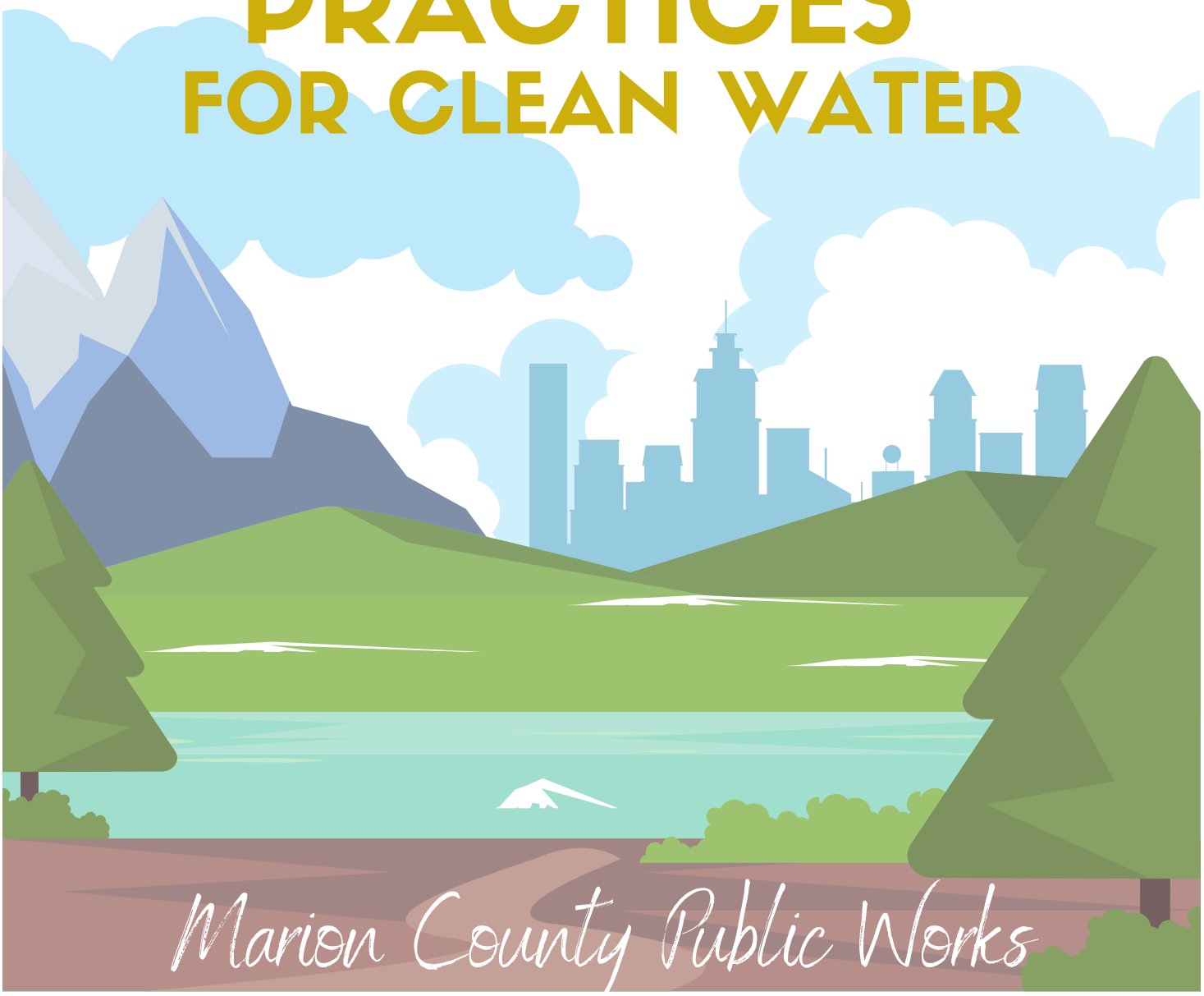
BEST MANAGEMENT PRACTICES
FOR CLEAN WATER



Crew Manual

Spring 2022

Marion County
OREGON

BMPs can be found on-line at:
http://intra.co.marion.or.us/PW/ES/Pages/BMPbasics.aspx

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I. PURPOSE, GOALS, AND INTRODUCTION

The purpose of the Marion County Public Works Best Management Practices for Clean Water is to enhance the recovery of native salmon and steelhead runs and minimize the impact to water quality in Marion County. The specific objectives include:

- To establish a set of Best Management Practices (BMPs) to minimize the impacts of MCPW activities on fish, wildlife, and water quality.
- To train MCPW personnel on these BMPs.
- To ensure that MCPW complies with the 4(d) rules published by NMFS, prohibiting take of listed salmon and steelhead by securing a programmatic limitation under Limit 10: Routine Road Maintenance.
- To ensure that MCPW complies with NPDES Phase II and TMDL requirements as outlined by DEQ.

The goal of BMPs and of the regulations that require them is to protect water quality and wildlife. We should strive to ensure that our work leaves waters cool, clean, and connected. If you're unsure if a practice needs additional protection measures or needs to be modified to accomplish this, contact the Environmental Specialist. The following pages will list specific practices to help meet these goals. However, in general, these six items should always be considered during maintenance activities:

1) ***Keep everything out of the water.*** This includes dirt, sediment, chemicals, rocks, dust, equipment, polluted water, and garbage.
2) ***Avoid disturbing soil whenever possible.*** If soil is disturbed, ***always*** use erosion/sediment control measures.
3) ***Avoid disturbing vegetation.*** If vegetation is disturbed, replant/reseed if possible or use temporary stabilization/erosion control measures.
4) For work in wetlands, riparian areas, and flowing bodies of water, ***consult the Environmental Specialist*** to ensure that permitting and regulations are adhered to.
5) ***Dispose of excess material at appropriate disposal facilities or locations.***
6) ***Plan ahead whenever possible.*** Planning ahead is a BMP! It ensures best methods are being used to complete the goals stated above.

The following is a brief overview of some of the regulations that affect maintenance and operations in regard to water quality and endangered species. Regulations are constantly changing, so it is crucial that we are adaptable. If you're ever unsure of what is required of you or your work by law, please consult with the Environmental Specialist. We are here to work together to ensure that we provide a safe county road system, the environment is protected, and that all state and federal regulations are met.

Total Maximum Daily Loads (TMDL):

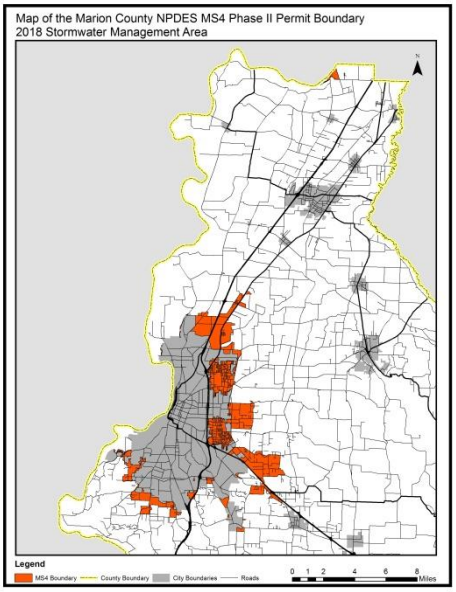
TMDLs set parameters for the amount of pollutants (mercury, nitrates, pesticides, temperature, bacteria, etc.) that can be in the water and still meet water quality standards. The purpose of water quality standards is to protect beneficial uses of waters of the state. Beneficial uses include human health, aquatic life, fishing, drinking water, and more.

Different rivers and streams in Marion County have TMDL requirements for a variety of pollutants. The BMPs serve as the Operations Division's contribution to the implementation plans for all pollutants in all rivers.

National Pollutant Discharge Elimination System (NPDES) – 2019:

The NPDES permit allows entities to discharge (municipal stormwater, treated wastewater, industrial stormwater, etc.) to waters of the state if requirements are met to ensure that the discharge will make as little impact as possible to water quality. Marion County holds a Phase II general permit, which essentially allows us to discharge our stormwater system into streams without first treating the stormwater. There are six minimum control measures that the County must meet in order to comply with our permit, one of which is "pollution prevention and good housekeeping" which is aimed directly at reducing pollution during maintenance activities. It includes activities such as:

- Operation and Maintenance Strategy for Existing Stormwater Controls
- Inspection and Cleaning of Catch Basins
- Pollution Prevention in Facilities and Operations
- Requirements for Pesticide and Fertilizer Applications
- Litter Control
- Materials Disposal
- Stormwater Infrastructure Staff Training
- Tracking and Assessment



Our BMPs serve to meet these requirements. While the NPDES only applies within the stormwater management area (pictured above), it is crucial that we're practicing good housekeeping in all areas of the County, as the BMPs are used to meet more than just this regulation.

National Oceanic and Atmospheric Administration (NOAA) "Take" Rule, Limit 10 – Endangered Species Act (ESA) section 4(d):

From the NOAA July 2000 4(d) Rule Implementation Binder:

"In July of 2000, NOAA Fisheries adopted a rule1 prohibiting the take of 14 groups of salmon and steelhead listed as threatened under the Endangered Species Act (ESA). NOAA Fisheries adopted the take rule under section 4(d) of the ESA. This rule prohibits anyone from taking a listed salmon or steelhead ***except in cases where the take is associated with an approved program.*** *The 4(d) rule approves some specific existing state and local programs and creates a means for NOAA Fisheries to approve additional programs if they meet certain standards set out in the rule..*

…NOAA Fisheries does not find it necessary or advisable to apply take prohibitions to routine road maintenance activities provided that: (1) The activity constitutes routine road maintenance conducted by Oregon Department of Transportation (ODOT) employees (or their agents) that complies with ODOT's Transportation Maintenance Management System Water Quality and Habitat Guide (July, 1999); or (2) it is conducted by the employees or agents of a state, county, city, or port under a program that complies substantially with the ODOT Guide and has been determined to meet or exceed the protections provided by the ODOT Guide; or (3) it is conducted by the employees or agents of a state, county, city, or port in a manner that has been found to contribute to properly functioning condition (PFC)."

In short, as long as we follow our own BMPs, which were heavily influenced by ODOT's, we are exempt from the Take rule.

Oregon's Removal-Fill Law:

From Oregon Department of State Lands (DSL):

"Oregon's Removal-Fill Law (ORS 196.795-990) requires people who plan to remove or fill material in wetlands or waterways to obtain a permit from the Department of State Lands. This permit is broadly referred to as the "Removal-Fill Permit." The law applies to all landowners, whether private individuals or public agencies.
The purpose of the law, enacted in 1967, is to ensure protection and the best use of Oregon's water resources for home, commercial, wildlife habitat, public navigation, fishing and recreational uses.
In most cases, a permit is required if an activity will involve filling or removing 50 cubic yards or more of material in a wetland or waterway. For activities in state-designated Essential Salmonid Habitat, State Scenic Waterways and compensatory mitigation sites, a permit is required for any amount of removal or fill."

For many of our maintenance activities, we have an exemption from needing to receive a permit, however these exemptions come with stipulations. It is best to consult the Environmental Specialist when working in flowing bodies of water.

Migratory Bird Treaty Act (MBTA):

The MBTA states:

"Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions…"

In this instance, routine road maintenance or any other kind of maintenance is not exempt, meaning when performing our work we need to be sure we are not harming or disrupting nests, habitat, or the birds themselves.

Fish Passage

ORS 509.585 states:

"(2) Except as otherwise provided by this section or ORS 509.645, a person owning or operating an artificial obstruction may not construct or maintain any artificial obstruction across any waters of this state that are inhabited, or historically inhabited, by native migratory fish without providing passage for native migratory fish…
(4) A person owning or operating an artificial obstruction shall, prior to construction, fundamental change in permit status or abandonment of the artificial obstruction in any waters of this state, obtain a determination from the department as to whether native migratory fish are or historically have been present in the waters. If the department determines that native migratory fish are or historically have been present in the waters, the person owning or operating the artificial obstruction shall either submit a proposal for fish passage to the department or apply for a waiver pursuant to subsection (7) of this section. Approval of the proposed fish passage facility or of the alternatives to fish passage must be obtained from the department prior to construction, permit modification or abandonment of the artificial obstruction."

Prior to removing, replacing, or doing any major repairs on stream crossing culverts, the Environmental Specialist **must** be contacted. The Environmental Specialist will consult with ODFW if necessary. See Appendix F for more information on fish passage criteria.

II. Best Management Practices for Clean Water

How to use the BMPs:

1. Look up your activity in the MCPW Clean Water BMP crew manual.
2. Review the BMPs for that activity and determine how they affect your project.
3. If there is a  icon next to an activity, make sure to review the ODOT Migratory Bird Treaty Act Directive (Appendix B) and take any extra precautions to protect birds and their habitat
4. Adapt your activities so that they accommodate the BMPs and address the concerns listed in the BMP.
5. There are maps available in the break room and in dispatch that show streams and road crossings. You can use these to help plan your work.

Where to find additional materials:

If you need information beyond that found in the BMP manual, feel free to contact the MCPW Environmental Specialist. Current contact info can be found on the intranet.

Your part:

MCPW staff is expected to follow the guidelines provided by the BMPs. Though the BMPs and the maps were developed to be as practical as possible, they are not intended to replace good judgment or common sense in the field. ***The main focus of the BMPs is to keep chemicals, sediments, and all other material out of rivers, streams, and lakes while still accomplishing our work.***

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

A. ROAD MAINTENANCE

A. 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 fish, wildlife, and water quality without compromising safety. In general, the BMPs are designed to:

- ***Keep everything out of streams, lakes, rivers, ditches, and catch basins including*** dirt, sediment, chemicals, rocks, dust, equipment, polluted water, and garbage.
- ***Avoid disturbing soil whenever possible to*** reduce the occurrences of erosion and sedimentation. If soil is disturbed, ***always*** use erosion/sediment control measures.
- ***Avoid disturbing vegetation in order to*** promote the ability of ditches to naturally filter contaminants. If vegetation is disturbed, replant/reseed if possible or use temporary stabilization/erosion control measures.
- Ensure MCPW is meeting all regulatory requirements and that the environmental specialist is contacted when work is being performed in sensitive areas or when the environment might be negatively impacted by maintenance activities.

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**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways.
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather, but with soil still containing some moisture to minimize dust.
- 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.

Protect Water:

- Prevent materials or debris from entering waterways, ditches or storm drains. Use appropriate measures to prevent debris from entering these facilities.

- 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.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

2. Dust Abatement & Soil Stabilization

a) Description

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. This practice is for the purpose of the reduction of dust as well as road stabilization. Application of dust palliatives often occurs at the beginning of the summer by a contractor 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 used for dust palliatives are lignosulfonates (lignin) or EarthBind. Materials are loaded into equipment at the contractor's yard and never onsite.

b) **Concerns**

- Chemicals leaving the road surface (via runoff from rain or spills during maintenance) and entering ditches, catch basins, or waterways. These chemicals may have negative impacts on fish and water quality.
- Appropriate handling and disposal of dust abatement chemicals.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Dust palliatives will not be applied while raining. (Where practicable, a 3-day forecast of clear weather should follow any application of dust palliatives).
- 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.

Protect Water:

- Construct gravel berms at the low shoulders of the roadway during preparation for application of dust palliatives to inhibit liquid palliatives from entering waterways, wetlands or aquatic systems, where appropriate.

- Maintain a 1’ buffer zone in from the edge of gravel if the road width allows.
- Prevent materials or debris from entering waterways, ditches or storm drains. Use appropriate measures to prevent debris from entering these facilities.
- Clean equipment and vehicles at approved sites, not on job site. See activity ***22. Equipment Cleaning***

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

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**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather, but with soil still containing some moisture to minimize dust.
- 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.

Practice Preventative Maintenance:

- Evaluate specific sites for alternatives to recurrent grading such as berming, curbing, or paving the shoulder.
- Minimize the need for shoulder grading using mowing methods and seed selection, etc. when possible.

Protect Water:

- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent debris and/or materials from entering these facilities
- Install check dams or other erosion control devices in adjacent ditches to protect resource water during shoulder maintenance activities. (See the Erosion Control Table for appropriate measures in Appendix A).
- Pick up excess gravel and debris when within 25' of any water bodies.
- Modify width of grading whenever practical to minimize disturbance of vegetation.
- Permanently stabilize disturbed roadway slopes with BMPs: jute matting, native vegetation, or other erosion control techniques.

Always:

- 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 small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

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**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- If work is in a waterbody, consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected. Use appropriate fish screen on pump inlets and observe water laws.
- 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.

Protect Water:

- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent debris and/or materials from entering these facilities
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Cover catch basins, and other inlets.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

5. Stockpiling and Staging 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**

- Material eroding and running off of the staging site into ditches, catch basins, or waterways.
- Siting stockpiles in inappropriate locations where wetlands, groundwater, or stormwater runoff could be negatively affected.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Locate stockpiles & storage piles of loose materials awayfrom waterbodies.
- When creating a new stockpile site, consult the Environnmental Specialist

Protect Water:

- Install erosion control and/or perimeter controls 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.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

- 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.

6. Slurry Seal

a) Description

The process of slurry sealing involves mixing and placing a liquid emulsified asphalt (a combination of asphalt, water, and small amount of an emulsifying agent) 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**

- Sand, aggregate. sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Asphalt and/or emulsifying agent (runoff or spilled) entering ditches, catch basins, or waterways.
- Appropriate handling and disposal of slurry seal material.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather conditions.
- Require contractors to comply with all MCPW BMP's 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.

Protect Water:

- Use any practical means to prevent gravel, sand and asphalt from entering water bodies.
- Cover catch basins, and other inlets.
- Use less water in the slurry mixture when operating near roadside ditches or other water bodies.

Always:

- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.

- Excess materials will be disposed of at areas designated, and approved, for receiving such materials.

7. 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**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Asphalt (runoff or spilled) entering ditches, catch basins, or waterways.
- Appropriate handling and disposal of excess material and grindings.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather conditions.
- Require contractors to comply with all MCPW BMP's 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.

Protect Water:

- Use any practical means to prevent gravel, sand, rock, asphalt, etc. from entering water bodies.
- Isolate activities near water bodies to avoid contact between fresh asphalt and water.
- Cover catch basins, and other inlets. On bridges, 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.
- Add the minimum amount of rock needed to match the shoulder to the new road surface.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small

generators, etc. at least 25’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- 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.

8. Pavement Repair

a) Description

Pavement repair includes major and minor patching of 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**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Asphalt (runoff or spilled) entering ditches, catch basins, or waterways.
- Appropriate handling and disposal of excess material and grindings.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather conditions.
- 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.

Protect Water:

- Use heat sources to heat and clean tack nozzles during operations.
- Isolate activities near water bodies to avoid contact between fresh asphalt and water.
- Cover catch basins, and other inlets.
- Sweep up and remove excess material.

Always:

- 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 small pieces of equipment such as chainsaws, small generators, etc. at least 25’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

9. 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 or vacuum swept in sensitive areas and along curb lines

b) **Concerns**

- Aggregate (including clean aggregate), sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Asphalt emulsion (runoff or spilled) entering ditches, catch basins, or waterways.

c) **Best Management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather conditions.
- 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.

Protect Water:

- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent waste and/or materials from entering these facilities.
- Plug scuppers and drains on bridges and cover catch basins. Protect waters from recently-applied excess oil and clean them to remove any excess material after the activity.
- Remove excess material using a vacuum sweeper.
- Use water, as needed, to reduce dust during sweeping.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State

10. 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**

- Paint, beads, grindings, etc. leaving the road surface (via runoff or spills during maintenance) and ending up in ditches, catch basins, or waterways.
- Appropriate handling and disposal of excess material and grindings.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Perform activity in dry weather conditions.
- Minimize drift by spraying on calm days.
- Use only federally approved, low volatile organic compound (VOC) paint.
- 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.

