

Appendix B Resource Protection Measures

The following resource protection measures, Best Management Practices, and mitigation measures will be applied to the activities proposed in the Ninemile Fuel Reduction Project.

Heritage Resources

Heritage resource sites will be protected by avoidance. Trees will be directional felled away from significant sites. If previously undiscovered sites are found in the course of harvest or other project activities, all activities in the vicinity of the site will cease and the site area will be protected until the site is recorded and evaluated by a qualified archaeologist. All heritage resource sites are actively protected under the C6.24 protection clause in the Timber Sale Contract.

Prior to layout and implementation of activities, the archaeologist or a cultural resource technician will be actively engaged during layout of all timber and fuel reduction treatment areas. All archaeological, cultural and historic sites, along or adjacent to, treatment areas will be flagged on the ground for identification and protection. The flagging will be renewed as necessary. Protective buffers located around vision quest rock feature sites will ensure that trees are not inadvertently felled into sites. The buffers will enhance site setting by leaving an unharvested stand around vision quest sites. This zone will provide additional leave areas for wildlife and enhance wildlife habitat objectives.

Cambium-barked trees will be raked around their bases to reduce fuel accumulations in an effort to avoid lethal basal scorch or torching of the crowns. No fuels treatment activities will be allowed within the site boundaries of winter village areas, rock feature, lithic scatter, or any other types of cultural resource sites. Hand and dozer lines will be directed around sites to avoid disturbance of potential buried cultural deposits. A cultural resource technician will monitor fuel treatment activities, especially along dozer lines, mechanical operations and in areas within closest proximity to sites.

Soils

On slopes greater than 15%, skidtrails should run up and down the slope. Excavated skidtrails will not be permitted.

Erosion control measures will be required and kept current, except for grass seeding, on skidtrails and temporary roads. Erosion measures will include ripping, subsoiling, scattering slash, or waterbars if mineral soil is exposed.

Skidtrails will average at least 125 feet apart and will be no more than 14 feet wide.

Landing size will be kept to 1/4 to 1/3 acre when possible. Safety and the amount of

logging slash accumulated at the landings will determine size. Increased landing size to allow "cold decking" will not be permitted.

Machinery in excess of 10 feet wide at its widest point will not be permitted off roads and landings unless waived in writing.

Landings, temporary roads, and skidtrails will not be located in wet areas or draws, basins, etc., where water concentrates. Existing landing, temporary roads, and trails in these areas will not be used without consulting the Forest Hydrologist.

Trees will be directional felled to lead to the skidtrails, or mechanical harvesters will be used. Stage logging will be required in all units unless waived in writing.

Trees may be felled in Riparian Habitat Conservation Areas (RHCA) when they pose a safety risk. Trees felled into the RHCA will not be yarded out. This will assure every effort is made to directional fell trees away from RHCA buffers and no yarding damage will occur as a result of removing trees from within the protection zones.

Machinery is permitted off designated skidtrails by written agreement when residual stand protection objectives can be met under one of the following conditions.

1. **All** soil types:

The ground is frozen to a depth of 4 inches;

The ground is covered with 2 feet of snow or 18 inches of compacted snow.

2. On **H** type soils:

When soil moisture is 16% or less, boom type feller/bunchers may leave the skidtrail on slopes of 35% or less. Monitoring will occur for displacement. Machinery will be limited to three passes or less over the same area depending upon % of soil moisture.

Skidding machinery may back off skidtrails on slopes of 25% or less when soil moisture is 14% or less and will be limited to no more than two passes over the same area. Soil displacement will be monitored.

3. On **B** type soils:

Boom type feller/bunchers may leave the skidtrails on slopes of 35% or less and will be monitored for displacement. When soil moisture is over 20%, machines will be limited to no more than three passes.

Skidding machinery may back off skidtrails on slopes of 35% or less and will be monitored for displacement. When soil moisture is 20% or less and will be limited to no more than two passes over the same areas. Soil displacement will be monitored.

4. On **G** type soils:

Ground-based logging operations are permitted when ground water is at least 24 inches

from the surface and soil moisture is 18% or less.

Boom type feller/bunchers may leave the skidtrails when soil moisture is 16% or less and will be limited to no more than two passes over the same area. Soil moisture will be monitored by taking readings at six inches below the surface with a Speedy Moisture Meter.

