

E APPENDIX E BMPS FOR PROTECTION OF WATER QUALITY

BMP EFFECTIVENESS

Forest Management activities and associated road building in steep rugged forest terrain have long been recognized as sources of non-point water pollution. Non-point pollution is not, by definition, controllable through conventional treatment plant means. Containing the pollutant at its source, thereby precluding its delivery to surface water, controls non-point pollution. Sections 208 and 319 of the Federal Clean Water Act, as amended, acknowledge that land treatment measures are effective in controlling non-point sources of water pollution. The Act emphasizes development and use of such measures on the ground where appropriate.

Working cooperatively with the California State Water Quality Control Board, the Forest Service developed and documented non-point pollution control measures applicable to National Forest System Lands. Following evaluations by State Water Quality Control Board personnel of the control measures, as they were actually applied on the ground during management activities, an assessment of monitoring data and the completion of public workshops and hearings, the measures were certified by the State and approved by EPA as the most effective means the Forest Service could implement to control non-point source pollution. These measures were termed “Best Management Practices” (BMPs).

BMP control measures are designed to accommodate site-specific conditions. They are designed to account for the complexity and physical and biological variability of the natural environment. In the 1981 Management Agency Agreement between the State Water Resources Control Board and the Forest Service, the State agreed that: “The practices and procedures set forth in the Forest Service document constitute sound water quality management and, as such, are the best management practices to be implemented for water quality protection and improvement on NFS lands.”¹ The implementation of BMPs is the performance standard against which the success of the Forest Service’s non-point pollution water quality management efforts are judged.

The Clean Water Act provided the initial test of effectiveness of the Forest Service non-point pollution control measures. It required the evaluation of the practices by the

¹ Management Agency Agreement Between the State Water Resources Control Board, State of California and the Forest Service, United States Department of Agriculture, March 1981.

regulatory agencies (State Board and EPA) and the certification and approval of the practices as the “BEST” measures for control. Another test of BMP effectiveness is the capability to custom fit the measures to site-specific conditions where non-point pollution potential exists. The Forest Service BMPs are flexible in that they are tailor-made to account for diverse combinations of physical and biological environmental circumstances. A final test of the effectiveness of the Forest Service BMPs is their demonstrated ability to protect the beneficial uses of the surface waters in the State. The BMPs incorporate 75 years of erosion control and watershed protection experience and are based on sound scientific principles.

The land treatment measures incorporated into Forest Service BMPs evolved through extensive research and development, and have been monitored and modified over several decades with the expressed purpose of improving the measures and making them more effective. On-site evaluations of the BMP control measures by State regulatory agencies have found the practices to be effective in protecting beneficial uses and have been “certified” for Forest Service application as the agency’s means to protect water quality.

SPECIFIC BMP MEASURES

The following table lists the BMPs that will be applied to the various activities associated with the exploration, development and production of oil and gas resources. This list will be reviewed, and the applicable BMPs will be made a part of the Conditions of Approval (COAs) at the time that an Application for Permit to Drill (APD) is made by the lessee/operator.

Best Management Practices to Protect Water Quality and Soil Productivity for Areas Where Leasing is Approved (Forest Service R-5 Handbook Reference)

BMP NO.	BEST MGMT. PRACTICE	INTENT OF SITE SPECIFIC BMPs TO BE INCLUDED IN COAS
1.6	Protection of Unstable Areas	Construction activities are modified to buffer and protect unstable lands to prevent triggering mass slope failure and resultant erosion and sedimentation.
1.8	Streamside Management Zone (SMZ) Designation	Zones adjacent to water, streams, and riparian/wetland areas are designated as areas of special management. These zones are prescribed different levels of protection to reduce adverse impacts of nearby construction activities.
2.1	General Guidelines for the Location and Design of Roads	Guidelines are given for locating stream and drainage crossings, and for development of road construction standards to minimize damage to water resources.