Protect Water:

- Clean up spills on site with absorbents, shovels and buckets, return to shop for proper disposal.
- 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. Turn off paint to prevent paint from entering drainage system.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

11. 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. This set of BMPs is for the activity of road sweeping. Please note that many times, vacuum sweeping at a project site is a BMP.

b) **Concerns**

- Proper functioning of and seals on containment bins in equipment
- Appropriate handling and disposal of materials
- Timing
- Disposal of removed materials

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Schedule in damp weather, when possible, to minimize dust.
- Perform activity more often during rainy season to minimize contamination of runoff.
- Complete bridge sweeping/flushing activities prior to bridge washing when feasible. By removing excess sediment on bridges by sweeping there will be less sediment to be washed off the bridge.
- 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.

Protect Water:

- Use water, as needed, to reduce dust during sweeping.
- Pick up excess gravel and debris when within 25' of any flowing water bodies.
- Emphasize recycling of materials where appropriate.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

12. 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. If the project in its entirety will disturb more than an acre of soil, please contact the Environmental Specialist during the planning phase.

b) **Concerns**

- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.
- Appropriate handling and disposal of removed material.
- Appropriate Permitting.

c) **Best Management Practices for MCPW will be to:**

Plan Ahead:

- Develop a schedule to assure that appropriate controls are implemented and maintained during the wet season work and work suspension periods.
- Follow ODOT's Supplemental Standard Specifications for Highway Construction Section 00280- Erosion and Sediment Control.
- 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.
- If disturbing over an acre of area, you will need a DEQ permit (1200CA) – contact the Environmental Specialist during the planning phases of the project.
- 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.

Protect Water:

- Minimize or prevent damage to vegetation, soil and other natural resources that are to remain on site.
- Install all specified perimeter controls prior to any major site grubbing operation. Perimeter controls include side ditches, berms in fill areas, and sediment fences, etc. along the banks of existing streams and toes of slopes.
- Use temporary stabilization methods on bare soils and slopes not at finished grade, and bare soils and slopes at finished grade when outside permanent seeding dates.
- Permanently stabilize soils and slope at finished grade through permanent seeding and mulching, riprap protection or bioengineered slope stabilization.
- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent debris and/or materials from entering these facilities.

Always:

- Refuel and repair equipment at least 150' from water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Dispose of excess or waste material at appropriate sites.

13. 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**

- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.
- Sediment, rock, etc. entering or traveling through ditches to waterways
- Appropriate handling and disposal of removed material.

c) Best management practices for MCPW will be to:

Plan Ahead:

- 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.
- 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.
- If working in an active stream, contact the Environmental Specialist and see D. Bridge Maintenance, 3. Drift Removal/Channel Clearance.

Practice Preventative Maintenance:

- Avoid disturbing sides of ditch and creating vertical back slopes unless necessary. **Clean only those ditch segments that have filled in to the extent where the drainage may not function properly during a major weather event.** Limit soil and vegetation disturbance by using a vactor or bucket to remove material behind check dams, where feasible.
- Reshape ditches to have flatter side-slopes where space exists to trap sediments, and support development of vegetation.
- Machine brush ditches instead of ditching when removal of soil is unnecessary and control of vegetation growth is adequate to ensure drainage.

Protect Water:

- Protect/maintain existing vegetation to the maximum extent possible.
- Re-seed or re-establish vegetation in drainage ditches and steep slopes as appropriate.
- Install erosion control devices such as check dams (Bio-bags or rock) or other erosion control measures 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.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- 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.

14. 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. See Appendix F for fish passage criteria.

b) **Concerns**

- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Sediment, rock, etc. entering or traveling through ditches to waterways.
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- 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 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.

Protect Water:

- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent debris and/or materials from entering these facilities.
- Divert runoff into a vegetated or rock-lined ditch, where possible.

15. Construct, Clean, and Repair Catch Basins and UICs 

a) Description

Catch basins, junction boxes and Underground Injection Control (UIC) systems require construction, cleaning, and repair. Some catch basins and UICs are cleaned mechanically with a vacuum truck.

b) **Concerns**

- Green concrete running off into a water body or into a conveyance system that leads to a water body. Green concrete is toxic to fish and water.
- Sediment deposits in catch basins being removed prior to discharge downstream
- Appropriate handling and disposal of removed material.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Consult Environmental Specialist to review relevant regulations prior to beginning ***construction or major repair.***
- Perform ***construction or major repair*** in dry weather conditions.
- If ***construction*** is necessary during wet weather, use pre-cast structures.
- 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.

Protect Water:

- Isolate activities near water bodies to avoid contact between fresh concrete and water.

- During ***construction***, follow appropriate water quality and storm water management regulations, such as NPDES Phase II, or other DEQ requirements or permits.
- ***Clean*** catch basins and UICs 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.
- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)

Always:

- Report location of catch basins with signs of illicit dumping (i.e. used motor oil) to supervisor or environmental specialist
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Dispose of vacuumed materials at the City of Salem Public Works Waste Processing Facility.

16. 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 pitch forks. 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. Repairing, replacing, and up-sizing may also require permitting from various agencies. The environmental specialist should be consulted early in the planning process for these activities. See Appendix F for fish passage criteria.

b) **Concerns**

- Sediment, vegetation, rock, debris, etc. entering or traveling through ditches to waterways
- Appropriate handling and disposal of removed material.
- Fish passage
- Obtaining appropriate permits and meeting state and federal regulation

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- 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. **Consult the Environmental Specialist to ensure all appropriate permits are obtained.**
- Clean culverts in water bodies containing flowing water, or during the ODWF 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.
- 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.
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.

Protect Water:

- Install erosion control where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Use appropriate measures to prevent debris and/or materials from entering waterways.

Always:

- 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 small pieces of equipment such as chainsaws, small generators, etc. at least 25’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

17. Emergency Maintenance

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**

- Rock, sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Impact to wetlands and stream morphology
- Appropriate handling and disposal of material.
- Tracking and documentation of emergency work

c) **Best Management Practices:**

Practice Preventative Maintenance:

- Schedule transportation infrastructure repairs to address known maintenance issues in a timely manner and avoid emergency response situations.

Before Beginning Emergency Work:

- 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.
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.
- 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 coordination with the Environmental Specialist, repair any damage to fishery or water resources caused by MCPW maintenance responses to the emergency.

Protect Water During Emergency Work:

- 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.)
- Prevent materials or debris from entering waterways, ditches, or storm

drains. Use appropriate measures to prevent debris and/or materials from entering these facilities

Always:

- 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 small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies. Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

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**

- Asphalt, rock, sediment, dust, etc. leaving the road surface and entering ditches, catch basins, or waterways
- Impact to wetlands
- Appropriate handling and disposal of removed material.
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.

c) **Best management practices for MCPW will be to:**

Before Beginning Emergency Work:

- Provide a quick response and first inspection; notify appropriate resource staff in a timely manner.
- 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.

Protect Water During Emergency Work:

- 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.

Protect Water Long Term:

- Permanent solutions, such as artificial hillside drainage or permanent shoring, should be applied to chronically unstable areas through the project development process.
- Look for opportunities to plant vegetation on failing banks to prevent further deterioration of the roadbed and reduce sediment and pollutants from reaching nearby waterbodies, where appropriate.

Always:

- 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.

18. 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**

- Debris from repairs, rock, sediment, dust, etc. entering ditches, catch basins, or waterways
- Green concrete running off into a water body or into a conveyance system that leads to a water body. Green concrete is toxic to fish and water.
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Appropriate handling and disposal of excess material and debris from repairs/installations.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- 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.

Protect Water:

- 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.)
- Protect inlets, catchments, wetlands and waterways from green concrete.
- Replace any vegetation and soil removed during sign or fence post installation when practical.

19. Hazardous Materials Response

a) Description

The following guidelines are for the proper containment and cleanup of hazardous material releases involving private citizens, the commercial transportation industry, illegal dumping, and MCPW equipment failures or spills occurring during routine road maintenance activities.

b) Concerns

- Public and employee safety
- Hazardous materials including vehicle fuels and fluids (diesel, gasoline, antifreeze, oils, and other fluids), various herbicides, road oils (CSS 1 or HFE 91-S), anti-icing agents, dust control agents, road marking paints, unknown materials illegally dumped in County ROW, and other hazardous materials being released into the environment and causing harm to water quality, groundwater, air quality, or soil.
- Appropriate handling and disposal of hazardous material.
- Ensuring spill/material is immediately contained, appropriate agencies/parties are notified, and clean-up is completed properly.

c) Best management practices for MCPW will be to:

- Notify dispatch as to the nature and location of spills.
- Contact the Safety Specialist and/or the Environmental Specialist for additional assistance at (503) 588-5304. Unknown material spills shall be isolated and the area secured. Make no effort to clean-up until material has been identified.
- Contain spills using the appropriate absorbent cleanup materials. Isolate and contain spill to restrict movement into, or from further containment of, waterways.
- If no absorbent materials are immediately available use native soil or rock to temporarily contain the spill.

Note: *Notify Oregon Emergency Response system (1-800-452-0311) or contact the Environmental Specialist when:*

- Any amount of an identified hazardous material (has a hazmat placard) is released
- 42 gallons or more of a petroleum-based product is spilled
- Any amount of material enters a water body
- Large amounts of foreign (non-stormwater) materials are released (ex. milk, raw sewage, salt water)

20. Snow Removal and Anti-Icing

a) **Description**

Snow removal and Anti-Icing involves applying abrasives or deicing chemicals to the roadway to provide a safe driving surface via removing snow, ice, and slush from the roadway and shoulders, including ramps and intersections, by plowing or blading.

b) **Concerns**

- Chemical agents and abrasives leaving the road surface and entering ditches, catch basins, or waterways

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Move toward using chemical deicers as the primary deicing method, as opposed to road sanding, in areas where there is a 25' vegetation buffer between the road surface and a watercourse or where there is a 100:1, or greater, dilution factor in the adjacent water body.
- Identify and create facilities to capture sanding material where appropriate.
- 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.

Protect Water:

- To minimize sidecast, reduce plowing speed when adjacent to rivers, streams or approaches to bridges.
- Modify blade angles when within 25' of a water body to reduce sidecast.
- Apply ice control chemicals and sand at a minimal rate that is consistent with environmental, meteorological, and traffic conditions.
- Pick up, or sweep, gravel and sand within 50' of bridge structures or flowing water bodies.
- Clean bridge scuppers after snow or ice hazard has passed, as soon as possible.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

21. Equipment Cleaning

a) Description:
Material residue, sediment, dust, and other pollutants are cleaned off of vehicles and equipment.

b) Concerns:
- The release of pollutants or surfactants (from soap) into ditches, catch basins, or waterways

c) The Best Management Practices for MCPW will be to:
- Use environmentally sensitive cleaning agents when cleaning equipment and vehicles at approved sites. Fully contain cleaning agents in a safe system.
- Dispose of used cleaning agents with a licensed waste recycler.
- Clean equipment per manufacturer's recommendations.
- Consult with the Environmental Specialist if standard equipment cleaning procedures will not work for a particular situation.

B. VEGETATION MAINTENANCE

B. VEGETATION MANAGEMENT

The purposes of vegetation management are to provide a safe road system, free of sight-hindering brush and limbs, maintain adequate drainage in ditches, and control noxious weeds (as defined by the Oregon Department of Agriculture.) Public safety and integrity of public facilities will be maintained, but with careful evaluation of impacts of disturbance to the watersheds and environment. MCPW employs a number of techniques to accomplish these goals including:

- **Mechanical:** Use of equipment such as mowers, brushers, chain saws, etc. to physically remove vegetation.
- **Cultural:** Vegetation planning that incorporates native, or more appropriate, plant material to out-compete the pest.
- **Chemical:** Application of herbicides.
- **Biological:** Prescribed use of insects and other organisms that will control specifically targeted noxious weeds.

MCPW Best Management Practices for Vegetation Management focus on minimizing the disturbance to native vegetation and maintaining ground cover to prevent erosion. When possible, MCPW will control vegetation through mechanical and cultural means before resorting to chemical methods.

1. Brush Cutting, Mowing, and Tree Removal

a) Description

Hand cutting, mechanical mowing, removing and disposing of brush, trees, and other undesirable vegetation on County right-of-way is conducted to maintain sight distance, vertical and horizontal vehicle clearance, and general public safety. Removal of hazardous vegetation disturbed by snow, ice, or windstorms is also performed.

b) **Concerns**

- Appropriate disposal of removed vegetation
- Loss of shade to waterbodies and riparian destruction
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Sediment, dust, etc. leaving the work area and entering ditches, catch basins, or waterways
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.

c) Best management practices for MCPW will be to:

<u>Plan Ahead:</u>

- 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.

Minimize Disturbance:

- Limit mowing, and other methods of vegetation removal, to the area from the edge of pavement to the catch point of the ditch line. Vegetation within the County right-of-way on the backside of the ditch will not be brushed, except where sight distance, drainage, or public safety is of concern. See Figure 1.
- Remove vegetation up to 10' beyond guardrails to maintain visibility.
- Provide a brush buffer of 10 feet or up to the back slope of the ditch line along water bodies whenever possible.

Protect Water and Habitat:

- Leave brush that is cut in riparian areas in place where doing so does not interfere with sight distance, create safety issues, cause fire hazards, involve noxious weeds, or hinder the proper functioning of stormwater infrastructure.
- If permanently removing vegetation or trees in riparian areas, consult with the Environmental Specialist to work out a replanting plan. Mature trees that are removed will be replaced at a 2:1 ratio.
- Maintain shade trees along water bodies and snags for habitat, when possible.

Always:

- Prevent debris and vegetative materials created from mowing activity from entering waterways, streams, wetlands and rivers.
- Properly dispose of brush (processing through chipper) that is cut outside of riparian areas. When chipping non-invasive vegetation, recycle materials as needed for custom bio-bags and/or spread within the ROW.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.

2. Bridge Brush Maintenance:

a) Description

Hand cutting, mechanical mowing, removing and disposing of brush, trees, and other undesirable vegetation on County right-of-way is conducted to maintain sight distance, vertical and horizontal vehicle clearance, and general public safety. Removal of hazardous vegetation disturbed by snow, ice, or windstorms is also performed.

b) **Concerns**

- Appropriate disposal of removed vegetation
- Loss of shade to waterbodies and riparian destruction
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Sediment, dust, etc. leaving the work area and entering ditches, catch basins, or waterways
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.

c) Best management practices for MCPW will be to:

Plan Ahead:

- 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.

Minimize Disturbance:

- Remove brush on either side, either end, and under the structure only as needed to maintain sight distance and safety of the structure or control noxious weeds, maintaining adequate air flow to prevent moisture build-up on wood, steel, and concrete bridge components; dispose of brush appropriately.
- Remove 10' of brush, upstream, downstream, and on each side of culverts that are 6 feet diameter or greater. Removal of noxious weeds may extend beyond this limit.

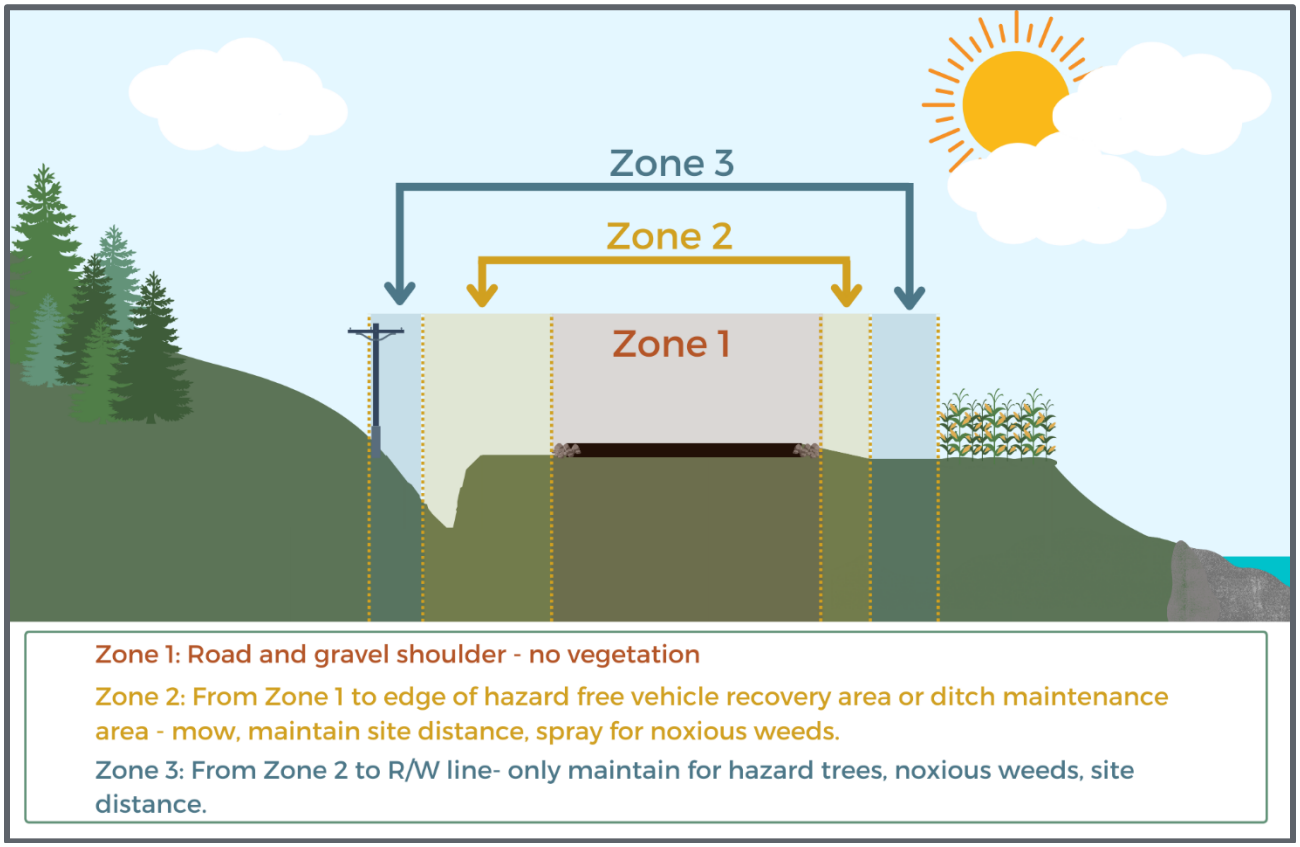
Protect Water and Habitat:

- Maintain trees that lean, but pose no danger to structures or facilities.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.

FIGURE 1: VEGETATION MANAGEMENT STANDARDS



3. Herbicide Application

a) **Description**

The purpose of applying herbicides along the roadside is to eradicate, prevent, or retard the growth of noxious weeds, brush, and other undesirable vegetation. Cut tree Stumps may be treated to prevent unwanted regrowth. Cut Stump treatments will be treated following herbicide label. Shoulder spraying is broadcast applied by truck. Foliar spraying is either truck applied, or hand/backpack applied. MCPW does not use any restricted-use chemicals to control vegetation. Herbicides used include broad-based foliar-active herbicides and soil residual herbicides.

b) **Concerns**

Chemicals leaving the roadside (via runoff from rain, drift, or spills during maintenance) and entering ditches, catch basins, or waterways. These chemicals are toxic to fish and water.

c) **Best management practices for MCPW will be to:**

The following are general guidelines for application of herbicide. The most important BMP is to use herbicides in accordance with EPA labels and select the most appropriate method of application for the particular scenario. Consult the Environmental Specialist if needed.

Plan Ahead:

- Prior to each season, applicators will collectively review current labels for each chemical to be used.
- Training on these BMPs will be annual for applicators.
- Apply only when wind speeds are within EPA label guidelines. Wind speed is logged at beginning and end of day. Wind speed is monitored throughout the day.
- 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.