Fuels Treatments

Because brush blades/rakes used to form machine piles are typically wider than other types of dozer blades, maximum blade width will change to 12 feet during machine piling activities. Maximum dozer body width will remain 10 feet unless waived by the Forest Service.

Slash will be removed to the landings using Yard Top Attached (YTA) provisions. Larger trees requiring hand falling will lop and scatter slash, except for the top, which will be treated YTA.

Machine fuels treatment would be limited to periods when at least one of the following conditions exist: (1) Dry soil < 16 percent moisture on "H" and "G" soils and < 20 percent on "B" soils, (2) Frozen soil to a depth of 4 inches.

Wildlife

Seasonal Restrictions

The following are known nest sites and restricted operating seasons at the time the EA was written. Additional units and/or roads may be affected if more animals requiring protection are located.

Species	Affected Units	Affected Roads	Operating Restrictions Based on Nesting/Roosting Seasons	Protection Zone
Cooper's hawk (<i>Accipter cooperii</i>)	R14, H54, H60	65-240, 250 22-134	March 1 - August 31	440 yards
Great grey owl (<i>Strix nebulosa</i>)	R02, R06, R19, H16, H51, F32	5815, 5813, 5813-380, 660, 661, 820	March 1 - July 31	440 yards
Northern goshawk (<i>Accipter gentilis</i>)	R18	5817-200, 210, 232	March 1 - August 31	440 yards
Red tail hawk (<i>Buteo jamaicensis</i>)	H59	6520-050	March 1 - August 31	440 yards
Bald eagle (<i>Haliaeetus leucocephalus</i>)	H57	58-288, 320	January 1 - August 31	440 - 880 yards

Seasonal restrictions will be applied as listed within ¼ mile of any activities that may cause disturbance to the above nests or any other raptor nests that is located within or adjacent to the project area, including during project layout and throughout

implementation, or until any young have fledged, as determined by a qualified wildlife biologist. Restrictions include log hauling and heavy equipment use on road segments that are within a ¼ mile radius of a raptor nest site. Restrictions are extended to activities within ½ mile of the bald eagle nest for work involving heavy equipment that is line-of-sight from the nest, as required in the Pacific Bald Eagle Recovery Plan (USFWS, 1986). Nest trees located within units will be flagged and marked as leave trees to assure their protection. Any current or new nest sites located will be assumed active until June 1st. If a site is determined by a qualified biologist to be inactive at that time, the restrictions will be waived for the year.

Winter Range MA 10

Human activities shall be discouraged or minimized, and management shall be for reduced vehicular access on deer winter range from November 15 through July 15 to prevent disturbance of wintering and fawning mule deer. Refer to Figure 3-10 for the Winter Range boundary. Traffic shall be limited to designated open roads. Off-road vehicle use is prohibited during the specified closure season. Non-motorized use is acceptable to provide access for subsistence hunters and for winter surveys. Use of closed roads may be authorized if the proposed use does not conflict with mule deer wintering or fawning, e.g. when environmental conditions are such that the winter range is not being used by big game.

Downed Woody Material

Piles of woody material, other than at landings (mainly timber sale slash, with incidental small piles of woody material from pre-sale conditions) if present, will be left adjacent to timber sale units, on the average of 1 per 10-20 acres in machine-piled units, or 1 pile per skidding/landing area, in non-machine-piled units. These piles will provide hiding, thermal, and nesting/denning sites for small mammals, passerine birds, and forest carnivores.

Slash piles should be at least 3 feet in height and 6 feet in diameter. Where machine piling is used, leave a pile at least 6 feet tall and 15 feet in diameter, composed of larger materials such as root wads and large limbs per every 5 acres, away from main roads and overhanging trees. A combination of the two methods is an acceptable alternative, as long as the general amount of materials piled remains consistent.

If snags are cut due to safety reasons, they will be left on site to provide for additional downed woody material. These measures will be applied through the administration of the contract, with force account labor and through monitoring by timber sale administrators, contract officer representative, wildlife biologist, and/or the hydrology staff.

