Resource Management Plan Maintenance – FY 2011

Plan Name: Lakeview Resource Management Plan and Record of Decision
Planning Area: Lakeview Resource Area
Location of Change/Clarification/Correction:
Page: Appendix D – Best Management Practices, p. A-2 to A-4

Text Change

Delete: Road Design and Maintenance BMPs numbers 1-35

Insert: Road and Sediment Delivery BMPs numbers R001 to R101 from Attachment 1, IM No. OR-2011-074.

Reason

Instruction Memorandum No. OR-2011-074 instructs all Oregon BLM Districts to incorporate these BMPs into existing RMPs as a plan maintenance action.

Change Proponent Paul Whitman Date 9/21/2011
Planning & Environmental Coordinator

Field Manager [signature] Date 9/22/11

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965
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In Reply Refer to: **September 8, 2011**
7240 (OR932) I

EMS TRANSMISSION 09/14/2011
Instruction Memorandum No. OR-2011-074
Expires: 9/30/2012

To: District Managers

From: State Director, Oregon/Washington

Subject: Incorporating Road and Sediment Delivery Best Management Practices into Resource Management Plans

Program Area: Water Quality, Timber Management, and Roads

Purpose: The purpose of this instruction memorandum (IM) is to transmit an updated set of Best Management Practices (BMP). These BMPs provide direction regarding road maintenance practices and road-related actions with the intention to minimize or prevent sediment delivery to waters of the United States in compliance with the Clean Water Act of 1972 and its revisions.

Background: Instruction Memorandum OR-2011-18 directed the districts to assist in the update of BMPs that would disconnect road surfaces from drainage ditches. The Bureau of Land Management (BLM) designed the BMPs to minimize or reduce the conveyance and delivery of sediment to the waters of the United States. All districts participated in the development of this updated set of BMPs that serve to disconnect the conveyance method to the extent practicable. Selection of BMPs is made by decision-makers using input from soil, water, fisheries, geology, and other professionals during project-level analyses. It is not intended that all of the BMPs listed will be selected for any specific management action. Each activity is unique, based on site-specific conditions and the selection of an individual BMP or a combination of BMPs and measures to become the BMP design.

Policy/Action: The districts are directed to:

- Incorporate the updated BMPs as a plan maintenance action. Plan maintenance actions occur continuously but must be documented so that the change and Field Manager concurrence are evident. A project's National Environmental Policy Act (NEPA) documentation may be used for this purpose. Plan maintenance does not require formal public involvement. The district planning update or the Annual Program Summary may be used to communicate plan maintenance actions to the public.

- Ensure that BMPs related to the construction, maintenance, and use of logging roads are clearly identified and analyzed in project planning documents and are implemented according to the decision.
- Conduct and document required monitoring related to active rock and timber haul activities as directed in Resource Management Plans and step-down project decisions. The districts are encouraged to select BMPs related to timber haul and road actions (construction, improvement, use and final maintenance or decommissioning) for effectiveness monitoring. Document BMP implementation and effectiveness in annual program summaries and monitoring reports.

Timeframe: This IM is effective immediately.

Budget Impact: None.

Manual/Handbook Sections Affected: None.

Coordination: The Oregon State Office provided review opportunity to and coordinated this guidance with the Deputy State Directors for OR930 (Resources, Planning, Use, and Protection) and OR950 (Management Services); Branch Chiefs for OR931 (Forest Resources and Special Status Species), OR932 (Rangeland Resources, Recreation, and Wilderness), OR933 (Planning, Science, and Resource Information), and OR959 (Engineering and Facilities); Group Managers for WO270 (Forest Woodland Management Office) and WO280 (Division of Environmental Quality and Protection); and the Office of the Regional Solicitor – Pacific Northwest Region.

Contact: For policy questions, contact Brendan Cain, Branch Chief for Rangeland Resources, Recreation and Wilderness, at 503-808-6143. For technical program questions, contact the following leads: Dale A. Stewart, Soil, Water, Air Program Lead, at 503-808-6053, Anne Boeder, Planning and National Environmental Policy Act, at 503-808-6628, Anita Bilbao, Natural Resource Advisor, at 503-808-6081, and Dick Bergen, Senior Civil Engineer, at 503-808-6100.

Districts with Unions are reminded to notify their unions of this IM and satisfy any bargaining obligations before implementation. Your servicing Human Resources Office or Labor Relations Specialist can provide you with assistance in this matter.

