



**Marion County
Department of Public Works**

Best Management Practices
for Clean Water



Abridged Version For Contractors

February 2005

Introduction

This manual is intended for use on Marion County projects where erosion and sediment control plans do not exist, i.e. resurfacing, and should be considered a companion document to the 2002 Oregon Standard Specifications for Construction as modified in Supplemental Standard Specifications or the Special Specifications of the contract documents. Though the Best Management Practices (BMPs) were developed to be as practical as possible, they are not intended to replace good judgment, common sense, or regulations already in place.

Marion County's BMPs for Clean Water and the Abridged Version for Contractors are intended to assure compliance with [Marion County's NPDES Permit #1200-CA](#). Marion County staff and its contractors are expected to follow the guidelines provided by the BMPs. Remember, the main focus of the BMPs is to keep chemicals and sediments out of the streams while still accomplishing the work.

Everyone has a role to play in keeping the streams of Marion County clean, and the BMPs are one way we can have a positive impact on the local environment. As we continue to put these BMPs in place, we expect to come up with problems and improvements regarding implementation. Please feel free to share your ideas with your inspector or engineer, and they will be documented and considered for the next version.

Make sure you're helping to keep the local waterways in good shape. Here are three easy things to remember:

- Cool
Most of our local streams are warmer than is healthy for native fish, so whenever possible keep shade on a stream. If you have to remove trees near a stream, make sure that you follow replanting guidelines.
- Clean
Remember, if it isn't water, it doesn't go in a stream (or ditch). Keep fuels, asphalt, herbicides, loose dirt (sediments), and other contaminants away from water. Vegetation can help filter some contaminants, but it doesn't get them all. Even small amounts of contaminants can add up over time.
- Connected
Don't create any new barriers to fish passage. (Like culverts that have a large drop-off.) Fish will use nearly any area where they can swim, so don't be surprised if you find juvenile fish in areas that we call ditches. If you have work planned near a stream, make sure that your project protects water quality and fish passage.

BEST MANAGEMENT PRACTICES FOR CLEAN WATER

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THE BEST MANAGEMENT PRACTICES

Road Maintenance Activities

The purpose of the MCPW road maintenance program is to provide a transportation system that is safe and efficient for motorists and residents. Public and personal safety is always the primary concern for maintenance crews. The best management practices in this section are designed to eliminate the adverse impacts of road maintenance activities on salmonid habitat without compromising safety. In general, the BMPs are designed to:

- Keep rock, sediment, and foreign matter out of ditches, catch basins, and streams.
- Reduce the occurrences of erosion.
- Promote the ability of ditches to naturally filter contaminants.

1. Gravel Road Maintenance

a. Description

Gravel road maintenance includes restoring gravel roadway cross slope, drainage, and grade by blading, reshaping, and smoothing of existing surface materials using a motor grader. This also includes, transporting and placing of suitable aggregate material on existing gravel roads to repair soft spots and potholes, providing a suitable driving surface.

b. Concerns

- Rock and sediment deposits in ditches
- Dust
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Perform activity in dry weather, but with soil still containing some moisture to minimize dust.
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Prevent material from falling into the ditch by maintaining a clear buffer space (meeting min. standards) from the edge of the road surface to the ditch.
- When practicable, protect/maintain existing vegetation.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

2. Dust Abatement

a. Description

Dust abatement practices help to stabilize gravel roads to reduce damage and maintenance costs. Depending on the type of road treated, application of dust

palliatives creates a hard, compact surface that resists potholing, rutting and loss of aggregate.

In addition control of road surface soils reduces the short-term, localized air quality hazards associated with unpaved roads. For people living along dirt roads, dust can cause inconveniences from dust settling on their property. While, not all county gravel roads require dust abatement applications, there are situations where dust control is either requested or required.

Dust suppression involves the application of a dust palliative to non-paved road surfaces to temporarily stabilize surface soils, leading to a reduction of dust. Counties provide dust abatement with their own funding in only a few circumstances. In some cases, Counties apply palliatives when excessive truck traffic utilizes a non-paved gravel road such as a quarry or construction site. This practice is for the purpose of the reduction of dust as well as road stabilization. In other instances, private contractors apply dust palliatives to county roads for residents living along county roads to reduce the amount of dust produced by passing vehicles.