Snags

During timber sale unit layout and timber cruising, snags will be tallied by size, species, and condition by presale personnel. The tally will be given to the project wildlife biologist for future monitoring and possible snag creation projects. No tally will be done outside of harvest units unless planned and accomplished by Wildlife personnel.

Protect snags and logs, whatever their condition class, from felling and fire operations wherever operationally feasible. Maintain all hollow trees, snags and logs wherever feasible. To match historic conditions, a mix of clumps and more widely distributed snags should occur within and among stands.

Live, defective trees can be substituted for some of the snags when meeting snag density and dbh guidelines. Select trees with fruiting bodies of heartrot fungi (e.g., Indian paint fungus, quinine fungus, red ring rot). Trees with other structures such as forked tops, broken tops, or brooms are also acceptable if snags are not available or must be removed for operational safety considerations. If green trees greater than 10 inches DBH are damaged through either sale activities, or during post-treatment activities, the trees would be left in the stand for future snag recruitment.

Bitterbrush

Retain approximately 30% of the existing bitterbrush in treated units, which will maintain seed sources and diversity within the units. This may be accomplished by a variety of methods including leave strips and islands, mosaic burn patterns, and selective brush shredding.

Mountain Mahogany

All treatments in mountain mahogany stands will be accomplished with care for any small plants in the vicinity. Some of the larger mountain mahogany plants will be left to provide a seed source. Underburning will be used in very limited situations so as to protect young mountain mahogany plants.

Cliffs, Caves and Talus

According to the Winema LRMP, the project shall be designed to protect cliffs (including rimrock), caves, and talus habitat. Protection shall include vegetative protection zones of at least 200 feet adjacent to these habitats that are being used by mammals or birds for denning, roosting, or nesting. Foot travel over the rocks will be discouraged in layout and implementation plans to protect bat habitat and for safety.

Roads and Skid Trails

Close any newly opened roads and skid trails as soon as possible after the project to protect big game and other species from disturbance.

Fisheries

INFISH standards and guidelines will be applied in unit design, harvest, and post sale activities. A variable protection buffer on all stream courses is designed to prevent creation of new overland movement of sediment. If skid trails need to cross a dry channel they will be designed to limit the number of crossings, be at right angles to the channel, and rehabilitated the same season of use. Erosion control measures will be completed as soon as skidding is completed on skidtrails that may contribute sedimentation into riparian areas or stream courses. Measures used to minimize the

delivery of sediment may include water bars, outsloping, subsoiling, or placing of slash and/or logs in the skid trails. Design activities so help achieve attainment of Riparian Management Objectives. Implement all road improvements, including drainage improvements and culvert replacements, for the roads identified in the EA prior to using for timber activities. Implement needed blading and surfacing elsewhere.

Air Quality

All burning operations (burning of landing piles) will occur in accordance with the Oregon Smoke Management Plan (specifications to be included in the prescribed fire burn plan before implementation).

The prescribed burn plan, written before implementation, would outline specific fuel moisture and weather conditions that would minimize PM10 emissions associated with burning operations.

To ensure public safety, warning signs, and if necessary, warning devices, would be placed where burning operations would potentially impair visibility on roads.

Sensitive Plant Species

If any sensitive plants are found during project activities, mitigation measures would be applied to protect those populations. In most or all cases, exclusion/avoidance of populations will be the protection measure. A small population of mountain lady's slipper near unit H-35 is an example of a population that can be protected through unit layout.

Underburning to promote Peck's milkvetch is proposed for portions of fuels units F 24-27. An adaptive management approach will be used for this species. A small area will be underburned initially, and evaluated. The remainder of the habitat in these units will only be burned if there is a favorable response from the plant to the initial burning.

Noxious Weeds and Invasive Plants

All areas of heavy ground disturbance adjacent to existing noxious weed populations, such as skid trails, landings, and obliterated temporary roads, should be seeded with local native grass and forb species to minimize the introduction of noxious weeds.

Noxious weed populations, where present after treatment activities, should be treated for removal after completion of proposed activities. Populations may be treated prior to use of infested areas to prevent spread through project activities.

Include the standard timber sale contract clause for inspection of off-road equipment. Contract clause C6.343 (Option2, 7/96) requires an inspection for noxious weed propagules on all machinery which would leave designated roads upon initial entry onto National Forest Lands.