Signed by	Authenticated by
Michael S. Mottice	Paj Shua Cha
Associate State Director	Records Section

Attachments

1. BMP To Reduce Sediment Delivery from BLM Roads in Oregon (22 pp)
2. BLM Road BMP Glossary (3 pp)

Distribution
WO270 (Vice Jon Menten)
WO280 (Robert Boyd)
OR931 (Lee Folliard)
OR932 (Brendan Cain)
OR932 (Dale A. Stewart)
OR959 (Dick Bergen)

Best Management Practices To Reduce Sediment Delivery from BLM Roads in Oregon

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 001	**Locate temporary and permanent roads and landings on stable locations, e.g., ridge tops, stable benches or flats, and gentle-to-moderate side slopes. Minimize construction on steep slopes, slide areas and high landslide hazard locations.**	ODF (OAR) 629-625-0200 (3)	**ODF (OAR) 629-625-0200, Road Location**
R 002	**Locate temporary and permanent road construction or improvement to minimize the number of stream crossings.**	ODF (OAR) 629-625-0200 (3-4)	**ODF (OAR) 629-625-0200, Road Location**
R 003	**Avoid locating roads and landings in wetlands, riparian management areas, floodplains and waters of the state. Avoid locating landings in areas that can contribute to dry draws and swales.**	ODF (OAR) 629-625-0200 (2)	**ODF (OAR) 629-625-0200, Road Location**
R 004	**Locate roads and landings to minimize total transportation system mileage. Renovate or improve existing roads or landings when it would cause less adverse environmental impact. Where roads traverse land in another ownership, investigate options for using those roads before constructing new roads.**	EPA (2005)Page 3-12 Bullet 1; ODF (OAR) 629-625-0200 (5); EPA (2005)Page 3-10 Bullet 1	**ODF (OAR) 629-625-0200, Road Location**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 005	**Design and construct sub-surface drainage in landslide prone areas and saturated soils (e.g., trench drains using geo-textile fabrics and drain pipe).**	ODEQ 2005, RC-1, RC-6 (pages 4-5, 4-6)	**ODF (OAR) 629-625-0300, Road Design**
R 006	**Design road cut and fill slopes with stable angles, to minimize erosion and prevent slope failure.**	EPA 2005 mod 3-13	**ODF (OAR) 629-625-0310, Road Prism**
R 007	**Design roads to the minimum width needed for the intended use as referenced in BLM Manual 9113.**	ODF 629-625-0310 (3)	**ODF (OAR) 629-625-0310, Road Prism**
R 008	**End-haul material excavated during construction, renovation, and/or maintenance where side slopes generally exceed 60 percent, and regardless of slope where side-cast material may enter wetlands, floodplains and waters of the state.**	FEIS 2008 with modification using EPA 2005 page 3-12 5th bullet	**ODF (OAR) 629-625-0310, Road Prism**
R 009	**Construct road fills to prevent fill failure using inorganic material, compaction, buttressing, sub-surface drainage, rock facing or other effective means.**	OAR 629-625-0310-5	**ODF (OAR) 629-625-0310, Road Prism**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 010	**Avoid use of road fills for water impoundment dams unless specifically designed for that purpose. Impoundments over 9.2 acre feet or 10 feet in depth will require a dam safety assessment by a registered engineer. Upgrade existing road fill impoundments to pass 100-year flood events.**	OAR 629-625-0310-5	**ODF (OAR) 629-625-0310, Road Prism**
R 011	**Design culverts, bridges, and other stream crossings for the 100-year flood event including allowance for bed load and anticipated floatable debris.**	FEIS 2008	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 012	**Minimize fill volumes at permanent and temporary stream crossings by restricting width and height of fill to amounts needed for safe travel and adequate cover for culverts. For deep fills (generally greater than 15 feet deep) incorporate additional design criteria (e.g., rock blankets, buttressing, bioengineering techniques) to reduce the susceptibility of fill failures.**	ODF OAR 629-625 -0320 (1b)	**ODF (OAR) 629-625-0320, Stream Crossing Structures**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 013	**Locate stream crossing culverts on well defined, unobstructed, and straight reaches of stream. Locate these crossings as close to perpendicular to the streamflow as stream allows. When structure cannot be aligned perpendicular, provide inlet and outlet structures that protect fill and minimize bank erosion. Choose crossings that have well defined stream channels with erosion resistant bed and banks.**	EPA 2005, 3-14 G&A 2006, p5-30	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 014	**On new construction, install culverts at the natural stream grade.**	FEIS 2008	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 015	**Use stream crossing protection techniques to allow flood water and debris to flow over the top of the road prism without the loss of the fill or diversion of streamflow. This protection could include hardening crossings, armoring fills, dipping grades, oversizing culverts, hardening inlets and outlets, and lowering the fill height.**	FEIS 2008	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 016	**Place instream grade control structures above or below the crossing structure, if necessary, to prevent stream headcutting, culvert undermining and downstream sedimentation. Employ bioengineering measures (e.g., large wood for gradient control) to protect the stability of the streambed and banks.**	ODEQ 2005 , RC - 2 , Gesford & Anderson 2006, pp 5 -31, USDA RMRS GTR 102 - #20	**ODF (OAR) 629-625-0320, Stream Crossing Structures**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 017	**Prevent culvert plugging and failure in areas of active debris movement with measures such as beveled culvert inlets, flared inlets, wingwalls, over-sized culverts, trash racks or slotted risers.