



Stormwater Phase II Final Rule

Small MS4 Stormwater Program Overview

Stormwater Phase II Final Rule Fact Sheet Series

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Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local rivers and streams without treatment. EPA's Stormwater Phase II Rule establishes an MS4 stormwater management program that is intended to improve the Nation's waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

In 1990, EPA promulgated rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program. The Phase I program for MS4s requires operators of "medium" and "large" MS4s, that is, those that generally serve populations of 100,000 or greater, to implement a stormwater management program as a means to control polluted discharges from these MS4s. The Stormwater Phase II Rule extends coverage of the NPDES stormwater program to certain "small" MS4s but takes a slightly different approach to how the stormwater management program is developed and implemented.

What Is a Phase II Small MS4?

A small MS4 is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II Rule automatically covers on a nationwide basis all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census (unless waived by the NPDES permitting authority), and on a case-by-case basis those small MS4s located outside of UAs that the NPDES permitting authority designates. For more information on Phase II small MS4 coverage, see Fact Sheets 2.1 and 2.2.

What Are the Phase II Small MS4 Program Requirements?

Operators of regulated small MS4s are required to design their programs to:

- Reduce the discharge of pollutants to the "maximum extent practicable" (MEP);
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the Clean Water Act.

Implementation of the MEP standard will typically require the development and implementation of BMPs and the achievement of measurable goals to satisfy each of the six minimum control measures.

The Phase II Rule defines a small MS4 stormwater management program as a program comprising six elements that, when implemented in concert, are expected to result in significant reductions of pollutants discharged into receiving waterbodies.

The six MS4 program elements, termed “minimum control measures,” are outlined below. For more information on each of these required control measures, see Fact Sheets 2.3 – 2.8.

- ① ***Public Education and Outreach***
Distributing educational materials and performing outreach to inform citizens about the impacts polluted stormwater runoff discharges can have on water quality.
- ② ***Public Participation/Involvement***
Providing opportunities for citizens to participate in program development and implementation, including effectively publicizing public hearings and/or encouraging citizen representatives on a stormwater management panel.
- ③ ***Illicit Discharge Detection and Elimination***
Developing and implementing a plan to detect and eliminate illicit discharges to the storm sewer system (includes developing a system map and informing the community about hazards associated with illegal discharges and improper disposal of waste).
- ④ ***Construction Site Runoff Control***
Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb 1 or more acres of land (controls could include silt fences and temporary stormwater detention ponds).
- ⑤ ***Post-Construction Runoff Control***
Developing, implementing, and enforcing a program to address discharges of post-construction stormwater runoff from new development and redevelopment areas. Applicable controls could include preventative actions such as protecting sensitive areas (e.g., wetlands) or the use of structural BMPs such as grassed swales or porous pavement.
- ⑥ ***Pollution Prevention/Good Housekeeping***
Developing and implementing a program with the goal of preventing or reducing pollutant runoff from municipal operations. The program must include municipal staff training on pollution prevention measures and techniques (e.g., regular street sweeping, reduction in the use of pesticides or street salt, or frequent catch-basin cleaning).

What Information Must the NPDES Permit Application Include?

The Phase II program for MS4s is designed to accommodate a general permit approach using a Notice of Intent (NOI) as the permit application. The operator of a regulated small MS4 must include in its permit application, or NOI, its chosen BMPs and measurable goals for each minimum control measure. To help permittees identify the most appropriate BMPs for their programs, EPA issued a Menu of BMPs to serve as guidance. NPDES permitting authorities can modify the EPA menu or develop their own list. For more information on application requirements, see Fact Sheet 2.9.

What Are the Implementation Options?

The rule identifies a number of implementation options for regulated small MS4 operators. These include sharing responsibility for program development with a nearby regulated small MS4, taking advantage of existing local or State programs, or participating in the implementation of an existing Phase I MS4's stormwater program as a co-permittee. These options are intended to promote a regional approach to stormwater management coordinated on a watershed basis.

What Kind of Program Evaluation/Assessment Is Required?

Permittees need to evaluate the effectiveness of their chosen BMPs to determine whether the BMPs are reducing the discharge of pollutants from their systems to the “maximum extent practicable” and to determine if the BMP mix is satisfying the water quality requirements of the Clean Water Act. Permittees also are required to assess their progress in achieving their program's measurable goals. While monitoring is not required under the rule, the NPDES permitting authority has the discretion to require monitoring if deemed necessary. If there is an indication of a need for improved controls, permittees can revise their mix of BMPs to create a more effective program. For more information on program evaluation/assessment, see Fact Sheet 2.9.

