

Chapter 6

Keeping a Clean Maintenance Shop/Yard

Maintenance shops and equipment yards play an important role in a public works department, just as they do in any industry. However, maintenance and storage of vehicles and equipment involves many substances that are extremely harmful to the environment. Fuel, solvents, metal shavings, lubricants, and other materials all cause toxic effects if they are allowed to enter stormwater runoff. Also, bulk storage of materials such as hazardous wastes, fuels, emulsified oil, asphalt, concrete, and sand can contribute to stream pollution if the materials are not managed and contained properly.

The facility audit

How clean is your agency's maintenance yard? The best way to answer this question is to conduct a self-audit of your facility. Use the checklist provided on the next page or a standard checklist designed for industrial stormwater inspections. The audit should take no longer than three hours for an average-sized facility. Or, conduct the audit in phases. When the audit is completed and the checklist is filled out, your agency will have a good sense of what improvements should be made to better protect stormwater quality. See the Case Study below that describes the City of Gresham's audit process.



Maintenance Yard Audit Checklist

Use this checklist of clean water tips as a guide for conducting water quality-friendly maintenance practices. Refer to the rest of this chapter for details regarding each clean water tip.

| Practice | Done ✓ | Clean Water Tip | Tip # |
|---------------------|---------------|-----------------------------------|--------------|
| Prevent exposure | | Perform maintenance indoors | 1 |
| | | Provide dead-end sump | 2 |
| | | Wash in a contained area | 3 |
| | | Cover bulk materials | 4 |
| | | Label & store containers properly | 5 |
| | | Disconnect process drains | 6 |
| Provide containment | | Use drip pans for parked vehicles | 7 |
| | | Drain fluids from vehicles | 8 |
| | | Contain large fuel tanks | 9 |
| | | Contain uncovered bulk materials | 10 |
| | | Store containers on pallets | 11 |
| | | Use dumpsters with lids | 12 |
| | | Clean up spills promptly | 13 |
| | | Regrade site to divert stormwater | 14 |
| Remove pollutants | | Provide oil & grease controls | 15 |
| | | Apply erosion control | 16 |
| | | Use sediment controls | 17 |
| | | Install stormwater filters | 18 |
| | | Build stormwater detention | 19 |
| Other steps | | Don't generate additional water | 20 |
| | | Educate staff | 21 |
| | | Reduce chemical use | 22 |
| | | Recycle wastes | 23 |
| | | Consider alternative products | 24 |
| | | Prepare site drainage map | 25 |
| | | Inspect storm sewers monthly | 26 |
| | | Keep water out of dumpsters | 27 |

Clean water tips for a clean shop/yard

Keeping a clean shop/yard in large part involves common sense measures. The easiest way to minimize pollutants in runoff is to prevent exposure to stormwater in the first place. The next best measure is to provide containment so the pollutant(s) doesn't come in contact with stormwater runoff. The least desirable, and most expensive way to protect stormwater quality is to remove pollutants after they are in the runoff. The following are some tips for keeping a clean facility:

Prevent Exposure to Stormwater.

Take the following steps to keep all potential pollutants within areas of the site where they do not come into contact with rain water, stormwater runoff, or washwater from other site activities:

- 1. Perform vehicle/equipment maintenance in a single, designated covered facility.** Four walls are not always necessary, often just a roof will suffice if runoff is routed around the facility.
- 2. Provide a dead-end sump in maintenance areas for collecting all spills and leaks.** Clean out the sump regularly and recycle or dispose as hazardous waste.
- 3. Perform vehicle/equipment washing in a single, designated covered facility.** Recycle wash water and/or discharge to the sanitary sewer system.
- 4. Store bulk materials under cover (e.g., roof or tarps).**
- 5. Make sure all containers are labeled and stored correctly.** Store indoors whenever possible, and routinely check for leaks.
- 6. Make sure that building drains or drains in outside storage or processing areas do not discharge to the storm sewer system.** Process areas should be graded or bermed to minimize stormwater run-on to drains. The drains should then be connected to the sanitary sewer system or an on-site recycling or treatment unit.