Road Use and Obliterations

The Ninemile IDT identified all roads in the project area which are not needed for administrative use. Road obliterations would require a separate environmental document with public and The Klamath Tribes input and are not part of the current Ninemile Project.

Haul of commercial products will be confined to periods where such haul will not generate sediment that moves outside the road prism on the primarily native-surface (dry/frozen) roads or cause rutting of greater than 3 inches – indicating potential degradation in structural strength – on the (extended season) roads.

To prevent user conflicts and potential safety hazards, warning signs will be used on all maintenance level 2 haul roads (Roads that would be listed in Timber Sale Contract Provision C 5.43) to discourage use by other than timber sale-related traffic.

Best Management Practices

Best Management Practices (BMPs) are standard operating procedure for the protection of water quality. They are not intended as mitigation measures. Following are site-specific BMPs that apply to all machinery use in harvest, postsale activities, and natural fuels units in the Ninemile Project Area.

Timber Management Practices

T-1 Project Area Planning Process

Purpose - To ensure that water resources are considered during the planning process by having the forest fisheries biologist on the Ninemile Project ID Team.

T-2 Timber Harvest Design

Purpose - To ensure that the Ninemile Project harvest and natural fuels units design will not degrade conditions of water flow, water quality and fish habitat for Sprague River and their tributaries, and will not negatively impact riparian areas, by modifying unit design where necessary.

Location - Entire Ninemile Project Area.

T-4 Use of Sale Area Map for Designating Water Quality Protection Needs

Purpose - Identify areas that need to be protected on the Ninemile Timber Sale Area/ Contract Map, which will be part of the Timber Sale /Service Contract package, as a guide for both the Purchaser/Contractor and Sale Administrator/ Contracting Officer Representative (COR), to ensure their recognition and proper consideration and protection of soil and water resources on the ground.

Location - Entire Ninemile Project Area.

T-5 Limiting the Operating Period

Purpose - To ensure that the Purchaser/Contractor conducts operations in a timely manner that will protect soil and water resources, by limiting operating periods identified and specified in the soil restrictions and Timber sale/Service Contract.

Location - Entire Ninemile Project Area.

T-7 Streamside Management Unit Design

Purpose - Designate appropriate buffers on either side of the intermittent streams to provide site-specific management of riparian areas and prevent disturbance from logging activities.

Location - All intermittent channels that are adjacent to or partially in: Timber Sale Units 3, 11, 37, 38, 40, 42, 43, 45, 48, 49, 51, 52, 53, 56 and 57. Natural Fuels Units 6, 7, 11, 20, 21, 22, 24, 25, 26, 27, 28, 29, 30, 32, 41, 42 and 44.

T-8 Streamcourse Protection

Purpose - To protect the natural flow of intermittent streams, to provide unobstructed passage of stormflows, and to prevent sediment and other pollutants from entering the stream channels, by having the Sale Administrator/COR work with the Purchaser's/Contractor Representative to ensure that the Ninemile Timber Sale/Service Contract provisions covering protection of streamcourses are carried out on the ground wherever streamcourses are crossed.

Location - All intermittent channels.

T-9 Determine Tractor Loggable Ground

Purpose - Identify lands suitable for equipment (tractor, fellar buncher, slashbuster, etc.) in the planning phase of the Ninemile Project to minimize compaction and erosion. Factors considered when selecting equipment operable land are: slope, topography, soil texture, soil drainage, and drainage pattern. Generally, equipment will operate on slopes less than 35%.

Location – All harvest and natural fuels units.

T-10 Log Landing Location

Purpose - The sale administrator ensures that the landings are located and constructed according to the Ninemile Timber Sale Contract; by locating landings to minimize adverse effects to soil and water resources.

Location - All harvest units.

T-11 Tractor Skid Trail Location and Design

Purpose - Sale administrator will approve location of skid trails, using old skid trails where possible (except those located within streamside management zones) and avoiding steep slopes and erodible soils. To minimize area compacted, erosion, and runoff, skid trails shall be not closer than 125 feet apart, on the average.

Location - All harvest units.

T-13 Erosion Prevention and Control measures During Harvest Operations

Purpose - To ensure that the Purchaser's operations shall be conducted to minimize soil erosion, by setting forth Purchaser's responsibilities for timing and placement of erosion control techniques (such as waterbars, backblading) in the Ninemile Timber Sale Contract.