Protect Water, Habitat, and Human Health:

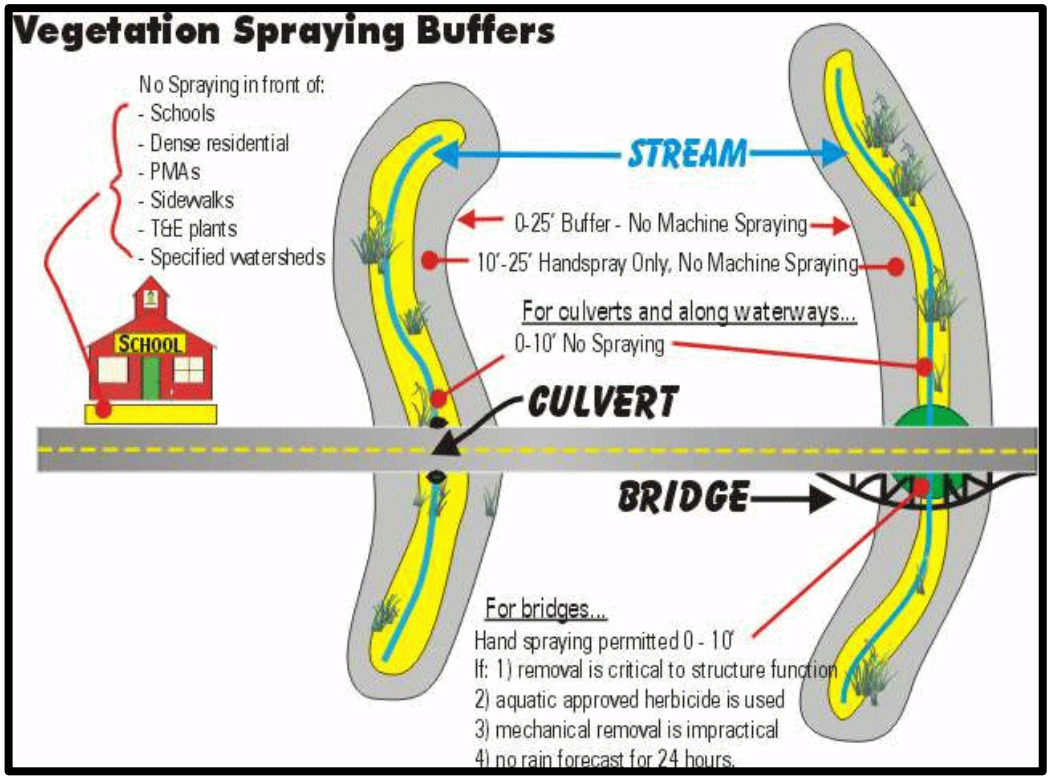
- Use herbicides in accordance with EPA labels
- Use lowest pressure compatible with adequate coverage.
- Spray shoulders no further than 2', 3', or 5' from edge of pavement except around road signs and when foliar spraying (see Figure 1, Zone A)
- Herbicide applications in sensitive areas such as Abiqua Creek (upstream of Abiqua Dam), North Fork Rd, and Silver Creek (upstream of the Silverton Reservoir) will include consultation with an Environmental Specialist.
- No herbicides will be applied:
  a) to driveways or field entrances where they could be tracked off the shoulder
  b) areas where farmers have observably sprayed
  c) refer to state and locals laws and regulations when spraying in areas trafficked by pedestrians, such as in front of schools, along walkways, etc.
  d) to areas of known threatened, or endangered plants
  e) to properties with private maintenance agreement areas
  f) to culvert crossings or ditches, where residual chemical can be carried by later rains.

Always:

- Dispose of empty herbicide containers in accordance with EPA guidelines.
- Require that all herbicide applicators, or anyone preparing or mixing herbicides, carry a current roadside applicator's license.
- Maintain a record-keeping system that documents the date, amount of pesticide applied, location of application, and temperature and windspeed at the beginning and end of application.
- Do not spray triclopyr, diuron, or 2,4-D within 60' of a salmon-bearing stream with any method (hand or machine). Check with Environmental Specialist for maps of salmon streams.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.

FIGURE 2: VEGETATION SPRAYING BUFFERS

The following table lists the chemicals currently employed by MCPW for vegetation management. The toxicity data is the 96-hr LC50 for rainbow trout unless another species is specified. Toxicity results were obtained from research done at OSU and manufacturers= MSDS. Adjutants are not included because they are added at significantly smaller concentrations. This table may be updated as new products and information become available.



4. Noxious Weeds Treatments, Planting, and Restoration Projects

a) Description

Occasionally, situations requiring noxious weed infestations, restoration work, replanting work, and other similar work will come up. Each situation will be unique and the Environmental Specialist should be involved in planning and coordination of such projects.

b) **Concerns**

- Chemical contaminants
- Displacement of native habitat types with noxious weeds
- Erosion

c) Best management practices for MCPW will be to:

Plan ahead:

- Consult with the Environmental Specialist before work begins.
- 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.

Minimize Disturbance:

- Utilize planting techniques that minimize the disturbance of soils such as, hydroseeding, manual planting, and no-till planting.

Protect Water and Habitat:

- Favor physical and biological removal of weeds over chemical methods, whenever possible and when sensitive plant species are involved.
- Avoid the unnecessary use of fertilizers that can result in nutrient loading.
- Replant removal areas where further noxious weed invasion is probable, use native seeds when practical.
- Follow best management practices for spraying when chemical methods are employed.

Always:

- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.

5. Ankeny National Wildlife Refuge (NWR)

a) Description

The control of vegetation along county right-of-way within the Ankeny National Wildlife Refuge is to ensure public safety. Control practices include manual brushing, mowing, and herbicide spraying. The Ankeny NWR area drains into Sydney Ditch.

b) **Concerns**

- Erosion
- Chemical runoff

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Contact the manager of the wildlife refuge before performing any work.
- Mow 5' from the edge of the maintained shoulder every year during August or September (after bird nesting season).
- 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 advised by supervisor.

Protect Water and Habitat:

- Use only herbicides approved for use near aquatic resources. Do not use herbicides in areas of identified sensitive plant populations.
- Manually brush and spot spray, in late summer, selected areas on the right-of-way where the vegetation is encroaching on the pavement despite other controls.
- Remove large, woody material that becomes established in the ditch once every five years only if it impedes drainage.

Always:

- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.

C. FERRY MAINTENANCE & OPERATIONS

C. FERRY MAINTENANCE AND OPERATIONS

MCPW maintains and operates two ferries on the Willamette River. The Wheatland Ferry carries passengers across just north of Willamette Mission Park and the Buena Vista Ferry operates about a mile downstream from the Santiam River confluence. The Wheatland Ferry is the only way to cross the Willamette River between Newberg and Salem. Best management practices focus on preventing material from falling off the ferry decks into the river, prevention and containment of fuel leaks, and minimizing disturbances to riverbeds.

A Wheatland Ferry is designed to support these goals. Its design includes a deck containment system with drain holes in the deck that may route spills and wash water to a holding tank.

1. Wheatland and Buena Vista Ferry Operation and Repair

a) **Description**

The ferry operations, include the maintenance and repair of the ferryboats to transport vehicles approximately 700 ft. across the Willamette River. Both ferries are powered by 40 HP electric motors that are powered by commercial power from the shore. Repairs involve removal and replacement of damaged, worn, or defective parts on the boat such as cable rollers, cables, hinge pins, pneumatic cylinders, air compressors, electric motors, or prop shafts. Dredging is permitted by the Army Corps of Engineers and is performed on occasion to prevent the build-up of the river bottom.

Marion County is a designated management agency (DMA) for the mercury total maximum daily load (TMDL) in the Willamette River Basin. One of the largest contributors of mercury to water is erosion and sedimentation. As a DMA, Marion County needs to do all that it can to keep sediment out of the Willamette River and its tributaries. This should be kept in mind when cleaning ferry decks or allowing commercial/farming vehicles/equipment to cross on the ferry.

b) **b) Concerns**

- Increased turbidity during low flow due to propeller
- Oil, sediments, and other contaminants entering the water from the deck of the ferry
- Potential diesel spill from tanks or ruptured lines of ferry passenger vehicles
- The disturbance of fish habitat from dredging operations.

c) Best management practices for MCPW will be to:

- Schedule all in-water work to fall within the ODFW In-Water Timing Guidelines. Any exceptions will be coordinated with ODFW. Secure necessary permits from Oregon Division of State Lands (DSL) and US Army Corps of Engineers; consult with Environmental Specialist.

- Coordinate with the Environmental Specialist, ensuring that all permits are secured and requirements are met. **DSL needs to be notified before dredging begins.**
- Sweep and contain deck debris to prevent it from entering the water.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Maintain secondary containment reservoirs in case of fuel tank leaks.
- Inspect fuel lines regularly to detect potential problems before spill occurs.
- If a spill occurs on the deck of the ferry, the ramp, or in close proximity to the river, please contact the Environmental Specialist as soon as possible. Any amount of material released to the water is required to be reported to the Oregon Emergency Response System (OERS). If this situation occurs, please call OERS and then the Environmental Specialist.

D. BRIDGE MAINTENANCE

D. BRIDGE MAINTENANCE

Best management practices for bridge maintenance are especially cautious due to the proximity to stream habitat. They are aimed to protect habitat areas and prevent all foreign matter from entering water bodies by requiring containment, sound housekeeping practices, minimal removal of materials from stream habitat, and proper timing of activities.

For vegetation maintenance, see B. Vegetation Management, Section 2 (Bridge Brush Maintenance)

1. Seasonal Bridge and Box Culvert Maintenance

a) Description

Seasonal bridge and box culvert maintenance includes maintenance of the bridge structures, approaches, and box culverts, including sweeping/shoveling debris off of bridge decks, pressure washing deck and rails, brushing, and painting bridge rails. Maintenance and repair of box culverts includes concrete patching of rails.

b) **Concerns**

- Debris from bridge cleaning may carry contaminants into water or flood plain.
- Paint or other chemicals may accidentally spill into water or flood plain.
- Loose concrete or form material can fall into water.

c) **Best management practices for MCPW will be to:**

Plan Ahead:

- Wash bridges at times of high water level (between November 1 and March 31) whenever possible using appropriate pressure and volume settings.
- Consult with the Environmental Specialist to ensure stream hydrology and ecology are not affected and water laws are observed.
- 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.
- Review the Migratory Bird Treaty Act before beginning work.
- Perform work that may disrupt fish habitat in the in-water work window. See Appendix C.

Protect Water and Habitat:

- Remove debris from bridge decks in a manner that minimizes material entering waterbodies. Preferred methods may include removal of large debris from bridge decks with a sweeper or a shovel. Other material may be scraped by hand before being collected and removed (prior to pressure washing)
- Prevent any material or debris from entering the stream, should any enter the waterway, remove.

- Sweep up and remove excess material.
- Capture paint overspray and contain it with a shield.
- Temporarily block deck drains and scuppers over streams when pressure washing, sandblasting, or scraping structures, to route water off deck and into vegetated areas.
- Cease pressure washing if paint is displaced and set up containment to keep paint chips from entering the stream.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State

2. Repair Bridges / Structures 

a) Description

General bridge repair activities include removing and replacing deteriorated bridge components such as caps, pilings, posts, rails, wheel guards, decks, and stringers and repairing damaged concrete rails/posts.

b) **Concerns**

- Debris from repairs, loose pavement from repaving, rock, sediment, dust, etc. entering waterways or floodplain
- Sawdust from cutting on pressure treated lumber entering the water or floodplain
- Increased turbidity from maintenance activities
- Sediment loading may cause destruction of spawning habitat

c) Best management practices for MCPW will be to:

Plan Ahead:

- Coordinate with the Environmental Specialist, ensuring that all permits are secured and requirements are met.
- Coordinate bridge repairs that require in-water work with the Environmental Specialist. Structural repairs need to be coordinated with the responsible engineer to minimize impacts. These actions may require a Biological Assessment and consultation with NMFS/USFWS.
- 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.

- If structures have lead-based paint, bridge crews will consult with the Environmental Specialist to set up appropriate containment processes.
- Review the Migratory Bird Treaty Act. Delay bridge repair work if birds are found nesting in or on the structure. In an emergency, notify the Environmental Specialist. Coordinate with the Environmental Specialist on timing and possible options to the work if bats are present on structure.

Protect Water and Habitat:

- Operate on a scaffold work platform that will catch falling debris and sawdust that might otherwise fall into water or flood plain.
- Place booms in the water, as necessary, to prevent debris from entering the water.
- Use temporary water management techniques for structural repairs as appropriate.
- Ensure green concrete does not come in contact with the water. Provide a stable concrete chute clean out area for contractors and require contractors to use it.
- Prohibit use of creosote or "Penta" treated wood for permanent structures.
- When using a dry product to fill voids, use any means necessary to prevent the material from entering the water.
- If stream channel is disturbed, where feasible, mimic natural stream channel conditions upstream and downstream of bridge.

Always:

- 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.
- Dispose of excess materials at areas designated and approved for receiving such materials.
- Use good housekeeping practices including erosion control and spill containment.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

3. Drift Removal / Channel Clearance

a) Description

Removal of drift material and channel clearance is performed to protect in-water structures from hazardous debris. Wood and debris are removed from pilings and piers. On rare occasions, gravel deposits that cause detrimental flow and currents around pilings and piers, or that change the channel alignment to threaten headers or embankments, are cleared and redistributed downstream.

b) Concerns

- Increased turbidity from maintenance activities
- Removal of wood debris that may be creating habitat
- Destruction of spawning habitat

c) Best management practices for MCPW will be to:

Plan Ahead:

- Schedule all in-water work to fall within the ODFW In-Water Timing Guidelines. Any exceptions will be coordinated with ODFW. Secure necessary permits from Oregon Division of State Lands and US Army Corps of Engineers; consult with Environmental Specialist.
- 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.
- Evaluate the need for gravel deposit removal on a case-by- case basis and follow Oregon Division of State Lands permit process.

Protect Water and Habitat:

- Only interfere with drift and gravel beds if the structure is threatened.
- Minimize amount of material removed.
- Allow drift wood to float free of bridge to lodge and create habitat elsewhere.
- Repair and restore riparian areas temporarily impacted by machinery during drift removal. Long-term access for drift removal will be coordinated with The Environmental Specialist.

4. Metal Guardrail Maintenance, Construction, & Inspection

a) Description

MCPW conducts the construction, maintenance, repair, and inspection of metal guardrail and posts. Most new construction is contracted outside of MCPW.

b) Concerns

- Erosion
- Debris from repairs, rock, sediment, dust, etc. entering ditches, catch basins, or waterways

c) Best management practices for MCPW will be to:

Plan Ahead:

- Require contractors to comply with all MCPW BMP's 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.

Protect Water and Habitat:

- Use caution to control the dispersal of excess soil and gravel.
- In unstable slope situations, areas down-slope from the guardrail installation will be protected through the placement of appropriate erosion control measures (silt fences or other control devices) where necessary to minimize additional sediment deposits into aquatic systems.
- Prevent materials or debris from entering waterways, ditches or storm drains. Use appropriate measures to prevent waste and/or materials from entering these facilities when practicable.
- Limit the use of creosote or other treated woods to locations not frequently inundated by flood flows.
- Reseed disturbed areas with steep slopes or at risk of erosion to prevent siltation or sedimentation into waterways, when appropriate.

Always:

- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

E. BUILDING AND FACILITY MAINTENANCE

E. BUILDING / FACILITY MAINTENANCE

Buildings and facilities at Marion County are maintained by various divisions and departments

1. Shop Maintenance

a) **Description**

Shop maintenance includes miscellaneous routine maintenance performed on buildings, structures, and facilities such as septic tank maintenance, steam cleaner area cleanup, and maintenance, etc.

b) **Concerns**

Site runoff into stormwater conveyance systems and/or waters of the state

c) **Best management practices for MCPW will be to:**

- Store chemicals at county shops with proper containment
- Provide oil and sediment control on outfalls

2. Grounds Maintenance

a. Description

Grounds maintenance includes general yard maintenance activities such as lawn mowing, weeding, spraying, pruning, cleanup, etc.

b. Concerns

- Proper disposal of removed vegetation
- Chemicals entering stormwater conveyance systems and/or waters of the state via runoff, drift, or spills.
- Employee and public health
- Soil disturbed and left exposed, which can lead to erosion and sedimentation.
- Sediment, dust, etc. leaving the work area and entering ditches, catch basins, or waterways
- The unnecessary disturbance of vegetation, which helps filter water running to ditches and waterways.

c. Best management practices for MCPW will be to:

- For BMPs on herbicide application, see B. Vegetation Maintenance, Section 3 (Herbicide Application)
- For BMPs on mowing and general facility maintenance, see G. Parks Maintenance, Sections 1, 4, and 5. Parks are also County properties and will be maintained similarly to County shops and buildings

3. Aboveground Storage Tanks

a) **Description**

Aboveground storage tanks are located at numerous places around the County. The tanks are used for storing fluids to fuel equipment and for roadway maintenance activities. Fluids include petroleum products and deicing agents. See Appendix G for a list of storage tanks maintained by Public Works (both aboveground and underground).

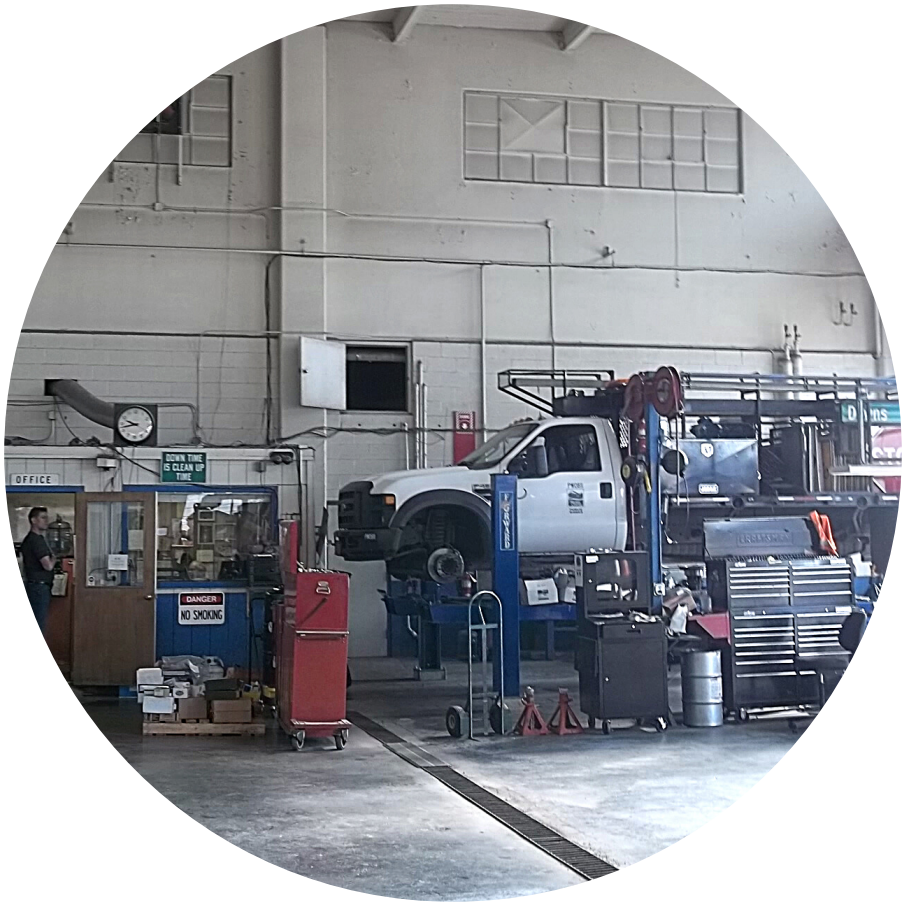
b) **Concerns**

- Containment of spills and leaks
- Employee safety

c) Best management practices for MCPW will be to:

- Public Works will design and/or maintain fueling areas in accordance with the State Fire Marshall requirements, and all applicable state and federal regulation, ensuring spills, overfills, and leaks will not enter nearby waterbodies or storm drains
- Label Tanks and piping.
- Secure valves in closed position and/or lock dispenser when not in use.
- Post warning signs and/or operating instructions
- Protect tanks from vehicle impact
- Use overfill indicators and/or overfill protection on fuel tanks
- Install tanks on a solid foundation if site appropriate.
- Provide secondary containment in areas where spills, leaks, or ruptures could enter nearby creeks or streams.

