
APPENDIX A

BEST MANAGEMENT PRACTICES Bitterroot National Forest

INTRODUCTION

Best Management Practices (BMPs) are the primary mechanism to enable the achievement of water quality standards (Environmental Protection Agency 1987). This Appendix describes the Forest Service's BMP process in detail; lists the key Soil and Water Conservation Practices (SWCP) that have been selected to be used on the Bitterroot National Forest; and describes each SWCP that may be refined for site-specific conditions to arrive at the project level BMPs to protect beneficial uses and meet water quality objectives. BMP's included in this list are consistent with those developed and adopted by the State of Montana Department of Natural Resources. Although not identical, the Bitterroot National Forest BMP's address similar concerns and have been developed to better fit Bitterroot National Forest conditions.

BMPs include, but are not limited to, structural and non-structural controls, operations, and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (40 CFR 130.2, EPA Water Quality Standards Regulation). Usually BMPs are applied as a system of practices rather than a single practice. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

The Bitterroot National Forest Plan states "Soil and Water Conservation practices will be a part of project design and implementation to ensure soil and water resource protection (Forest Service Handbook 2509.22) " (Forest Plan, page II-25). Montana State Water Quality Standards require the use of Reasonable Land, Soil, and Water Conservation Practices (analogous to BMPs) as the controlling mechanism for nonpoint pollution. Use of BMPs is also required in the MOU between the Forest Service and the State of Montana as part of our responsibility as the Designated Water Quality Management Agency on National Forest System (NFS) lands.

The Practices described herein are tiered to the practices in FSH 2509.22. They were developed as part of the NEPA process, with interdisciplinary involvement, and meet Forest and State water quality objectives.

BMP IMPLEMENTATION PROCESS

In cooperation with the State, the USDA Forest Service's primary strategy for the control of nonpoint sources is based on the implementation of preventive practices (BMPs) determined necessary for the protection of the identified beneficial uses.

The Forest Service Nonpoint Source Management System consists of:

1. BMP selection and design based on site-specific conditions; technical, economic and institutional feasibility; and the designated beneficial uses of the streams.
2. BMP Application
3. BMP monitoring to ensure that they are being implemented and are effective in protecting designated beneficial uses.
4. Evaluation of BMP monitoring results.
5. Feeding back the results into current/future activities and BMP design. The District Ranger is responsible for insuring that this BMP feedback loop is implemented on all projects.

1. BMP Selection and Design. Water quality goals are identified in Forest Plans. These goals meet or exceed applicable legal requirements, including State water quality regulations, the Clean Water Act, and the National Forest Management Act. Environmental assessments for projects are tiered to Forest Plans, using the NEPA process. Appropriate BMPs are selected for each project by an interdisciplinary team. After identifying the designated beneficial uses for the associated streams, the initial list of BMPs is developed from the Forest Plan standards and guidelines, Forest Service handbooks, and special provisions identified by watershed and fisheries specialists for sensitive areas.

BMP selection and design are dictated by water quality objectives, soils, topography, geology, vegetation, and climate. Environmental impacts and water quality protection options are evaluated and alternative mixes of practices are considered. A final collection of practices are selected that not only protect water quality but meet other resource needs. These final selected practices constitute the BMPs.

2. BMP Application. The BMPs are translated into contract clauses, special use permit requirements, project plan specifications, and so forth. This ensures that the operator or person responsible for applying the BMP actually is required to apply it. The site-specific BMP prescriptions are taken from plan-to-ground during harvest unit layout through marking, tagging and flagging by pre-sale crews and tagline surveys, road drainage, and stream crossings locations by engineers. This is when final adjustments to fit the BMP prescriptions to the site are made before implementing the resource activity.

3. BMP Monitoring. During the course of project activities (eg., timber harvest or road construction), timber sale administrators, engineering representatives, resource specialists, and others ensure that the BMPs are implemented according to plan. BMP implementation monitoring is done before, during, and after resource activity implementation. This monitoring answers the question: Did we do what we said we were going to do? Once BMPs have been implemented, further monitoring is done to evaluate if BMPs are effective in meeting management objectives and protecting water beneficial uses. State water quality standards, including the beneficial uses, will serve as one evaluation criteria for the EIS monitoring.

