mid-Seral Enhancement
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	Does not prevent the attainment of ***ACSO 5***. Addressed in Text (*EA section 3.1.4*). In summary **No Action Alternative:** It is assumed that the current levels of sediment into streams would be maintained. **Proposed Action Alternative** It is unlikely that the proposed project will lead to measurable increases in sediment delivery to streams, stream turbidity, the alteration of stream substrate composition, or sediment transport regime. Stream protection zones will eliminate disturbance of streamside vegetation; no trees will be cut from the stream bank or where roots are stabilizing the stream bank. Tree girdling and piling of slash will have minimal to no ground disturbance and no activities will take place directly in or adjacent to stream channels. Skyline and ground-based skid trails, if sufficiently compacted, could route surface water and sediment into streams. However, several factors will limit the potential for this to occur. Even if compacted, high levels of residual slash left on yarding corridors (both machine and skyline), will reduce runoff by deflecting and redistributing overland flow laterally to areas where it will infiltrate into the soil. Existing skid trails will be used for ground-based equipment as much as possible to reduce additional soil compaction and the total surface area of landings will be kept to a minimum. In addition SPZs in riparian areas have high surface roughness, which function to trap any overland flow and sediment before reaching streams. Ground-based skidding will occur during periods of low soil moisture with little or no rainfall, in order to minimize soil compaction and erosion. Sediment supplies are in the range expected for their stream type (Rosgen, 1994). Channel substrates are typically sand, with some pebbles and gravels. Some channel reaches contain large amounts of CWD. The remaining channels all contained sections of discontinuous flow where water went subsurface. Burning hand piles could produce patches of soil with altered surface properties that restrict infiltration. However, these surfaces will be surrounded by larger areas that could absorb runoff or sediment that reach them. In addition, piles will be burned outside of SPZs and away from standing or running surface water. No burning will occur within SPZs to protect water resources and the remaining vegetated buffer will filter out any potential sediment delivered from upslope areas. Based on previous burning projects, it is not expected that any erosion will occur from these areas due to the burning and thus there will be no impact to sediment generation or nutrient levels available to the remaining vegetation which will maintain the productivity of the stand. Since the proposed action is unlikely to result in any measurable increase in stream temperature or sedimentation and will not place large amounts of fine organic material in the streams or alter stream reaeration, it is unlikely that it will have any measurable effect on dissolved oxygen or nutrient levels (EA pp. 68 and 69).

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Mid-Seral Enhancement
6. 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.	Does not prevent the attainment of ***ACSO 6***. Addressed in Text (*EA section 3.1.4*). In summary **No Action Alternative:** No change in in-streams flows would be anticipated. **Proposed Action Alternative** Measurable effects to hydrologic processes, channel conditions, and water quality due to the proposed action are unlikely. Alterations in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect from the proposed action will be difficult to measure and unlikely to substantially alter stream flow or water quality. Numerous studies have documented increases in mean annual water yield and increases in summer base flow following the removal of watershed vegetation; vegetation intercepts and evapotranspires precipitation that might otherwise become runoff (Bosch et al. 1982). Thus, it can be assumed that this project will likely result in some small increase in water yield which correlates with the removal of conifers, the death of larger conifers by girdling, and a short-term reduction in vegetation cover through pile burning. However, other than increased peak flows, an increase in fall and winter discharge from forest activities is likely to have little biological or physical significance (U.S.E.P.A. 1991). In almost all cases, removal of more than 20 percent of the vegetative cover over an entire watershed (5th-field) will result in increases in mean annual water yield. Removal of less than 20 percent of vegetative cover has resulted in negligible changes, where it was not possible to detect any effect (i.e. the error in measurements was greater than the change) (Bosch 1982). In addition, alterations in the timing and/or quantity of peak flow events as a result of forest harvest and road construction have been studied for several decades (Jones and Grant 1996). The proposed project sites will affect approximately 1.7 percent of the forest cover in the Slick Rock Creek Subwatershed and 0.3 percent in the larger Salmon River Watershed. Because of the small percentage of forest cover being affected by this project, increases to stream flow (mean annual yield and summer base flow) caused by this action alone are unlikely to be measurable. There is a low risk of increased peak flows due to ROS winter storms. This effect is presumed to be small because the vegetation treatment planned is only a thinning and should not alter the vegetation structure of the landscape such as clear cutting will (EA pp. 42 to 43).