F. FLEET MAINTENANCE



F. FLEET MAINTENANCE

MCPW's Fleet Maintenance team repairs and maintains vehicles and equipment used by MCPW, MCSO, and other County departments. In maintaining the County's fleet, the Fleet Maintenance team stores, uses, and disposes of various different chemicals, fluids, and auto parts, as well as maintaining fuel systems at three County facilities. Appropriate handling of chemicals, vehicle fluids, auto parts, and pollutants washed off of vehicles is key to ensuring the Marion County's fleet does not negatively impact water quality.

1. Vehicle Washing

a) **Description**
Vehicles are washed on concrete pads in two locations:

- Vehicles are rinsed with water only (no detergent or scrubbing) on the wash rack (see Appendix E) and the water runs to a settling basin, and then through an oil/water separator and treatment before discharging to the West Fork of the Little Pudding River.
- Vehicles are pressure washed (sometimes with soap) in the wash bay (see Appendix E) and the wash water is collected in a settling basin and then sent through a closed-loop treatment and recycle system.

b) **Concerns**
Sediment, oil, soap/detergent, and other pollutants from vehicles being discharged to waters of the state

c) Best management practices for MCPW will be to:

- Only wash vehicles in appropriate areas using appropriate soaps/detergents. Never wash vehicles on a job site.
- Complete routine maintenance checks of all components of the water system to ensure proper operation at all times.
- Clean trough bimonthly, or as needed.
- Keep the water maze clean.

2. Vehicle Maintenance

a) **Description**
General maintenance and repair of county vehicles includes adding fluids. Work is performed at county shops.

b) **Concerns**

- Chemical storage
- Oil/Chemical spills
- Disposal of materials

c) Best management practices for MCPW will be to:

- Prevent or repair all equipment leakages before using equipment, if possible.
- Store chemicals with proper containment.
- A stock of clean-up materials is kept at all shops. If supplies need to be restocked or located, please contact the Parts Room or the Environmental Specialist.
- Excess materials will be disposed of at areas designated, and approved, for receiving such materials. Some materials are collected by a contractor and disposed of or recycled offsite.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

3. Fuel Storage and Fueling Locations

a) **Description**

Fueling stations are located at the Silverton Road Shop in Salem, the Silverton Shop, Brown's Island, the Aumsville Shop, and the North Marion Recycling and Transfer Station. All tanks, underground and aboveground, have secondary containment systems. Appendix G for a list of storage tanks maintained by Public Works (both aboveground and underground).

b) **Concerns**

Storage of fuel and containment of spilled fuel

c) Best management practices for MCPW will be to:

- Public Works will design and/or maintain fueling areas in accordance with the State Fire Marshall requirements, and all applicable state and federal regulation, ensuring spills, overfills, and leaks will not enter nearby waterbodies or storm drains.
- Ensure signage with clear direction to the emergency shut-off switch at all locations with fuel tanks
- Maintain a spill kit at fueling locations that is accessible at all times
- Inspect fueling equipment regularly to ensure parts are all functioning properly
- Clean spills using dry methods such as absorbent materials. Fueling areas will be swept rather than sprayed down with a hose.
- Contact the safety specialist, the environmental specialist, and Fleet if petroleum products enter waters of the state.

G. PARK MAINTENANCE

G. PARK MAINTENANCE

The Marion County Parks system is currently comprised of 18 developed public parks and several undeveloped park properties. Over half of these parks are riverside or lakeside parks, providing riparian habitat and requiring special consideration for maintenance. Maintenance of all county parks is aimed at minimizing disturbance to the land and promoting a natural setting.

1. Parks and Property Mowing 

a) **Description**

Parks and property mowing includes the mowing of developed and undeveloped parkland. Specific project and/or property mowing activities utilizing mechanical mowers. Neighborhood parks are trim mowed, leaving 3-4 inches of vegetation and undeveloped field parks are rough mowed, leaving 6- 8" of vegetation. No cutting occurs in riparian areas except where necessary for access to the water.

b) **Concerns**

- The unnecessary disturbance of vegetation, which helps filter stormwater
- Disturbance and/or harm to birds and their active bird nests

c) Best management practices for MCPW will be to:

- Minimize the amount of mowing that occurs in riparian areas. Leave a 50' wooded buffer where practical.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 50' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.
- Follow guidelines for management of areas containing sensitive plant species as indicated by roadside markers, or as advised by supervisor.

2. Water Systems Maintenance

a) Description

Water systems maintenance includes inspection and winterizing of water wells at Spong's Landing, North Santiam, and Bear Creek Parks. The wells are sampled in the spring and summer to ensure that they meet the County Environmental Health Department's drinking water standards. The water systems are emptied on the ground when the parks close in the fall.

b) **Concerns**

- Well contamination
- Public Health

c) Best management practices for MCPW will be to:

- Keep pump houses locked to deter tampering.
- When winterizing, empty water systems onto vegetated areas where erosion is not a concern.
- Sample drinking water for water quality in spring and summer.

3. Water Area Maintenance

a) Description

Water area maintenance includes cleaning and maintenance of wading pools and fish runs, such as the concrete wading pool at Scotts Mills, located on Butte Creek. River rock that accumulates in the wading pool is removed. The wading pool provides passage to fish around the dam.

b) **Concerns**

- Disposal of rock
- Habitat disturbance
- Compliance with state and federal regulations

c) Best management practices for MCPW will be to:

- Check with the Environmental Specialist to ensure all regulations regarding waters of the state are followed.
- Remove rock in the summer months only, when fish are not present and pool is dry. Follow the in-water work window (see Appendix C).
- Inspect and prioritize repairs, incorporating bioengineering and fish-friendly elements in repairs where practical for stability and safety. Use ODFW fish passage standards.
- Follow guidelines for management of areas containing sensitive plant species as indicated by as advised by supervisor.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 50’ away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150’ of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.

4. Trail and Path Maintenance 

a) Description

Trails are walked through twice a year, once in the spring and once in the fall, to clear trails and paths of hazardous vegetation. Weed-eaters, pruning shears, and sometimes a chainsaw may be used to cut branches and vegetation to ensure public safety.

b) **Concerns**

- Erosion
- Loss of shade
- Habitat

c) Best management practices for MCPW will be to:

- Protect and maintain existing vegetation.
- Maintain shade trees along water bodies and snags for habitat, when possible.
- If trees providing shade or bank stabilization within 50' of water bodies are determined to be a risk to public safety, the trees will be removed in consultation with the Environmental Specialist. If permanently removing vegetation or trees in riparian areas, consult with the Environmental Specialist to work out a replanting plan. Mature trees that are removed will be replaced at a 2:1 ratio.
- Place woodchips and pea gravel along trails and paths, as needed, to reduce erosion.
- Install erosion control during work where the potential for runoff of sediments exists. (See the Erosion Control Table for appropriate measures in Appendix A.)
- Follow guidelines for management of areas containing sensitive plant species as indicated by roadside markers, or as advised by supervisor.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 50' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
- Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species.

5. Parks Facility Maintenance

a) Description

Parks facility maintenance includes weed-eating, spreading bark dust, repairing traffic barriers, cleaning parking lots, pavement markings, fence repair, removal of vandalism and litter pick-up. This activity also includes the repair and painting of picnic tables, shelters, and restrooms.

b) **Concerns**

- Foreign material, including litter, dust, paint, and sewage, making its way to waterways or contaminating recreation areas
- Pollutants collected on impervious surface and transported by stormwater
- Proper disposal of cleaning agents and removed materials

c) Best management practices for MCPW will be to:

- Pick up litter several times a week during the open season.
- Schedule sweeping in damp weather, when possible, to minimize dust. Perform more often during rainy season to minimize contamination of runoff.
- Paint with a brush/roller instead of a sprayer to minimize contamination potential.
- Prevent runoff of cleaning products into catch basins, other stormwater infrastructure, or riparian areas.
- Wooden picnic tables are removed in the winter and painted, as needed, at county shops.
- Dispose of used cleaning agents, excess maintenance material, and litter appropriately. See the Environmental Specialist for guidance on proper disposal.
- Pump restroom tanks regularly and send to a local municipality for treatment.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.

6. Tree Maintenance and Removal 

a) **Description**

Tree maintenance and removal includes the pruning and removal of trees for public safety or park improvements.

b) **Concerns**

- Erosion
- Loss of shade

c) Best management practices for MCPW will be to:

- If permanently removing vegetation or trees in riparian areas, consult with the Environmental Specialist to work out a replanting plan. Mature trees that are removed will be replaced at a 2:1 ratio.
- Maintain shade trees along water bodies and snags for habitat, when possible.
- Branches providing shade over water bodies will not be pruned unless they pose a hazard to the public.

- Follow guidelines for management of areas containing sensitive plant species as indicated as advised by supervisor.
- Refuel and repair small pieces of equipment such as chainsaws, small generators, etc. at least 25' away from water bodies. Large equipment and vehicles should not be refueled or repaired within 150' of water bodies.
- Carry and maintain spill kits and equipment to ensure any leaks or spills are prevented from entering any waters of the State.
  Clean large and hand-held equipment when feasible to reduce the spread of noxious and invasive plant species

7. Herbicide Application

a) Description

Herbicide application involves spraying chemical herbicides to control and manage vegetation (mostly grasses and broadleafs), and removal of noxious weeds and undesirable vegetation.
Spraying usually occurs along gravel trails to control Himalayan blackberry bushes.

b) **Concerns**

- Chemicals entering ditches, catch basins, or waterways via drift, runoff, or spills. These chemicals are toxic to fish and water.
- Public Health

c) Best management practices for MCPW will be to:

- Keep herbicide use to a minimum in parks. Herbicides should be applied in small amounts to noxious weeds only.
- Please see the B. Vegetation Maintenance, Section 3 for best management practices regarding the application of herbicides.

H. SERVICE DISTRICTS

SERVICE DISTRICTS

1. Brooks Community Service District

The Brooks Community Service District operates a Septic Tank Effluent Pumping (STEP) system and a small, commercial drinking water system. Treated wastewater from the Brooks Community Service District Lagoons is discharged to the Willamette River, following the DEQ-issued National Pollution Discharge Elimination System (NPDES) permit guidelines. Employees are contracted from MCPW and will follow BMPs during any work for this district. Work can include vegetation maintenance and minimal ground disturbance. There is a potential for contamination of groundwater and stormwater.

2. Fargo Interchange Service District

The Fargo Interchange Service District operates a gravity sewer system. Untreated wastewater is collected and delivered in a closed system to the City of Donald wastewater treatment facility. Employees are contracted from MCPW and will follow BMPs during any work for this district.

3. East Salem Service District (Waterway Maintenance)

MCPW maintains the East Salem Service District drainage ditch.

The East Salem Service District waterways provide water conveyance for much of East Salem by routing rainfall runoff to Mill Creek, Claggett Creek, or the Little Pudding River. Vegetation management in the waterway is necessary to ensure adequate drainage because the area is very flat, making it sensitive to any impediments to flow. Approximately eleven miles of the waterway are maintained by MCPW.

Maintenance and construction projects in the ESSD will follow the BMPs in this guide as well as meet requirements for the National Pollutant Discharge Elimination System (NPDES) MS4 Phase II permit. The BMPs under this permit will correspond to the BMPs listed in the salmon recovery plan.

Maintenance includes control and removal of undesirable vegetation through manual, mechanical, and chemical means to maintain adequate drainage and safety of nearby landowners. This activity also includes removal of litter. Maintenance activities are performed along the whole ditch once a year and more often at locations where material frequently builds-up. Refer to the Road Maintenance, Vegetation Maintenance, and other sections of this manual for specific BMPs.

I. SURVEY

SURVEYING

1. Surveying 

a) Description

Surveying includes recording the contour, dimensions, position, or other particulars of county land, including locating government corners and right-of-way and construction staking. Sometimes vegetation must be cut back to increase visibility. On occasion, excavation may be required to locate a government corner.

b) Concerns

- Loss of stream shade
- Disturbance to stream banks

c) Best management practices for MCPW will be to:

- If permanently removing vegetation or trees in riparian areas, consult with the Environmental Specialist to work out a replanting plan. Mature trees that are removed will be replaced at a 2:1 ratio.
- Maintain shade trees along water bodies and snags for habitat, when possible.
- Leave brush that is cut in riparian areas in place where doing so does not interfere with sight distance, create safety issues, cause fire hazards, involve noxious weeds, or hinder the proper functioning of stormwater infrastructure.
- 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.
- Prevent materials or debris from entering waterways, ditches, or storm drains. Use appropriate measures to prevent debris and/or materials from entering these facilities
- Follow guidelines for management of areas containing sensitive plant species as indicated by roadside markers, or as advised by supervisor.

III. TRAINING PROGRAM

Employees will be instructed on the elements of this plan, dependent upon their responsibilities with MCPW. The goals of the training program are:

- To educate staff on Best Management Practices (BMPs)
    - Field-based training on practical applications
- To educate staff on regulations regarding waters of the state and their responsibility as County employees
    - Online training that covers the history of water quality regulation, current regulation, and best management practices
- To provide staff with the knowledge and tools to reduce the impact of their work to water quality, wildlife, and habitat
- To ensure compliance with all applicable regulations

All employees will be instructed to monitor their work activities and observe their work environment for any issues that may potentially threaten water quality, wildlife, or habitat. If any issues arise, employees are directed to immediately contact their supervisor or the Environmental Specialist. In emergency situations, where work stoppage is impractical, employees are directed to also determine any short-term remedies for the immediate situation. In non-emergency situations, employees are directed to stop any activities directly threatening salmonids and work with their supervisor or the Environmental Specialist to address the issues.

IV. Monitoring

Field Inspections

Random field inspections of routine maintenance work and inspections of all major projects will occur to ensure compliance with BMPs and relevant environmental regulations. Any compliance problems observed during inspection will be resolved during, or shortly after, the inspection. Complaints regarding PW activities - whether from PW staff, agency personnel or the public, will be investigated immediately, and addressed appropriately.

Staff allocations

Oversight for monitoring the implementation of BMPs in this report will be the responsibility of MCPW's Environmental Specialist. This individual, with appropriate staff support, will produce updates to the BMP program and work with the managers and supervisors to ensure that the annual reports are completed, and outstanding issues resolved during the course of the year. Supervisory staff and management staff will be responsible for implementation of the BMPs in the field.

APPENDIX A

Appendix A

Erosion and Sediment Control Matrix [a]

Activity		Control Measure: 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
Embankment & Excavation Work (slope length > 8 ft)	Slope flatter than 1:2	X		X						X					Anytime the potential for oil contamination exists.	Anytime there is the potential for material to enter an inlet.
	Slope steeper than 1:2	X	X						X	X						
Embankment & Excavation Work (slope length < 8 ft)	Slope flatter than 1:2	X								X						
	Slope steeper than 1:2	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		

[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

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 B

Oregon Department of Transportation

Highway Division DIRECTIVE

NUMBER	SUPERSEDES
ENV 01-01	New
EFFECTIVE DATE: January 17, 2006	PAGE NUMBER: 1 of 13
REFERENCE	

SUBJECT	APPROVED SIGNATURE
Migratory Bird Treaty Act (16 U.S.C. 703-712)	/s/ Douglas Tindall, Highway Division Deputy Director

PURPOSE:

To provide agency personnel involved in project delivery, construction, and maintenance with guidelines and strategies to ensure that appropriate and reasonable measures are taken to prevent injury to and death of migratory birds.

DEFINITIONS:

- **Active nest** – a nest containing eggs or young.
- **Appropriate** – suitable for a particular condition, occasion, or place.
- **Conservation** – the protection, preservation, management, or restoration of wildlife and natural resources.
- **Context Sensitive and Sustainable Solutions (CS^3)** – an operational approach that addresses the preservation of scenic, aesthetic, historical, environmental, economic, and community values while building safe and enduring transportation projects.
- **Due diligence** – use of reasonable but not necessarily exhaustive efforts.
- **Environmental stewardship** – the careful and responsible management of natural resources.
- **Fledged** – young that are capable of flight and can successfully leave the nest.
- **Indiscriminate** – non-selective, wanton.
- **Migratory bird** – the vast majority of wild bird species encountered in Oregon; notable exceptions include European starling, house sparrow, and rock dove (feral pigeon).
- **Migratory Bird Treaty Act (MBTA)** – implements four bilateral treaties (between the U.S. and Canada, Japan, Mexico, and the former Soviet Union) making it illegal to pursue, possess, injure, or kill migratory birds without a permit.
- **Reasonably expect** – to presume that one has acted sensibly under the circumstances.
- **Safeguard** – strive to protect against potential harm.
- **USFWS** – United States Fish and Wildlife Service, regulatory agency enforcing the MBTA.

BACKGROUND:

The MBTA was developed in 1918 to stop the indiscriminate killing and market hunting of migratory birds. This act applies to activities conducted within the United States by any person, business, organization, institution, and any local, state, or federal agency.

GUIDELINES:

ODOT is committed to environmental stewardship and supporting the conservation intent of the MBTA while designing, constructing, operating, and maintaining the state highway system through Context Sensitive and Sustainable Solutions (CS^3); therefore, ODOT employees must practice due diligence to safeguard migratory birds while carrying out their daily activities. ODOT Highway Division employees are to incorporate the attached MBTA Guidelines and Strategies into their work responsibilities as can reasonably be expected when implementing the agency mission to provide a safe and efficient transportation system in ways that protect and enhance the environment.

RESPONSIBILITIES:

Highway Division Deputy Director:

- Provide guidance and direction on the MBTA to Highway Division personnel.

Technical Services Manager:

- Ensure that the MBTA Guidelines and Strategies associated with this Highway Division Directive are adaptive.

Natural Resources Unit:

- Lead efforts to revise the MBTA Guidelines and Strategies as needed.
- Include internal and external stakeholders in the periodic review and revision of the MBTA Guidelines and Strategies.
- Provide training and updates on the MBTA Guidelines and Strategies.
- Work with the Specifications, Estimating, and Office of Pre-Letting Unit, Project Managers, and other pertinent parties to develop standard specifications language for activities relevant to migratory bird protection.
- Work with the ODOT Bridge Engineering Section to foster bridge designs that dissuade birds from building nests on bridge sections *that are difficult to access*.
- Pursue MBTA permit options and an ODOT Avian Protection Plan with USFWS.

Environmental Leadership Team:

- Provide input on revisions to the MBTA Guidelines and Strategies.
- Incorporate MBTA Guidelines and Strategies into ODOT activities, projects, and contracts.
- Include migratory bird conservation practices into ODOT activities, projects, and contracts when relevant and reasonable.
- Disseminate MBTA information on the MBTA Guidelines and Strategies to appropriate ODOT personnel and contractors.

Project Delivery Leadership Team:

- Ensure that the protection of migratory birds is given due consideration in the entire project delivery system from inception through final project acceptance.
- Bring project MBTA compliance issues to the attention of the Natural Resources Unit.

Project Team Leaders:

- Ensure that migratory bird conservation principles and practices are implemented as stipulated during project design.
- Work with Biologists and Regional Environmental Coordinators to resolve MBTA compliance issues.