**	FEIS 2008	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 018	**When installing temporary culverts, use washed rock as a backfill material. Use geotextile fabric as necessary where washed rock will spread with traffic and cannot be practicably retrieved.**	ODEQ 2005 NS-3	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 019	**Use permanent low water fords in debris-flow susceptible streams (e.g., concrete, well anchored concrete mats, etc.).**	EPA 2005 p3-50	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 020	**Design roads crossing low-lying areas so that water does not pond on the upslope side of the road. Provide cross drains at short intervals to ensure free drainage.**	EPA (2005) Page 3-14 Bullet 1	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 021	**Use no-fill structures (e.g., portable mats, temporary bridges, or improved hardened crossings) for temporary stream crossings. When not practicable, design temporary stream crossings with the least amount of fill and construct with coarse material to facilitate removal upon completion.**	ODF 629-625-0320 (2)	**ODF (OAR) 629-625-0320, Stream Crossing Structures**
R 022	**Install underdrain structures when roads cross or expose springs, seeps, or or wet areas rather than allowing intercepted water to flow downgradient in ditchlines.**	ODF (OAR) 629-625-0330 (5)	**ODF (OAR) 629-625-0330, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 023	**Effectively drain the road surface by using crowning, insloping or outsloping , grade reversals (rolling dips) and waterbars or a combination of these methods. Avoid concentrated discharge onto fill slopes unless the fill slopes are stable and erosion proofed.**	EPA 2005, 3-41	**ODF (OAR) 629-625-0330, Drainage**
R 024	**Outslope temporary and permanent low volume roads to provide surface drainage on road gradients up to 6% unless there is a traffic hazard from the road shape.**	EPA 2005 page 3-42 & USDA RMRS GTR 102-#13	**ODF (OAR) 629-625-0330, Drainage**
R 025	**Consider using broadbased drainage dips and/or lead-off ditches in lieu of cross drains for low volume roads. Locate these surface water drainage measures where they won't drain into wetlands, floodplains and waters of the state.**	EPA 2005 page 3-41 - 45 & USDA RMRS GTR 102-#13	**ODF (OAR) 629-625-0330, Drainage**
R 026	**Avoid use of outside road berms unless designed to protect road fills. If road berms are used, breach to accommodate drainage where fill slopes are stable.**	Gesford & Anderson 2006, pp 3-7	**ODF (OAR) 629-625-0330, Drainage**
R 027	**Construct variable road grades and alignments (e.g., roll the grade, grade breaks) which limit water concentration, velocity, flow distance and associated stream power.**	Gesford & Anderson 2006, pp 5-20 OAR 629-625-0310 (1)	**ODF (OAR) 629-625-0330, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 028	**Divert road and landing runoff water away from headwalls, slide areas, high landslide hazard locations or steep erodible fill slopes.**	ODF 629-625-0330 (2)	**ODF (OAR) 629-625-0330, Drainage**
R 029	**Design landings to disperse surface water to vegetated stable areas.**	FEIS 2008	**ODF (OAR) 629-625-0330, Drainage**
R 030	**Design stream crossings to prevent diversion of water from streams into downgrade road ditches or down road surfaces.**	ODF OAR 629-625 -0330 (3)	**ODF (OAR) 629-625-0330, Drainage**
R 031	**Disconnect the road runoff to the stream channel by outsloping the road approach. If outsloping is not possible, use runoff control, erosion control and sediment containment measures. These may include using additional cross drain culverts, ditch lining, and catchment basins. Minimize ditch flow conveyance to stream through cross drain placement above stream crossing.**	Gesford & Anderson 2006 pp 5-22, OAR 629-625-0330 (4)	**ODF (OAR) 629-625-0330, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 032	**Locate cross drains to prevent or minimize runoff and sediment conveyance to wetlands, riparian management areas, floodplains and waters of the state. Implement sediment reduction techniques such as settling basins, brush filters, sediment fences and check dams to prevent or minimize sediment conveyance.**	ODF OAR 629-625 -0330 (4)	**ODF (OAR) 629-625-0330, Drainage**
R 033	**Space cross drain culverts at intervals sufficient to prevent water volume concentration and accelerated ditch erosion. At a minimum, space cross drains at intervals referred to in the BLM Road Design Handbook 9113-1, Illustration 11 -"Spacing for Drainage Laterals". Increase cross drain frequency through erodible soils, steep grades, and unstable areas.**	FEIS 2008	**ODF (OAR) 629-625-0330, Drainage**
R 034	**Choose cross drain culvert diameter and type according to predicted ditch flow, debris and bedload passage expected from the ditch. Minimum diameter is 18 inches.**	USDA 1997-9777 1812-SDTDC, p 3	**ODF (OAR) 629-625-0330, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 035	**Locate surface water drainage measures (e.g., cross drain culverts, rolling dips, water bars) where water flow will be released on convex slopes or other stable and non-erosive areas that will absorb road drainage and prevent sediment flows from reaching wetlands, floodplains and waters of the state. Where possible locate surface water drainage structures above road segments with steeper downhill grade.**	USDA 1997-9777 1812-SDTDC, p 3	**ODF (OAR) 629-625-0330, Drainage**
R 036	**Armor surface drainage structures (e.g., broad based dips, leadoff ditches) to maintain functionality in areas of erosive and low strength soils.**	FEIS 2008	**ODF (OAR) 629-625-0330, Drainage**
R 037	**Discharge cross drain culverts at ground level on non-erodible material. Install downspout structures and/or energy dissipaters at cross drain outlets or drivable dips where water is discharged onto loose material, erodible soils, fills, or steep slopes.**	ODEQ 2005 RC-2, Gesford and Anderson 2006, pp 5-31	**ODF (OAR) 629-625-0330, Drainage**