Application of dust palliatives often occurs at the beginning of the summer and depending on the road surface and grade, two “light” applications may be made to avoid run off of the palliative from the road surface. In preparation for palliative application, roads are graded and “roughed up” to allow for greater penetration of the palliative. Application normally consists of 0.5 gallons of material per square yard of road and is applied using an applicator truck.

Materials

The following materials are proposed for use in county road dust abatement practices on unpaved roads. They have been selected because of their effectiveness in controlling fugitive dust, as well as minimizing potential environmental impacts.

Lignosulfonates

Lignin is a polymer in the secondary cell wall of woody plant cells that helps to strengthen and stiffen the wall. During the various pulping processes, lignin by-products are produced. Lignosulfonate is a byproduct of the sulfite method for manufacturing paper from wood pulp. Sometimes it is called sulfonated lignin. Lignosulfonate is a complex mixture of small- to moderate-sized polymeric compounds with sulfonate groups attached to the molecule.

Lignosulfonates have a long history of use on roads as a method for dust control and surface stabilization. Lignosulfonates have a natural adhesive property when moist. When applied to gravel roads, the lignosulfonate solution coats individual road particles with a thin adhesive-like film that binds the particles together. The lignosulfonate acts as a dispersant. By attaching to the particle surface, it keeps the particle from being attracted to

other particles and reduces the amount of water needed to use the product effectively. This allows the particles to pack closer together for a stronger surface. Consequently, water uptake by the roadbed surface is greatly reduced and the binder is less likely to be washed away by rain.

Lignosulfonates used for road applications are usually shipped in a concentrated solution and diluted with water on the job site to about a 25 percent solid content. Road conditions and climate can affect the application rate. However, as a general rule for dust control, a diluted solution of lignosulfonate is applied at a rate of one-half gallon per square yard.

Magnesium Chloride

Magnesium chloride is a naturally occurring element and is extracted from salt-water solutions such as those found in seawater. To extract the magnesium chloride brine, water is removed from the salt water by solar evaporation, other energy, and a simple refinement process until other chemicals have been extracted resulting in magnesium chloride brine. This brine can then be further dehydrated to produce magnesium chloride solids.

Magnesium chloride can be adapted and designed to provide highest efficiency depending on prevailing dust conditions, anticipated traffic, and type of soil. Dilution can also be varied to obtain the greatest possible economy and minimize environmental impact. Some soil types may be best treated with a one-time heavy application of product, whereas others may require several light applications. As a general rule, the rate of penetration of magnesium chloride is rapid in sandy soil, moderately fast in silty soil and slow in clay.

b. Concerns

- Runoff into streams
- Biochemical oxygen demand
- Aquatic toxicity
- Chemical spills

c. Best management practices for MCPW will be to:

- Refuel and repair equipment at least 25' from water bodies.
- Prepare gravel road surfaces by tight blading or processing (cut 2" and water, then lay gravel back to grade and roll).
- Within 25' of water bodies, construct 6" gravel berms on low shoulders of roads.
- Maintain a 1' buffer zone on the edge of gravel if the road width allows.
- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Perform activity in dry weather conditions.
- When practicable, a 3-day forecast of clear weather should follow any application.

- Use environmentally-sensitive cleaning agents when cleaning equipment and vehicles at approved sites.
- Excess materials will be disposed of at areas designated, and approved, for receiving such materials.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

3. Grading Shoulders

a. Description

Grading shoulders includes restoration of unpaved shoulder sections by adding, reshaping, and compacting aggregate material. This action also includes removing excess shoulder material and/or vegetation for safety, to improve drainage, and to prevent standing water on roadways.

b. Concerns

- Rock and sediment deposits in streams
- Dust
- Disposal of material
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Perform activity in dry weather, but with soil still containing some moisture to minimize dust.
- Modify width of grading whenever practical to minimize disturbance of vegetation.
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Pick up excess gravel and debris when within 25’ of salmon habitat and other flowing water bodies.
- Minimize the need for shoulder grading using mowing methods and seed selection, etc. when possible.
- Permanently stabilize disturbed soils with reseeding, where appropriate.
- Evaluate specific sites for alternatives such as berming, curbing, or paving the shoulder.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75’ of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Refuel and repair equipment at least 25’ from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