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Mid-Seral Enhancement
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.	Does not prevent the attainment of ***ACSO 7***. Addressed in Text (*EA section 3.1.4*). In summary **No Action Alternative:** No change in in-streams flows would be anticipated. **Proposed Action Alternative** Design features for the project, such as SPZs, coupled with the relatively small percent of vegetation proposed to be removed, will maintain groundwater levels and floodplain inundation rates. Detectable direct or indirect effects to stream flow as a result of this action are unlikely. The proposed action will not alter existing patterns of floodplain inundation or water table elevation as it will have no effects on existing flow patterns and stream channel conditions. Proper drainage of roads will maintain water tables and flood plain functions.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.	Does not prevent the attainment of ***ACSO 8***. Addressed in Text (*EA section 3.1.1*). In summary **No Action Alternative:** The current species composition and structural diversity of plant communities would continue along the current trajectory. Diversification would occur over a longer period of time. **Proposed Action Alternative:** The actual riparian areas along streams in Project 1 will be excluded from treatment during the project by designating SPZs. There will be no change to riparian vegetation on banks or within the riparian zones along streams resulting from the proposed project. Large amounts of smaller wood will continue to fall from within the untreated SPZs, and larger wood will begin to be recruited from farther up the slopes as the treated stands reach heights of 200 feet. In the long-term, trees will reach large diameters earlier compared to the no treatment option, creating natural opportunities for high quality LWD recruitment (EA pg. 25).

Aquatic Conservation Strategy Objectives (ACSOs)	Project 1 – Mid-Seral Enhancement
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.	Does not prevent the attainment of ***ACSO 9***. Addressed in Text (*EA section 3.1.3*). In summary **No Action Alternative:** Habitats would be maintained over the short-term and continue to develop over the long-term with no known impacts on species currently present. **Proposed Action Alternative** Research at the DMS sites found that the treatments generally maintained habitat for native plant, invertebrate and invertebrate riparian-dependant species. Similar effects are expected in the proposed action as the previous treatment measured in the research. However, no additional patch cuts are included in the proposed action. Specifically, thinning was found to increase species richness of arthropods, and forest riparian buffers thirty meters wide serve as refuge for both forest-upland and forest-riparian arthropod species. Thinning was found to have minimal effects on most species of aquatic vertebrates (salamanders). Native plants were found to persist and increase in coverage after density management. Patch openings and low (retention) thinning drastically reduced the diversity of epigeous ectomycorrhizal fungal species, but medium and high retention thinning showed little change in fungal diversity. Buffers of widths defined by the transition from riparian to upland vegetation or topographic slope breaks appear sufficient to mitigate the impacts of upslope thinning on the microclimate above headwater streams. Because the microclimate, as well as the structure and composition of the forest stand and understory vegetation are protected within the untreated buffer, habitat elements seem to be protected (EA pp. 25 and 26).

IV. Alternatives Considered

The EA analyzed the effects of the proposed action and the no action alternatives. No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA were identified. No action alternatives were identified that will meet the purpose and need of the project and have meaningful differences in environmental effects from the proposed action (EA Section 3.1). Complete descriptions of the "action" and "no action" alternatives are contained in the EA, pp. 18-64.

V. Decision Rationale

Considering public comment, the content of the EA and supporting project record, the management recommendations contained in the *Salmon-Neskowin Watershed Analysis* (USDA FS and USDI BLM, June 1999), and the management direction contained in the RMP, I have decided to implement Alternative 2, hereafter referred to as the selected action as described above. The following is my rationale for this decision.

1. The selected action:

- Meets the purpose and need of the project (EA section 1.6), as shown in *Table 2*.
- Complies with the *Salem District Record of Decision and Resource Management Plan,* May 1995 (RMP):
- Will not have significant impact on the affected elements of the environment (EA FONASI pp. i-vi) beyond those already anticipated and addressed in the RMP EIS.
- Has been adequately analyzed.

2. The No Action alternative was not selected because it does not meet the Purpose and Need directly, or delays the achievement of the Purpose and Need as shown in *Table 2*.

Table 2: Comparison of the Alternatives with Regard to the Purpose of and Need for Action (EA section 1.6)