Location - Within the entire Ninemile Project Area and along haul roads.

T-15 Log Landing Erosion Prevention and Control

Purpose - To ensure that equipment will not be operated when ground conditions are such that excessive damage will result, the sale administrator monitor landings and have them treated (waterbars) or by stopping equipment operation when necessary to avoid negative impacts to soil and water resources. Subsoiling, where possible, or ripping will be done after operations to reduce soil compaction.

Location - All harvest units.

T-16 Erosion Control on Skid Trails

Purpose - Sale administrator and Purchaser will determine need for installation of erosion control measures (such as waterbars, back blading, and/or lop and scatter) on skid trails, tractor roads and temporary roads to minimize erosion and sediment transport.

Location - All harvest units.

T-19 Acceptance of Timber Sale Erosion Control Measures Before Sale Closure

Purpose -To ensure the required erosion control work on the Ninemile Timber Sale is adequate, sale administrator will inspect control work for effectiveness prior to closure of Timber Sale.

Location - Within the entire Ninemile Project Area and along haul roads.

T-21 Servicing and Refueling Equipment

Purpose - To prevent pollutants from discharging into channels or impoundments, service and refueling areas will be placed at least 200 feet away from intermittent or ephemeral channels. Berms will be placed around sites that include larger than 600 gallon fuel barrels.

Location - Within the entire Ninemile Project Area wherever fuels are stored.

T-22 Modification of Ninemile Timber Sale Contract

Purpose - Provide for modification of the Ninemile Timber Sale Contract/ Service Contract if new circumstances or conditions arise that would result in irreversible damage to soil or water resources.

Location - Within the entire Ninemile Project Area.

Road System Practices

R-2. Erosion Control Plan

Purpose: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of road construction activities and through effective contract administration during construction. Land disturbing activities, such as road construction, usually result in short term erosion. By effectively planning for erosion control, sedimentation can be minimized. Prior to starting work, the Contractor submits a general plan, which sets forth erosion control measures to be used. Operations cannot begin until the Forest Service has given written approval of the plan. The plan recognizes the mitigation measures required in the contract. All contracts specify that operations be scheduled and conducted to minimize erosion.

R-3. Timing of Construction Activities

Purpose: To minimize erosion by conducting road construction operations during minimal runoff periods. Since erosion and sedimentation are directly related to runoff, scheduling operations during periods when the probabilities for rain and runoff are low is an essential element of effective erosion control. Contractors are to schedule and conduct operations to minimize erosion and sedimentation. Equipment shall not be operated when ground conditions are such that excessive damage will result. Such conditions are identified by the COR or ER with the assistance of watershed specialists as needed.

R-7 Control of Surface Road Drainage Associated with Roads

Purpose - To minimize the erosive effects of water concentrated by road drainage features by: using energy dissipaters, aprons, downspouts, and armored ditches; to disperse runoff from or through roads use rolled grades, insloping, or crowned grades); and to minimize the sediment generated from roads by using sediment ponds where appropriate to maintain roads for proper drainage, protect the road investment, and minimize damage to adjacent soil and water resources.

Location - All roads used for logging operations in the Ninemile Project Area.

R-11. Control of Sidecast Material

Purpose: To minimize sediment production originating from sidecast material during road construction or maintenance. Unconsolidated sidecast material can be difficult to stabilize and is susceptible to erosion, settling, and mass instability. Site-specific limits or controls for sidecasting uncompacted material should be developed through interdisciplinary input. Sidecasting is not an acceptable embankment placement alternative in areas where it will adversely affect water quality. Road widths on full bench ground should not include any width on side cast material without prior approval of the COR or ER.

R-18 Maintenance of Roads

Purpose - To maintain roads used within the Ninemile Project Area for proper drainage, to protect the road investment, and to minimize damage to adjacent soil and water resources by controlling the placement of waste material, keeping drainage facilities open, and by repairing ruts and failures, to reduce sedimentation and erosion.

Location - All roads used for logging operations in the Ninemile Project Area.

R-19 Road Surface Treatment to Prevent Loss of Materials

Purpose - To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production from those areas by treatments such as grading, watering, aggregate surfacing, chip-sealing.

