

Chapter 2



Developing A Water Quality-Friendly Maintenance Program

This chapter of the Toolbox is intended for operations and maintenance managers. The goal is to provide guidance for design and implementation of the overall maintenance program in your organization. Presented here are six steps for improving your program and an easy checklist for describing your current program. Following the checklist are ideas for funding, a discussion of the need for coordination between maintenance and other planning efforts, and finally, suggestions for dealing with maintenance contractors.

Six steps for managers – integrating water quality-friendly practices into your program

Step 1: Describe and evaluate your existing program - Use the Checklist

Refer to the Activity Checklist later in this chapter as a starting point in describing your organization's maintenance practices. Check those activities that apply, or add other activities in the spaces provided. For each maintenance practice listed, go to the specified Toolbox chapter for more guidance and case studies describing lessons other communities have learned about water quality protection.

Step 2: Gather input and ideas for improving maintenance practices

Use the last column in the Activity Checklist to record your own notes about how your organization's practices might be improved or modified. Then share these ideas with other managers and maintenance personnel in your organization and ask for their input. The outcome of this task will likely be a list of simple, low-cost improvements, as well as some

larger, more costly improvements your organization can make over the coming years. Examples of lower cost solutions include training staff about water quality issues or purchasing simple inlet protection materials for crews. Improvements that will require a major capital investment might include purchasing a new vacuum truck for cleaning storm sewers or streets. (See Case Study at the end of this chapter to learn what the City of Portland found when it evaluated its maintenance practices).

Step 3. Initiate a pilot program and keep records

Consider making some of the more major program improvements on a pilot scale level to test the practices before applying in your entire service area. Plan to run pilot tests for six months to one year. This can be very cost-effective. Keep records during the pilot program about what's working and what's not.

Step 4. Develop a work plan and record keeping/tracking forms

Once possible maintenance improvements have been identified, develop a schedule for making the changes. Indicate who is responsible for doing the work and who will be following-up. Adjust standard record keeping forms, so that maintenance staff can begin to keep records of their actions to protect water quality. For instance, for storm sewer cleaning, it would be good to track how much and what type of debris was removed, notes about any signs of pollution observed, and when further follow-up is needed. (See Case Study at the end of this chapter for lessons learned from Multnomah County about record keeping).

Step 5. Implement your work plan and annually assess the program

Implement your work plan according to the schedule defined in Step 4 and keep records. Every year, before your budgeting process begins for the coming fiscal year, take some time to reevaluate your agency's maintenance practices. Answer these questions:

- Are the maintenance staff aware of how their actions affect stormwater quality?

-
- Have staff been making improvements — what do the records show?
 - Are the improvements working (in your opinion, as well as staff's)?
 - Is more improvement needed — what other practices need to change?
 - What lessons were learned during the pilot test(s)?
 - Are additional resources and capital required to continue the program?
 - Refer to your Activity Checklist again to make sure that all possible practices have been considered during this annual assessment.

Step 6. Share results

Finally, consider sharing your success stories and lessons learned with other agencies. Others can learn from your experiences!

Maintenance Manager's Activity Checklist

Use the checklist on the next page as a starting point in describing your organization's maintenance practices. Remove the checklist and make additional copies for future use and reference. Check those activities that apply to you or add other activities in the spaces provided. For each practice refer to the specified Toolbox chapter for more guidance and case studies. In the "Manager's Notes" column, make notes about improvements you'd like to make related to each activity on the checklist.



Maintenance Manager's Activity Checklist

Use this checklist as a starting point in describing your organization's maintenance practices. Check those activities that apply, or add other activities in the blank spaces provided. For each practice, refer to the specified Toolbox chapter for more guidance and case studies.