Purpose and Need (EA Section 1.6)	No Action (Alternative 1)	Proposed Action (Alternative 2)
Accelerate the development of late-seral/old-growth forest characteristics in mid and late-successional forest habitat for the future needs of northern spotted owls, marbled murrelets and other species which depend upon late-seral/old-growth habitat. (RMP pp. 15-19)	Maintains the slow level of growth in overstocked mid-seral habitat for the next decade or two; existing wolf trees lose structure to competition; no immediate addition of snags and CWD. In the late-seral stand existing wolf trees lose structure to competition; no immediate addition of snags and CWD.	Creates a more open and faster growing mid-seral forest with variable tree densities; protects and enhances structure of wolf trees; creates hard snags and CWD.
Offer a marketable timber sale. (RMP pp. 15-19)	Would not offer timber for sale.	Offers approximately 161 acres of timber for sale.
Increase structural diversity in the Riparian Reserve LUA from relatively uniform conifer stands. (RMP pp. 9-15)	Maintains a highly dense, uniform stand of trees with receding crown ratios, loss of limbs and loss of growth.	Reduces tree densities within stands to increase diameter growth and restore large conifers to Riparian Reserves. Increases species diversity of native riparian-dependent plants and animals.
Provides appropriate access for timber harvest and silvicultural practices used to meet the objectives above, while minimizing increases in road densities. (RMP p. 62)	Maintain existing road densities.	Constructs approximately 5,370 feet of new roads and renovates approximately eight miles. Following harvest, the new construction will be decommissioned.
	Delay maintenance on feeder roads, main routes would be maintained.	Will implement maintenance on feeder roads, allowing for continued access.
Reduces environmental effects associated with existing roads within the project area (RMP p. 62)	Maintain existing drainage and road surface conditions.	Renovates existing roads (includes drainage structure renovation or replacement). These renovations will improve drainage and road surface conditions, resulting in less road surface erosion into the streams.

VI. Public Involvement/Consultation/Coordination

Public Scoping:

- A scoping letter, dated October 11, 2007, was sent to 16 potentially affected or interested individuals, groups, and agencies. – Two responses were received during the scoping period.
- A description of the project was included in the March, June, September and December 2008, February and November 2009 and March and June 2010 project updates to solicit comments on the proposed project.

EA and FONSI Comment Period and Comments:

BLM made the 2009 EA and FONSI available for public review from July 1, 2009 to July 31, 2009. Two (2) comment letters/emails were received during the original EA comment period.

Based on the comments, the BLM revised the Bottleneck LSR Enhancement EA to address the topics raised in the original comments. The BLM made the revised EA and FONASI available for additional public comment from June 30, 2010 to July 14, 2010. Two comment letters were received during this comment period. Responses to the public comments can be found in section VIII of this Decision Rationale. The EA comment letters/emails are available for review at the Salem District BLM Office, 1717 Fabry Rd SE, Salem, Oregon.

Consultation/Coordination:

Wildlife: United States Fish and Wildlife Service (USFWS)
To address concerns for potential effects to listed wildlife species and potential modification of critical habitats, the proposed action was consulted upon with the USFWS, as required under Section 7 of the Endangered Species Act. Consultation for this proposed action was facilitated by its inclusion within a programmatic Biological Assessment (BA) that analyzed all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. The proposed action has been designed to incorporate all appropriate design standards set forth in the BA. This action would be considered a "may affect, not likely to adversely affect" northern spotted owl dispersal habitat and northern spotted owl and marbled murrelet critical habitats. In the resulting Letter of Concurrence (FWS Reference Number 13420-2008-I-0125), after reviewing the effects of the proposed action on the spotted owl and its critical habitat, and the marbled murrelet and its critical habitat, the Service concurred with BLM that the activities, as proposed, are not likely to adversely affect spotted owls or marbled murrelets and are not likely to adversely affect critical habitat for either species.

Fish: National Marine Fisheries Service (NMFS)
Consultation with NMFS is required for all actions which 'may affect' ESA listed fish species and critical habitat. Oregon Coast (OC) Coho Salmon are listed as threatened under the ESA, as amended, and are known to occur in the area where the proposed actions are located (Salmon River and Siletz River).

The proposed thinning actions associated with the Bottleneck LSR Thinning Project are within 0.5 miles to the listed fish or listed critical habitat in the Slick Rock Creek Sub-Watershed. Proposed hauling associated with the project occurs adjacent to listed fish. A determination has been made that this proposed project will be a 'May Affect' on OC coho salmon. The 'May Affect' determination is based on the proximity of the density management treatments to the Trout Creek and Slick Rock Creek in the Slick Rock Creek Sub-Watershed where listed fish reside. Due to the "May Affect" determination this project will need to have consultation completed with the NMFS prior to implementation.

Project 1 – Concurrence from NMFS on consistency of this project with guidance described in *Endangered Species Act Section 7 Informal Consultation for the 2008-2009 North Coast Province Thinning Timber Sales Programmatic on Portions of the Siuslaw National Forest and Eugene and Salem Districts of the Bureau of Land Management, Seven Watersheds within the Oregon Coast Recovery Domain* (NMFS 2008) will provide consultation coverage for the May Affect actions of the Bottleneck LSR Thinning project. Concurrence from NMFS was received on March 24, 2010 concluding informal consultation for this project. Actions which do not comply with design criteria of the Thinning Timber sale Programmatic or *Aquatic Restoration Biological Opinion (ESA Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act-Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-2012)* would require additional ESA consultation coverage.