R 038	**Cut protruding "shotgun" culverts at the fill surface or existing ground. Install downspout and/or energy dissipaters to prevent erosion.**	FEIS 2008	**ODF (OAR) 629-625-0330, Drainage**
R 039	**Skew cross drain culverts 45 to 60 degrees from the ditchline as referenced in BLM Road Design Handbook 9113-1 and provide pipe gradient slightly greater than ditch gradient to reduce erosion at cross drain inlet.**	BLM road design handbook H9113-1, revised 2009	**ODF (OAR) 629-625-0330, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 040	**Use slotted risers, over-sized culverts or build catch basins where floatable debris or sediments may plug cross drain culverts.**	EPA 2005 pp 3-43	**ODF (OAR) 629-625-0330, Drainage**
R 041	**Locate waste disposal areas outside wetlands, riparian management areas, floodplains and unstable areas to minimize risk of sediment delivery to waters of the state. Apply surface erosion control prior to the wet season. Prevent overloading areas which may become unstable.**	ODF (OAR) 629-625-0340 FEIS 2008	**ODF (OAR) 629-625-0340, Waste Disposal Areas**
R 042	**Confine pioneer roads to the construction limits of the permanent roadway to reduce the amount of area disturbed and avoid deposition in wetlands, riparian management areas, floodplains and waters of the state. Install temporary drainage, erosion, and sediment control structures. Storm proof or close pioneer roads prior to the onset of the wet season.**	EPA (2005) Page 3-41 Bullet 2	**ODF (OAR) 629-625-0410, Disposal of Waste Materials**
R 043	**Use controlled blasting techniques to minimize loss of material on steep slopes or into wetlands, riparian management areas, floodplains and waters of the state.**	FEIS 2008	**ODF (OAR) 629-625-0410, Disposal of Waste Materials**
R 044	**Provide for unobstructed flow at culvert inlets and within ditch lines during and upon completion of road construction prior to the wet season.**	FEIS 2008	**ODF (OAR) 629-625-0420, Drainage**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 045	**Use temporary sediment control measures (e.g., check dams, silt fencing, bark bags, filter strips and mulch) to slow runoff and contain sediment from road construction areas. Remove any accumulated sediment and the control measures when work or haul is complete. When long term structrual sediment control measures are incorporated into the final erosion control plan, remove any accumulated sediment to retain capacity of the control measure.**	FEIS 2008 with modification using ODEQ 2005 RC-11	**ODF (OAR) 629-625-0430, Stream Protection**
R 046	**Conduct all nonemergency in-water work during the ODFW instream work window.**	Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources – June, 2008 ODF OAR 629-625-0430 (2)	**ODF (OAR) 629-625-0430, Stream Protection**
R 047	**Utilize stream diversion and isolation techniques when installing stream crossings. Evaluate the physical characteristics of the site, volume of water flowing through the project area and the risk of erosion and sedimentation when selecting the proper techniques.**	ODEQ 2006, RC-9 and 10	**ODF (OAR) 629-625-0430, Stream Protection**
R 048	**Limit activities and access points of mechanized equipment to streambank areas or temporary platforms when installing or removing structures. Keep equipment activity in the stream channel to an absolute minimum.**	OAR 629-625-0430 (2)	**ODF (OAR) 629-625-0430, Stream Protection**
R 049	**Install stream crossing structures before heavy equipment moves beyond the crossing area.**	FEIS 2008	**ODF (OAR) 629-625-0430, Stream Protection**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 050	**Remove temporary crossing structures promptly after use. Follow practices under the Closure/Decommissioning section for removing stream crossing drainage structures and reestablishing the natural drainage.**	ODF (OAR) 629-625-0430 (5)	**ODF (OAR) 629-625-0430, Stream Protection**
R 051	**Harden low water ford approaches with durable materials. Provide cross drainage on approaches.**	EPA 2005 p3-50	**ODF (OAR) 629-625-0430, Stream Protection**
R 052	**Restrict access to unimproved low water stream crossings.**	ODR (OAR) 629-625-0430 (5)	**ODF (OAR) 629-625-0430, Stream Protection**
R 053	**Locate equipment washing sites in areas with no potential for runoff into wetlands, riparian management areas, floodplains and waters of the state. Do not use solvents or detergents to clean equipment on site.**	ODEQ 2005 , NS-5	**ODF (OAR) 629-625-0430, Stream Protection**
R 054	**Limit disturbance to vegetation and modification of streambanks when locating road approaches to in-stream water source developments. Surface these approaches with durable material. Employ erosion and runoff control measures.**	FEIS 2008.	**ODF (OAR) 629-625-0430, Stream Protection**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 055	**Direct pass-through flow and/or overflow from in-channel and any connected off-channel water developments back into the stream.**	FEIS 2008	**ODF (OAR) 629-625-0430, Stream Protection**
R 056	**Overflow from water harvesting ponds should be directed to a safe non-eroding dissipation area, and not into a stream channel.**	Unknown	**Does not fit in an ODFcategory**
R 057	**Limit the construction of temporary in-channel water drafting sites. Develop permanent water sources outside of stream channels and wetlands.**	FEIS 2008 & ODEQ 2005, NS-1	**ODF (OAR) 629-625-0430, Stream Protection**
R 058	**Do not place pump intakes on the substrate or edges of the stream channel. When placing intakes instream, place on hard surfaces (e.g., shovel, rocks) to minimize turbidity. Use a temporary liner to create intake site. After completion of use, remove liner and restore channel to natural condition.**	FEIS 2008 & ODEQ 2005, NS-1	**ODF (OAR) 629-625-0430, Stream Protection**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 059	**Placement of road fill in Waters of the US shall not be located in the proximity of a public water supply intake (404(f) exemption criteria xi)**	(404(f) exemption criteria xi)	**ODF (OAR) 629-625-0430, Stream Protection**