For Additional Information

Contacts

- ☞ U.S. EPA Office of Wastewater Management

<http://www.epa.gov/npdes/stormwater>

Phone: 202-564-9545

- ☞ Your NPDES Permitting Authority. Most States and Territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

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Idaho	Midway and Wake Islands
Massachusetts	Northern Mariana Islands
New Hampshire	Puerto Rico
New Mexico	Trust Territories
American Samoa	

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Reference Documents

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- And many others



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Public Education and Outreach Minimum Control Measure

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Industrial "No Exposure"

4.0 – Conditional No Exposure Exclusion for Industrial Activity

This fact sheet profiles the Public Education and Outreach minimum control measure, one of six measures an operator of a Phase II-regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) stormwater permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the regulated small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

Why Is Public Education and Outreach Necessary?

An informed and knowledgeable community is crucial to the success of a stormwater management program since it helps to ensure the following:

- **Greater support** for the program as the public gains a greater understanding of the reasons why it is necessary and important. Public support is particularly beneficial when operators of small MS4s attempt to institute new funding initiatives for the program or seek volunteers to help implement the program; and
- **Greater compliance** with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.

What Is Required?

To satisfy this minimum control measure, the operator of a regulated small MS4 needs to:

- Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of stormwater discharges on local waterbodies and the steps that can be taken to reduce stormwater pollution; and
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e., the program actions/activities), and measurable goals are suggested below.

What Are Some Guidelines for Developing and Implementing This Measure?

Three main action areas are important for successful implementation of a public education and outreach program:

① Forming Partnerships

Operators of regulated small MS4s are encouraged to utilize partnerships with other governmental entities to fulfill this minimum control measure's requirements. It is generally more cost-effective to use an existing program, or to develop a new regional or state-wide education program, than to have numerous operators developing their own local programs. Operators also are encouraged to seek assistance from non-governmental organizations (e.g., environmental, civic, and industrial organizations), since many already have educational materials and perform outreach activities.

② Using Educational Materials and Strategies

Operators of regulated small MS4s may use stormwater educational information provided by their State, Tribe, EPA Region, or environmental, public interest, or trade organizations instead of developing their own materials. Operators should strive to make their materials and activities relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage. Some examples include:

- *Brochures or fact sheets* for general public and specific audiences;
- *Recreational guides* to educate groups such as golfers, hikers, paddlers, climbers, fishermen, and campers;
- *Alternative information sources*, such as web sites, bumper stickers, refrigerator magnets, posters for bus and subway stops, and restaurant placemats;
- *A library of educational materials* for community and school groups;
- *Volunteer citizen educators* to staff a *public education task force*;
- *Event participation* with educational displays at home shows and community festivals;
- *Educational programs* for school-age children;
- *Storm drain stenciling* of storm drains with messages such as "Do Not Dump - Drains Directly to Lake;"
- *Stormwater hotlines* for information and for citizen reporting of polluters;
- *Economic incentives* to citizens and businesses (e.g., rebates to homeowners purchasing mulching lawnmowers or biodegradable lawn products); and
- *Tributary signage* to increase public awareness of local water resources.

③ Reaching Diverse Audiences

The public education program should use a mix of appropriate local strategies to address the viewpoints and concerns of a variety of audiences and communities, including minority and disadvantaged communities, as well as children. Printing posters and brochures in more than one language or posting large warning signs (e.g., cautioning against fishing or swimming) near storm sewer outfalls are methods that can be used to reach audiences less likely to read standard materials. Directing materials or outreach programs toward specific groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts is also recommended. For example, information could be provided to restaurants on the effects of grease clogging storm drains and to auto garages on the effects of dumping used oil into storm drains.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure. Finally, they should allow the MS4 to make improvements to its program over each 5-year permit term by providing data on program successes and shortfalls.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 could develop a stormwater public education campaign for radio and television. The goal of the campaign might be to increase the number of dog owners who pick up after their pets. To measure the program's progress towards this goal, the program manager might perform a stormwater public awareness survey at the beginning, during, and at the end of the permit term to gauge any change in pet owner behavior over time. As another example, an MS4 might want to encourage "do-it-yourselfers" to recycle used motor oil by establishing and advertising a municipal drop-off center. The MS4 could measure progress toward this goal by tracking the amount of motor oil collected and correlating those data to the timing of public service announcements and other advertisements to see if their message is being received.