Construction Project Managers:

- Assist with developing contract language for implementation of the MBTA.
- Verify that construction contractors understand how to implement MBTA Guidelines and Strategies within projects.
- Ensure that the agreed upon MBTA Guidelines and Strategies are adhered to during construction activities.
- Report to the Project Delivery Leadership Team any MBTA compliance issues that occur on projects.

Maintenance Leadership Team:

- Incorporate changes in MBTA Guidelines and Strategies as needed into the Routine Road Maintenance Guide for Water Quality and Habitat Best Management Practices (2004 Blue Book).
- Disseminate information on the MBTA Guidelines and Strategies to appropriate maintenance personnel.
- Apprise the Natural Resources Unit of maintenance issues that should be considered in future revisions of the MBTA Guidelines and Strategies.

Maintenance District Managers:

- Integrate appropriate MBTA Guidelines and Strategies into maintenance activities.
- Provide training and disseminate information on the MBTA Guidelines and Strategies to maintenance personnel.

Facilities (Maintenance) Managers:

- Incorporate migratory bird conservation practices into facilities management.
- Report MBTA compliance issues at maintenance facilities to the region Biologist.

Biologists and Regional Environmental Coordinators:

- Recommend and support measures to protect migratory birds during project development and maintenance.
- Help identify active bird nests and/or habitat.
- Involve appropriate federal, state, and non-governmental agencies regarding migratory bird issues that arise during project development and implementation.
- Help resolve MBTA compliance issues during project and maintenance implementation.
- Work with the Natural Resource Unit to ensure that the MBTA Guidelines and Strategies document is current and inclusive.

Individual Employees:

- Practice due diligence to safeguard migratory birds while carrying out employment duties.
- Inform managers of activities that should be considered for inclusion in future revisions of the MBTA Guidelines and Strategies.
- Contact the region Biologist or Regional Environmental Coordinator when issues pertaining to the MBTA arise.

ACTION REQUIRED:

MBTA Guidelines and Strategies are to be incorporated into project delivery, construction, and maintenance activities to ensure that appropriate and reasonable measures are taken to prevent injury to and death of migratory birds.

SPECIAL INSTRUCTIONS:

Implementation of MBTA Guidelines and Strategies is to begin immediately.

MBTA Guidelines and Strategies

Statement of Intent: This document provides strategies to guide project decision-making regarding compliance with the Migratory Bird Treaty Act (MBTA). Because each project provides its own set of MBTA challenges, this document recognizes the need for flexibility in selecting compliance strategies by providing a suite of **possible** options for consideration on a project by project basis.

Compliance Summary: Unless and except as permitted by regulation, it shall be unlawful to possess, pursue, hunt, take, capture, kill, or attempt to take, capture, or kill any migratory bird, any part, nest, or eggs of any such bird, or any product of any such bird or any part, nest, or egg thereof (16 U.S.C. 703).

I. Project Delivery

MBTA Focus for Project Delivery – Identify and incorporate migratory bird conservation principles and practices into ODOT projects and contracts through collaboration with appropriate federal, state, and non-governmental groups during planning efforts.

1) Vegetation/Habitat Preservation

Goal – Ensure that project activities are designed such that migratory bird habitat is not unnecessarily disturbed during project implementation and that nesting habitat is not disturbed during the nesting season.

Possible *habitat preservation activities to require in projects to meet this goal:*

- Avoid disturbing nesting habitat (i.e., vegetation or structures) during the nesting season.
- Identify valuable bird nesting habitat within the project area and retain it if possible within project limits.
- Prevent migratory birds from nesting on structures that will be repaired or demolished prior to when young birds will fledge (e.g., employ exclusionary devices or dispersal methods)
- Within the work area, avoid disturbing vegetation designated to remain following project completion; preservation of this vegetation includes keeping equipment and materials off of the critical root zone.
- Avoid directly or indirectly damaging vegetation outside the work area.
- Following consultation with the project Biologist or Regional Environmental Coordinator (REC), undertake other actions not listed above that meet the MBTA goal for preservation of bird habitat (see Construction section for additional possibilities).

2) Vegetation/Habitat Restoration

Goal – Ensure that migratory bird habitat that is negatively impacted during project implementation is restored where feasible.

Possible *habitat restoration activities to require in projects to meet this goal:*

- Prevent fouling topsoil with subsoil or other detrimental matter; consult Oregon Standard Specifications for Construction (2002).
- Following construction, bring the surface area to a condition ready for planting operations; consult Oregon Standard Specifications for Construction (2002).
- Seed/plant using practices outlined in Sections 01030 and 01040 of Oregon Standard Specifications for Construction (2002).
- Plant in riparian areas following practices outlined in the Vegetation Management Program section of the ODOT Routine Road Maintenance Water Quality and Habitat Guide (2004 Blue Book).
- Consult with ODOT Foresters regarding best practices for planting trees.
- Following consultation with the project Biologist or REC, undertake other actions not listed above that meet the MBTA goal for restoration of bird habitat.

3) Vegetation/Habitat Enhancement

Goal – Improve migratory bird habitat within project areas if feasible and reasonable.

Possible *habitat enhancement activities to incorporate into projects to meet this goal:*

- Eliminate weeds (consult Oregon Standard Specifications for Construction, 2002) before beginning planting or seeding operations.
- Identify suitable native plants to utilize in habitat enhancement activities.
- Foster multi-layered vegetative communities in restoration activities when they do not interfere with the safe operation of the highway.
- Provide structural elements for nest sites *on suitable areas* of transportation structures (e.g., bridges).
- In consultation with the project Biologist, REC, or ODOT Foresters, identify other opportunities to improve bird habitat within the project scope.

4) Vegetation/Habitat Mitigation

Goal – Enhance bird habitat off-site when on-site vegetation preservation, restoration, and enhancement opportunities are limited. Off-site areas include mitigation banks and ODOT properties not associated with the right-of-way.

Possible *habitat mitigation activities to incorporate into projects to meet this goal:*

- Create snags in snag deficient areas.
- Provide nest boxes and nesting structures.
- Encourage multi-layered vegetation communities when practical.
- Enhance habitat requirements for bird species in decline.
- In consultation with the project Biologist or REC, identify other opportunities that meet the MBTA goal for bird habitat mitigation.

II. Construction

MBTA Focus for Construction – Put migratory bird conservation principles into practice during construction activities.

1) Vegetation Clearing

Goal – Avoid clearing live or dead vegetation containing active nests of migratory birds.

Possible *activities to meet this goal:*

- Do not damage vegetation by mechanical or chemical means unless it is necessary for project implementation.
- Clear vegetation outside the nesting season; contact the project Biologist for USFWS-provided information on when migratory birds nest in the project area.
- Prevent migratory birds from nesting in vegetation scheduled for clearing (e.g., employ exclusionary devices or dispersal methods).
- Inspect vegetation for active nests prior to clearing.
- If an active nest is encountered, avoid disturbing the nest or associated vegetation until the young have fledged.
- Consult with the project Biologist or Regional Environmental Coordinator (REC) on vegetation issues that arise during a project regarding compliance with the MBTA; seek additional advice from the Terrestrial Biology Team Leader in ODOT Central Services if warranted.
- Undertake other actions not listed above that meet the MBTA goal for vegetation clearing within the context of the particular project.

NOTE: In the event that eggs or birds are injured or killed, contact the REC for advice on how to proceed.

2) Tree/Snag Removal

Goal – Avoid felling trees or snags containing active nests of migratory birds.

Possible *activities to meet this goal:*

- Do not remove trees and snags unless it is necessary for project implementation or there is a safety issue.
- Remove trees and snags outside the nesting period; contact the project Biologist for USFWS-provided information on when migratory birds nest in the project area.
- Inspect trees and snags for active nests prior to their removal (e.g., observation methods or tree rapping).
- If an active nest is encountered, avoid removing the tree/snag until the young have fledged.

- Consult with the project Biologist or REC on tree/snag removal issues that arise during a project regarding compliance with the MBTA; seek additional advice from the Terrestrial Biology Team Leader in ODOT Central Services if warranted.
- Undertake other actions not listed above that meet the MBTA goal for tree/snag removal within the context of the particular project.

NOTE: In the event that eggs or birds are injured or killed, contact the REC for advice on how to proceed.

3) Bridge Demolition or Repair

Goal – Avoid destroying active nests and injuring birds protected by the MBTA during bridge demolition or repair.

Possible *activities to meet this goal:*

- Prevent migratory birds from nesting on bridges that will be demolished or repaired prior to when young birds will fledge (e.g., employ exclusionary devices or dispersal methods).
- Physically remove nests that do not contain eggs to prevent active nests.
- Inspect bridges for active nests prior to demolition or repair.
- Delay demolition or repair if active nests are located.
- Screen active nests from bridge repair activities.
- Demolish or repair bridges outside the nesting season.
- If occupied nests are encountered, continue work if the nests will not be destroyed and their inhabitants will not be injured, and if parent birds will not be precluded from tending their nests to the extent that the eggs or young are negatively impacted.
- Consult with the project Biologist or REC on bridge demolition/repair issues that arise during a project regarding compliance with the MBTA; seek additional advice from the Terrestrial Biology Team Leader in ODOT Central Service if warranted.
- Undertake other actions not listed above that meet the MBTA goal for bridge demolition or repair within the context of the particular project.

NOTE: In the event that eggs or birds are injured or killed, contact the REC for advice on how to proceed.

III. Maintenance

MBTA Focus for Maintenance – Integrate migratory bird conservation principles and practices into routine and extraordinary ODOT maintenance activities through existing programs and practices.

1) Tree Pruning and Tree/Snag Removal

Goal – Avoid pruning trees or removing trees/snags containing active nests of migratory birds.

- Follow appropriate Best Management Practices (BMPs) as described in the ODOT Routine Road Maintenance Water Quality and Habitat Guide (2004 Blue Book).
- In the unlikely event that state or federal endangered migratory birds are encountered during routine maintenance of trees or snags, stop work immediately and contact the Regional Environmental Coordinator (REC) for advice on how to proceed.

Possible *activities to meet this goal, in addition to those outlined in the Blue Book and other management plans:*

- Where feasible, trees/snags along the right-of-way should not be removed unless they pose safety concerns to the highway or motoring public and/or removing trees/snags is required to comply with state and local laws. Hazard trees are to be removed according to the Blue Book.
- As appropriate, prune or remove trees/snags outside the nesting season (as identified by ODFW), particularly the peak nesting period, unless the tree, limb, or snag is an imminent hazard.
- As outlined in the Blue Book, where appropriate, develop and implement highway corridor plans to minimize the removal of hazard trees/snags during the peak nesting season.
- When feasible, inspect trees/snags prior to removal for active nests (e.g., observation methods or tree rapping).
- If an active nest is encountered, when feasible, avoid pruning or removing the tree/snag until the young have fledged.

2) Vegetation Management

Goal – Minimize impacts to migratory birds that may be nesting in vegetation along right-of-ways through implementation of District Integrated Vegetation Management (IVM) plans that include considerations for migratory birds.

- Follow BMPs for vegetation management as described in the Blue Book.
- In the unlikely event that state or federal endangered migratory birds are encountered in vegetation during routine maintenance, stop work immediately and contact the REC for advice on how to proceed.

Possible *actions to include in District IVM plans that meet this goal:*

- When and where feasible, vegetation will be cleared only if it is necessary for the safe operation of the transportation system, to comply with state and local laws, or to control noxious weeds.
- As appropriate, low-growing plants will be planted that do not require maintenance during the nesting season (as identified by ODFW) of migratory birds; preference may be given to native plant species.
- When feasible, vegetation maintenance activities will occur outside the nesting season, especially during the peak nesting season, unless safety, fire, weed control, incident response, or state and local laws dictate otherwise.
- When feasible, the timing and width of required mowing will be adjusted to minimize impacts to nesting birds.
- When feasible, brush removal will be limited to no more than 20 feet from either end and under all maintained bridges unless necessary for sight distance and the structural integrity of the bridge.
- If possible, inspect vegetation for active nests prior to clearing.
- If an active nest is encountered, if possible, avoid disturbing the nest or surrounding vegetation until the young have fledged.

3) Culvert/Bridge Maintenance and Repair

Goal – Avoid destroying active nests and injuring migratory birds while cleaning or repairing culverts and bridges.

- Follow the Bridge Washing Guidelines found in the Blue Book.
- For state and federal endangered migratory birds known to occur on identified ODOT structures, follow BMPs for maintenance activities described in relevant ODOT management plans (e.g., Peregrine Falcon Management Plan 2002-2007).
- If state or federal endangered migratory birds are unexpectedly encountered during maintenance/repair activities, stop work immediately and contact the REC for advice on how to proceed.

Possible *activities to meet this goal, in addition to those identified in the Blue Book and other management plans:*

- When feasible for scheduled work, prevent migratory birds from nesting on sections of transportation structures that will be cleaned or repaired prior to when young birds will fledge (e.g., employ exclusionary devices or dispersal methods); bridges used for nesting by migratory birds are often noted in the bridge inspectors' database.
- For sections of structures that will undergo maintenance/repair, physically remove nests prior to egg laying (to prevent active nests) or after birds have fledged, when feasible.

- If migratory birds are nesting in or on a structure, delay or avoid maintenance/repair work in the vicinity of the nest, when feasible.
- If active nests are present and work can occur around them, when feasible shield the nests from maintenance/repair activities so nest inhabitants are disturbed as little as possible; reasonable attempts should be made to protect active nests and their inhabitants, and to allow parent birds to tend their nests so that eggs and young are not negatively impacted.
- Undertake other actions not listed above that meet the MBTA goal for the maintenance and repair of culverts and bridges.

4) Maintenance Facilities Management

Goal – Avoid destroying active nests and injuring migratory birds while managing facilities and yards utilized by maintenance.

- Follow rest area vegetation management practices identified in District IVM plans.
- In the unlikely event that state or federal endangered migratory birds are encountered during activities associated with the management of maintenance facilities, stop work immediately and contact the REC for advice on how to proceed.

Possible *activities to meet this goal, in addition to those identified in District IVM plans:*

- When feasible, pressure wash facilities outside the migratory bird nesting season (as identified by ODFW) or when active nests are not present.
- If migratory birds normally nest on facilities that must be maintained/repaired during the nesting season, when feasible prevent nesting on affected sections of the structures by employing exclusionary devices or dispersal methods.
- If active nests are present on facilities that must be maintained/repaired, when feasible shield the nests from disruptive activities so that nests are not destroyed and their inhabitants are not injured, and parent birds are not precluded from tending their nests to the extent that the eggs or young are negatively impacted.
- When feasible, physically remove nests that do not contain eggs to prevent active nests on facilities that will require maintenance/repair.
- When feasible, inspect facilities for active nests prior to undertaking repair/maintenance activities that may be disruptive to nesting birds.
- When feasible, delay repair/maintenance activities on facilities if active nests are located and the activities will be disruptive to nesting birds.
- Prior to building new facilities, evaluate designs that will limit or prevent birds from nesting on problematic areas of the structures.
- When active nests of ground-nesting migratory birds are encountered in maintenance yards, when feasible, flag the nests to minimize disturbing activities around the nests.
- When feasible, undertake other actions not listed above that meet the MBTA goal for maintenance facilities management.

DEFINITIONS:

- **Active nest** – a nest containing eggs or young.
- **Best Management Practices (BMPs)** – the performance of activities in a manner that minimizes impacts to protected species and their habitat.
- **Conservation** – the protection, preservation, management, or restoration of wildlife and natural resources.
- **Enhancement** – an improvement.
- **Goal** – an idealistic or long-term purpose.
- **Integrated Vegetation Management (IVM)** – a decision-making and management process that uses knowledge from a broad base of expertise, a combination of treatment methods, and a monitoring and evaluation system to achieve vegetation management goals.
- **Migratory Bird Treaty Act (MBTA)** – implements four bilateral treaties (between the U.S. and Canada, Japan, Mexico, and the former Soviet Union) making it illegal to possess, pursue, wound, or kill migratory birds without a permit.
- **Mitigation** – an action taken to eliminate or reduce long-term damage to a system.
- **ODFW** – Oregon Department of Fish and Wildlife.
- **Preservation** – the activity of protecting something from loss.
- **REC** – Regional Environmental Coordinator
- **Restoration** – returning to a normal or healthy condition.
- **Strategy** – a plan of action intended to accomplish a specific goal.
- **Tree** – vegetation with a stem diameter greater than 6 inches.

METHODS TO PREVENT SUCCESSFUL NESTING BY MIGRATORY BIRDS:

Exclusionary Devices – any method that denies birds physical access to a nest site.

- Nets
- Curtains of vinyl plastic strips
- Smooth, concave, fiberglass panels (for placement between an eave and wall)
- Slick surface coatings (e.g., slick paint)
- Ledge protectors (e.g., coils, pin and wire, points, shock wire, sticky repellents)
- Hole blockers (e.g., foam, steel wool)

Dispersal Methods – any method that deters birds from producing active nests but does not exclude them from nesting areas.

- Visual deterrents (e.g., mobiles, predator models, scare balloons, tapes)
- Auditory deterrents (e.g., sonic devices)
- Sensory deterrents (e.g., chemical repellents)
- Nest removal prior to egg laying (e.g., knock down with a pole, wash down with water). NOTE: swallows are strongly attracted to old nests or to the remnants of deteriorated nests, so all traces of mud should be removed.

U.S. Department of Agriculture – Animal and Plant Health Inspection Service – Wildlife Services (USDA-APHIS-WS) – has the authority to manage wildlife conflicts with humans (including government agencies).

APPENDIX C

OREGON GUIDELINES FOR TIMING OF IN-WATER WORK TO PROTECT FISH AND WILDLIFE RESOURCES

JANUARY 2022

Purpose of Guidelines

The Oregon Department of Fish and Wildlife, (ODFW), under its authority to manage Oregon's fish and wildlife resources has updated the following guidelines for timing of in-water work. The guidelines are to assist the public in minimizing potential impacts to important fish, wildlife and habitat resources.

"The guidelines are to assist the public in minimizing potential impacts...".

Developing the Guidelines

The guidelines are based on ODFW district fish biologists' recommendations. Primary considerations were given to important fish species including anadromous and other game fish and threatened, endangered, or sensitive species (coded list of species included in the guidelines). Time periods were established to avoid the vulnerable life stages of these fish including migration, spawning and rearing. The preferred work period applies to the listed streams, unlisted upstream tributaries, and associated reservoirs and lakes.

"The guidelines are based on ODFW district fish biologists' recommendations".

Using the Guidelines

These guidelines provide the public a way of planning in-water work during periods of time that would have the least impact on important fish, wildlife, and habitat resources. ODFW will use the guidelines as a basis for commenting on planning and regulatory processes. There are some circumstances where it may be appropriate to perform in-water work outside of the preferred work period indicated in the guidelines. ODFW, on a project-by-project basis, may consider variations in climate, location, and category of work that would allow more specific in-water work timing recommendations. These more specific timing recommendations will be made by the appropriate ODFW district office through the established planning and regulatory processes.

"These guidelines provide the public a way of planning in-water work during periods of time that would have the least impact on important fish, wildlife and habitat resources".

Modification of Guidelines

There may be limited situations where minor modification of the timing guidelines is warranted. ODFW may consider new information, the need for greater detail, or other factors that would generally improve the quality and usefulness of these guidelines. ODFW through the appropriate district office may modify or clarify timing guidelines within the district as needed. Statewide updates to guidelines will occur on a periodic basis.

"ODFW through the appropriate district office may modify or clarify timing guidelines within the district as needed".