Protection of Essential Fish Habitat (EFH) as described by the Magnuson/Stevens Fisheries Conservation and Management Act and consultation with NMFS is required for all projects which may adversely affect EFH of Chinook and coho salmon. The proposed Bottleneck LSR Enhancement Project 1 is not expected to adversely affect EFH due to distance of all activities associated with the project from ESA listed fish or critical habitat. Consultation with NMFS on EFH is not required for this project.

VII. Conclusion

Review of Finding of No Additional Significant Impact

I have determined that change to the Finding of No Additional Significant Impact (FONASI – July 2010) for the Bottleneck LSR Enhancement Project 1 is not necessary because I've considered and concur with information in the EA and FONASI. The comments on the EA were reviewed and no information was provided in the comments that lead me to believe the analysis, data or conclusions are in error or that the selected action needs to be altered. There are no significant new circumstances or facts relevant to the selected action or associated environmental effects that were not addressed in the EA.

Administrative Review Opportunities

Protests: In accordance with Forest Management Regulations at 43 CFR 5003.2, the decision for this timber sale will not become effective or be open to formal protest until the Notice of Sale is published in a newspaper of general circulation in the area where the lands affected by the decision are located. Protests of this sale must be filed within 15 days of the first publication of the notice. For this project, the Notice of Sale will be published in the *News-Guard* and *News-Times* newspapers on or around August 18, 2010. The planned sale date is September 15, 2010.

Implementation Date

If no protest is received within 15 days after publication of this Decision Record (Bottleneck Late Successional Reserve Enhancement Project 1) this decision will become final. For additional information concerning this decision, contact Gary Humbard (503) 315-5981, Marys Peak Resource Area, Salem BLM, 1717 Fabry SE, Salem, Oregon 97306.

Approved by: _____ 7/27/2010

John Huston — Date

Marys Peak Resource Area Acting Field Manager

VIII. Appendix A: Response to Public Comments Received on the Bottleneck LSR Enhancement Project 1 (EA#OR080-06-18)

Two letters were received commenting on the Revised Upper and Lower Alsea River Watershed Restoration Environmental Assessment. The following is the response to the site specific Carbon Storage/Climate Change analysis found in the March 2010 EA. In some cases the comments have been quoted directly from commenter's responses and in some cases they have been paraphrased. Comments are in *italics*. The BLM response follows each comment.

Oregon Wild, Doug Heiken
Received July 14, 2010

1. **Comment:** *The BLM has selected fifty years as the analysis period of carbon storage for this project, because it encompasses the duration of the direct and indirect effects on carbon storage. In fifty years, stands in the project area will have nearly returned to current carbon storage levels, and carbon storage will have offset carbon emissions resulting from harvest." The graphic (EA pg. 58) clearly shows that logging has effects that last more than 100 years.*

   Response: For the reason cited, 50 years is a meaningful analysis period for carbon storage because it reflects the replacement time of carbon storage from harvested wood. The graphic does show diminished carbon storage in the action alternative compared with the no action alternative over 100 years, and the difference narrows only slightly over that time. The graph is meant to help depict the relationship. The relative difference between carbon storage in the no action and the action alternative is comparable at both 50 years and 100 years, and the graphic shows that. Choosing 100 years as an analysis period for the action alternative conveys no additional information, nor does it represent an inflection point in the carbon storage as 50 years does.

2. **Comment:** *The EA relies on the carbon analysis in the WOPR EIS – an EIS that has been withdrawn and declared legally indefensible. This is not proper. BLM still lacks a program-level NEPA analysis of its logging program and how all that logging affects carbon and climate.*

   Response: The BLM did not tier to the 2008 FEIS (aka WOPR EIS) nor has this EIS been deemed legally indefensible. There were lawsuits associated with the Record of Decision/Resource Management Plan and associated EIS, however, there was never an opinion declaring the EIS "legally indefensible" or otherwise invalid. The new Secretary of the Interior chose to withdraw the 2008 Record of Decision, due to BLM's failure to complete section 7 consultation under the Endangered Species Act. The 2008 Final EIS was not withdrawn and remains available for use.

   The BLM used the carbon methodology described in the 2008 FEIS because that is the best analysis and methodology available to BLM at this time. The EA used numbers associated with the No Action Alternative in the 2008 FEIS, which by definition is management under the 1995 ROD and the Northwest Forest Plan, including the cumulative effects analysis. Therefore the commenter has not demonstrated why using the carbon analysis as it pertains to the parcels managed under the 1995 RMP and the Northwest Forest Plan is improper.