4. BMP Monitoring Evaluation. The technical evaluation/monitoring described above will determine how effectively BMPs protect and/or improve water quality. Water quality standards and conditions of the beneficial uses of water will serve as one evaluation criteria. If the evaluation indicates that water quality standards are not being met and/or beneficial uses are not being protected, corrective action will consider the following three components:

- A. The BMP: Is it properly designed, technically sound, and effective? Is it really best, or is there a better practice, which is technically sound and feasible to implement?
- B. The implementation program or processes: Was the BMP applied entirely as designed? Was it only partially implemented? Were personnel, equipment, funds, or training lacking which resulted in inadequate or incomplete implementation?
- C. The State water quality criteria: Do the parameters and criteria used for effectiveness evaluation adequately reflect human induced changes to water quality and beneficial uses?

5. Feedback. Feedback of the results of BMP evaluation is both short- and long-term in nature. Where corrective action is needed, immediate response will be undertaken. This action may include: modification of the BMP, modification of the activity, or ceasing the activity. Cumulative effects over the long-term may also lead to the need for possible corrective actions.

SOIL AND WATER CONSERVATION PRACTICES

CLASS SOIL AND WATER CONSERVATION PRACTICE (FSH 2509.22)

11 WATERSHED MANAGEMENT

- A 11.01 Determination of Cumulative Watershed Effects
- E 11.02 Watershed Improvement of Roads, OHV Trails and Skid Trails
- A 11.05 Wetlands Analysis and Evaluation (13.03, 14.16)
- A 11.09 Management by Closure to Use

W	11.13	Sanitary Guidelines for Construction of Temporary Labor, Spike, Logging, and Fire Camps, and Similar Installations
		13 VEGETATION MANIPULATION
G	13.02	Slope Limitations for Tractor Operation (14.07)
G	13.03	Tractor Operation Excluded from Wetlands, Bogs, & Wet Meadows
E	13.04	Revegetation of Surface Disturbed Areas
W	13.05	Inclusion of INFISH (7/95) Recommendations
		14 TIMBER
A	14.02	Timber Harvest Unit Design (14.08, 14.10)
A	14.03	Use of Sale Area Maps for Designating Soil and Water Protection Needs
A	14.04	Limiting the Operating Period of Timber Sale Activities
A	14.05	Protection of Unstable Areas
A	14.06	Streamside Management Zone Rules, Riparian Area Designation
G	14.07	Determining Tractor Loggable Ground
E	14.08	Tractor Skidding Design
A	14.10	Log Landing Location and Design
E	14.11	Log Landing Erosion Prevention and Control (14.12, 14.15)
E	14.12	Erosion Prevention and Control Measures During Timber Sale Operations
E	14.15	Erosion Control on Skid Trails
E	14.16	Meadow Protection During Timber Harvesting
S	14.17	Streamcourse Protection (Implementation and Enforcement)
E	14.18	Erosion Control Structure Maintenance
A	14.19	Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
E	14.20	Slash Treatment in Sensitive Areas
A	14.22	Modification of the Timber Sale Contract
A	14.23	Reforestation Requirement
G	14.24	On-site Large Woody Residue and Soil Litter Retention
G	14.25	Winter Logging
		15 ROADS AND TRAILS
S	15.02	General Guidelines for the Location and Design of Roads and trails
E	15.03	Road and Trail Erosion Control Plan
E	15.04	Timing of Construction Activities
E	15.06	Mitigation of Surface Erosion and Stabilization of Slopes
E	15.07	Control of Permanent Road Drainage
E	15.08	Pioneer Road Construction
E	15.09	Timely Erosion Control Measures on Incomplete Road and Stream crossing Projects
E	15.10	Control of Road Construction Excavation & Sidecast Material
S	15.11	Servicing and Refueling of Equipment
S	15.12	Control of Construction in Riparian Areas
S	15.13	Controlling In-Channel Excavation
S	15.14	Diversion of Flows Around Construction Sites
S	15.15	Streamcrossings on Temporary Roads
S	15.16	Bridge and Culvert Installation (Disposition of Surplus Material and Protection of Fisheries)
E	15.18	Disposal of Right-of-Way and Roadside Debris
E	15.21	Maintenance of Roads
E	15.22	Road Surface Treatment to Prevent Loss of Materials
		CLASS SOIL AND WATER CONSERVATION PRACTICE (FSH 2509.22)
E	15.23	Traffic Control During Wet Periods
E	15.24	Snow Removal Controls
E	15.25	Obliteration of Temporary Roads