Name:
Date:

Practice	Applies? (Y/N)	Toolbox Page #	Manager's Notes
Maintaining the Storm Sewer System		Chapter 3	
<i>Culvert cleaning & repair</i>		34	
<i>Pipe cleaning & repair</i>		34	
<i>Catch basin/inlet cleaning & repair</i>		36	
<i>Drainage channel (ditch) maintenance</i>		37	
<i>Natural stream maintenance</i>		38	
<i>Detention pond maintenance</i>		40	
<i>Maintenance of other treatment devices</i>		41	
<i>System retrofitting</i>		42	

Maintenance Manager's Activity Checklist continued.

Practice	Applies? (Y/N)	Toolbox Page #	Manager's Notes
Maintaining & Repairing Roadways		Chapter 4	
Street cleaning		53	
Roadway repair		55	
Surfacing & resurfacing		57	
Pavement marking		59	
Snow & ice control		60	
Bridge repair & maintenance		61	
Utilities in roadways		63	
Maintaining Roadside Areas		Chapter 5	
Roadside ditch cleaning		37	
Vegetation management		71	
Erosion control		72	
Litter control		72	
Wall & slope maintenance		73	
Pedestrian facilities maintenance		74	
Guardrail & fence repair		75	
Keeping a Clean Maintenance Yard		Chapter 6	
Vehicle maintenance		83	
Vehicle washing		83	
Bulk materials storage		83	
Hazardous materials storage		83	
Above ground fuel tanks		84	

Maintenance Manager's Activity Checklist continued.

Practice	Applies? (Y/N)	Toolbox Page #	Manager's Notes
Fueling area(s)		84	
Garbage dumpsters		84	
Oil & grease controls		85	
Erosion controls		85	
Sediment controls		85	
Stormwater filter(s)		85	
Detention pond/wetlands		86	
Other treatment device(s)		86	
New or remodeled facility being planned		86	
Waste minimization program (recycling, etc.)		86	
Site drainage map		87	
Stormwater outfalls		87	
Storing and Disposing of Waste Materials		Chapter 7	
Concrete, asphalt & slurry		91	
Road fill/base material		91	
Sludge & sediment (vacuum & street sweeping waste)		91	
Dredged sediments		91	
Dropped leaves		91	
Other vegetation		91	
Deicing sands & gravels		91	
Recycling practices		92	
Dewatering practices		92	

Maintenance Manager's Activity Checklist continued.

Practice	Applies? (Y/N)	Toolbox Page #	Manager's Notes
Educating Staff about Stormwater Quality		Chapter 8	
Safety meeting presentations		97	
Training		97	
Tools for maintenance crews		97	
Signs posted at facilities & yards		97	
Involve staff		98	
Recognize accomplishments		98	
Educating Public about Stormwater Quality		Chapter 9	
Informational flyers		101	
Doorhangers		101	
Newsletter/paper articles		101	
Utility insert(s)		101	
Direct mailer		101	

Alternatives for funding

Primarily, agencies rely on operating funds to pay for routine operations and maintenance activities. New practices to improve stormwater quality have to compete with ongoing practices, which are typically underfunded. Many agencies across the country are reporting that they don't have the staff and resources to do the work already on their plates. Given all this, how are agencies expected to handle additional stormwater quality tasks?

Here are a few tips based on how other agencies have addressed the funding dilemma:

- **Educate crews to integrate stormwater quality into their everyday maintenance activities.** Invest some dollars early in common-sense education for staff as the first measure. The City of Charlotte, North Carolina, learned that its own staff were unknowingly contributing to stormwater pollution. The city now has an extremely successful educational video that has helped to increase the awareness of maintenance crews (see Case Study in Chapter 8).
- **Cross-train maintenance workers.** Many of the cities and counties in the San Francisco Bay Area began developing stormwater programs in the early 1990's. Over the years, agencies involved in the Santa Clara and Alameda County programs have found that the best way to address stormwater quality with limited resources is to cross-train maintenance workers. The crews that inspect and repair sidewalks, for instance, now inspect catch basins and report any problems to the street crews.
- **Conduct pilot studies before full-scale implementation.** The City of Portland and other agencies discovered that pilot studies are a cost-effective way to test an idea. Several years ago Portland selected a small watershed in which to pilot test a wide variety of best management practices. The results of the study are being used to design citywide action plans. As another example, Portland's Bureau of Maintenance is currently planning a pilot test for runoff management kits in maintenance trucks (see Case Study in Chapter 8).
- **Apply for grants.** "What to do with vector waste?" has become a critical question in Oregon. The Oregon Department of Transportation and Multnomah County were recently awarded matching funds from the Federal Highway Administration to study