For Additional Information

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|----------------------|--------------------------|
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| District of Columbia | Johnston Atoll |
| Idaho | Midway and Wake Islands |
| Massachusetts | Northern Mariana Islands |
| New Hampshire | Puerto Rico |
| New Mexico | Trust Territories |
| American Samoa | |
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 - Measurable Goals Guidance for Phase II Small MS4s
 - Stormwater Case Studies
 - Stormwater Month Materials
 - And many others
- ☞ Getting In Step
<http://www.epa.gov/owow/watershed/outreach/documents/getnstep.pdf>



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Public Participation/ Involvement Minimum Control Measure

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4.0 – Conditional No Exposure Exclusion for Industrial Activity

This fact sheet profiles the Public Participation/Involvement minimum control measure, one of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in determining how to satisfy the minimum control measure requirements.

Why Is Public Participation and Involvement Necessary?

EPA believes that the public can provide valuable input and assistance to a regulated small MS4's municipal stormwater management program and, therefore, suggests that the public be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a stormwater management program because it allows for:

- **Broader public support** since citizens who participate in the development and decision making process are partially responsible for the program and, therefore, may be less likely to raise legal challenges to the program and more likely to take an active role in its implementation;
- **Shorter implementation schedules** due to fewer obstacles in the form of public and legal challenges and increased sources in the form of citizen volunteers;
- **A broader base of expertise and economic benefits** since the community can be a valuable, and free, intellectual resource; and
- **A conduit to other programs** as citizens involved in the stormwater program development process provide important cross-connections and relationships with other community and government programs. This benefit is particularly valuable when trying to implement a stormwater program on a watershed basis, as encouraged by EPA.

What Is Required?

To satisfy this minimum control measure, the operator of a regulated small MS4 must:

- Comply with applicable State, Tribal, and local public notice requirements; and
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Possible implementation approaches, BMPs (i.e., the program actions and activities), and measurable goals are described below.

What Are Some Guidelines for Developing and Implementing This Measure?

Operators of regulated small MS4s should include the public in developing, implementing, updating, and reviewing their stormwater management programs. The public participation program should make every effort to reach out and engage all economic and ethnic groups. EPA recognizes that there are challenges associated with public involvement. Nevertheless, EPA strongly believes that these challenges can be addressed through an aggressive and inclusive program. Challenges and example practices that can help ensure successful participation are discussed below.

Implementation Challenges

The best way to handle common notification and recruitment challenges is to know the audience and think creatively about how to gain its attention and interest. Traditional methods of soliciting public input are not always successful in generating interest, and subsequent involvement, in all sectors of the community. For example, municipalities often rely solely on advertising in local newspapers to announce public meetings and other opportunities for public involvement. Since there may be large sectors of the population who do not read the local press, the audience reached may be limited. Therefore, alternative advertising methods should be used whenever possible, including radio or television spots, postings at bus or subway stops, announcements in neighborhood newsletters, announcements at civic organization meetings, distribution of flyers, mass mailings, door-to-door visits, telephone notifications, and multilingual announcements. These efforts, of course, are tied closely to the efforts for the public education and outreach minimum control measure (see Fact Sheet 2.3).

In addition, advertising and soliciting help should be targeted at specific population sectors, including ethnic, minority, and low-income communities; academia and educational institutions; neighborhood and community groups; outdoor recreation groups; and business and industry. The goal is to involve a diverse cross-section of people who can offer a multitude of concerns, ideas, and connections during the program development process.

Possible BMPs

There are a variety of practices that could be incorporated into a public participation and involvement program, such as:

- **Public meetings/citizen panels** allow citizens to discuss various viewpoints and provide input concerning appropriate stormwater management policies and BMPs;
- **Volunteer water quality monitoring** gives citizens first-hand knowledge of the quality of local water bodies and provides a cost-effective means of collecting water quality data;

- **Volunteer educators/speakers** who can conduct workshops, encourage public participation, and staff special events;
- **Storm drain stenciling** is an important and simple activity that concerned citizens, especially students, can do;
- **Community clean-ups** along local waterways, beaches, and around storm drains;
- **Citizen watch groups** can aid local enforcement authorities in the identification of polluters; and
- **“Adopt A Storm Drain” programs** encourage individuals or groups to keep storm drains free of debris and to monitor what is entering local waterways through storm drains.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, greatly depend on the needs and characteristics of the operator and the area served by the small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 could conclude as part of its Illicit Discharge Detection and Elimination program that a certain section of town has a high incidence of used motor oil dumping. The watershed has numerous automotive businesses including small repair shops, large auto dealerships, gas stations, and body shops. In addition, there are several large apartment complexes with areas that could be used as “do-it-yourself” oil change areas. The MS4 organizes a public meeting in the watershed to not only educate residents about stormwater issues and permit requirements, but also to ask for input regarding possible dumping areas and to determine if the community needs an oil recycling facility or some other way to safely dispose of used motor oil. In this way, the MS4 might better understand who the target audience is for illegal dumping control while implementing a valuable service for the watershed community.