		17 GRAZING
A	17.01	Planning Prescribed Grazing Activities
A	17.02	Development of a Grazing Strategy
G	17.03	Herbaceous Utilization and Grazing on Uplands
A	17.04	Use of Rangeland Improvements
W	17.06	Riparian Planning Considerations for Grazing
S	17.07	Grazing Considerations for Water Quality
S	17.08	Grazing and Maintenance of Streambank Stability
S	17.09	Grazing and Woody Riparian Systems
W	17.10	Grazing and Herbaceous Forage Utilization in Riparian Areas
A	17.11	Monitoring to Evaluate Effectiveness and/or Change Grazing Strategy

		18 FIRE SUPPRESSION AND FUELS MANAGEMENT
A	18.02	Formulation of Fire Prescriptions
E	18.03	Protection of Soil & Water from Prescribed Burning Effects
E	18.04	Minimizing Watershed Impacts from Fire Suppression Efforts
E	18.05	Stabilization of Fire Suppression Related Watershed Damage

		19 PLACER MINES
W	19.02	Mine Design and Operation

		20 HAZARDOUS MATERIALS
A	20.02	Proper Design of Projects Using Hazardous Materials
A	20.03	Development of Spill Contingency Plan
A	20.04	Integrated Approach to Weed Management
W	20.05	Proper Application

CLASSES OF SWCP (BMP)

- A = Administrative
- G = Ground Disturbance Reduction
- E = Erosion Reduction
- S = Stream Channel Protection/Stream Sediment Reduction
- W = Water Quality Protection

FORMAT OF THE BMPs

Each Soil and Water Conservation Practice (SWCP) is described as follows:

Title: Includes the sequential number of the SWCP and a brief title

Objective: Describes the SWCP objective(s) and the desired results for protecting water quality.

Effectiveness: Provides a qualitative assessment of expected effectiveness that the applied measure will have on preventing or reducing impacts on water quality. The SWCP effectiveness rating is based on literature & research, administrative studies, and professional experience. The SWCP is rated either High, Moderate, or Low based on the following criteria:

- a. Literature/Research (must be applicable to area)
- b. Administrative studies (local or within similar ecosystem)
- c. Experience (judgment of an expert by education and/or experience)
- d. Fact (obvious by reasoned [logical] response)

Implementation: This section identifies: 1) the range of site-specific water quality protection measures to be implemented and 2) how the practices are expected to be applied.

ITEMS COMMON TO ALL SOIL AND WATER CONSERVATION PRACTICE

Responsibility for Implementation: The District Ranger is responsible for ensuring the factors identified in the following SWCPs are incorporated into the correct Timber Sale Contract provision, that the provisions are included in the Timber Sale Contract, or public works contract through the inclusion of specific contract clauses, and implemented on the ground. Specific Timber Sale Contract clauses are often included in the BMPs for further reference, and the clauses start with a "B" or a "C" followed by number (eg. B6.4).

Unless otherwise specified, the Presale Forester is responsible for insuring that the factors identified in the following SWCPs are incorporated into the correct Timber Sale Contract B and/or C provision and that the provisions are included in the Timber Sale Contract.

The contracting officer through his/her official representatives (sale administrator and/or engineering representative on timber sale contracts and contracting officers representative on public works contracts) are responsible for insuring that the clauses are properly administered on the ground.

Monitoring: Unless otherwise noted, the SWCPs will be monitored by the TSA as part of BMP Implementation Monitoring of timber sale activities, and by the COR on public works road construction work.