WATERWAY	TELEPHONE	PREFERRED WORK PERIOD[1]	SPECIES CODE
Columbia River Management	**(971) 673-6000**		
Columbia River Estuary (Mouth to Tongue Pt.)		November 1 – February 28	SHL, CHF, CHS, SS, CO, STW, STS, CT, EU, LS, GS, WS, PH, SF*
Columbia River (Tongue Pt. to Bonneville Dam)		November 1 – February 28	CHF, CHS, SS, CO, STW, CS, CHR, CT, STS*
WEST REGION			
North Coast Watershed District			
Tillamook Office	**(503) 842-2741**		
Pacific			
Columbia River Estuary Tributaries (Mouth to Hunt Creek)		July 1 – September 15	CHF, CO, CS, STW, CT, LAM*
Necanicum			
Necanicum River & Tributaries		July 1 – September 15	CHF, CO, CS, STW, CT, LAM*
Necanicum and Neawanna Estuary		November 1 – February 15	MAR, SHL, CO, STW, CT, CHF, CS*
Ecola			
Ecola Creek and Tributaries		July 1 – September 15	CO, STW, CT, LAM*
Ecola Creek Estuary		November 1 – February 15	MAR, SHL, CO, STW, CT
Nehalem			
Nehalem Estuary		November 1 – February 15	SHL, CO, STW, CT, CHF, CHS, CS, PH, SF*
Lower Nehalem River (below Hwy 26 and Elsie)		July 1 – September 15	CHF, CHS, CO, CS, STW, CT, LAM*
Salmonberry River		August 15 – September 15	CHF, CHS, STW, CT, CO, LAM*
Other Lower Nehalem River Tributaries		July 1 – September 15	CHF, CO, STW, CS, CT, LAM*
Upper Nehalem River (above Hwy 26 at Elsie) and Tributaries		July 1 – August 31	CHF, CHS, CO, STW, CT, LAM*
Tillamook			
Tillamook Estuary		November 1 – February 15	SHL, CO, STW, CT, CHF, CHS, CS, LS, WS, PH, SF*
Tillamook Bay Tributaries		July 1 – September 15	CHS, CHF, CO, CS, STW, CT, LAM*
Netarts			
Netarts Estuary		November 1 – February 15	SHL, STW, CO, CS, PH, SF*
Netarts Bay Tributaries		July 1 – September 15	CHF, CO, CS, STW, CT, LAM*
Sand Lake			
Sand Lake Estuary		November 1 – February 15	MAR, SHL, CHF, CO, CTW, CT*
Sand Lake Tributaries		July 1 – September 15	CHF, CO, STW, CT, LAM*
Nestucca			
Nestucca Estuary		November 1 – February 15	MAR, SHL, CT, CHF, CHS, STW, CO, CS*

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Nestucca River & Tributaries		July 1 – September 15	CO, CHF, CHS, CS, STW, CT, LAM*
Neskowin Creek and Tributaries		July 1 – September 15	CO, CS, STW, CT, LAM*
Other North Coastal Tributaries (Columbia River to Neskowin Cr.)		July 1 – September 15	CO, STW, CT, LAM*
Coastal Lakes and Tributaries		July 1 – September 15	CT, CO, LAM*
Newport Office	**(541) 867-4741**		
Pacific			
Salmon			
Salmon River Estuary		November 1 – February 15	MAR, SHL*
Salmon River		July 1 – September 15	CHF, CO, CS, STW, CT, LAM*
Siletz			
Siletz River Estuary		November 1 – February 15	SHL, PH, SF*
Siletz River		July 1 – August 31	CHF, CHS, CO, CS, STW, STS, CT, LAM*
Yaquina			
Yaquina River Estuary		November 1 – February 1	SHL, EU, LS, GS, WS, PH, SF*
Yaquina River		July 1 – September 15	CHF, CO, CS, STW, CT, LAM*
Alsea			
Alsea River Estuary		November 1 – February 15	SHL, LS, GS, WS, PH, SF*
Alsea River		July 1 – August 31	CHF, CHS, CO, CS, STW, CT, LAM*
Yachats River		July 1 – September 15	CHF, CO, STW, CT, LAM*
Siuslaw			
Siuslaw River Estuary		November 1 – February 15	SHL, EU, LS, GS, WS, PH, SF*
Siuslaw River		July 1 – September 15	CHF, CO, STW, CT, LAM*
Other Coastal Tributaries		July 1 – September 15	CHF, CO, STW, CT, LAM*
Coastal Lakes		July 1 – September 15	STW, CO, CT, LAM*
Coastal Lake Tributaries		July 1 – September 15	STW, CO, CT, LAM*
NORTH WILLAMETTE WATERSHED DISTRICT			
Clackamas Office	**(971) 673-6000**		
Columbia			
Columbia River (Hunt Creek to Bonneville Dam) See Columbia River Management			
Columbia River (within District above Bonneville Dam)		November 15 – March 15	CHF, CHS, CHR, SS, CO, CS, STW, STS, CT*
Columbia River Tributaries (Hunt Creek to St. Helens)		July 15 – September 15	CHF, STW*
Clatskanie River		July 15 – September 15	CHF, STW, LAM*

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Willamette			
Multnomah Channel (including Scappoose Bay)		July 1 – October 31 & December 1 – January 31[2]	CHF, CHS, CO, STW, STS, CT, LAM*
Milton Cr. & Scappoose Cr.		July 15 – August 31	CO, STW, JUV, LAM*
Willamette River (mouth to Willamette Falls)		July 1 – October 31 & December 1 – January 31[3]	CHF, CHS, CO, STW, STS, CT, LAM*
Columbia Slough		June 15 – September 15	JUV*
Johnson Creek and Tributaries		July 15 – August 31	STW, CO, CT, CHF, LAM*
Kellogg Creek		July 15 – September 30	STW, CO, CT, LAM*
Tyron Creek		July 15 – September 30	STW, CO, CT, LAM*
Clackamas River			
Clackamas River and Tributaries (mouth to North Fork Reservoir)		July 15 – August 31	CHF, CHS, STW, CO, STS, CT, LAM*
Clackamas River and Tributaries (upstream of North Fork Reservoir)		July 15 – August 31	CHF, CHS, STW, CO, STS, CT, BUT, LAM*
Abernathy Creek		July 15 – August 31	CO, STW, CT, LAM*
Other Willamette River Tributaries (mouth to Willamette Falls)		July 15 – September 30	CT, LAM*
Willamette River (Willamette Falls to Chehalem Creek)		June 1 – October 31 & December 1 – January 31	CHS, STW*
Tualatin			
All Tualatin River Tributaries		July 15 – September 30	CO, STW, CT, LAM*
Tualatin River (below Scoggins Cr.)		June 1 – September 30	CO, STW, CT, LAM*
Tualatin River (above Scoggins Cr.)		July 15 – September 30	CO, STW, CT, LAM*
Beaver Creek		July 15 – September 30	CT*
Molalla River and Tributaries		July 15 – August 31	CHS, STW, CT, RB, LAM*
Pudding River			
Pudding River Mainstem		July 1 – September 15	CHS, STW, CT, LAM*
Pudding River Tributaries (Butte, Abiqua, Silver and other Creeks)		July 15 – September 15	CHS, STW, CT, LAM*
Willamette River (Chehalem Creek to Keizer Rapids Park)		June 1 – September 30	CHS, STW, CT, RB*
Chehalem Creek		July 15 – September 30	CT, LAM*
Yamhill River		July 15 – September 30	STW, CT, LAM*
Other Willamette River Tributaries (Chehalem Creek to Keizer Rapids)		July 15 – October 15	CT, LAM*
Fairview Cr., Arata Cr., Salmon Cr.		June 15 – September 15	CT*

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[2] Winter window only for activities below -20'Columbia River Datum
[3] Winter window only for activities below -20' National Geodetic Vertical Datum 1947

Sandy River and Tributaries		July 15 – August 31	CHS, CHF, CO, STW, LAM*
Tanner Creek		July 15 – August 15	CHS, CHF, CO, STW, LAM*
Columbia River Tributaries (St. Helens to Sandy River)		July 15 – August 31	CHF, CO, STW, CT, LAM*
Columbia River Tributaries (Sandy River to Herman Cr.)		July 15 – August 31	CO, STW, STS, CT, LAM*
Spring Valley Creek		July 1 – October 15	CT, LAM*
SOUTH WILLAMETTE WATERSHED DISTRICT			
Corvallis Office	**(541) 757-4186**		
Willamette			
Willamette River (Keizer Rapids Park to McKenzie River)		June 1 – October 31	CHS, STW, CT, RB*
Mill Creek and Pringle Creek		July 1 – October 31	CT, RB, LAM*
Rickreall Creek		July 1 – October 31	STW, CT, LAM*
Luckiamute River		July 1 – October 31	STW, CT, LAM*
Santiam River, mainstem		July 1 – October 31	CT, LAM*
North Santiam River (below Big Cliff Dam)		July 15 – August 31	CHS, STW, CT, LAM*
Stout, Rock, & Mad Creeks		July 15 – October 31	STW, CT, LAM*
Little North Fork Santiam River		July 15 – August 31	CHS, STW, CT, LAM*
Sinker, Elkhorn, Big, Cedar Creeks & Tributaries		July 15 – October 31	STW, CT, RB, LAM*
Other Tributaries		June 1 – October 31	CT*
Other North Santiam River Tributaries (below Big Cliff Dam)		July 1 – October 31	CT, LAM*
North Santiam River (above Big Cliff Dam)		June 1 – August 31	CHS, CT, RB*
Breitenbush River		June 1 – August 31	CHS, CT, RB*
South Santiam River (below Foster Dam)		July 15 – August 31	CHS, STW, CT, LAM*
Crabtree Cr., Thomas Cr. & Wiley Cr.		July 15 – August 31	CHS, STW, CT, LAM*
McDowell and Hamilton Creeks		July 15 – October 31	STW, CT, LAM*
Other South Santiam River Tributaries (below Foster Dam)		June 1 – October 31	CT, LAM*
South Santiam River (above Foster Dam)		July 15 – August 31	CHS, STW, CT, RB*
Middle Santiam River & Quartzville Creek		June 1 – August 31	CHS, CT, RB*
Calapooia River			
Calapooia River (below Brownsville)		June 1- October 31	CT*
Calapooia River (above Brownsville)		July 15 – August 31	CHS, STW, CT, LAM*
Mary's River		July 1 – October 31	CT, LAM*
Long Tom River		July 1 – October 31	CT, LAM*
Other Willamette River Tributaries (Keizer Falls Park to McKenzie River)		July 1 – October 31	CT, LAM*

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Springfield Office	**(541) 726-3515**		
Willamette			
Willamette River (McKenzie River to Coast Fork Willamette)		June 1 – October 31	CHS, RB, LAM*
McKenzie River (below Leaburg Dam)		By specific arrangement	CHS, CT, RB, BUT, OC, LAM*
Tributaries of McKenzie River (below Leaburg Dam)		June 1 – October 31	CT, RB, OC*
McKenzie River (above Leaburg Dam)		July 1 – August 15	CHS, BUT, CT, RB*
Blue River (above Blue River Dam)		June 1 – October 31	CT, RB*
Middle Fork Willamette River (Confluence with the Coast Fork Willamette to Dexter Dam)		By specific arrangement	CHS, STW, CT, RB, OC, LAM*
Fall Creek & Little Fall Creek		July 1 – August 31	CHS, STW, CT, RB, OC, LAM*
Lost Creek		July 1 – August 31	CHS, STW, CT, RB, LAM*
Rattlesnake Creek		By specific arrangement	STW, CT, RB, OC*
Other Middle Fork Willamette River Tributaries (between the confluence with the Coast Fork Willamette and Dexter Dam)		June 1 – October 31	CT, RB*
Middle Fork Willamette River (Dexter Dam to Hills Creek Dam)		By specific arrangement	CHS, CT, RB, OC, LAM*
North Fork Middle Fork Willamette River		July 1 – August 31	CHS, CT, RB*
Salmon Creek		July 1 – August 31	CHS, CT, RB*
Salt Creek		July 1 – August 31	CHS, CT, RB, OC*
Middle Fork Willamette River (above Hills Creek Dam)		July 1 – August 15	CHS, BUT, CT, RB*
Coast Fork Willamette River (Confluence with the Middle Fork Willamette to Cottage Grove Dam)		By specific arrangement	CHS, RB, OC, LAM*
Coast Fork Willamette River (above Cottage Grove Dam)		May 15 – November 30	CT*
Row River (above Dorena Dam)		May 15 – November 30	CT*
Row River (below Dorena Dam)		June 1 – October 31	CHS, CT, RB, LAM*
SOUTHWEST REGION			
Umpqua Watershed District			
Roseburg Office	**(541) 440-3353**		
Pacific			
Umpqua River			
Umpqua Bay & Smith Estuary (tidally influenced)		November 1 – January 31	CHS, CHF, CO, STW, STS, CT, LAM, EU, LS, GS, WS, PH, SF, SHL*
Umpqua River Tributaries below Scottsburg (including Smith River)		July 1 – September 15	CHF, CO, STW, CT, LAM*
Umpqua River (Scottsburg and above)		July 1 – August 31	CHS, CHF, CO, STW, STS, CT, LAM*
Umpqua River Tributaries (Scottsburg and above)		July 1 – September 15	CHF, CO, STW, CT, LAM*
South Umpqua			

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South Umpqua River		July 1 – September 15	CHF, CHS, CO, STW, CT, LAM*
South Umpqua River Tributaries		July 1 – September 15	CHS, CHF, CO, STW, CT, LAM*
North Umpqua			
North Umpqua River (below Slide Creek Dam)		By specific arrangement	CHF, CHS, CO, STW, STS, CT, LAM*
North Umpqua River Tributaries (below Slide Creek Dam)		July 1 – September 15	CHS, CHF, CO, STW, STS, CT, LAM*
North Umpqua River and Tributaries (above Slide Creek Dam)		June 15 – October 15	RB, BT, BR*
Charleston Office	**(541) 888-5515**		
Pacific			
Coos			
Coos Bay Estuary and River (mouth to Millicoma River/South Coos River Confluence)		October 1 – February 1	JUV, CHF, CO, STW, CT, EU, LS, GS, WS, PH, SF, SHL*
Millicoma River, S. Coos River and Tributaries		July 1 – September 15	CHF, CO, STW, CT, MD, LAM*
Tributaries of Coos River and Bay (mouth to Millicoma River/South Coos River confluence)		July 1 – September 15	CHF, CO, STW, CT, LAM*
Coquille			
Coquille River Estuary (mouth to Bear Creek)		October 1 – February 15	JUV, CHF, CHS, CO, STW, EU, SHL, CT*
Tributaries of Coquille River (mouth to Bear Creek)		July 1 - September 15	CHF, CO, STW, CT, LAM*
Coquille River and Tributaries (Bear Creek and above)		July 1 – September 15	CHF, CO, STW, CT, CHS, LAM*
Other Coastal Tributaries		July 1 – September 15	CHF, CO, STW, CT, LAM*
Coastal Lakes		October 1 – February 15	JUV, CO, STW, CT, LAM*
Coastal Lake Tributaries		July 1 – September 15	CO, STW, CT, LAM*
ROGUE WATERSHED DISTRICT			
Gold Beach Field Office	**(541) 247-7605**		
Pacific			
Chetco River, Smith River (Curry County), Sixes River, Pistol River, Hunter Creek, Floras Creek, Euchre Creek, Elk River, Winchuck River, Brush Creek		July 15 – September 30	CHF, CO, STW, CT, EU, LAM*
Hubbard Creek, Mussel Creek		July 15 – October 31	STW, CT, LAM*
Myers Creek, Thomas Creek, Whaleshead Creek and Other Coastal Tributaries		July 15 – October 31	CT, LAM*
Rogue River			
Rogue River below Marial		May 1 – September 30	CHF, GS, LAM*
Rogue River Tributaries below Marial		July 15 – September 30	CHF, CO, STW, CT, LAM*
South Coast Estuaries including New River		October 1 – May 31	CHF, CO, SHL, MAR, LAM*

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Central Point Office	**(541) 826-8774**		
Rogue			
Rogue River (Marial to William Jess Dam)		June 15 – August 31	CHS, STW*
Illinois River		June 15 – September 15	CHF, STW*
Applegate River		July 1 – September 15	CHF, STW*
Other Rogue River Tributaries (above Marial)		June 15 – September 15	CHS, STW*
Rogue River (above William Jess Dam)		July 15 – October 15	BT, CT, RB*
EAST REGION			
DESCHUTES WATERSHED DISTRICT			
The Dalles Office	**(541) 296-4628**		
Columbia			
Columbia River (within District Bonneville to John Day Dam)		November 15 – March 15	CHF, CHS, SS, CO, STW, STS, LAM*
Columbia River Tributaries (Bonneville Dam to John Day Dam)		July 15 – September 30	STW, STS, CO, CT, RB*
Fifteenmile Creek		July 15 – October 31	STS, CT, LAM, RB*
Hood River			
Hood River		July 15 – August 31	CHF, CHS, CO, LAM, CT, STS, STW*
East Fork Hood River and Tributaries		July 15 – August 31	CO, LAM, CT, STS, STW*
Middle Fork Hood River and Tributaries		July 15 – August 15	STW, CHS, CT, BUT*
West Fork Hood River and Tributaries		July 15 – August 15	CHS, LAM, RB, STS, STW*
Deschutes			
Deschutes River (below Pelton Re-regulating Dam)		July 15 – August 15	CHF, CHS, CO, STS, LAM, BUT, RB*
White River		July 15 – October 31	RB*
Buckhollow Cr.		July 15 – October 31	STS, RB*
Bakeoven Cr.		July 15 – October 31	STS, RB*
Trout Cr.		July 15 – October 31	STS, RB*
Bend Office	**(541) 388-6363**		
Deschutes			
Metolius			
Metolius River		July 1 - August 15	CHS, SS, RB, WF, BUT*
Lake Creek including Spring Creek		July 1 – August 15	CHS, BUT, RB, WF, SS*
Crooked River			
Crooked River (below Bowman Dam)		July 1 – August 15	CHS, STS, BUT, RB, WF*
McKay Creek		July 1 – October 31	STS, RB, WF*
Crooked River (above Bowman Dam including Prineville Reservoir)		July 1 – October 31	RB*
Ochoco Creek (below Ochoco Dam)		July 1 – August 15	CHS, STS, RB, WF*

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Ochoco Creek and Tributaries (above Ochoco Dam)		July 1 – October 31	RB*
Deschutes River			
Deschutes River (Pelton Re-regulating Dam through Lake Simtustus and tributaries)		July 1 - October 31	RB, WF*
Deschutes River (Round Butte Dam through Lake Billy Chinook)		July 1 - September 30	CHS, STS, BUT, RB, WF, SS*
Deschutes River (Lake Billy Chinook to Big Falls)		July 1 – August 15	CHS, STS, RB, BR, BUT, K, WF*
Whychus Creek		July 1 – August 15	CHS, STS, RB, BR, WF, BUT*
Deschutes River (Big Falls to Wickiup Dam including Tumalo Creek, and Spring, Fall and Little Deschutes Rivers)		July 1 – October 15	RB, BR, WF*
Deschutes River (Wickiup Reservoir to Crane Prairie Reservoir)		July 1 – September 30	RB, BR, K, WF*
Deschutes River (Crane Prairie Reservoir to Little Lava Lake)		July 1 – September 30	RB, BT, K, WF*
Odell/Davis Lake and Tributaries		July 1 – August 15	K, RB, WF, BUT*
KLAMATH WATERSHED DISTRICT			
Klamath Falls Office	**(541) 883-5732**		
Klamath			
Klamath River (below Keno)		July 1 – September 30	RT, SNS, KRL, KLL*
Cottonwood Creek and Beaver Creek		July 1 – September 30	STS, RB, CO, CHF*
Jenny Creek		July 1 – January 31	RT, JCS*
Klamath River (above Keno)		July 1 – January 31	RT, LRS, SNS, KRL, KLL*
Lost River above Bonanza		July 1 – January 31	RT, SNS*
Lost River below Bonanza		July 1 – March 31	RT, SNS*
Williamson River		August 1 – September 30	RT, LRS, SNS, MLL, KLL, PKL*
Sprague River		August 1 – September 30	RT, BUT, LRS, SNS, KLL, PKL*
Sycan River		August 1 - September 30	RT, BUT, LRS, MLL, PKL*
Wood River		August 1 - September 30	RT, BUT, SNS, LRS, PKL*
Sevenmile Creek		August 1 – September 30	RT, LAM*
Klamath Lake and Agency Lake		July 1 – January 31	RT, LRS, SNS, KLL*
Silver Lake Tributaries		July 15 – October 30	RT*
Summer Lake and Tributaries		July 15 – October 30	RT*
Chewaucan River		July 15 – October 30	RT*
Goose Lake Tributaries		July 15 – October 30	RT, GSUC, MSUC, PSCL, PKL, GLAM*
Warner Valley Tributaries		July 15 – October 30	RT, WSUC*
Link River		November 1 – February 1	RT, LRS, SNS, KRL, KLL*