3. **Comment:** *BLM cannot ignore the local incremental causes of climate change because all of the causes are both spatially dispersed and incremental in nature, and the cumulative effect of all these individual local decisions results in a problem of global proportions. This indicates the need for an*

EIS because the problem is significant and BLM is contributing to it and has no other NEPA analysis that it can tier to.

Response: BLM has addressed the potential local impact of the project on greenhouse gas levels by making changes in vegetation that may result in net emissions or net storage of greenhouse gases (EA p. 57). The EA also addresses the cumulative impact of the projects carbon release and sequestration and presents the incremental effect of the proposed action on greenhouse gas levels within the context of effects of past, present, and reasonably foreseeable future actions at multiple spatial scales on page 64. While anthropogenic-caused greenhouse gases contribute to climate change, it is beyond the scope of existing science to identify this project's greenhouse gas emissions as a measurable cause of specific climate impacts as outlined by the U.S. Geological Survey in its report described on page 54 of this EA.

4. **Comment:** *The logged forest will not have caught up to the amount of carbon stored in the forest in 2060 if it is left unlogged.*

Response: We agree with this comment. EA Table 13 shows that the no action alternative stores more carbon than the action alternatives at year 2060. Table 13 also shows that for the action alternative, there is a net increase in carbon storage at year 2060. Although carbon has been removed, carbon storage still continues in the stands thinned by the selected action.

5. **Comment:** *BLM cannot limit the temporal scope of the analysis by saying that the carbon losses and climate impacts of logging will be erased in 50 years because the extra carbon in the atmosphere will be contributing to adverse climate impacts over the 50 years and the unlogged forest will store far more carbon at the end of 50 years. For every year that logging results in extra carbon in the atmosphere, there needs to be mitigation.*

Response: As described in the EA (P. 57), the analysis quantifies the project's carbon net emissions as temporary and small. Moreover the commenter cites no scientific opinion, report or otherwise to support the viewpoint that could connect carbon emissions from this project to a measurable adverse impact to climate. Instead, the EA articulated how the U.S. Geological Survey described how, although scientific information on greenhouse gases are extremely likely to have exerted a substantial effect on global climate, it is beyond the scope of existing science to identify how a project's greenhouse gas emissions as a measurable cause of specific climate impacts (EA, page 54). Therefore, as described in the EA (p.57), the BLM identified the greenhouse gas emissions and storage associated with this project, but this project in and of itself or cumulatively could not measurably affect climate change.

There is no legal, regulatory or policy basis to provide for carbon above other ecosystem services including timber. Commenter offers no specifics regarding potential mitigation to which the agency can respond. Mitigation measures are not required where impacts are not significant. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 359 (1989).

6. **Comment:** *Logging causes very long-term climate impacts that should be considered significant in a NEPA context and trigger an EIS.*

Response: As described in the EA (p. 64), the incremental effect of the proposed action on greenhouse gas levels within the context of effects of past, present, and reasonably foreseeable future actions at multiple spatial scales, the analysis has evidenced that the project's carbon release contribution is very small (emissions from the proposed action will constitute .00000004% of current global emissions and .0000016% of current U.S. emissions). The incremental effect of the proposed action and similar actions, over time, will be net storage of carbon. At this time, there is no science available to analyze how the carbon release associated with this project will have a measurable effect

on climate change (EA, p 54).

7. **Comment:** *The proper scale of comparison is 350ppm. The EA compares carbon emission from logging Upper and Lower Alsea River Restoration project to the current annual global emissions of CO2 from all sources. These are a misleading comparisons which serve to minimize the significance of the amount of carbon in the stands in this project and the amount of GHG emissions caused by logging.*

   Response: Commenter asserts that experts (with none cited) contend that the atmosphere has a threshold 350 ppm and that the current level is 390 ppm. These numbers are global numbers. There is no difference between the comparison BLM has used or making a comparison against the asserted global parts per million. The fact remains that the emissions from the Bottleneck LSR Enhancement projects are very small to the point of being undetectable. Implementing the Bottleneck LSR Enhancement projects will not raise the assumed 390 ppm any detectable amount. The BLM agrees that emissions under the proposed action, though they are offset by tree growth on the project area within five years, are greater than the no action alternative.

8. **Comment:** *BLM must do all it can to mitigate and reverse climate change in order to meet its legal obligations.*

   Response: There is no legal mandate for BLM to avoid or minimize emissions, store more carbon, or "mitigate and reverse climate change."