R 060	**During roadside brushing remove vegetation by cutting rather than uprooting.**	ODF (OAR) 629-625-0430 (4)	**ODF (OAR) 629-625-0430, Stream Protection**
R 061	**Limit road and landing construction, reconstruction, or renovation activities to the dry season. Keep erosion control measures concurrent with ground disturbance to allow immediate stormproofing.**	FEIS 2008	**ODF (OAR) 629-625-0440, Stabilization**
R 062	**Apply native seed and certified weed free mulch to cut and fill slopes, ditchlines, and waste disposal sites with the potential for sediment delivery to wetlands, riparian management areas, floodplains and waters of the state. Apply upon completion of construction and as early as possible to increase germination and growth. Reseed if necessary to accomplish erosion control. Select seed species that are fast growing, have adequate provide ample ground cover and soil-binding properties. Apply mulch that will stay in place and at site specific rates to prevent erosion.**	FEIS 2008	**ODF (OAR) 629-625-0440, Stabilization**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 063	**Place sediment-trapping materials or structures such as straw bales, jute netting, or sediment basins at the base of newly constructed fill or side slopes where sediment could be transported to waters of the state. Keep materials away from culvert outlets.**	USDS RMRS GTR 102-#18	**ODF (OAR) 629-625-0440, Stabilization**
R 064	**Use biotechnical stabilization and soil bioengineering techniques to control bank erosion (e.g., commercially produced matting and blankets, live plants or cuttings, dead plant material, rock or other inert structure).**	USDS RMRS GTR 102 - #18 & 20	**ODF (OAR) 629-625-0440, Stabilization**
R 065	**Suspend ground-disturbing activity if projected forecasted rain will saturate soils to the extent that there is potential for movement of sediment from the road to wetlands, floodplains and waters of the state. Cover or temporarily stabilize exposed soils during work suspension. Upon completion of ground disturbing activities, immediately stabilize fill material over stream crossing structures. Measures could include but not limited to erosion control blankets and mats, soil binders, soil tackifiers, slash placement.**	ODEQ 2010 - 1200-c permit 7 a I & ii.	**ODF (OAR) 629-625-0440, Stabilization**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 066	**When conducting erosion control measures, apply fertilizer in a manner to prevent direct fertilizer entry to wetlands, riparian management areas, floodplains and waters of the state.**	May find in BO for fish protection	**ODF (OAR) 629-625-0440, Stabilization**
R 067	**Stablize cutbanks, headwalls and other surfaces and prevent overburden, solid wastes, drainage water or petroleum products from entering wetlands, riparian management areas, floodplains and waters of the state during the development and use of rock pits or quarries.**	ODF OAR 629-625-0500 1-5 next 5 new BMP's	**ODF (OAR) 629-625-0500, Rock Pits and Quarries**
R 068	**Do not locate new or expand existing quarry sites or stockpile sites in wetlands, riparian management areas, and floodplains or waters of the state. Control runoff from quarries to prevent sediment delivery to waters of the state.**	FEIS 2008 Minerals BMP OAR 340-041-0036	**ODF (OAR) 629-625-0500, Rock Pits and Quarries**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 069	**When a quarry or rock pit is inactive or vacated, stabilize cutbanks, headwalls, and other surfaces to prevent surface erosion and landslides. Remove all potential pollutants to prevent their entry into wetlands, riparian management areas, floodplains and waters of the state.**	FEIS 2008 Minerals BMP mod & ODEQ 2005 NS - 6	**ODF (OAR) 629-625-0500, Rock Pits and Quarries**
R 070	**Apply water or approved road surface stabilizers/dust control additives to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands, floodplains and waters of the state. Prevent entry of road surface stabilizers/dust control additives into waters of the state during application.**	ODEQ 2005, EP-13	**ODF (OAR) 629-625-0600, Road Maintenance**
R 071	**Prior to the wet season, provide effective road surface drainage through practices such as machine cleaning of ditches, surface blading including berm removal, constructing sediment barriers, cleaning inlets and outlets.**	ODF OAR 629-625 0600 (2-4) EPA 2005 pp361-362	**ODF (OAR) 629-625-0600, Road Maintenance**
R 072	**Avoid undercutting of cut-slopes when cleaning ditchlines. Seed with native species and use weed free mulch on bare soils including cleaned ditchlines that drain directly to wetlands, floodplains and waters of the state.**	EPA 2005 pp362	**ODF (OAR) 629-625-0600, Road Maintenance**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 073	**Remove and dispose of slide material when it is obstructing road surface and ditchline drainage. Place material on stable ground outside of wetlands, riparian management areas, floodplains and waters of the state.**	ODF OAR 629-625-0600 (6)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 074	**Do not sidecast loose ditch or surface material where it can enter wetlands, riparian management areas, floodplains and waters of the state.**	FEIS 2008 & ODF OAR 629-625-0600 (7)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 075	**Inspect and maintain culvert inlets and outlets, drainage structures and ditches before and during the wet season to diminish the likelihood of plugged culverts and the possibility of washouts.**	FEIS 2008 & ODF OAR 629-625 -0600 (3)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 076	**Repair damaged culvert inlets and downspouts to maintain drainage design capacity.**	FEIS 2008 & ODF OAR 629-625 -0600 (3)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 077	**Blade and shape roads to conserve existing aggregate surface material, retain or restore the original cross section, remove berms and other irregularities that impede effective runoff or cause erosion, and ensure that surface runoff is directed into vegetated, stable areas.**	FEIS 2008 & ODF OAR 629-625 -0600 (4)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 078	**Retain ground cover in ditchlines, except where sediment deposition or obstructions require maintenance.**	FEIS 2008	**ODF (OAR) 629-625-0600, Road Maintenance**