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2.2	Erosion Control Plan	An erosion control plan is developed by the lessee to identify erosion prevention methods to be used for road, well pad and pipeline construction and maintenance. This plan incorporates the appropriate BMPs (2.1, 2.3--2.26) for the landscape, climate and other local factors.
2.3	Timing of Construction Activities	Construction activities are to be controlled during rainy periods, generally depending on the amount of precipitation received and time between storms.
2.4	Road Slope Stabilization (Preventive Practice)	Specifications are given for structural and biological stabilization of cuts and fills of roads.
2.5	Road Slope Stabilization (Administrative Practice)	A schedule is made for inspecting road construction and maintenance work.
2.6	Dispersion of Subsurface Drainage from Cuts and Fill Slopes	Roads that cross unstable areas should include a design for draining subsurface water to assist in preventing slope failures.
2.7	Control of Road Drainage	Specifications are given for draining the road surface, such as out-sloping, or in sloping with ditched drainage.
2.8	Constraints Related to Pioneer Road Construction	These constraints identify actions to control erosion and water pollution during layout of roads and pipelines.
2.9	Timely Erosion Control Measures on Incomplete Road and Stream Crossing Projects	Measures are identified for use between storms, or rainy seasons, to prevent erosion. A common measure is to construct temporary silt-fence dams in critical areas to catch sediment from incomplete construction, before it enters a drainage.
2.10	Construction of Stable Embankments	Standards are given for using structural and biological measures to stabilize road cuts and fills.
2.11	Minimization of Sidecast Material	If cut and fill areas fail and block roads, methods of disposing of the material are designated, to prevent the material from being dumped off the side of the road into the streams.
2.12	Servicing and Refueling Equipment	Measures are developed to prevent hazardous materials, such as gasoline and oil, from entering water courses.
2.13	Control of Construction in Streamside	Streamside management zones are designated to prevent construction equipment from operating too

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	Management Zones	close to stream courses.
2.14	Controlling In-Channel Excavation	Standards are provided for crossing stream channels. The primary purpose is to limit disturbance at the crossing site.
2.15	Diversion of Flows Around Construction Sites	Insures that stream diversions are planned to minimize downstream sedimentation.
2.16	Stream Crossings on Temporary Roads	Standards are provided for temporary roads to ensure that they are properly drained to prevent erosion, and so that they cross streams in appropriate places.
2.17	Bridge and Culvert Installation	These are standards for locating and constructing bridges and culverts to prevent water pollution.
2.18	Regulating Streamside Gravel Borrow Areas	Gravel borrow areas are designated so stream course materials are not randomly used for surfacing roads or well pads.
2.19	Disposal of Right-of-Way and Road Side Debris	Specifications are given for disposing of vegetation, rock and soils not needed for construction, to prevent deleterious materials from being discharged into streams.
2.21	Water Source Development	The purpose is to control extraction of stream water or from connected groundwater (for road watering, road construction, etc) so that downstream water flow is not reduced to a level that may be detrimental to aquatic resources, fish passage, or other established uses. Measures are prescribed to prevent negative impacts that may be caused by water source developments.
2.22	Maintenance of Roads	Provides for inspections of road condition and follow up maintenance to insure that project roads and well pads do not, over time, contribute to water pollution.
2.23	Road Surface Treatment to Prevent Loss of Materials	Road surfacing may be required when roads cross very high erosion hazard soils.
2.24	Traffic Control During Wet Periods	Controls traffic, during wet conditions, that would damage the road surface and drain-age system, and make erosion prevention measures ineffective.
2.26	Obliteration of Temporary Roads	Measures are prescribed for obliteration of roads that are no longer needed by the lessee.

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3.2	Administering Terms of BLM Leases	To ensure soil and water quality are protected during mineral exploration, extraction, and processing, and that reclamation activities are carried out under the conditions of the lease.
5.3	Tractor Operations Excluded from Wetlands and Meadows	To limit turbidity and sedimentation resulting from compaction, rutting, runoff concentration and subsequent erosion. Preventative measures are designed to preclude or reduce the need to take corrective measures to dissipate concentrated surface runoff.
5.4	Revegetation of Surface Disturbed Areas	This is a corrective measure that uses vegetation to stabilize the soil surface of a disturbed area in order to protect water and soil quality by minimizing soil erosion.
7.1	Watershed Restoration	This is a corrective measure designed to improve ground cover density, infiltration, prevent excessive overland runoff, conserve the soil resource, stabilize stream banks and channels, improve soil productivity; and reduce flood occurrence and flood damage.
7.2	Floodplain Analysis	This is a hazard analysis and evaluation to avoid, where possible, impacts to water quality associated with the occupancy and modification of floodplains.
7.3	Protection of Wetlands	The intent is to avoid adverse water quality impacts associated with the destruction, disturbance or modification of wetlands.
7.4	Oil and Hazardous Substance Spill Contingency Plan	Requires the lessee/operator to prepare a HAZMAT Contingency Plan, which will direct actions to be taken to prevent the contamination of waters from the accidental spill of hazardous materials. The plan includes coordination to be established in the event of an accidental spill and actions to be taken for the identification, cleanup, and disposal of contaminated materials.