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MALHEUR WATERSHED DISTRICT			
Hines Office	**(541) 573-6582**		
Columbia			
Snake			
Snake River (Malheur County)		Open	
Malheur			
Malheur River (below Namorf Dam)		Open	
Willow Cr. (below Malheur Res.)		Open	
Willow Cr. (above Malheur Res.)		October 1 – March 31	RB, RT*
Cottonwood Creek and Squaw Creek		October 1 – January 31	RB, RT*
Other Tributaries		Open	
Bully Creek (above Dam)		October 1 – January 31	RT, RB*
Bully Creek (below Dam)		Open	
Malheur River (Namorf Dam to Wolf Creek)		November 1 – March 1	RT*
North Fork Malheur (below Beulah Res.)		November 1 – March 31	BUT, RT, RB*
North Fork Malheur (above Beulah Res.)		July 1 – August 31	BUT, RT, BT*
South Fork Malheur		October 1 – January 31	RT, RB*
Malheur River (including Wolf Creek and above)		July 1 – August 15	BUT, RT*
Owyhee River			
Owyhee River (below Dam)		November 1 – March 31	RB, BR*
Owyhee River (above Dam)		October 1 – January 31	RB, RT*
Succor Creek		October 1 – January 31	RT*
Closed Lakes Basins in Harney County			
Malheur Lake and Tributaries		October 1 – January 31	RT*
Silvies River (above 5 mile Dam)		October 1 – January 31	RT*
Silver Creek (above Moon Reservoir)		October 1 – January 31	RT*
Silver Creek (below Moon Reservoir)		Open	
East Burns Isolated Streams		October 1 - January 31	RT*
Donner and Blitzen River and Tributaries		October 1 – January 31	RT, WF*
Alvord Basin and Trout Creek Mountain Streams		October 1 – January 31	AC, LCT, RB, CT*
Catlow Valley Tributaries		October 1 – January 31	CT, CTC, RT*
Coyote Lakes Basin		October 1 – March 1	LCT*
Quinn River		October 1 – March 1	LCT*
Rincon		Open	

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JOHN DAY WATERSHED DISTRICT			
John Day Office	**(541) 575-1167**		
Columbia River			
Lower John Day			
John Day River (below John Day)		July 15 – September 30	STS, RT*
North Fork John Day			
North Fork John Day River (below US 395)		July 15 – September 30	STS, RT*
Middle Fork John Day			
Middle Fork John Day River (below US 395)		July 15 – September 30	STS, RT*
Middle Fork John Day River (above US 395)		July 15 – August 15	CHS, STS, RT, BUT*
North Fork John Day River (above US 395)		July 15 – August 15	CHS, STS, BUT*
Upper John Day			
South Fork John Day River			
South Fork John Day River		July 15 – August 31	STS, RT*
John Day River (above John Day, including Canyon Creek)		July 15 – August 15	CHS, STS, BUT, RT, CT*
Pendleton Office	**(541) 276-2344**		
Columbia			
Columbia River (John Day Dam Upstream)		December 1 – March 31	CHF, CHS, CO, STS, BUT, LAM*
Willow Creek		July 1 –September 30	RT, STS, LAM*
Umatilla			
Umatilla River (below Cayuse)		July 1 – September 30	CHF, CHS, CO, STS, RT, BUT, LAM*
Butter Creek		July 1 – September 30	RT*
Birch Creek		July 1 – September 30	STS, RT*
McKay Creek			
McKay Creek (below Reservoir)		December 1 – February 28	CHF, CHS, CO, STS, RT, BUT, LAM*
McKay Creek (above Reservoir)		July 1 – September 30	RT*
Wildhorse Creek		July 1 – September 30	CHF, CHS, CO, STS, RT, LAM*
Umatilla River (above Cayuse)		July 1 – August 15	CHS, CHF, STS, RT, CO, BUT, WF, LAM*
Meacham Creek		July 1 – August 15	CHS, STS, RT, BUT, WF, LAM*
Walla Walla			
Walla Walla River (below Forks)		July 1 – September 30	CHS, STS, RT, BUT, WF, LAM*
Pine Creek		July 1 – September 30	STS, RT*
Little Walla Walla Distributary System			
Little Walla Walla (below Ferndale Rd)		July 1 – September 30	STS, RT, BUT, LAM*

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Mill Creek		July 1 – August 15	CHS, STS, RT, BUT, WF, LAM*
Cottonwood Creek		July 1 – October 31	STS, RT*
Birch Creek		July 1 – October 31	STS, RT*
Couse Creek		July 1 – October 31	STS, RT*
South Fork Walla Walla River		July 1 – August 15	CHS, STS, RT, BUT, WF, LAM*
North Fork Walla Walla River		July 1 – September 30	STS, RT, BUT, WF, LAM*
GRANDE RONDE WATERSHED DISTRICT			
Enterprise Office	**(541) 426-3279**		
Columbia			
Snake River (state line to Hells Canyon Dam)		July 15 – October 15	CHF, CHS, SS, STS*
Snake River Tributaries		July 15 – February 15	STS*
Grande Ronde River (below Wallowa River)		July 15 – September 15	CHF, RT, STS*
Grand Ronde River Tributaries (below Wallowa River)		July 15 – February 15	PL, RT, STS*
Wenaha River		July 15 – August 15	PL, CHS, RT, STS, BUT*
Joseph Creek		July 15 – February 15	PL, RT, STS*
Wallowa River and Tributaries		July 15 – August 15	PL, CHS, STS, RT, BUT*
Minam River		July 1 – August 15	CHS, STS, RT, PL, BUT*
Imnaha River (above Highway 350 Bridge)		July 15 – August 15	PL, CHS, RT, STS, BUT*
Imnaha River (below Highway 350 Bridge)		July 15 – October 15	PL, RT, CHF, STS*
La Grande Office	**(541) 963-2138**		
Columbia			
Snake			
Grande Ronde River			
Grande Ronde River (Wallowa River to Red Bridge State Park)		July 1 – October 15	CHS, STS, RT, PL, BUT*
Grande Ronde River (above Red Bridge State Park)		July 1 – July 31	CHS, STS, RT, PL, BUT*
Lookingglass Creek		July 1 – August 15	CHS, STS, RT, PL, BUT*
Catherine Creek			
Catherine Creek (to and including Little Creek)		July 1 – October 15	CHS, STS, RT, PL, BUT*
Catherine Creek (above Little Creek)		July 1 – August 15	CHS, STS, RT, BUT*
Snake River Reservoirs		July 1 – November 30	
Snake River Reservoir Tributaries		July 1 – October 31	RT*
Burnt River		July 1 – October 31	RT*
Pine Creek			
Pine Creek (mouth to Carson)		July 1 – October 15	RT, BUT*
Pine Creek (upper Tributaries)		July 1 – August 31	RT, BUT*

[1] Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

Powder River			
Powder River (mouth to Phillips Reservoir)		July 1 – October 31	RT*
Upper Powder and Elkhorn Tributaries		July 1 – August 31	RT, BUT*

[1] Work period is established for named stream, all upstream tributaries, and associated lakes within the watershed unless otherwise indicated.

***Coded fish species defined below provide the primary basis for timing guidelines. The species list should be considered general information and is not necessarily comprehensive nor accurate.**

AC	Alvord Chub
BR	Brown Trout
BT	Brook Trout
BUT	Bull Trout
CHF	Chinook Salmon, Fall
CHR	Chinook Salmon, Summer
CHS	Chinook Salmon, Spring
CO	Coho Salmon
CS	Chum Salmon
CT	Cutthroat Trout (includes sea run)
CTC	Catlow Tui Chub
EU	Eulachon
GCB	Goose Lake Chub
GLAM	Goose Lake Lamprey
GS	Green Sturgeon
GSUC	Goose Lake Sucker
JCS	Jenny Creek Sucker
JUV	Juvenile Salmonids
K	Kokanee
KLL	Klamath Lake Lamprey
KLS	Klamath Largescale Sucker
KRL	Klamath River Lamprey
LAM	Lamprey Species
LCT	Lahontan Cutthroat Trout
LRS	Lost River Sucker

LS	Longfin Smelt
MAR	Various Marine Species of Fish
MD	Millicoma Dace
MLL	Miller Lake Lamprey
MMS	Malheur Mottled Sculpin
MSUC	Modoc Sucker
OC	Oregon Sucker
PH	Pacific Herring
PKL	Pit-Klamath Brook Lamprey
PL	Pacific Lamprey
PSCL	Pit Sculpin
RB	Rainbow Trout
RT	Red Band Trout
SF	Starry Flounder
SHL	Various Marine Shellfish
SNS	Shortnose Sucker
SS	Sockeye Salmon
SSUC	Sacramento Sucker
STS	Steelhead, Summer
STW	Steelhead, Winter
SUSP	Sucker Species
WF	Mountain White Fish
WS	White Sturgeon
WSUC	Warner Sucker

DRAFT: 12-21-21

APPENDIX D

Coming Soon!

APPENDIX E

Coming Soon!

APPENDIX F

MEMORANDUM

Oregon Department of Fish and Wildlife

Fish Division

Date: **March 28, 2008**

To: **Art Martin, Statewide Transportation Coordinator**

From: **Tom Stahl, Fish Passage Coordinator**

Subject: **Clarification of Fish Passage Triggers and Guidelines for Bridges**

This memo is intended to clarify when bridges trigger fish passage laws (ORS 509-580 through 910; OAR Chapter 635, Division 412). Additionally, new fish passage guidelines for bridges are detailed, which can be used for fish passage approval under the "Alternative Option" for road-stream crossings in ODFW's fish passage criteria (OAR 635-412-0035(3)(b)). This document shall remain in effect until ODFW revises it, passes new administrative rules, or updates fish passage criteria or guidelines and posts these on the ODFW website.

DEFINITIONS

The following definitions apply for the purposes of this memo (note: defined words or phrases are in italics throughout):

- "*active channel width*" means the stream width between the ordinary high water (OHW) lines[1], or at the channel bankfull elevation[2] if the ordinary high water lines are indeterminate (OAR 635-412-0005(2)). Note that in bays and estuaries, the *active channel width* is calculated as the summation of the *active channel widths* of all freshwater streams entering the bay or estuary upstream of the site (per OAR 635-412-0035(4)(b)). Also note that, for fish passage requirement compliance, *active channel width* should be determined outside the influence of artificial structures or impacts and confluent tributaries[3]. See Figure 1.

- "*bed*" or "*bed and banks*" means the physical container of the waters of this state, bounded on freshwater bodies by the ordinary high water line or bankfull stage, and on bays and estuaries by the limits of the highest measured tide (OAR 635-412-0005(6)). Note that the *bed and banks* of a stream determine its *channel*[4]. See Figure 2.

- "*bridge*" means a set of structural *elements* allowing a road and waters-of-the-state to cross which a) is open-bottomed and has a *clear span* greater than 20 feet or b) is open-bottomed, does not have earthen fill on top of it, and has a *clear span* less than or equal to 20 feet[5].

- "*channel*" means a waterway that periodically or continuously contains moving waters of this state and has a definite *bed and banks* that serve to confine the water (OAR 635-412-0005(7)). Note that, for fish passage trigger determination, the *channel* should be determined outside the influence of artificial structures or impacts and confluent tributaries (see Endnote #3). See Figure 2.

- "*clear span*" means the open distance between *bridge elements* within the horizontal plane of the channel passing below the *bridge*. See Figure 3 for a depiction of the horizontal plane of the channel and Figure 4 for measurement examples.

- "*element*" or "*bridge element*" means any part of a *bridge* that supports or provides a roadway (i.e., is structural) or provides structural protection[6].

BRIDGE TRIGGERS

This section only defines when fish passage must be addressed at *bridges*[7], not whether a new, replacement, or existing *bridge* meets fish passage requirements or is a barrier. If fish passage must be addressed, some form of ODFW fish passage approval will be needed (see next section for more information on passage approval options).

A *bridge* must address fish passage only if all three of the following apply:

1. native migratory fish are currently or were historically present at the location[8],

2. one of the following will occur (note: these are the potential trigger actions):

    a. a new *bridge* will be constructed at a location where there is no existing crossing (OAR 635-412-0005(9)(a)),

    b. a replacement *bridge* will be constructed at a location where there is an existing crossing (OAR 635-412-0005(9)(a)), **or**

    c. over 50% of an existing *bridge's elements* within, below, or above the *channel* are cumulatively removed, replaced, filled, or added to through time (OAR 635-412-0005(9)(b)(D); see endnotes for more regarding the 50% calculation[9]), **and**

3. any *element* of a new, replacement, or existing *bridge*, or any part of an existing crossing being replaced by a *bridge*, is within or below the *channel* (see Figure 5).

FISH PASSAGE REQUIREMENTS FOR BRIDGES

Existing criteria in rule for road-stream crossings only describe a Stream Simulation option and an Alternative option (OAR 635-412-0035(3)). *Bridges* and other crossings do not qualify under the Stream Simulation option if a) there is any *bridge element* within the *channel* (including on, or replacing, the *bed and banks*) and b) they do not have a *clear span* greater than or equal to the *active channel width*[10] (see Figure 6). In these cases it is also difficult or time-consuming to show that an Alternative design will meet certain hydraulic conditions in the *channel* that allow for fish passage, based on known or assumed fish swimming abilities (i.e., the "Hydraulic Design" method). Therefore, other Alternative options for fish passage approval of *bridges* are presented here. So, if a) native migratory fish are or were present in a location, b) a new, replacement, or existing *bridge* has any element within or below the *channel*, c) there will be a trigger event, and d) fish passage will be provided, the following design options may be used to obtain fish passage approval for *bridges* from ODFW.

	Eligible for Programmatic Approval	Passage Design/ Review Basis
Stream Simulation Design[11] • *beds* or *clear spans* under should be equal to or greater than the *active channel width*, with no *element* within the active *channel* • *beds* under should be equal to the slope of, and at elevations continuous with, the surrounding long-channel streambed profile • *beds* under should maintain average water depth and velocities that simulate those in the surrounding stream *channel*	YES	Structure and Channel Measures

	Eligible for Programmatic Approval	Passage Design/ Review Basis
Stream Simulation Design (continued)		
• *beds* under should be maintained through time • *beds* under should be composed of material that is similar in size and composition as the surrounding stream, but may be naturally supplemented to address site specific needs including, but not limited to, *bed* retention and hydraulic shadow[12] • *beds* under, if being placed or replaced, should be mechanically placed during installation • trash racks shall not extend below the top of the *channel* (i.e., OHW or bankfull elevation) and shall have a minimum of 9 inches clear spacing between vertical members		
Alternative 1: Larger-Scale Crossing Design[13] • only applies to channels greater than 35 feet wide[14] • there should be at least one *clear span* of 35 feet within the *channel* • no more than 25% of the *active channel width* should be filled (see Figure 7) • no more than 25% of the *bed and banks* should be filled (see Figure 7) • *bridge elements* should only fill one channel margin (i.e., one bank at the OHW or bankfull lines)[15], and, where a margin is filled, the fill should not exceed a 1:1 slope or have a Manning's coefficient less than 0.3 • *beds* under should meet Stream Simulation requirements described above, excluding the requirement for being *active channel width*	YES	Structure and Channel Measures
Alternative 2: Hydraulic Design[16] • water velocity at the high fish passage design flow should be no greater than 2 feet per second • water depth at the low fish passage design flow should be at least the lower of: the surrounding stream, 6 inches if only juveniles require passage at a given time, or 12 inches if adults require passage at a given time • if there is a stream discontinuity (i.e., hydraulic or grade drop), jump height, jump pool depth, and energy dissipation requirements should also be addressed	NO	Hydrologic/ Hydraulic Calculations
Alternative 3: Future Replacement or Removal[17] • only applies to **existing** *bridges* • only applies to *channels* greater than 20 feet wide • *clear span* should be greater than or equal to ½ of the *active channel width* or 20 feet, whichever is greater • *beds* under should meet Stream Simulation requirements described above, excluding the requirement for being *active channel width* • *bridge* shall be placed on a list for future replacement with a *bridge* which meets either the Stream Simulation or Larger-Scale Crossing Design option or for future removal[18]	?	Structure and Channel Measures

If none of these options can be met for a new, replacement, or existing *bridge*, the owner/operator of a crossing should have more detailed discussions with ODFW about how best to meet legal fish passage requirements. Other possible approval options include providing passage under some other Alternative design (which may entail exceptions to criteria or guidelines, some combination of the options noted above, or the use of another entity's criteria or guidelines[19]), waivers, exemptions, or deferrals for structural emergencies that may affect human safety.

As with all temporary construction activities, passage requirements for temporary *bridges* or construction isolation measures shall be approved by ODFW staff on a site-specific basis and do not necessarily have to meet ODFW's full passage criteria or guidelines. Temporary construction activities are those which take place only within an approved in-water work window. An approved in-water work window may include extensions to published dates that are approved by ODFW. Any structure in place outside of an approved in-water work window will require more formal fish passage approval from ODFW. Work *bridges* that are not permanent, but do not meet ODFW's criteria for being temporary, may qualify for approval under "Alternative 3: Future Replacement or Removal" and be covered generally in a programmatic agreement.

[1] Defined in OAR 635-412-0005(34).

[2] Defined in OAR 635-412-0005(5).

[3] For locations with an existing artificial structure, the *channel's* delineation and *active channel width* should not be determined at the site. Consult ODFW for appropriate methods to determine these.

[4] Consistent with ODFW's definition of *active channel width* (OAR 635-412-0005(2)), the ordinary high water lines are the primary determinant of a *channel*, and only if they are indeterminate should the secondary determinant, bankfull stage, be used.

[5] Open-bottomed culverts, whether arched, rectilinear, or some other form, are not addressed in this memo and their triggers differ.

[6] This includes both superstructure *elements* (including, but not limited to: decks, girders/beams/stringers, wearing surfaces, diaphragms, trusses, and bearings) and substructure *elements* (including, but not limited to: bents/piers, abutments, footings, caps, piles, drilled shafts, columns, retaining walls, wing walls, approach fills, roadway embankments, impact panels, riprap, and other means of scour protection). This excludes ancillary *bridge* parts, such as signs, lighting, *bridge* rails, guardrails, or other items for vehicular or pedestrian safety.

[7] As currently written, triggers under OAR 635-412-0005(9)(d) for culverts, and roads above them, do not apply to *bridges*.

[8] Unless native migratory fish presence is assumed, ODFW determines current and historic use by native migratory fish (i.e., an owner/operator of an artificial obstruction can assume native migratory fish are or were present, but can't assume they aren't or weren't present without contacting ODFW).

[9] 50% of the structure should be calculated by volume. For irregular or complicated forms (e.g., I-beams, hollow tubes, or other odd shaped *bridge* elements), either a rough outer volume or an actual volume may be calculated, as long as the same type of calculation is used for both the work in question for the trigger and the entire structure to which it will be compared to determine the percentage. Rather than complicated calculations for *bridge element* volumes, ODFW is open to suggestions regarding other means to determine if *bridge* repair/maintenance/modification actions will affect 50% of a *bridge* and constitute a trigger.