4. Road Base Construction

a. Description

For the processing or construction of a gravel road base in preparation for paving, for major base repair of paved roads, gravel is placed on the road surface in 4-6 inch lifts, bladed, compacted, and then watered.

b. Concerns

- Rock and sediment deposits in ditches or catch basins
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Properly place base on roadway, compact, and water to minimize the release of suspended solids into the environment.
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Cover catch basins, and other inlets, when appropriate.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

5. Stockpiling Materials

a. Description

In loading, hauling, mixing, or stockpiling materials used for routine maintenance activities, placement of material at Marion County sites follows ODEQ guidelines.

b. Concerns

- Erosion
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)

- Hydroseed the stockpiles if they are expected to be in place longer than 2 months. Consult with Environmental Specialist for seed species approval.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

6. Gravel Road Paving (O-11 Process)

a. Description

The O-11 process involves an application of alternating layers of emulsified rubber asphalt and rock over base material. Emulsified asphalt is applied to the road surface in five stages and does not runoff unless rained on prior to setting.

b. Concerns

- Asphalt spills
- Rock and sediment deposits in ditches
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Perform activity in dry weather conditions.
- Use any practical means to prevent gravel, sand and asphalt from entering water bodies.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- In case of spills, contain with a dike composed of native materials until diapers, berms or pillows can be set up.
- Refuel and repair equipment at least 25' from water bodies.
- Load asphalt emulsions away from water bodies.
- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

7. Slurry Seal

a. Description

The process of slurry sealing involves mixing and placing a liquid emulsified asphalt and sand mixture over existing asphalt to seal and maintain the road surface. This activity also includes crack sealing prior to slurry seal. Road surface cracks are cleared with a hot air lance and then filled with hot liquid asphalt, no sand. The slurry ingredients are combined from storage tanks and stockpiles at MCPW shop yard and transported to the job site where they are mixed and applied.

b. Concerns

- Asphalt spills and runoff
- Sand deposits in ditches or catch basins

c. Best management practices for MCPW will be to:

- Perform activity in dry weather conditions.
- Use any practical means to prevent gravel, sand and asphalt from entering water bodies.
- Cover catch basins, and other inlets, when appropriate.
- Use environmentally-sensitive cleaning agents when cleaning equipment and vehicles at approved sites.
- Use less water in the slurry mixture when operating near roadside ditches or other water bodies.
- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Dispose of used cleaning agents with a licensed waste recycler.
- Excess materials will be disposed of at areas designated, and approved, for receiving such materials.
- Require contractors to comply with all MCPW BMPs by including them as part of the project specifications and instructing on them during the pre-construction conference.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

8. Pavement Overlays

a. Description

The process of pavement overlays involves placement and compaction of hot mix asphalt concrete (a uniform mixture of hot asphalt oil and fine aggregate which hardens by cooling) over existing asphalt surfaces. Preparation work may include grinding of existing surface in some areas. Rock is added to the shoulders, afterward, to make them level with the new surface. This activity is performed by contractors and overseen by MCPW inspectors.

b. Concerns

- Asphalt spills and runoff
- Rock and sediment deposits in ditches and catch basins
- Disposal of material
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Perform activity in dry weather conditions.
- Use any practical means to prevent gravel, sand and asphalt from entering water bodies.
- Isolate activities near water bodies to avoid contact between fresh concrete and water.

- Cover catch basins, and other inlets, when appropriate.
- Sweep up and remove excess material.
- Fully contain cleaning agents in a safe system.
- Use environmentally-sensitive releasing agents such as vegetable oil based release agents (no diesel).
- Add the minimum amount of rock needed to match the shoulder to the new road surface.
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Dispose of used cleaning agents with a licensed waste recycler.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Require contractors to comply with all MCPW BMPs by including them as part of the project specifications and instructing on them during the pre-construction conference.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

For Bridges: (Use overlay BMPs as well as the following)

- Cover scuppers and drains before performing the activity and clean them to remove any excess material after the activity.
- Use any practical means to prevent gravel, sand and asphalt from entering water bodies.
- Sweep up and remove excess material.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.