For Additional Information

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Illicit Discharge Detection and Elimination Minimum Control Measure

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Industrial "No Exposure"

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This fact sheet profiles the Illicit Discharge Detection and Elimination minimum control measure, one of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

What Is An "Illicit Discharge"?

Federal regulations define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of stormwater..." with some exceptions. These exceptions include discharges from NPDES-permitted industrial sources and discharges from fire-fighting activities. Illicit discharges (see Table 1) are considered "illicit" because MS4s are not designed to accept, process, or discharge such non-stormwater wastes.

Why Are Illicit Discharge Detection and Elimination Efforts Necessary?

Discharges from MS4s often include wastes and wastewater from non-stormwater sources. A study conducted in 1987 in Sacramento, California, found that almost one-half of the water discharged from a local MS4 was not directly attributable to precipitation runoff. A significant portion of these dry weather flows were from illicit and/or inappropriate discharges and connections to the MS4.

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint or used oil dumped directly into a drain). The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

Table 1

Sources of Illicit Discharges
Sanitary wastewater
Effluent from septic tanks
Car wash wastewaters
Improper oil disposal
Radiator flushing disposal
Laundry wastewaters
Spills from roadway accidents
Improper disposal of auto and household toxics

What Is Required?

Recognizing the adverse effects illicit discharges can have on receiving waters, the Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement and enforce an illicit discharge detection and elimination program. This program must include the following:

- A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, Tribal, or local law) on non-stormwater discharges into the MS4, and appropriate enforcement procedures and actions;
- A plan to detect and address non-stormwater discharges, including illegal dumping, into the MS4;
- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste; and
- The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e., the program actions/activities), and measurable goals are suggested below.

Does This Measure Need to Address All Illicit Discharges?

No. The illicit discharge detection and elimination program does not need to address the following categories of non-stormwater discharges or flows unless the operator of the regulated small MS4 identifies them as significant contributors of pollutants to its MS4:

- Water line flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration;
- Uncontaminated pumped ground water;
- Discharges from potable water sources;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water;
- Springs;
- Water from crawl space pumps;

- Footing drains;
- Lawn watering;
- Individual residential car washing;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges; and
- Street wash water.

What Are Some Guidelines for Developing and Implementing This Measure?

The objective of the illicit discharge detection and elimination minimum control measure is to have regulated small MS4 operators gain a thorough awareness of their systems. This awareness allows them to determine the types and sources of illicit discharges entering their system; and establish the legal, technical, and educational means needed to eliminate these discharges. Permittees could meet these objectives in a variety of ways depending on their individual needs and abilities, but some general guidance for each requirement is provided below.

The Map

The storm sewer system map is meant to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular waterbodies these flows may be affecting. An existing map, such as a topographical map, on which the location of major pipes and outfalls can be clearly presented demonstrates such awareness.

EPA recommends collecting all existing information on outfall locations (e.g., review city records, drainage maps, storm drain maps), and then conducting field surveys to verify locations. It probably will be necessary to walk (i.e., wade through small receiving waters or use a boat for larger waters) the streambanks and shorelines for visual observation. More than one trip may be needed to locate all outfalls.

Legal Prohibition and Enforcement

EPA recognizes that some permittees may have limited authority under State, Tribal or local law to establish and enforce an ordinance or other regulatory mechanism prohibiting illicit discharges. In such a case, the permittee is encouraged to obtain the necessary authority, if possible.

The Plan

The plan to detect and address illicit discharges is the central component of this minimum control measure. The plan is dependant upon several factors, including the permittee's available resources, size of staff, and degree and character of its illicit discharges. As guidance only, the four steps of a recommended plan are outlined below:

1 Locate Problem Areas

EPA recommends that priority areas be identified for detailed screening of the system based on the likelihood of illicit connections (e.g., areas with older sanitary sewer lines). Methods that can locate problem areas include: visual screening; water sampling from manholes and outfalls during dry weather; the use of infrared and thermal photography, cross-training field staff to detect illicit discharges, and public complaints.

2 Find the Source

Once a problem area or discharge is found, additional efforts usually are necessary to determine the source of the problem. Methods that can find the source of the illicit discharge include: dye-testing buildings in problem areas; dye- or smoke-testing buildings at the time of sale; tracing the discharge upstream in the storm sewer; employing a certification program that shows that buildings have been checked for illicit connections; implementing an inspection program of existing septic systems; and using video to inspect the storm sewers.