9. **Comment:** *The EA should at least disclose that there is strong physical science basis for thinking that thinning would be likely to increase the decay rate of dead wood.*

   Response: There are a suite of indirect effects that result from thinning that could effect carbon sequestration. However, relative to the elements included in the analysis, they have much less quantitative effect on results. The accumulation and decay of dead wood, as well as the development of understory trees are specifically excluded from the analysis.

10. **Comment:** *Certain stands in the matrix should be removed from the timber base to offset the loss of carbon storage in the current proposal.*

    Response: Changes in land use allocations are part of the Resource Management Planning process. Considering changes in land use allocations is outside the scope of this project.

11. **Comment:** *BLM must use the best available science.*

    Response: BLM has fully considered the best available science (EA pp 54 to 55). BLM has considered the sources utilized in the carbon/climate analysis for the WOPR analysis, sources presented by commenter, and others. Commenter does not point to any "available science" that BLM did not consider.

12. **Comment:** *Climate change is expected to increase winter/spring flooding and summer drought and in conjunction with nearby clear cutting in the next 5-10 years, stream temperatures and sediment can be expected to change even if BLM takes the "no action" alternative.*

    Response: Future changes in flooding and drought patterns and private land harvesting patterns from global warming are speculative and commenter offers no basis upon which to conclude otherwise, but their own personal conjecture. BLM has applied best management practices to mitigate impacts from the project.

13. **Comment:** *The FONSI is in error. The FONSI (p iii) says that forest growth following logging would offset greenhouse gas emissions and would, over time, result in net storage of carbon. In fact, the logging alternative never offsets all the climate consequences caused by emissions from logging.*

    Response: The EA articulated how the U.S. Geological Survey described how, although scientific information on greenhouse gases are extremely likely to have exerted a substantial effect on global climate, it is beyond the scope of existing science to identify how a project's greenhouse gas emissions as a measurable cause of specific climate impacts (EA, page 54). Emissions resulting from logging and from emissions from the harvested wood within 50 years of harvest are offset by tree growth within five years. The climate consequences of any project, especially an emission as small and temporary as this are not measurable.

14. **Comment:** *The EA fails to disclose the true cost of logging in terms of the warming caused by the extra CO_2 in the atmosphere caused by logging. EA Table 13 on page 57 does not show the cumulative effects of the extra carbon in the atmosphere. The EA must disclose the unmitigated warming effects caused by the extra carbon in the atmosphere over time, and must show the "time-value of carbon" whereby future forest growth is unable to make up for the extra carbon in the atmosphere in earlier time periods.*

    Response: See Response to #12. The commenter identifies no established analysis process to evaluate the concept of the "time value" of the carbon. Emissions from logging itself are offset by live tree carbon within one growing season. Emissions from 2010 to 2060 from the wood harvested at Bottleneck LSR Enhancement projects are offset by tree growth there by 2015, so net positive emissions are limited to the first year or two.

15. **Comment:** *The fossil fuel component of wood products is not fully disclosed. Wood products require fossil fuel use for harvesting and transportation to the mill, milling operations, transportation of the milled lumber, manufacturing operations, marketing and transportation of the final products, transportation of the waste products, plus the mining, smelting, milling, and manufacturing processes required to manufacture all the equipment used to harvest trees and make wood products. All these emissions serve to reduce any alleged contribution toward carbon storage in wood products, so to get an accurate picture of the real carbon storage in wood products, these emissions must be accounted for.*

    Response: The emissions resulting from harvest and transportation of harvested wood at Bottleneck LSR Enhancement projects are analyzed. Emissions resulting from all further industrial and commercial activity associated with the wood products and by-products obtained will not be properly ascribed to this project. This project will neither cause nor prevent the ongoing industrial and commercial activity associated with the wood products industry.

16. **Comment:** *We question the assertion on EA page 57 that 69% of forest carbon would remain stored in wood products after 50 years. That does not seem to be consistent with the decay rates found in the literature.*

    Response: The reference for this portion of the analysis is Smith, et al, 2006. The total stored carbon from harvested wood is from products still in use, stored in landfills (not fully decayed) or emitted with energy capture (thereby offsetting fossil fuels). Since the commenter does not cite specific literature, no comparison with it is possible.