9. Pavement Repair

a. Description

Pavement repair includes major and minor patching of intermittent potholes, small depressions, edge breaks, and any surface irregularities with plant mixed asphalt concrete material. Preparation work may include grinding of existing surface in some areas.

b. Concerns

- Rock and sediment deposits in ditches and catch basins
- Asphalt spills and runoff
- Disposal of materials

c. Best management practices for MCPW will be to:

- Use heat sources to heat and clean tack nozzles during operations.
- Use environmentally-sensitive releasing agents such as vegetable oil based release agents (no diesel).
- Refuel and repair equipment at least 25' from water bodies.
- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Perform activity in dry weather conditions.
- Isolate activities near water bodies to avoid contact between fresh concrete and water.
- Cover catch basins, and other inlets, when appropriate.
- Sweep up and remove excess material.
- Dispose of used cleaning agents with a licensed waste recycler.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

10. Chip Sealing

a. Description

Chip sealing involves applying a single layer each of liquid asphaltic material and aggregate to a paved roadway to seal the surface, restore surface life, flexibility, and skid resistance. Excess gravel is later swept onto the shoulders.

b. Concerns

- Rock in the ditches or streams
- Asphalt spills and runoff
- Fuel spills during equipment refueling

c. Best management practices for MCPW will be to:

- Use environmentally-sensitive releasing agents such as vegetable oil based release agents (no diesel).
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Use water, as needed, to reduce dust during sweeping.
- Perform activity in dry weather conditions.
- Cover scuppers and drains before performing the activity and clean them to remove any excess material after the activity.
- Sweep up and remove excess material.
- Pick up excess gravel and debris when within 25' of salmon habitat and other flowing water bodies.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)

- Carry supplies for, and follow, small spill containment plan (diapers, rice ash, shovel, etc.)
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

11. Road Striping and Pavement Marking

a. Description

Road striping and pavement marking includes center line, shoulder line, intersection, and miscellaneous pavement painting activities utilizing paint, beads, etc. The process includes use of a grinder to remove markings, graffiti, center and shoulder lines, and disposal of waste paint.

b. Concerns

- Total Suspended Solids
- Rock in ditches and catch basins

c. Best management practices for MCPW will be to:

- Perform activity in dry weather conditions.
- Clean up spills on site with absorbents, shovels and buckets, return to shop for proper disposal.
- Minimize drift by spraying on calm days.
- Use shovels, brooms, buckets and vacuums to collect all grindings and shot and return to shop for proper disposal.
- Cover catch basins, and other inlets, when appropriate.
- Use only federally approved, low volatile organic compound (VOC) paint.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

12. Road Vacuum Sweeping

a. Description

Vacuum sweeping of roadways is done to remove dirt, debris, and other loose material. The material is removed to another location for disposal. Vacuum sweeping is performed in most weather to prepare for striping, remove sanding material and pavement marking debris, and to improve aesthetics.

b. Concerns

- Total Suspended Solids
- Oil & Grease
- Metals
- Disposal of removed materials

- c. **Best management practices for MCPW will be to:**
 - Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75’ of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
 - Emphasize recycling of materials where appropriate.
 - Schedule in damp weather, when possible, to minimize dust.
 - Pick up excess gravel and debris when within 25’ of salmon habitat and other flowing water bodies.
 - When feasible, coordinate crews to follow sweeping/flushing with bridge drainage cleaning. Sweep material away from scuppers.
 - Use water, as needed, to reduce dust during sweeping.
 - Perform activity more often during rainy season to minimize contamination of runoff.
 - Refuel and repair equipment at least 25’ from water bodies.
 - Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

13. General Excavation

- a. **Description**
General excavation and/or embankment of native materials includes earthwork related to vision improvement, right-of-way clearing, road widening and typical cut and fill work. Excavated material is compacted and used as fill elsewhere.
- b. **Concerns**
 - Erosion
 - Fuel spills during equipment refueling
- c. **Best Management Practices for MCPW will be to:**
 - Follow Marion County’s Supplemental Standard Specifications for Highway Construction Section 00280- Erosion and Sediment Control, or current version of this document.
 - Install all specified perimeter controls prior to any major site grubbing operation. Perimeter controls include side ditches, berms in fill areas, and sediment fences or straw bales along the banks of existing streams and toes of slopes.
 - Develop a schedule to assure that appropriate controls are implemented and maintained during the wet season work and work suspension periods.
 - Temporarily stabilize bare soils and slopes not at finished grade, and bare soils and slopes at finished grade but outside permanent seeding dates as suggested in Table 4.
 - Stabilize or complete appropriate control measures within 7 days of exposure of any areas within 30 m of waterways, wetlands, and other sensitive areas and within 14 days for all other areas.