R 079	**Retain low-growing vegetation on cut-and-fill slopes.**	FEIS 2008 &EPA 2005 ; EP-6	**ODF (OAR) 629-625-0600, Road Maintenance**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 080	**Stormproof open resource roads receiving infrequent maintenance to reduce road erosion and reduce the risk of washouts by concentrated water flows. Stormproof temporary roads if retained over-winter.**	ODF OAR 629-625-0600 (2)	**ODF (OAR) 629-625-0600, Road Maintenance**
R 081	**Suspend stormproofing/decommissioning operations and cover or otherwise temporarily stabilize all exposed soil if conditions develop that cause a potential for sediment laden runoff to enter a wetland, floodplain or waters of the state. Resume operations when conditions allow turbidity standards to be met.**	FEIS 2008	**ODF (OAR) 629-625-0600, Road Maintenance**
R 082	**Inspect closed roads to ensure that vegetational stabilization measures are operating as planned, drainage structures are operational, and noxious weeds are not providing erosion control. Conduct vegetation treatments and drainage structure maintenance as needed.**	FEIS 2008 & ODF OAR 629-625 -0650 (2)	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 083	**Fully decommission or obliterate temporary roads upon completion of use.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 084	**Consider decommissioning or fully decommissioning low volume permanent roads not needed for future resource management located in, or draining into wetlands, riparian management areas, floodplains or waters of the state.**	EPA 2005 3-64	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 085	**Prevent use of vehicular traffic using methods such as gates, guard rails, earth/log barricades, to reduce or eliminate erosion and sedimentation due to traffic on roads.**	ODF OAR 629-625 -0650 (2)	**ODF (OAR) 629-625-0650, Vacating Forest Roads**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 086	**Convert existing drainage structures such as ditches and cross drain culverts to a long-term maintenance free drainage configuration such as outsloped road surface and waterbars.**	FEIS 2008 & ODF OAR 629-625 -0650 (3)	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 087	**Remove stream crossing culverts and entire in-channel fill material during ODFW instream work period.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 088	**Place excavated material from removed stream crossings on stable ground outside of wetlands, riparian management areas, floodplains and waters of the state. In some cases material could be used for recontouring old road cuts or be spread across roadbed and treated to prevent erosion.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 089	**Reestablish stream crossings to the natural stream gradient. Excavate sideslopes back to the natural bank profile. Reestablish natural channel width and floodplain.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 090	**On each side of a stream crossing, construct waterbars or cross ditches that will remain maintenance free.**	FEIS 2008 & ODF OAR 629-625 -0650 (3)	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 091	**Following culvert removal and prior to the wet season, apply erosion control and sediment trapping measures (e.g., seeding, mulching, straw bales, jute netting, native vegetative cuttings) where sediment can be delivered into wetlands, riparian management areas, floodplains and waters of the state.**	FEIS 2008 & ODF OAR 629-625 -0650 (3)	**ODF (OAR) 629-625-0650, Vacating Forest Roads**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 092	**Implement decompaction measures, including ripping or subsoiling to an effective depth. Treat compacted areas including the roadbed, landings, construction areas, and spoils sites.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 093	**After decompacting the road surface, pull back unstable road fill and either end-haul or recontour to the natural slopes.**	FEIS 2008	**ODF (OAR) 629-625-0650, Vacating Forest Roads**
R 094	**On active haul roads, during the wet season, use durable rock surfacing and sufficient surface depth to resist rutting or development of sediment on road surfaces that drain directly to wetlands, floodplains and waters of the state.**	ODF (OAR) 629-625-0700 (2)	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 095	**Prior to winter hauling activities, implement structural road treatments such as: increasing the frequency of cross drains, installing sediment barriers or catch basins, applying gravel lifts or asphalt road surfacing at stream crossing approaches, and cleaning and armoring ditchlines.**	ODF (OAR) 629-625-0700 (2)	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 096	**Suspend commercial use where the road surface is deeply rutted or covered by a layer of mud or when runoff from the road surface is causing a visible increase in stream turbidity in the receiving stream.**	ODF OAR 629-625-0700 - 3 modified with add from FEIS 2008	**ODF (OAR) 629-625-0700, Wet Weather Road Use**