3 Remove/Correct Illicit Connections

Once the source is identified, the offending discharger should be notified and directed to correct the problem. Education efforts and working with the discharger can be effective in resolving the problem before taking legal action.

4 Document Actions Taken

As a final step, all actions taken under the plan should be documented. This illustrates that progress is being made to eliminate illicit connections and discharges. Documented actions should be included in annual reports and include information such as: the number of outfalls screened; any complaints received and corrected; the number of discharges and quantities of flow eliminated; and the number of dye or smoke tests conducted.

Educational Outreach

The Center for Watershed Protection and Robert Pitt (2004) researched the most cost-effective and efficient techniques that can be employed to identify and correct inappropriate discharges. Data from Montgomery County, Maryland, was analyzed and it was determined that staff identify and correct about six inappropriate discharges per year as a result of regular screening. By contrast, over 185 inappropriate discharges are corrected each year in Montgomery County as a direct result of citizen complaints and calls to a storm water compliant hotline. Public education and labeling of outfalls and other storm drain infrastructure is an important element of establishing a successful citizen hotline. Outreach to public employees, businesses, property owners, the general public, and elected officials regarding ways to detect and eliminate illicit discharges is an integral part of this minimum measure.

Suggested educational outreach efforts include:

- Developing *informative brochures, and guidances* for specific audiences (e.g., carpet cleaning businesses) and school curricula;
- Designing a program to *publicize and facilitate public reporting* of illicit discharges;
- *Coordinating volunteers* for locating, and visually inspecting, outfalls or to stencil storm drains; and
- Initiating *recycling programs* for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 could establish a measurable goal of responding to all complaints received by the citizen complaint hotline within 24 hours to minimize water quality impacts or recurrent dumping. A complaint tracking system could be used to log response and enforcement activity.

The educational outreach measurable goals for this minimum control measure could be combined with the measurable goals for the Public Education and Outreach minimum control measure (see Fact Sheet 2.3).

Sources

Center for Watershed Protection and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection, Ellicott City, MD, and University of Alabama, Birmingham, AL.

Maryland Department of the Environment, Water Management Administration. 1997. *Dry Weather Flow and Illicit Discharges in Maryland Storm Drain Systems*. Baltimore, Maryland.

U.S. EPA Office of Water. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide*. EPA/600/R-92/238. Washington, D.C.

Wayne County Rouge River National Wet Weather Demonstration Project. 1997. *Guidance for Preparing a Program for the Elimination of Illicit Discharges*. Wayne County, Michigan.

For Additional Information

Contacts

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- Stormwater Phase II Final Rule (64 FR 68722)
- National Menu of Best Management Practices for Stormwater Phase II
- Measurable Goals Guidance for Phase II Small MS4s
- Stormwater Case Studies
- And many others

☞ Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments

http://www.cwp.org/idde_verify.htm



Stormwater Phase II Final Rule

Construction Site Runoff Control Minimum Control Measure

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Industrial "No Exposure"

4.0 – Conditional No Exposure Exclusion for Industrial Activity

This fact sheet profiles the Construction Site Runoff Control minimum control measure, one of six measures that the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

Why Is The Control of Construction Site Runoff Necessary?

Polluted stormwater runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. Of the pollutants listed in Table 1, sediment is usually the main pollutant of concern. According to the 2000 National Water Quality Inventory, States and Tribes report that sedimentation is one of the most widespread pollutants affecting assessed rivers and streams, second only to pathogens (bacteria). Sedimentation impairs 84,503 river and stream miles (12% of the assessed river and stream miles and 31% of the impaired river and stream miles). Sources of sedimentation include agriculture, urban runoff, construction, and forestry. Sediment runoff rates from construction sites, however, are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters. For example, excess sediment can quickly fill rivers and lakes, requiring dredging and destroying aquatic habitats.

Table 1

Pollutants Commonly Discharged From Construction Sites

Sediment
Solid and sanitary wastes
Phosphorous (fertilizer)
Nitrogen (fertilizer)
Pesticides
Oil and grease
Concrete truck washout
Construction chemicals
Construction debris

What Is Required?

The Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement, and enforce a program to reduce pollutants in stormwater runoff to their MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The small MS4 operator is required to:

- Have an ordinance or other regulatory mechanism requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites;
- Have procedures for site plan review of construction plans that consider potential water quality impacts;

- Have procedures for site inspection and enforcement of control measures;
- Have sanctions to ensure compliance (established in the ordinance or other regulatory mechanism);
- Establish procedures for the receipt and consideration of information submitted by the public; and
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Suggested BMPs (i.e., the program actions/activities) and measurable goals are presented below.