[10] If an *element* is within the *channel*, but the *clear span* is greater than the *active channel width*, then the structure would still be considered to meet Stream Simulation requirements. This allows for *channel* migration and assumes at least one naturally-functioning bank is present. See Figure 6.

[11] Criteria for vertical clearance and over-sized rock that are included in OAR 635-412-0035(3)(a) for Stream Simulation designs are not included here; ODFW is establishing a general exception by this memo, per OAR 635-412-0035(1)(d), for *bridges* for these two criteria.

[12] If this condition is met, it is assumed that the *bed* under the *bridge* is stable and there is no hydraulic drop, grade drop, *channel* degradation, or *channel* aggradation being caused by the *bridge*. Rip rap or other *bridge* protection may be placed below the *channel's bed and banks* (i.e., sub-grade). Above this, a top dressing of native material, which may also include over-sized rock, should comprise the *bed and banks*. This *bed and banks* must persist through time. The depth of native top dressing should be determined on a site-specific basis, addressing the risk of losing the native material and exposing the sub-grade, engineered protection (e.g., greater risk of native material degradation would require greater depth of native material).

[13] Guidelines apply to any given stream cross-section through the affected stream length.

[14] 35 feet is an approximate opening through which large wood is expected to pass, allows support for a standard temporary *bridge* span of 40 feet, and is the scale at which ODFW is comfortable that hydraulic constrictions of 25% will not have a significant impact on water velocity and fish passage without further documentation.

[15] ODFW strongly recommends the avoidance of channel margin reduction, as certain native migratory fish species and life history stages may migrate in this area and it provides habitat which is not available in other channel locations. If the guidelines for margin reduction are followed, this should reduce the impact to fish passage, although new information may prove these guidelines inadequate for passage of all native migratory fish and habitat impacts (which may need further habitat mitigation) will still occur.

[16] Hydraulic Design guidelines are contained in other ODFW documentation. The major items are only briefly addressed in this document. For *bridges*, open channel flow models or FishXing can be used to demonstrate hydraulic conditions will be met. In addition, ODFW will consider other information or models that show certain structure and channel conditions will meet hydraulic conditions.

[17] The legal basis for this type of approval is ODFW's authority under OAR 635-412-0020(4)(c) to approve "incremental passage plans", which provide that some level of fish passage is installed or exists at the time of the trigger event and full fish passage is provided at some point in the future.

[18] Timing of replacement will be determined by ODFW with the owner/operator on a site-specific basis, and will likely be based upon when the entity will have funding available and ODFW prioritization for fish passage needs across sites.

[19] NMFS or WDFW Stream Simulation criteria/guidelines are examples.

Figure 1. Delineation of the *active channel width*.

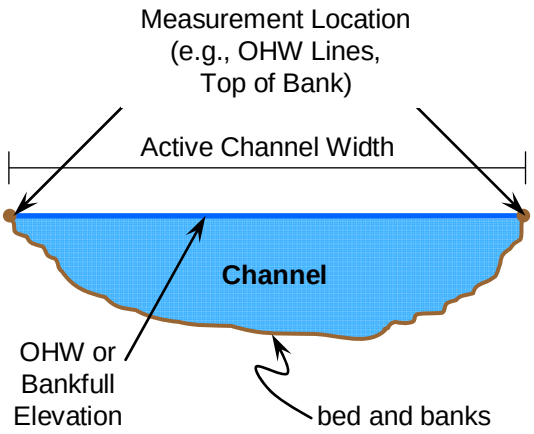


Figure 2. Delineation of a channel.

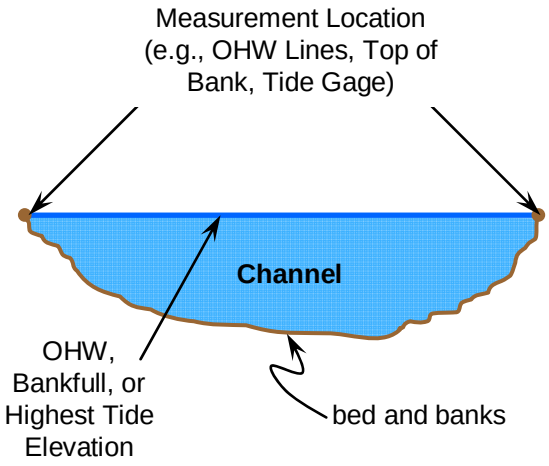


Figure 3. The horizontal plane of the channel (shaded).

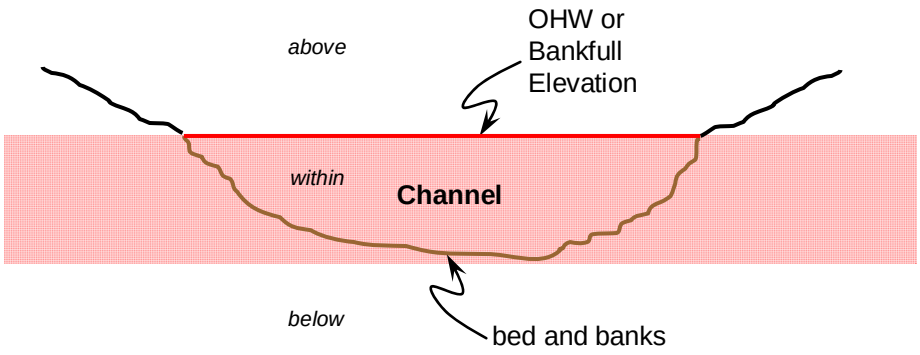


Figure 4. Examples of *clear span* measurements. Note that all situations except Figure 4-a could trigger fish passage laws due the presence of *elements* within or below the *channel* (see Figure 5). Note that new bridges are designed so that footings will not be exposed due to scour. Also note that of the remaining situations only Figure 4-b would meet the *active channel width* criterium for Stream Simulation design (even though in this case the *clear span* is less than the *active channel width*; see Figure 6). Also relative to Figure 4-b, if footings are above the deepest part of a channel that would naturally occur at the site, the clear span is the distance between the footings, assuming there are no other closer elements such as rip-rap within the horizontal plane of the channel.

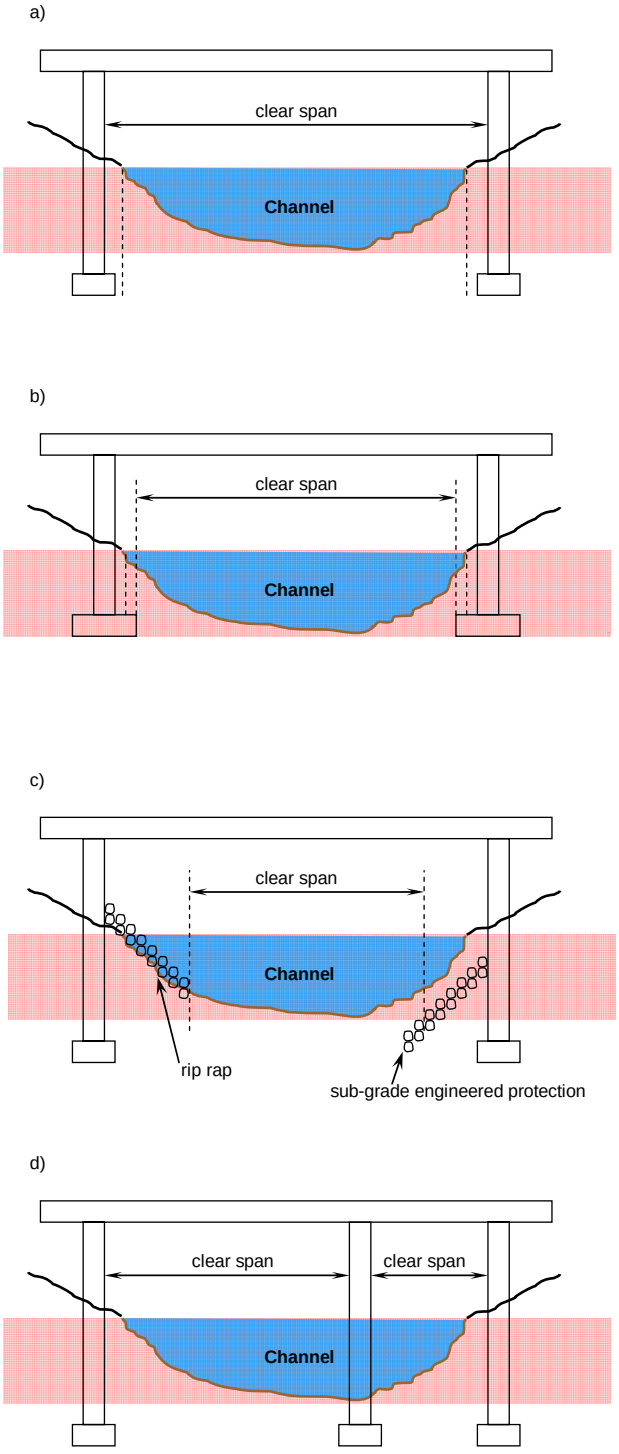


Figure 5. Zones relevant to bridge triggers. Presence of *bridge elements* in the "shaded zone" (i.e., within or below the *channel*) determines whether a trigger is possible. All (and only) *bridge elements* in the vertical plane of the *channel* (i.e., within, below, and above) should be considered for the 50% measure of whether repair/maintenance/modification of an existing *bridge* is a trigger.

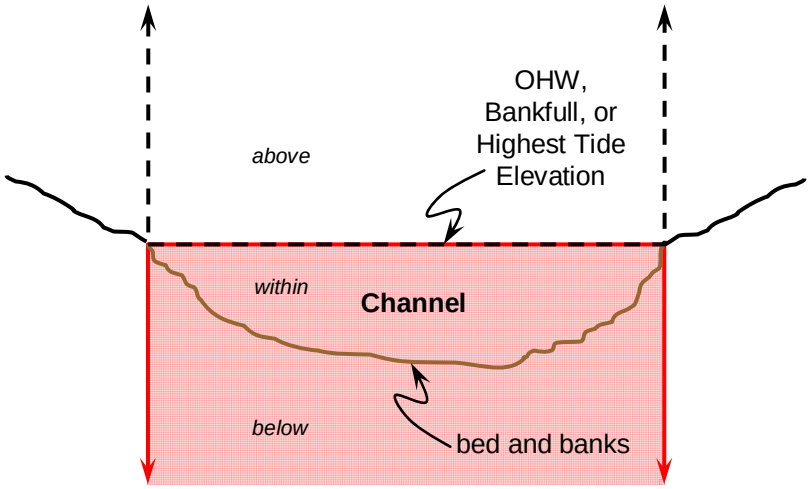


Figure 6. Channel conditions and/or clear span determine whether the Stream Simulation *active channel width* (ACW) criterium is met. The bridge in this diagram meets the Stream Simulation ACW criterium for both channel cases.

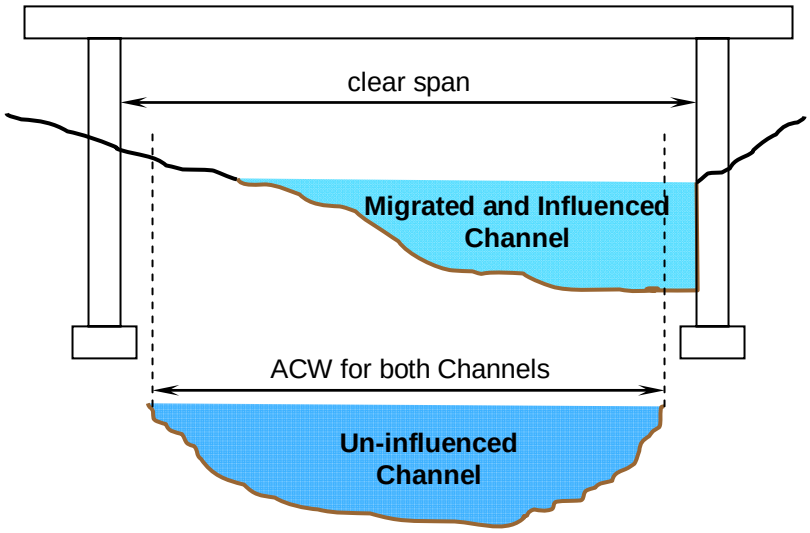
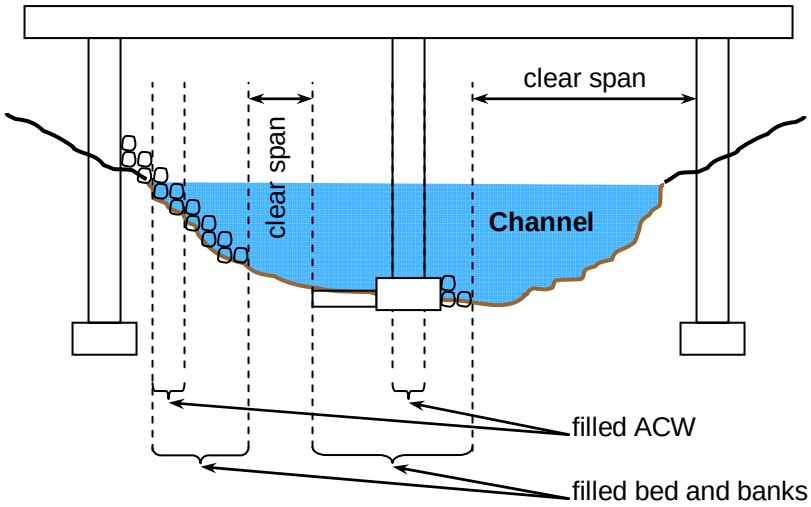
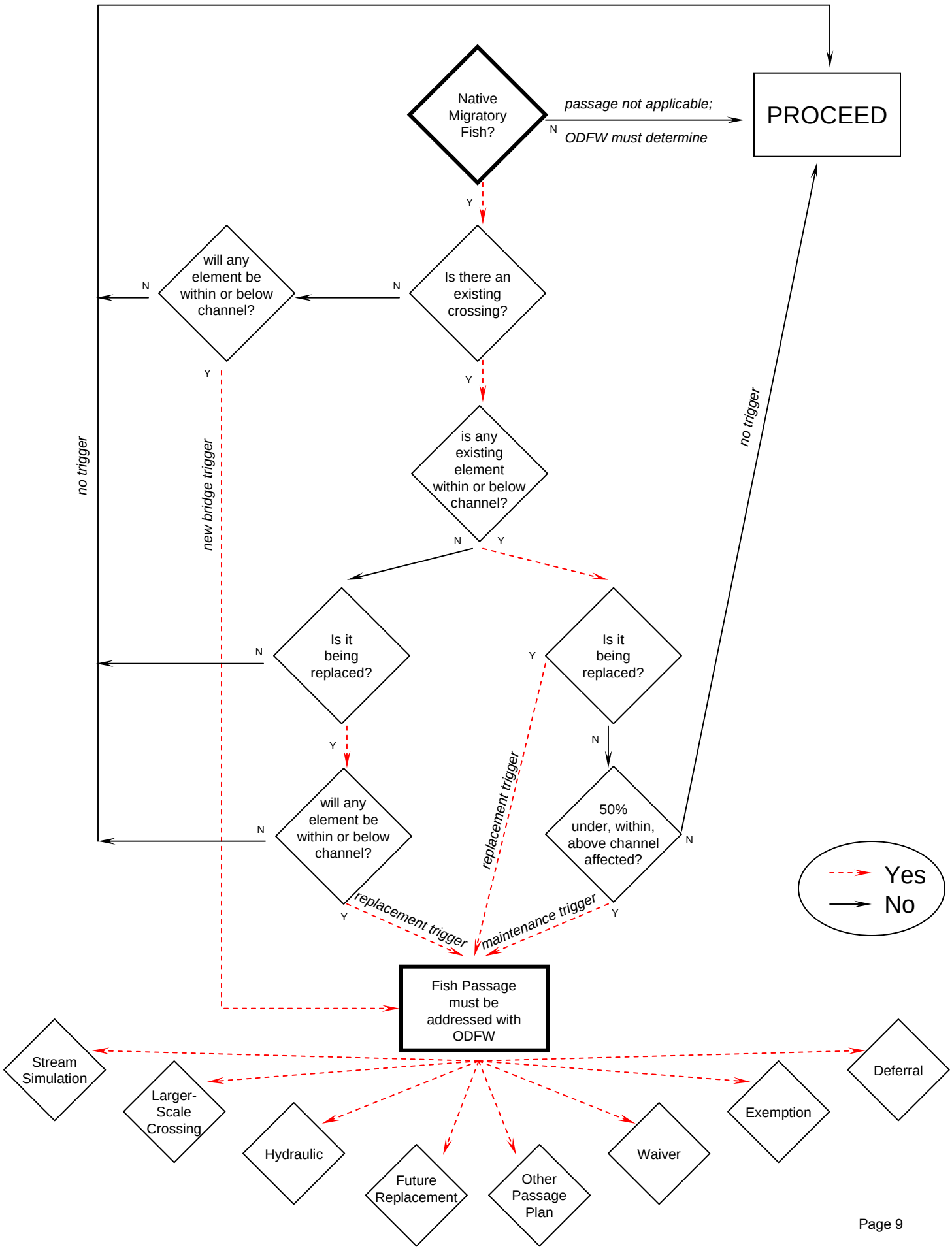


Figure 7. Examples of measurements for Larger-Scale Crossing Guidelines. Note that *active channel width* (ACW) fill is measured at the OHW or bankfull elevation. Anything that replaces or is placed on the *bed and banks* counts toward filled *bed and banks* (e.g., rip rap, exposed footers, poured concrete scour protection).



Appendix 1. Summary of fish passage requirements' applicability to bridges.



APPENDIX G

Group	Location	Material	Quantity	Tank Size Gallons	Type	Notes/Questions
Facilities	Silverton Rd, Building 1	Diesel B5	1	1,000	UST	*One Diesel UST - Leak detection equipment and spill containment per DEQ*
Fleet	Silverton Rd,	Liquid Propane	1	500	AST	
Fleet	Silverton Rd, Building 3	Diesel R99	1	20,000	UST	*One Diesel UST - Leak detection equipment and spill containment per DEQ*
Fleet	Silverton Rd, Building 3	Gasoline E-10	1	15,000	UST	*One Gasoline UST - Leak detection equipment and spill containment per DEQ*
Fleet	Silverton Shop	Diesel R99	1	2,500	UST	*One Diesel UST - Leak detection equipment and spill containment per DEQ*
Fleet	Silverton Shop	Gasoline E-10	1	1,000	UST	*One Gasoline UST - Leak detection equipment and spill containment per DEQ*
Fleet	North Marion	Diesel R99	1	5,000	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	North Marion	Gasoline E-10	1	1,000	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	Aumsville Shop	Diesel R99	1	2,500	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	Aumsville Shop	Gasoline E-10	1	1,000	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*

Fleet	Browns Island	Diesel R99	1	2,500	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	Browns Island	Gasoline E-10	1	500	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	CDO/ PSB	Gasoline E-10	1	3,000	AST	*Same tank separated by an internal wall - one side is diesel the other is gasoline - DEQ leak detection not a requirement for AST (Above Gound Storage Tanks) - Tank fill point spill bucket containment and spill containment under pump housing*
Fleet	Silverton Rd, Building 4	Magnesium Chloride	1	10,000	AST	*Deicing agent*
Radio	House Mountain	Liquid Propane	6	1,000	AST	
Radio	Crosby	Liquid Propane	1	500	AST, portable	
Radio	Wipper	Liquid Propane	1	500	AST	
Radio	Lower Prospect	Liquid Propane	2	500	AST	
Roads	Aumsville Shop	Magnesium Chloride	1	6,500	Portable tanker	*Deicing agent (trailer asset is under Roads, product is under Fleet inventory)*