 **Provide Containment.**

If maintenance or storage cannot be done indoors or under cover, follow these suggestions:

- 7. Use drip pans and other containment devices to prevent spills while servicing vehicles, or for vehicles and equipment parked for extended periods.**
- 8. Drain fluids out of equipment and vehicles that sit idle for more than a month.**
- 9. Enclose fuel tanks and other large liquid containers within secondary containment.** Include valves that can be closed to prevent a large spill from traveling offsite. Follow other regulations to properly size the tank containment area.
- 10. For bulk materials stored without cover, provide containment berms or walls and install inlet protection on nearby storm sewer drains.** Sweep or vacuum accumulated material behind the inlet controls regularly. Since these uncovered areas can collect rainwater, install valves that allow drainage but can be closed to prevent spills from traveling to the rest of the site.
- 11. For containers stored without cover, make sure they are labeled and stored correctly within secondary containment areas.** See Tip #10 about the need for a valve in uncovered containment areas.
- 12. Use dumpsters with lids for storage of waste materials and garbage.**
- 13. Clean up spills promptly.** Use absorbent material, such as kitty litter, to clean up liquid spills. Provide materials to cover drains until spills are cleaned up. Install spill kits in areas where accidents can occur (e.g., fueling areas).
- 14. For new or remodeled facilities, consider ways to grade the site so that stormwater is diverted away from fueling, storage and disposal areas.** Also, grade and construct berms the entire site so that all stormwater runoff stays within the property boundaries. Keep clean water away from all potential sources of pollution.


Remove pollutants from runoff.

When stormwater runoff contains pollutants, consider the following methods for cleaning the water before it's discharged from the maintenance facility to the storm sewer or drainage course. This is a brief overview only, so be sure to consult other handbooks and manuals for other types of devices and information about pollutant removal effectiveness. Also, see the Research Notes later in this chapter about the work being done nationally to study effectiveness of best management practices. Before choosing or installing any stormwater treatment devices, be aware of any environmental regulations that might apply to water discharged from the site to streams and water bodies.

- 15. Apply oil and grease controls.** Use oil/water separators, booms, skimmers or other commercially-available devices to eliminate or minimize oil and grease pollution of stormwater runoff. Keep in mind that all of these devices require frequent inspection and maintenance or they will cease to be effective.
- 16. Control erosion.** Stabilize exposed soil areas to prevent soil from eroding during rain events. This is particularly important on steep slopes. The best and generally most cost-effective choice is to vegetate the area, preferably with a mulch or binder that will hold the soils in place while the vegetation is establishing. There are several good commercially-available products to choose from, and native vegetation should be used if possible. If vegetation is not an option, apply temporary erosion control mats/blankets or use gravel as appropriate.
- 17. Install sediment controls.** Once sediment is already eroded and mobilized on a site, steps must be taken to keep it out of the storm sewer system or waterways. There are a variety of temporary controls commercially available that should be considered, for both slowing down the flow of water (to allow sediment to drop out) and holding the sediment back. These include: sediment control fences, fabric-covered triangular dikes, gravel-filled burlap bags, biobags or hay bales staked in place, and sediment detention ponds.
- 18. Consider stormwater filters.** Stormwater filters rely on vegetation, compost, sand or other filter media to filter out pollutants in stormwater. Generally, vegetative controls can be incorporated

easily into site landscaping and will require very little maintenance if native plants are used. Popular choices for stormwater filters include grassed swales and filter strips, compost filters, and sand filters. A variety of temporary storm drain inlet filter inserts are also available.

- 19. Consider stormwater detention ponds and wetlands.** For larger maintenance yards, consider installing detention ponds or wetlands to treat site runoff before it is discharged to the storm sewer system or waterways. Refer to design documents listed in Chapter 10 for specifics about designing and constructing these types of facilities. Ponds and wetlands allow larger sediment particles to settle out, and therefore, accumulated silt must be cleaned out periodically. Dredged sediments should be tested to determine proper disposal options.