Road BMP #	Proposed Language	Source	Oregon Dept. of Forestry/Oregon Administrative Rules Forest Roads - Division 625
R 097	**Remove snow on haul roads in a manner that will protect roads and adjacent resources. Retain a minimum layer (2-4 inches) of compacted snow on the road surface. Provide drainage through the snow bank at periodic intervals to allow for snow melt to drain off the road surface.**	BLM Snow removal letter.	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 098	**Do not allow wet season haul on natural surface roads or high sediment producing surfaced roads without praticable and effective mitigation.**	ODF OAR 629-625-0700 (1)	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 099	**Maintain road surface by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion under active haul where runoff drains to wetlands, riparian management areas, floodplains and waters of the state.**	ODF OAR 629-625-0700 (2)	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 100	**To reduce sediment tracking from natural surface roads during active haul provide gravel approach before entrance onto surfaced roads.**	ODEQ 2010-1200c-7 diii	**ODF (OAR) 629-625-0700, Wet Weather Road Use**
R 101	**Install temporary culverts and washed rock on top of low water ford to reduce vehicle contact with water during active haul. Remove culverts promptly after use.**	BLM - WOTT - 2011	**ODF (OAR) 629-625-0700, Wet Weather Road Use**

Bureau of Land Management Road Best Management Practices Glossary

Note: These terms are defined in relation to their use in the Bureau of Land Management (BLM) Road Best Management Practices (BMP).

Bed Load: Coarse sediment particles with a relatively fast settling rate that move by sliding, rolling or bouncing along the streambed in response to higher stream flows.

Bioengineering: Techniques combining the biological elements of live plants with engineering design concepts for slope protection and erosion reduction.

Broad Based Dip: Shallow gradual dips in the constructed road grade with a higher-than-road surface embankment angled across the road in the direction of water flow. The dip portion is used to drain ditch flows to the other side of the road where drainage can dissipate at ground level or exit upon an erosion resistant surface, if needed, to prevent erosion.

Commercial Use: The primary purpose for development and use of the BLM road system is access for forest management activities and the transportation of forest products. Commercial use of BLM's road system typically includes log hauling and aggregate hauling and is authorized by either 1) perpetual reciprocal right-of-way agreements between the United States and private timberland owners, or 2) BLM timber sale contracts.

Cross Drain Culvert: Culverts strategically installed to pass ditch runoff or drain seeps and springs, safely under the road prism. (Often referred to as relief culverts).

Crown: The center of the road being higher than the outer edges, creating a nearly flat A-shape with a normal cross slope of ½" to ¾" per foot.

Culvert: Enclosed channels of various materials and shapes designed to convey stream or ditch water under and away from the roadway.

Cutbank Gouging: A problematic practice during grading and ditch cleaning operations where the road maintenance equipment cuts into the toe of a stable bank and creates a vertical surface thereby destabilizing the bank .

Durable Rock Surfacing: Durability is an indicator of the relative quality or competence of an aggregate to resist abrasion, impact or grinding to produce clay-like fines when subjected to commercial hauling. Durable rock surfacing will support commercial timber or rock haul in the winter with a minimal level of fines produced due to wear.

Dry Season: An annually variable period of time, starting after spring rains cease and when hillslope subsurface flow declines; drying intermittent streams and roadside ditches. Generally June through October, but may start or end earlier depending on seasonal precipitation influences.

Effective Depth of Decompaction: The depth to which the soil is tilled or loosened to provide infiltration capacity that is near to the adjacent undisturbed forest floor. Measured depth is from road surface to bottom of evidence of platey soil or increased bulk density that impedes water transmission.

Energy Dissipater: Any device or installation of material used to reduce the energy of flowing water.