Cascadia Wildlands, Francis Eatherington
Received July 14, 2010

1. **Comment:** *There is scientific consensus on the interrelationship between greenhouse gases and global climate change. It is not beyond the scope of the EA to identify fossil fuels as a source of greenhouse gas emissions, or carbon loss from logging. It appears from the EA statement that the BLM is even questioning the sound scientific evidence on global warming. The BLM should take a hard look at the evidence, and change your assessment for this EA.*

   Response: As stated in the EA (pg.54), **"**Uncertainty about the nature, effects and magnitude of the greenhouse gases and global climate change interrelationship is evident in a wide range of conclusions and recommendations in the literature reviewed". However, Forster et. al. 2007 (pp. 129-234), which is incorporated here by reference, concluded that human-caused increases in greenhouse gases are extremely likely to have exerted a substantial effect on global climate. The U.S. Geological Survey, in a May 14, 2008 memorandum to the U.S. Fish and Wildlife Service, summarized the latest science on greenhouse gases and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location. This defines the spatial scale for analysis as global, not local, regional or continental.

2. **Comment:** *The EA (pg 57) tells us that harvested wood from this project will store 5,400 tonnes of carbon, and of that, 1,640 tonnes will be lost over 50 years, leaving 3,760 tonnes of carbon stored in harvested products after 50 years (195 tonnes more than in Table 13). Most wood products are paper products, which are gone in less than 10 years.*

   Response: Harvested wood follows a number of pathways, and the regional (Northwest) averages carbon storage and emission of harvested wood has been researched and presented in a paper by Smith, et al, 2006. Regional Pacific Northwest average proportion of harvested wood (63.8 percent sawtimber, 36.2 percent pulpwood is from GTR-RM-199, Table B-6 USDA For. SVC. Haynes R., Coordinator. An analysis of timber situation in the U.S. 1989-2040. Ft. Collins, CO F. S. Rocky Mtn For. and RNC. Exp. Stn. P 268. The carbon storage and emissions from harvested wood in the action alternative in Bottleneck are assumed to follow those pathways in the proportions per decade documented in the study. Included in storage is wood in use (including paper, building materials, etc), with a range of carbon storage duration. Also included is wood burned to generate energy, as it offsets other carbon emissions, such as coal. Wood is disposed of over time, and some becomes emissions from the landfill, and some proportion remains stored carbon after disposal.

3. **Comment:** *The EA is unclear on how much fossil fuels will be used to harvest Bottleneck, contributing to carbon in the atmosphere. The EA (page 57) tell us that after 50 years harvested wood will emit 1,640 tonnes of carbon. Table 13 tells us that total emissions are 1,700 tonnes, including fossil fuel used to harvest. Does that mean that the fossil fuel emissions to harvest the wood are just 60 tonnes? (1700 – 1640). That seems too low.*

   Response: Relative to the overall carbon flux, harvest operations emissions are a relatively small proportion. The amount varies by logging system and is lowest for skyline and greatest for helicopter logging. The haul distance to the mill also affects the emissions. For the action alternative in Bottleneck, diesel fuel needed to cut, yard and haul each thousand board foot of timber is estimated to be 2.65 gallons of diesel. Each gallon of diesel fuel contains about 6 lbs of carbon. The harvest operation was calculated to contain 62,707 lbs of carbon, or 28 tonnes of carbon. The other source of emissions in the total besides harvested wood and harvest operations is fuel treatment, estimated to release about 35 tonnes from burning of landing slash.

4. **Comment:** *In Table 13 for carbon storage information, the EA finds that the proposed action will store 1,300 tonnes over 50 years, while the no-action alternative will store ten times more carbon, 13,000 tonnes. The FONSI (page iii) calls this "small and temporary". The BLM should not belittle 10 times more carbon storage. That is not small. And the BLM never documented how temporary it is. When will the proposed action catch up to the no-action in carbon storage? The EA never tells us, but we know it is more than 50 years, so the word "temporary" also unfairly characterizes the no-action alternative.*