What Are Some Guidelines for Developing and Implementing This Measure?

Further explanation and guidance for each component of a regulated small MS4's construction program is provided below.

Regulatory Mechanism

Through the development of an ordinance or other regulatory mechanism, the small MS4 operator must establish a construction program that controls polluted runoff from construction sites with a land disturbance of greater than or equal to one acre. Because there may be limitations on regulatory legal authority, the small MS4 operator is required to satisfy this minimum control measure only to the maximum extent practicable and allowable under State, Tribal, or local law.

Site Plan Review

The small MS4 operator must include in its construction program requirements for the implementation of appropriate BMPs on construction sites to control erosion and sediment and other waste at the site. To determine if a construction site is in compliance with such provisions, the small MS4 operator should review the site plans submitted by the construction site operator before ground is broken.

Site plan review aids in compliance and enforcement efforts since it alerts the small MS4 operator early in the process to the planned use or non-use of proper BMPs and provides a way to track new construction activities. The tracking of sites is useful not only for the small MS4 operator's recordkeeping and reporting purposes, which are required under their NPDES stormwater permit (see Fact Sheet 2.9), but also for members of the public interested in ensuring that the sites are in compliance.

Inspections and Penalties

Once construction commences, BMPs should be in place and the small MS4 operator's enforcement activities should begin. To ensure that the BMPs are properly installed, the small MS4 operator is required to develop procedures for site inspection and enforcement of control measures to deter infractions. Procedures could include steps to identify priority sites for inspection and enforcement based on the nature and extent of the construction activity, topography, and the characteristics of soils and receiving water quality. Inspections give the MS4 operator an opportunity to provide additional guidance and education, issue warnings, or assess penalties. In early 2002, EPA's Office of Compliance established a national workgroup to address issues related to the construction industry. The workgroup has developed a construction industry compliance assistance Web site as a tool for builders and developers (www.cicacenter.org). Inspectors can use the Web site to find plain language explanations of the major environmental laws affecting the construction industry as well as guidance that can be distributed developers and construction site operators.

To conserve staff resources, one possible option for small MS4 operators is to have inspections performed by the same inspector that visits the sites to check compliance with health and safety building codes.

Information Submitted by the Public

A final requirement of the small MS4 program for construction activity is the development of procedures for the receipt and consideration of public inquiries, concerns, and information submitted regarding local construction activities. This provision is intended to further reinforce the public participation component of the regulated small MS4 stormwater program (see Fact Sheet 2.4) and to recognize the crucial role that the public can play in identifying instances of noncompliance.

The small MS4 operator is required only to *consider* the information submitted, and may not need to follow-up and respond to every complaint or concern. Although some form of enforcement action or reply is not required, the small MS4 operator is required to demonstrate acknowledgment and consideration of the information submitted. A simple tracking process in which submitted public information, both written and verbal, is recorded and then given to the construction site inspector for possible follow-up will suffice.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 program goal might be to educate at least 80 percent of all construction site operators and contractors about proper selection, installation, inspection, and maintenance of BMPs by the end of the permit term, which will help to ensure compliance with erosion and sediment control requirements. This goal could be tracked by documenting attendance at local, State, or Federal training programs. Attendance can be encouraged by decreasing permitting fees for those contractors who have been trained and provide proof of attendance when applying for permits.

Are Construction Sites Covered Under the NPDES Stormwater Program?

Yes. On March 10, 2003, Phase II NPDES regulations came into effect that extended coverage to construction sites that disturb one to five acres in size, including smaller sites that are part of a larger common plan of development or sale (see Fact Sheet 3.0 for information on the Phase II construction program). Sites disturbing five acres or more were regulated previously. Most states have been authorized to implement the NPDES stormwater program and have issued, or are developing state-specific construction general permits. EPA remains the permitting authority in a few states, territories, and on most land in Indian Country, however. For construction (and other land disturbing activities) in areas where EPA is the permitting authority, operators must meet the requirements of the EPA Construction General Permit (CGP). Permitting authority information can be found in Appendix B of the CGP. CGP permit requirements include the submission of a Notice of Intent and the development of a stormwater pollution prevention plan (SWPPP). The SWPPP must include a site description and measures and controls to prevent or minimize pollutants in stormwater discharges.

Even though all construction sites that disturb more than one acre are covered by national NPDES regulations, the construction site runoff control minimum measure for the small MS4 program is needed to induce more localized site regulation and enforcement efforts, and to enable operators of regulated small MS4s to more effectively control construction site discharges into their MS4s.