- Permanently stabilize soils and slope at finished grade through permanent seeding and mulching, riprap protection or bioengineered slope stabilization.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

14. Ditch Shaping, Grading, and Cleaning

a. Description

Machine cleaning, grading, and reshaping of ditches is done to maintain or improve drainage including removal, loading, hauling, and disposing of excess materials.

Ditch: a facility, typically parallel to a road or parking lot, which carries storm water runoff draining from the road or other constructed facilities. It is not a channelized stream, either with or without fish.

Stream: a channel that is usually flowing but can be dry. It may or may not be in its natural course, and can be parallel or perpendicular to the road. It may contain fish, but not necessarily so. The stream collects drainage water from its whole watershed, rather than just a facility.

b. Concerns

- Erosion
- Debris
- Disposal of material

c. Best management practices for MCPW will be to:

- Avoid disturbing sides of ditch and creating vertical back slopes unless necessary.
- When practicable, protect/maintain existing vegetation.
- Machine brush ditches instead of ditching when removal of soil is unnecessary and control of vegetation growth is adequate to ensure drainage.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Maintain erosion control until vegetation is re-established either naturally or through hydro-seeding.
- Perform work when water flow in the ditch is low, except in cases of emergency where water is backed up onto the roadway or adjacent property.

- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75’ of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Reshape ditches to have flatter side-slopes where space exists and where vegetation can quickly re-establish.
- Evaluate and modify existing ditch slopes to trap sediments, and support development of vegetation.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Refuel and repair equipment at least 25’ from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

15. Slot Drain Installation and Ditch Tiling

a. Description

The purpose of installing a slot drain is to help direct water into a ditch. Slot drains are normally installed at the bottom of a steep driveway to prevent water from running onto the roadway and creating a road hazard. For ditch tiling, a pipe is placed to carry the flow of water and the ditch is filled in.

b. Concerns

- Erosion
- Water quality

c. Best management practices for MCPW will be to:

- Divert runoff into a vegetated or rock-lined ditch, where possible.
- Avoid the practice of ditch tiling. Only perform activity when necessary for the widening of a driveway or a similar circumstance to be reviewed by engineering staff.
- Use any practical means to prevent rock or sediments from entering the water bodies.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

16. Construct, Clean, and Repair Catch Basins

a. Description

Catch basins or junction boxes require construction, cleaning, and repair. Some catch basins are cleaned mechanically with a vacuum truck. Beginning in the fall of 2003, the vacuumed material will be stockpiled at a covered site at Brooks CSD, dewatered, and tested for contaminants following the

recommendations of MC Environmental Engineers. If contamination levels exceed Oregon Department of Environmental Quality recommendations, the material will be disposed of in at appropriate solid waste facility.

b. Concerns

- Sediment deposits in catch basins being removed prior to discharge downstream
- Disposal of removed material

c. Best management practices for MCPW will be to:

- Clean catch basins as roadway sediments build-up. Catch basins should all have a sump to help collect sediments that can be removed with a flusher during normal maintenance activities.
- Dispose of vacuumed materials at the detention pad at Brooks CSD.
- Perform activity in dry weather conditions.
- If construction is necessary during wet weather, use pre-cast structures.
- Isolate activities near water bodies to avoid contact between fresh concrete and water.
- Report location of catch basins with signs of illicit dumping (i.e. used motor oil) to supervisor.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- During construction, follow appropriate water quality and storm water management regulations, such as NPDES Phase II, or other DEQ requirements or permits. Consult Environmental Specialist to review relevant regulations.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

17. Minor Culvert and Inlet Cleaning and Repair

a. Description

Cleaning of culverts, siphons, box culverts (that are less than 6' in width), drop inlets, and other minor drainage facilities of dirt and debris are required to restore proper operation. Due to the vast number of culverts in the county and the difficulty of predicting which will soon present drainage problems, cleaning occurs mainly on an emergency basis when a back-up of water indicates the need. Cleaning is performed manually, as needed, with shovels and pitchforks. Material and debris are scattered or removed. Some culverts and drop boxes are cleaned mechanically with a vacuum truck. The vacuumed material is stockpiled and may be recycled as fill. Repairing and

replacing may require excavating, diverting or impounding water, restoring, and backfilling. These situations are reviewed for priority and possible contract work.