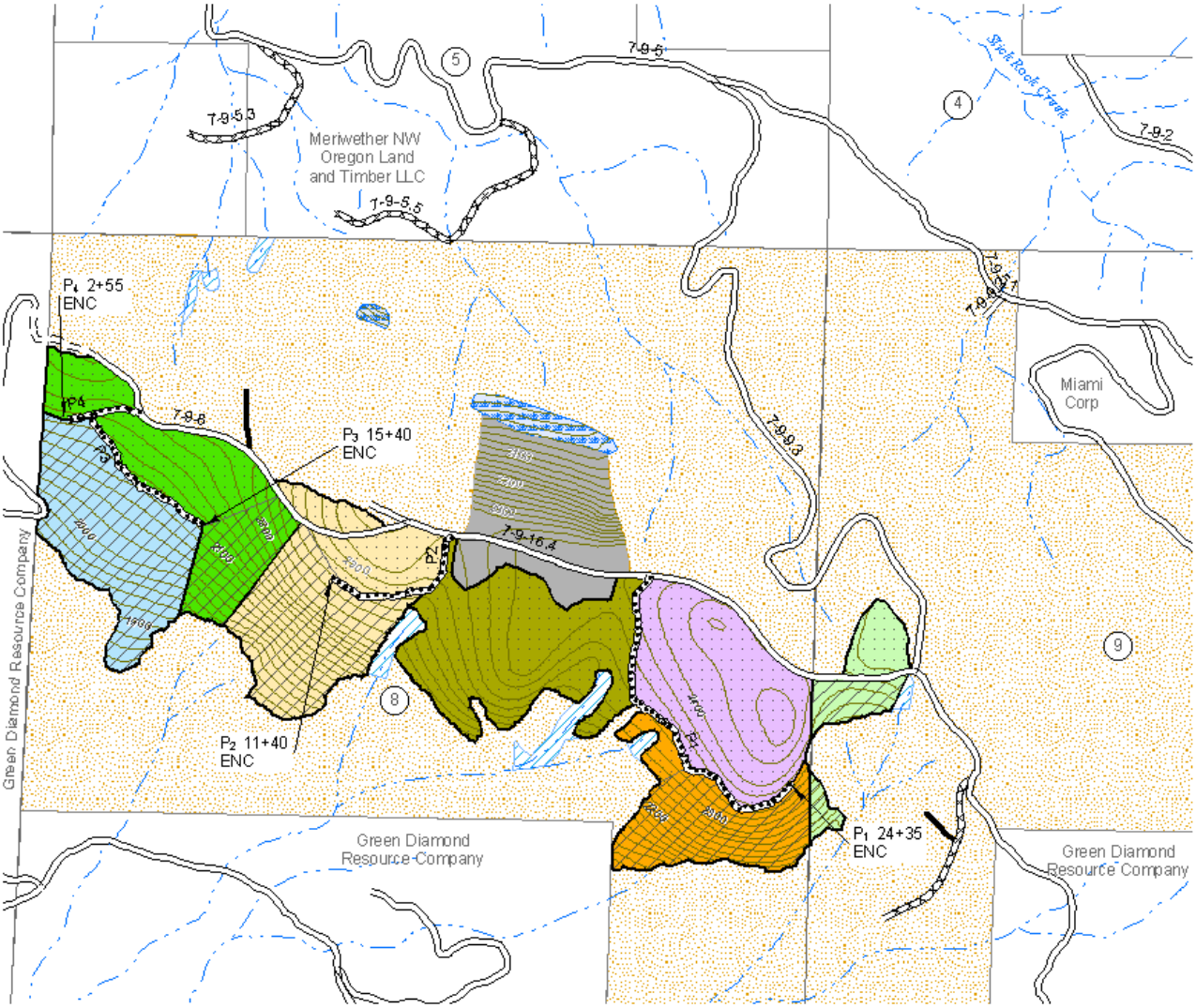
   Response: The baseline that net carbon storage is compared to for the analysis period is the current storage of about 30,000 tonnes. The no action alternative would add about 13,000 tonnes or 43% to this, the action alternative would only add 1,300 or 4% to this over 50 years. Relative to the project area, it is not small. But relative to the scale of BLM-managed lands in western Oregon it is very small, and cumulative effects of management under the Northwest Forest Plan is resulting in large increases in stored carbon. As for duration, emissions are offset by storage within a decade under the action alternative. The reduction in carbon storage from the no action persists beyond the 50 year analysis period, for over 100 years as the graphic on EA page 58 shows. After harvest, the action alternative lags the no action by about 37% in carbon storage. After 100 years, it lags by about 14%.

United States Department of the Interior - BUREAU OF LAND MANAGEMENT

Selected Action Map

Bottleneck LSR Enhancement

T. 7 S., R. 9 W., Sections 8 & 9, W. M. - SALEM DISTRICT - OREGON



Existing Road

Jeep or Dirt Road

Overgrown or Impassable Road

Decommissioned Road

Fishbearing Stream

Non-fishbearing astream

Stream Protection Zone

Project 1: Mid-Seral Habitat Enhancement

Unit 8A - 24 acres

Unit 8B - 24 acres

Unit 8C - 29 acres

Unit 8D - 30 acres

Unit 8E - 17 acres

Unit 8F - 28 acres

Unit 9A - 9 acres

No treatment would occur

Ground-Based Yarding

Skyline Yarding

Road to be Constructed and Decommissioned

Project 2

Late-Seral Enhancement - 24 acres

Deciduous Swamp Enhancement - 4 acres

April 6, 2010

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Data was compiled from multiple sources and may not meet U.S. National Mapping Accuracy Standard of the Office of Management and Budget.

N

0 250 500 1,000 1,500 2,000 Feet