Location - All roads used for logging operations in the Ninemile Project Area when appropriate.

R-20 Traffic Control During Wet Periods

Purpose - To reduce road surface damage and rutting and thus minimize sediment eroding from damaged road surfaces by closing roads that will result in non-compliance of road maintenance standards.

Location - All roads used for logging operations in the Ninemile Project Area when appropriate.

R-21 Snow Removal Controls to Avoid Resource Damage

Purpose - To minimize the impact of snowmelt water on road surfaces and to consequently reduce the probability of sediment production resulting from snow removal operations by snow plowing and/or backblading.

Location - All roads used for logging operations in the Ninemile Project Area when appropriate

R-23 Obliteration of Roads, Landings, and Non-system Roads Used During Harvest Operations

Purpose - To obliterate temporary and non-system roads, subsoil landings where possible, or seed, drain, and/or cover roads and landings with slash, as appropriate to minimize erosion and sedimentation.

Location - All temporary and non-system roads and landings used by the Ninemile Timber Sale Purchaser.

Fire Suppression and Fuel Management Practices

F-1 Fire and Fuel Management Activities

Purpose - To reduce potential public and private losses which could result from wildfire, and/or subsequent flooding and erosion, and consequently reducing the frequency, intensity and destruction of wildfires by implementing the Fuels Prescription for the Ninemile Project. Management constraints and resource protection prescriptions are documented in the Ninemile Project EA.

Location – The entire Ninemile Project Area.

F-2 Consideration of Water Quality in Formulating Fuels Treatment Prescriptions

Purpose - To protect water resources, by having the Forest Hydrologist working with the Fuels Specialist in preparation of the burn plan, including field investigations to identify site-specific soil and water protection needs.

Location – All harvest and natural fuels units in the Ninemile Project Area.

F-3 Protection of Water Quality During Fuels Treatment Operation

Purpose - To maintain soil productivity, minimize erosion, and prevent ash, sediment, nutrient, and debris from entering downstream channels, ensure that fuels treatments will be accomplished when seasonal water is not flowing in the treated units.

Location – All harvest and natural fuels units in the Ninemile Project Area.

Watershed Management Practices

W-1 Watershed Restoration Recommendations (projects will be analyzed and accomplished under a separate NEPA document)

Purpose – To minimize and/or restore soil and water resource impacts from roads and to improve, channel and riparian condition by obliterating non-system

roads to reduce road surface; obliterating roads that are resulting in sediment transport or are channeling surface flow; stabilizing headcuts to prevent further soil loss; and improving riparian conditions by mechanical treatment and prescribed burning to remove encroaching lodgepole, juniper and stimulating young aspen, willow, and grasses.

W-4 Hazardous Substance Spill Contingency Plan and Spill Prevention Control and Countermeasure Plan

Purpose - To prevent contamination of downstream waters from accidental spills by implementing a predetermined organization and action plan in the event of a hazardous substance spill.

Location - The Plan is located at the Winema NF Supervisor's Office.

W-5 Cumulative Watershed Effects

Purpose - To protect the beneficial uses of water and streams from the cumulative effects of multiple land management activities which may result in degraded water quality or stream habitat conditions by evaluating the extent of the additional Ninemile Projects on the conditions of the affected watersheds during environmental analysis.

Location - Aquatics Report.

Vegetation Management Practices

VM-2 Tractor Operation Excluded from Wetlands and Meadows

Purpose – To minimize sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion by having the Sale Administrator/COR identify wet areas and meadows not previously identified by the project planners.

Location – Wherever unidentified wetlands and meadows are discovered in the Ninemile Project Area.

VM-3 Stabilization of Soil on Obliterated Roads and Landings

Purpose – To stabilize soil disturbed from road obliteration by planting sterile or native seeds.

Location – All temporary and non-system roads used by the Ninemile Timber Sale Timber Sale purchaser when appropriate.

VM-4 Soil Moisture Limitations for Tractor Operation

Purpose – To prevent compaction, rutting, and sediment transport by having the sale administrator/ COR terminate operations when the soil surface is unstable and susceptible to detrimental impacts.

Location – Throughout the entire Ninemile Project Area.