b. Concerns

- Total Suspended Solids
- Debris
- Oil & Grease
- Metals
- Disposal or storage of material
- Fish passage

c. Best management practices for MCPW will be to:

- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Perform work when water flow in the ditch is low, except in cases of emergency where water is backed up onto the roadway or adjacent property.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Clean culverts in water bodies containing flowing water, or during the ODFW in-stream work window, or as negotiated within water areas, except in cases of emergency.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Consult with the Environmental Specialist prior to routine work at culverts on water bodies that may carry salmon, as shown on the Environmentally Sensitive Zone maps.
- Culvert replacement or extension will frequently require permits outside the scope of this guide, potentially including a U.S. Army Corps of Engineers 404 permit, DSL permit, and other permits. Follow ODFW Guidelines: Criteria for Stream and Road Crossings.
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

Emergency Contacts

Marion County
Public Works
503-588-5304

Department of
State Lands
503-378-3805 x231

Army Corp of
Engineers
503-808-4393

Oregon Department of
Fish and Wildlife
503-378-6925

National Marine
Fisheries Services
503-231-2202

Oregon Emergency
Management Agency
503-378-2911

18. Emergency Maintenance

A. Storms, Floods, and other Events

a. Description

Emergency maintenance actions include fixing damage to roadways, the roadside and structures (bridges) caused by storms, floods, and other unanticipated events. These actions may not receive a state or federal declaration of emergency, however, failure to perform them may result in an immediate loss of life or property.

b. Concerns

- Erosion
- Impact to wetlands and stream morphology
- Disposal of material
- Fuel spills during equipment refueling

c. Best Management Practices

- Schedule transportation infrastructure repairs to address known maintenance issues in a timely manner and avoid emergency response situations.
- Provide a quick response and first inspection; notify appropriate resource staff in a timely manner.
- Immediately consult with Environmental Specialist and secure appropriate emergency work permits from ODFW and NOAA and Fisheries.
- In coordination with the Environmental Specialist, repair any damage to fishery or water resources caused by MCPW maintenance responses to the emergency.
- Maintenance and repairs will avoid additional impacts to wetlands or streams where possible.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Use appropriate fish screen on pump inlets, observe water laws, and consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected.
- Refuel and repair equipment at least 25' from water bodies.
- Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any "caution" areas.

B. Settlements and Slides

a. Description

Repairing roadway settlements and slides includes loading, hauling, and placing of suitable materials. On settlements, the hole is filled and the grade is maintained. Slide material is moved to the side of the road until it can be disposed of properly.

b. Concerns

- Erosion
- Impact to wetlands
- Disposal of material

c. Best management practices for MCPW will be to:

- Provide a quick response and first inspection; notify appropriate resource staff in a timely manner.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Avoid additional mass wasting impacts to water bodies where possible.
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.
- Immediately consult with Environmental Specialist and secure appropriate emergency work permits from ODFW and NOAA and Fisheries.
- In coordination with the Environmental Specialist, repair any damage to fishery or water resources caused by MCPW maintenance responses to the emergency.
- Deposit excess material above the 100- year floodplain, at a supervisor-approved site, and not within 75' of a stream, wetland, or riparian area. Follow Erosion Control Table in Appendix A.
- Permanent solutions, such as artificial hillside drainage or permanent shoring, should be applied to chronically unstable areas through the project development process.

19. Fence and Sign Maintenance

a. Description

Repair and replacement of right of way and access control fences is needed to provide screening and restrict livestock access to county roads. This includes the installation and repair of road signs.

b. Concerns

- Total Suspended Solids
- Debris from repairs

- c. **Best management practices for MCPW will be to:**
 - Pick up debris.
 - Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
 - Replace any vegetation and soil removed during sign or fence post installation when practical.
 - Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.
 - Maintain secondary containment reservoirs in case of fuel tank leaks.
 - Inspect fuel lines regularly to detect potential problems before spill occurs.
 - Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.