Geotextile: A geosynthetic fabric or textile manufactured from synthetic plastic polymers, not biodegradable, in woven or non-woven types, and used for various purposes ranging from reinforcement and separation to drainage filtration and sediment control.

Grade Break: A long, gradual break in grade on a road with a relatively gradual downhill slope that improves drainage. Grade breaks limit water flow by decreasing concentration and velocity from a reduced area of road section.

High Sediment Producing Roads: Roads whose physical characteristics and rights of way vegetation, in combination with precipitation in the watershed and traffic result in high erosion rates.

Insloping: Constructing and maintaining the entire surface of the road toward the cutslope side of the road.

Lead-off Ditch: A formed channel that diverts ditch water away from the road, usually angled in the direction of water flow and placed at locations to empty into vegetative filtering areas.

Low Volume Road: A road that is functionally classified as a resource road and has a design average daily traffic volume of 20 vehicles per day or less.

Mitigation: The act of reducing or eliminating an adverse environmental impact.

ODFW in stream work period: Oregon Department of Fish and Wildlife designated guidelines that identify periods of time for in-water work that would have the least impact on important fish,
wildlife and habitat resources. Work periods are established to avoid the vulnerable life stages of fish including migration, spawning and rearing. Work periods are established for the named stream, all upstream tributaries, and associated lakes within a watershed. (Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources – June, 2008)

Outsloping: Constructing and maintaining the entire surface of the road toward the fillslope side of the road.

Pioneer Road: Temporary access ways, within the path of the permanent road, used to facilitate construction and equipment access. When building permanent roads, pioneer roads exist within the template of the finished road.

Renovation: Consists of work done to an existing road, restoring it to its original design standard.

Resource Road: Roads that provide a point of access to public lands and connect with local or collector roads.

Riparian Management Area: The areas along watercourses, lakes and wetlands which are primarily managed specifically for protection of aquatic and riparian dependent beneficial uses under Resource Management Plans.

Road Closures Categories:

a. **Temporary/Seasonal/Limited Access** – These are typically resource roads, closed with a gate or barrier. The road will be closed to public vehicular traffic but may be open for BLM/Permittee commercial activities. The road may or may not be closed to BLM administrative uses on a seasonal basis depending upon impacts to the resources. Drainage structures will be left in place.

b. **Decommission (long-term)** –The road segment will be closed to vehicles on a long-term basis, but may be used again in the future. Prior to closure the road will be left in an erosion-resistant condition by establishing cross drains, eliminating diversion potential at stream channels, and stabilizing or removing fills on unstable areas. Exposed soils will be treated to reduce sediment delivery to streams. The road will be closed with an earthen barrier or its equivalent. This category can include roads that have been or will be closed due to a natural process (abandonment) and may be opened and maintained for future use.

c. **Full Decommission (permanent)** – Roads determined to have no future need may be subsoiled (or tilled), seeded, mulched, and planted to reestablish vegetation. Cross drains, fills in stream channels, and unstable areas will be removed, if necessary, to restore natural hydrologic flow. The road will be closed with an earthen barrier or its equivalent. The road will not require future maintenance. This category includes roads that have been closed due to a natural process (abandonment) and where hydrologic flow has been naturally restored.

d. **Obliteration (full site restoration/permanent)** – Roads receiving this level of treatment have no future need. All drainage structures will be removed. Fill material used in the original road construction will be excavated and placed on the subgrade in an attempt to reestablish the original ground line. Exposed soil will be vegetated with native trees or other native vegetation. Road closure by obliteration is rarely used.

Sediment: Fine particles of inorganic and /or organic matter carried by water.

Shotgun Culverts: Ditch relief or stream culverts where the outlet extends beyond the natural ground line.

Storm-proof: Roads having a self-maintaining condition, allowing unimpeded flows at channel crossings and surface conditions that reduce chronic sediment input to stream channels.

Temporary Road: A short-term use road authorized for the development of a project that has a finite lifespan, e.g., a timber sale spur road. Temporary roads are not part of the permanent designated transportation network and must be reclaimed when their intended purpose has been fulfilled.

Turbidity: The cloudiness exhibited by water carrying sediment. The degree to which suspended sediment interferes with light passage through water.

Underdrain: Culverts installed to convey water from springs, and seeps encountered during road construction, under the road.

Water drafting site: Site to provide a short duration, small pump operation that withdraws water from streams or impoundments to fill conventional tank trucks or trailers.

Water Harvesting Pond: Ponds constructed to capture and store rainwater or snowmelt.

Waters of the State: Includes lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private which are wholly or partially within or bordering the State or within its jurisdiction. ORS § 468B.005(10).

Wetland: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, as defined by the 1972 Federal Clean Water Act. These wetlands generally meet the jurisdictional wetland criteria.

Wet Season: An annually variable period of time, starting after precipitation amounts saturate soils. This occurs after the onset of fairly continuous fall rains which result in seasonal runoff in ephemeral and intermittent stream channels and from the road surface and ditches. Generally November through May, but could start or end earlier depending on seasonal precipitation influences.