To aid operators of regulated construction sites in their efforts to comply with both local requirements and their NPDES permit, the Phase II Final Rule includes a provision that allows the NPDES permitting authority to reference a “qualifying State, Tribal or local program” in the NPDES general permit for construction. This means that if a construction site is located in an area covered by a qualifying local program, then the construction site operator’s compliance with the local program constitutes compliance with their NPDES permit. A regulated small MS4’s stormwater program for construction could be a “qualifying program” if the MS4 operator requires a SWPPP, in addition to the requirements summarized in this fact sheet.

The ability to reference other programs in the NPDES permit is intended to reduce confusion between overlapping and similar local and NPDES permitting authority requirements, while still providing for both local and national regulatory coverage of the construction site. The provision allowing NPDES permitting authorities to reference other programs has no impact on, or direct relation to, the small MS4 operator’s responsibilities under the construction site runoff control minimum measure profiled here.

Is a Small MS4 Required to Regulate Construction Sites that the Permitting Authority has Waived from the NPDES Construction Program?

No. If the NPDES permitting authority waives requirements for stormwater discharges associated with small construction activity (see 40 CFR § 122.26(b)(15)(i)), the small MS4 operator is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such construction sites.

For Additional Information

Contacts

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 - Stormwater Case Studies
 - And many others
 - EPA Construction General Permit and Fact Sheet
www.epa.gov/npdes/stormwater/cgp
 - EPA Stormwater Management for Construction Activities and Best Management Practices: Developing Pollution Prevention Plans Guidance

- ☞ Construction Industry Compliance Assistance Center. <http://www.cicacenter.org/>



Stormwater Phase II Final Rule

Post-Construction Runoff Control Minimum Control Measure

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Industrial "No Exposure"

4.0 – Conditional No Exposure Exclusion for Industrial Activity

This fact sheet profiles the Post-Construction Runoff Control minimum control measure, one of six measures that the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its stormwater management program in order to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements for post-construction runoff control and offers some general guidance on how to satisfy those requirements. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

Why Is The Control of Post-Construction Runoff Necessary?

Post-construction stormwater management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving waterbodies. Many studies indicate that prior planning and design for the minimization of pollutants in post-construction stormwater discharges is the most cost-effective approach to stormwater quality management.

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in stormwater runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody during storms. Increased impervious surfaces (e.g., parking lots, driveways, and rooftops) interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include streambank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

What Is Required?

The Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement, and enforce a program to reduce pollutants in post-construction runoff to their MS4 from new development and redevelopment projects that result in the land disturbance of greater than or equal to 1 acre. The small MS4 operator is required to:

- Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs);
- Have an ordinance or other regulatory mechanism requiring the implementation of post-construction runoff controls to the extent allowable under State, Tribal or local law;

- Ensure adequate long-term operation and maintenance of controls;
- Determine the appropriate best management practices and measurable goals for this minimum control measure.

What Is Considered a “Redevelopment” Project?

The Phase II Final Rule applies to “redevelopment” projects that alter the “footprint” of an existing site or building in such a way that there is a disturbance of equal to or greater than 1 acre of land. Redevelopment projects do not include such activities as exterior remodeling. Because redevelopment projects may have site constraints not found on new development sites, the Phase II Final Rule provides flexibility for implementing post-construction controls on redevelopment sites that consider these constraints.

What Are Some Guidelines for Developing and Implementing This Measure?

This section includes some non-structural and structural BMPs that could be used to satisfy the requirements of the post-construction runoff control minimum measure. It is important to recognize that many BMPs are climate-specific, and not all BMPs are appropriate in every geographic area. Because the requirements of this measure are closely tied to the requirements of the construction site runoff control minimum measure (see Fact Sheet 2.6), EPA recommends that small MS4 operators develop and implement these two measures in tandem.

Non-Structural BMPs

- **Planning Procedures.** Runoff problems can be addressed efficiently with sound planning procedures. Local master plans, comprehensive plans, and zoning ordinances can promote improved water quality in many ways, such as guiding the growth of a community away from sensitive areas to areas that can support it without compromising water quality.
- **Site-Based BMPs.** These BMPs can include buffer strip and riparian zone preservation, minimization of disturbance and imperviousness, and maximization of open space.

Structural BMPs

- **Stormwater Retention/Detention BMPs.** Retention or detention BMPs control stormwater by gathering runoff in wet ponds, dry basins, or multichamber catch basins and slowly releasing it to receiving waters or drainage systems. These practices can be designed to both control stormwater volume and settle out particulates for pollutant removal.

