



Chapter 1

Introduction

What Is the toolbox?

This Stormwater Toolbox for Maintenance Practices was developed by the Oregon Association of Clean Water Agencies, with a grant from the Lower Columbia River National Estuary Program. The toolbox provides quick and easy guidance for maintenance staff about ways to integrate water quality-friendly practices into routine everyday maintenance activities.

How should the toolbox be used?

The toolbox can be a guide for maintenance managers and field crews alike. Managers can use the activities checklist in Chapter 2 as a starting point for describing the overall maintenance program. Crews can refer to Chapters 3 through 7 in the field. These chapters provide “Clean Water Tips” for various types of maintenance practices, such as roadway repair and storm sewer cleaning and repair. Case studies from other organizations with successful stormwater programs are presented, together with names and numbers of contacts to help locate additional information.

Chapters 8 and 9 present ideas for managers and field staff about stormwater education and Chapter 10 lists resources for more information. Each chapter in the toolbox may be pulled out and used individually, so naturally there may be some redundancy between chapters.

The toolbox should be considered a starting point for describing and evaluating your program. It does not provide detailed guidelines or design specifics. Refer to the documents listed in Chapter 10 and other design manuals for more details.

How does maintenance affect stormwater quality?

Maintenance practices which remove sediment, trash, and debris from roadways and storm sewers can help prevent flooding and related damage and erosion. But these practices can also help protect stormwater and stream quality. Sediment removal is particularly important. This is because metals, pesticides, and other pollutants are often physically or chemically bound to the dirt and organic leaf materials that wash from city streets and other paved surfaces. A maintenance program which removes this material before it's discharged into storm sewers and drainage courses helps improve water quality. Sediments reaching streams and rivers can cover fish spawning gravels, create cloudy water conditions, and lead to silt build-up. Pollutants carried in these sediments — including oil and grease, hydrocarbons and metals from auto use — can degrade water quality and build up in stream bottom materials.



Floatable wastes (e.g., trash and debris) carried to streams through the storm sewers collect at points where the stream narrows, blocking water flow and creating an eyesore and public nuisance. Large amounts of vegetative (organic) material reaching the streams will deplete oxygen levels as it breaks down, and these low oxygen levels will not support fish and aquatic life.



Other maintenance operations also can affect stormwater quality. These include inspection and servicing of fleet vehicles and equipment and the manner in which the maintenance facilities and yards are operated. When waste materials and chemicals leak or spill at these locations, they may be carried from the site in stormwater runoff to the storm sewers or nearby creeks. Simple housekeeping practices can reduce the risk of adding these pollutants to the environment.



Maintenance of bridges and other structures can contribute metals to waterways in the form of paint scrappings and abrasives. Metals in stormwater affect sensitive animal species, plants and fisheries, and enter the food chain through animal tissue eaten by humans and other animals.



The use of sands and gravels for ice control in the winter can contribute to the suspended solids loads delivered to a stream. Also, the use of certain deicing chemicals can deplete

a waterway's dissolved oxygen which is needed for fish to survive. The use of salts on roadways for ice control has been banned in Oregon due to the negative impacts on water quality.



Pesticides and herbicides improperly applied in roadside areas have the potential to cause damage in receiving streams. Large amounts of some of these chemicals accumulating over time can kill or cause deformities in fish and other aquatic life. Some pesticides are very persistent in the environment and take many years to naturally degrade. Use of these materials should be a careful decision – choose chemicals that are less harmful to the environment and rotate types of chemicals applied. Select herbicides that are designed to destroy invasive plants while retaining a certain amount of vegetation which can help filter stormwater runoff, stabilize slopes and prevent erosion. Strike a balance between chemical treatment needed for safety and fire control with protection of water quality.

Finally, roadway repair and utility work in the right-of-way can contribute sediment and construction waste materials to stormwater runoff.

Proper and regular maintenance of the entire storm sewer system, including components such as pipes, inlets, and ditches is important. Regular inspection and cleaning of specialized stormwater quality facilities such as oil/water separators, compost and sand filters, detention ponds and grassed swales is also critical. Otherwise, stormwater flows may bypass these facilities without any treatment at all.

Why should we act now?

Several large municipalities in Oregon already have stormwater permits which require them to conduct maintenance practices in a manner which protects water quality. Eventually smaller agencies will be brought into the permitting process in about the Year 2002. But, regardless of an organization's size or permitting status, there are good reasons to begin NOW:

- Many of the actions described in this toolbox are common sense ideas for environmental protection.
- Most activities can be easily adopted as part of existing daily maintenance routines.
- The public expects water quality and natural resource protection to be handled, in addition to traditional flood control.

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- Agency personnel should set an example of effective pollution prevention for the general public.
 - Improved maintenance practices that reduce pollutant loadings to sensitive streams can help protect and potentially restore fisheries.
 - Finally, the anticipated new stormwater regulations will be requiring these types of improved actions for both large and small municipalities.