20. Metal Guardrail Maintenance, Construction, & Inspection

- a. **Description**
MCPW conducts the construction, maintenance, repair, and inspection of metal guardrail and posts. All new construction is contracted outside of MCPW.
- b. **Concerns**
 - Erosion
- c. **Best management practices for MCPW will be to:**
 - Use caution to control the dispersal of excess soil and gravel.
 - In unstable situations, areas downslope from guardrail replacement will be protected with erosion control measures (i.e. sediment fences).
 - Require contractors to comply with all MCPW BMPs by including them as part of the project specifications and instructing on them during the pre-construction conference.
 - Examine your work area on the Environmentally Sensitive Zone maps for this activity category. If in doubt, check with supervisor. Determine if there are any “caution” areas.
 - Follow guidelines for management of areas containing sensitive plant species as indicated by roadside markers, or as advised by supervisor.

Table 2. Erosion and Sediment Control Techniques

Aggregate Construction Entrance	A driveway of coarse aggregate designed to allow removal of soil from equipment tires before entering the public road. Generally used for work in undeveloped sites accessed by paved roads.
Erosion Control Matting	A net of plastic and wood shavings designed to temporarily protect bare soil from raindrop impact.
Straw Bale Sediment Barrier	A lineal barrier of straw bales placed transverse to a slope, usually a fill slope.
Sediment Fence	Permeable filter fabric staked perpendicular to the ground allowing water to pass, but trapping sediments.
Aggregate Check Dam	A dam of coarse aggregate in roadside ditches designed to produce a slack water condition in the ditch during heavy rains.
Sediment Biofilter Bags	Mesh bags of organic material, usually wood chips, designed to slow water in ditches, allowing sediments to settle.
Temporary Sediment Basin	A temporary pond designed to allow soil to settle out before water is discharged from the site.
Plastic Sheeting	A waterproof membrane designed to protect bare soil on steep slopes where vegetative matter is undesirable.
Seed, Fertilize, and Mulch	A process where, seed, inorganic fertilizer, and mulch is applied to protect bare soil and to provide a permanent vegetative cover. Native plant seeds are now being used due to suitability for the climate and low maintenance. Generally all disturbed areas are planted.
Surface Roughening	Includes cat tracks, stair-step, furrows, and grooving immediately prior to seeding and mulching to achieve optimum seed germination and growth.
Ditch Lining Mat	A thick synthetic mat designed to hold soil and allow plant materials to grow through. Used on ditches where long-term erosion is likely due to flow or slope.
Riprap / Armor	A 100-150 mm layer of 150 mm angular rock over riprap geotextile designed to improve the ditch's long-term resistance to erosion without promoting vegetative growth.
Skip Ditching	When cleaning ditches, skip ditching is the practice of leaving sections of the ditch undisturbed, allowing for filtration of sediments through existing vegetation.
Bioengineered Stabilization	The use of natural, native habitat materials to stabilize stream banks
Oil Pillows	Material designed to absorb oil and other contaminants.
Inlet Protection	A filter fabric barrier to water entering a catch basin designed to block larger soil particles.

Appendix A		Control Measure																
Erosion and Sediment Control Matrix ^a		Aggregate Construction Entrance	Erosion Control Matting	Straw Bale Sediment Barrier	Sediment Fence	Aggregate Check Dam	Sediment Biofilter Bags	Temporary Sediment Basin	Plastic Sheeting	Seed, Fertilize and Mulch	Ditch Lining Mat	Riprap / Armor	Skip Ditching	Bio-engineered Stabilization	Oil Pillows	Inlet Protection		
Activity	Embankment & Excavation Work (slope length > 8 ft)	Slope flatter than 1:2	X		X					X								
		Slope steeper than 1:2	X	X					X	X								
	Embankment & Excavation Work (slope length < 8 ft)	Slope flatter than 1:2	X							X	X							
		Slope steeper than 1:2	X							X	X							
	Clearing / Removing Vegetation	0-3% Gradient	X			X					X							
		3-10% Gradient	X		X						X							
		> 10% Gradient	X	X					X		X							
	Ditch Cleaning	0-3% Gradient					X	X						X				
		3-6% Gradient					X	X						X				
		> 6% Gradient					X ^b	X ^b	X			X	X	X				
Stream Bank Stabilization	Active Stream			X							X	X		X				
		Anytime the potential for oil contamination exists.																
		Anytime there is the potential for material to enter an inlet.																

^a This matrix provides guidelines for the effective use of erosion control measures. Implementation of these measures will be based on the judgment of MCPW staff.

^b Frequent maintenance will be required. Devices should be monitored closely.