- **Infiltration BMPs.** Infiltration BMPs are designed to facilitate the percolation of runoff through the soil to ground water, and, thereby, result in reduced stormwater runoff quantity and reduced mobilization of pollutants. Examples include infiltration basins/trenches, dry wells, and porous pavement.

- **Vegetative BMPs.** Vegetative BMPs are landscaping features that, with optimal design and good soil conditions, remove pollutants, and facilitate percolation of runoff, thereby maintaining natural site hydrology, promoting healthier habitats, and increasing aesthetic appeal. Examples include grassy swales, filter strips, artificial wetlands, and rain gardens.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect needs and characteristics of the operator and the area served by its small MS4. Furthermore, the measurable goals should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 program goal might be to reduce by 30 percent the road surface areas directly connected to storm sewer systems (using traditional curb and gutter infrastructure) in new developments and redevelopment areas over the course of the first permit term. Using “softer” stormwater conveyance approaches, such as grassy swales, will increase infiltration and decrease the volume and velocity of runoff leaving development sites. Progress toward the goal could be measured by tracking the linear feet of curb and gutter not installed in development projects that historically would have been used.

For Additional Information

Contacts

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 - National Menu of Best Management Practices for Stormwater Phase II
 - Measurable Goals Guidance for Phase II Small MS4s
 - Stormwater Case Studies
 - And many others

- ☞ Other EPA Web sites
 - Ordinance Database
www.epa.gov/owow/nps/ordinance
 - Urban Nonpoint Source Guidance
www.epa.gov/owow/nps/urbanmm/index.html
 - Low Impact Development Web site
www.epa.gov/owow/nps/lid



Stormwater Phase II Final Rule

Pollution Prevention/Good Housekeeping Minimum Control Measure

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Industrial "No Exposure"

4.0 – Conditional No Exposure Exclusion for Industrial Activity

This fact sheet profiles the Pollution Prevention/Good Housekeeping for Municipal Operations minimum control measure, one of six measures the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

Why Is Pollution Prevention/Good Housekeeping Necessary?

The Pollution Prevention/Good Housekeeping for municipal operations minimum control measure is a key element of the small MS4 stormwater management program. This measure requires the small MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

What Is Required?

Recognizing the benefits of pollution prevention practices, the rule requires an operator of a regulated small MS4 to:

- Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations into the storm sewer system;
- Include employee training on how to incorporate pollution prevention/good housekeeping techniques into municipal operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. To minimize duplication of effort and conserve resources, the MS4 operator can use training materials that are available from EPA, their State or Tribe, or relevant organizations;
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Some program implementation approaches, BMPs (i.e., the program actions/activities), and measurable goals are suggested below.

What Are Some Guidelines for Developing and Implementing This Measure?

The intent of this control measure is to ensure that existing municipal, State or Federal operations are performed in ways that will minimize contamination of stormwater discharges. EPA encourages the small MS4 operator to consider the following components when developing their program for this measure:

- *Maintenance activities, maintenance schedules, and long-term inspection procedures* for structural and non-structural controls to reduce floatables and other pollutants discharged from the separate storm sewers;
- *Controls for reducing or eliminating the discharge of pollutants* from areas such as roads and parking lots, maintenance and storage yards (including salt/sand storage and snow disposal areas), and waste transfer stations. These controls could include programs that promote recycling (to reduce litter), minimize pesticide use, and ensure the proper disposal of animal waste;
- *Procedures for the proper disposal of waste* removed from separate storm sewer systems and areas listed in the bullet above, including dredge spoil, accumulated sediments, floatables, and other debris; and
- *Ways to ensure that new flood management projects assess the impacts on water quality* and examine existing projects for incorporation of additional water quality protection devices or practices. EPA encourages coordination with flood control managers for the purpose of identifying and addressing environmental impacts from such projects.

The effective performance of this control measure hinges on the proper maintenance of the BMPs used, particularly for the first two bullets above. For example, structural controls, such as grates on outfalls to capture floatables, typically need regular cleaning, while non-structural controls, such as training materials and recycling programs, need periodic updating.

What Are Appropriate Measurable Goals?

Measurable goals, which are required for each minimum control measure, are meant to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should consider the needs and characteristics of the operator and the area served by its small MS4. The measurable goals should be chosen using an integrated

approach that fully addresses the requirements and intent of the minimum control measure.

EPA has developed a Measurable Goals Guidance for Phase II MS4s that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their stormwater management plan. For example, an MS4 program goal might be to incorporate the use of road salt alternatives for highway deicing and reduce traditional road salt use by 50 percent in the first year of the permit term.

For Additional Information

Contacts

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