the issue (see Research Notes in Chapter 7). The City of Portland is using funds from a three-year Environmental Protection Agency grant to conduct a wide range of stormwater quality improvement projects in the Columbia Slough watershed. As another example, this “Toolbox for Maintenance Practices” was funded by a grant from the Lower Columbia National Estuary Program. Identify a staff member in your agency who can seek out grant opportunities and write the applications.

- **Partner and cost-share with other agencies and private groups.** Look for opportunities to share costs with others. The Cities of Eugene and Springfield and Lane County are saving money by using a combined dewatering facility (see Case Study in Chapter 7). Agencies around the country are partnering with local product manufacturers to run pilot tests of various treatment technologies. In Oregon, the Association of Clean Water Agencies serves as a steering committee and clearinghouse of information for municipal stormwater programs. Several useful projects, including this Toolbox, are the combined effort of member agencies working through the Association.
- **Set up environmental bonds to improve facilities.** In Mecklenburg County, North Carolina, voters passed an Environmental Bond to set aside additional funds for improving City facilities.
- **Consider impact fees.** Local governments in Florida can assess development impact fees when issuing development permits. These funds help to cover infrastructure costs associated with new development. For other agencies considering this option, provisions should be made to assure that the funds can be used for both construction and long-term maintenance of the new facilities. Interested municipalities should also check on other restrictions regarding use of such funds.

Coordinating maintenance with other planning

The following is a common scenario in many cities today: a detention pond is designed and constructed in a local city park to provide additional flood storage, as well as stormwater treatment. Because the pond is situated in a park, the maintenance responsibility clearly lies with the city; however, no consideration has been given to the long-term maintenance requirements. For example:

- What do the designers recommend as the optimum cleaning frequency, for ensuring good stormwater treatment and maintaining storage capacity over time?
- Have the maintenance crews been given any guidance about how to clean the facility properly?
- Has access been provided for maintenance equipment?
- Will the current city-owned equipment be adequate for cleaning or is specialized equipment needed?
- Have funds been allocated for the maintenance crews to clean the facility according to the recommended schedule?
- Should landscape practices in the rest of the park be changed to make sure that fertilizers and pesticides are not carried into the new pond via runoff?
- Should the pond be monitored over time in order to fine-tune its maintenance needs?

Similar situations could arise when installing grassed swales along a public right-of-way, trapped catch basins in a downtown parking lot, or specialized trashracks on a culvert. Again the basic question is: was the maintenance department consulted for their input before and during the design phase to make sure that the new facilities were installed with long-term maintenance needs in mind?

Perhaps many present-day maintenance woes could be avoided if maintenance managers took part in planning efforts conducted by other parts of the agency. However, other groups might not think to invite maintenance to the planning table, so maintenance managers should take the first step and invite themselves.

Working with maintenance contractors

This Toolbox presents guidelines and ideas for improving maintenance practices to protect stormwater quality. For smaller agencies, some activities are conducted by contractors. It's important that the contractors, as well as the agency staff, follow the recommendations for water quality protection. Here are a few suggestions for dealing with contractors on this issue:

- Include conditions in contracts that require contractors to use proper procedures and protect water quality. Be as specific as possible in the contract itself, or issue water quality specifications to contractors and check to make sure they're being followed.
- Require certification or licenses as available. Pesticide applicators have to be licensed for example, and some states require construction contractors to have erosion control certification.
- Require that contractors carry materials in their trucks for inlet protection and temporary erosion control, depending on the type of job. Request that they also carry containers for temporarily storing of swept-up waste materials.
- Include contractors in the water quality protection training courses or safety meetings scheduled for internal staff.
- Provide copies of educational materials to contractors, such as videos and guidance handbooks.
- Give contractors copies of city informational materials to distribute to inquiring residents while they go about their field work.