 *Other steps.*

- 20. Don't generate additional water.** Sweep, vacuum or mop floors, sidewalks, and pavement rather than hosing them down. Dispose of swept materials properly. Use absorbent to soak up leaks and spills.
- 21. Educate staff.** Make sure all facility workers understand how their actions can affect stormwater quality. This includes those agency staff using the facility on a periodic basis, to deliver or pick up materials and supplies. At a minimum, staff should know proper procedures to deal with spills and leaks. There are various ways to educate and inform people, including presentations at safety meetings, posting signs, showing videos and providing training sessions.
- 22. Reduce chemical use whenever possible.** Consider adopting new practices that use less or no chemicals, as a way to save money and protect the environment.
- 23. Recycle wastes.** Recycle used oil, solvent, grease rags, washwater, and other spent liquids. Recycling often saves money (after an initial investment in some cases). Store materials awaiting recycling under cover with secondary containment. Also follow proper waste management requirements set up by the Department of Environmental Quality and/or the local fire department.

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- 24. Consider alternative products.** Consider using less harmful materials, such as non-phosphorus soaps and cleaners without petroleum solvents.
- 25. Prepare a site drainage map.** Make a copy of an existing site map for the maintenance facility, or draw a simple map with building and property outlines. Indicate the locations of all storm drain inlets and pipes, as well as all points where the site discharges to the municipal storm sewer system or a nearby waterway. Draw arrows on the map to indicate the direction of surface water flow. Use the drainage map as a planning tool to understand how water travels across the site and where there is the potential for stormwater to contact stored materials and maintenance activities. Educate facility workers using the map.
- 26. Inspect the storm sewer system.** On a monthly basis, and after major storms, inspect stormwater control structures, drain inlets, outfalls to streams and stormwater treatment devices. Check for sediment build-up and remove accumulated material. Also look for signs of pollution (e.g., oil sheen, discolored water or foul odor). If a problem is noted, track down the source of the pollution and eliminate it right away.
- 27. Keep water out of dumpsters.** Install lids on dumpsters to keep rainwater from contacting garbage and leaching out to the ground surface.

Case Study -

City of Gresham Conducts Self-Audit of Maintenance Operations Yard



Gresham's maintenance operations yard provides storage for equipment and materials used by all city operating divisions, such as parks, streets, sewer, and water. Stored materials include paint, gasoline, oil, grease, pesticides and herbicides. The city decided to conduct an internal audit of the yard to identify problems and recommend improvements that would benefit stormwater quality. They studied stormwater drainage on the site, inventoried equipment and materials with a potential for polluting stormwater runoff, inspected the outfalls where the site discharges to a local creek, and interviewed facility operators to learn about existing practices.

The city chose to treat this project like a city inspection of a regulated industry, and therefore used the sample stormwater industrial audit questionnaire it had prepared for industrial facilities. The project presented an opportunity to create a good site map showing drainage patterns, waste handling and storage locations, and locations of stormwater outfalls. By participating in the audit, all the facility operators were educated about stormwater drainage and quality and are now actively involved in implementing solutions.

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(503) 618-2381.

Case Study -

Agencies Develop Brochures for Vehicle Washing Operations and Auto Repair Shops



The Oregon Department of Environmental Quality, Oregon Association of Clean Water Agencies and local sewerage agencies have produced two handy brochures:

- Water Pollution Prevention Tips for Vehicle Washing Operations
- Water Pollution Prevention Tips for Auto Repair Shops

These brochures are excellent tools for maintenance yard/shop operators and are an ideal way to educate staff. They include 12 or more easy steps to protect water quality.

Contact: Oregon Association of
Clean Water Agencies,
(503) 236-6722.

- √ See Chapter 10 in this Toolbox for other guidance materials.

Research Notes -



National Study of BMP Pollutant Removal Effectiveness

The Environmental Protection Agency (EPA) and the American Society of Civil Engineers (ASCE) Urban Water Resources Research Council are conducting a study on urban stormwater BMPs pollutant removal effectiveness. The goal is to compile technical information and propose nationwide BMP evaluation protocols. The first phase of the project will be complete in Summer 1998, with the publication of an annotated bibliography of over 500 references and detailed abstracts for about 80 studies that will be used to develop the protocols. The goal is to encourage agencies and researchers across the country to use standard protocols for monitoring and evaluating effectiveness of BMPs. Currently, inconsistent methods are used and it's difficult or impossible to compare pollutant removal effectiveness findings from one study to another. It's expected that the protocols will be available through EPA sometime in 1999.

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- √ Look for additional information and periodic updates on the ASCE/EPA Stormwater BMP Database Website: <http://www.asce.org/peta/tech/bmpcoagr.html>.