Case Study -



The City of Portland Department of Transportation Identifies Top Priorities During Evaluation of its Maintenance Practices

The Portland Office of Transportation formed a stormwater team to describe and evaluate its existing maintenance programs and recommend improvements for water quality protection. To meet their stormwater permit requirements, the city developed a work plan and is currently implementing a pilot test of efforts related to in a range of its maintenance practices. A challenging part of the effort has been identifying potential impacts to water quality from a long list of transportation maintenance practices.

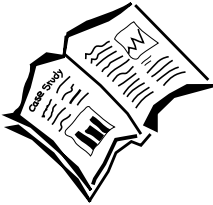
During the internal review of existing practices, several top priority issues were identified:

- Training for senior maintenance managers, followed by training for mid-level managers, field supervisors and field crews.
- Guidance and materials for temporary storm inlet protection during road and right-of-way maintenance operations.
- Expanding recycling operations for various materials: deicing sands, street-sweeping debris, asphalt and concrete from repair activities, leaf debris collected from residential neighborhoods, paint thinners, waste paint, sandblasting residue, and miscellaneous items such as cardboard, paper, metal and wood.
- Methods and requirements for covering bulk materials stored in stockpiles or on trucks.
- Guidance for good housekeeping practices.
- Methods for designing new (and redesigning existing) city maintenance yards for better efficiency and to better protect stormwater quality.

The city has started its pilot program with in-house training, evaluating housekeeping standards, and developing improved runoff control procedures. They are also improving communication and coordination within the city and among other local, state, and federal partners.

Contact: Doug MacCourt,
Portland Office of Transportation,
(503) 823-7052.

Case Study -



The City of Eugene Maintenance Managers Participate in Basin Planning Efforts

For the past few years, maintenance managers in the City of Eugene's Public Works Department have been voluntarily participating in basin planning efforts. This involves participating on stakeholder advisory committees, reviewing planning documents, and educating planners and engineers about the affects of their decisions on maintenance. This participation has been invaluable. The city is carefully considering maintenance needs of the various capital improvement projects being proposed for each of its drainage basins. This helps to identify funding and resource needs for long-term maintenance when the projects are constructed. Also, Eugene's maintenance managers are very involved in the effort to establish development standards. The goal is to make sure that the city doesn't require developers to install facilities that become an undue maintenance burden for the city down the road.

Contact: Jack Long,
Eugene Public Works Department,
(541) 682-4895.

Case Study -



Multnomah County's Reporting Forms Are a Hit with Maintenance Crews

As a first step in implementing its stormwater permit program, the county decided to write a maintenance manual describing its existing efforts and identifying areas that needed improvement. The agency determined that their four maintenance district supervisors needed guidance about how to add stormwater pollution prevention to their everyday maintenance activities.

One of the county's key accomplishments was creating a series of easy-to-use reporting forms. The managers designed special brightly-colored forms for reporting observed problems that need immediate attention by other county divisions. Field crews have been using the forms for three years with tremendous success. The result is a better response to observed problems such as spills and dumping. Also, the information services group compiles all the field data into computerized management reports. These reports track the volume and type of debris collected each year from county roads. The agency also brings in its maintenance supervisors twice a year for half-day work sessions along with the division's engineers and planners. At these meetings, staff evaluate the merits of the program and use of resources, and develop written progress reports as a group. Changes are proposed and discussed for the coming year. The progress reports developed at these work sessions are used to prepare the annual compliance reports submitted to the regulators.

Contact: Don Newell,
Multnomah County Department of
Environmental Services,
(503) 248-3888.