

MDOT Storm Water Management Plan Module 1: Introduction to Storm Water Management

**Together... Better Roads,
Cleaner Streams**



As part of MDOT's National Pollution Discharge Elimination System's (NPDES) Phase I Storm Water Permits, all municipal separate storm sewer systems (MS4s) serving populations of 100,000 or more must acquire a storm water permit. In Michigan there are 6 phase I municipalities, which include Ann Arbor, Flint, Grand Rapids, Sterling Heights, Warren, and Livonia.

The Michigan Department of Transportation has separate storm sewer systems on state roads within these cities and is required to hold a NPDES Storm Water Permit for each city. As required by the Storm Water NPDES Permit, MDOT has developed a storm water management plan for MDOT facilities within those cities. A portion of the storm water management plan states that MDOT will educate its employees and contractors about storm water management and how to reduce storm water pollution. This series of training modules address the NPDES permit requirements and provides concise and valuable information on storm water management.

The project theme, "Together... Better Roads, Cleaner Streams", was developed in planning discussions with MDOT environmental, communications, and policy staff, with assistance from Tetra Tech MPS. It complements the overall Michigan Department of Transportation Mission Statement.

This is Module 1 of a four part series of short presentations intended to inform staff and contractors about the MDOT Storm Water Program. The topics of the training modules are:

- Module 1- Introduction to Storm Water Management
- Module 2- Best Management Practices
- Module 3- Maintenance Considerations
- Module 4- Illicit Discharge Elimination Program

Module 1: Introduction to Storm Water Management

- Why are Storm Water Permits Needed?
- NPDES Permit Requirements
- Overview of MDOT's Storm Water Management Plan
- Value of the Storm Water Management Plan

Module 1 will define storm water and discuss why MDOT has developed a Storm Water Management Plan. It also reviews the National Pollutant Discharge Elimination System (NPDES), Permit Requirements and provides an overview of MDOT's Storm Water Management Plan.

There will be a survey questionnaire at the end of this presentation.

Storm Water: Contributions to Nonpoint Source Pollution (NPS)

- NPS pollution is caused by rainfall or snowmelt moving over the ground and picking up pollutants, depositing them into lakes, rivers, wetlands, and groundwater.
- Examples of these pollutants include: fertilizers, oil, grease, and sediment



Nonpoint source (NPS) pollution has been determined as a significant threat to water quality in the United States. NPS pollution is caused by rainfall or snowmelt moving over the ground and picking up pollutants, depositing them into lakes, rivers, wetlands, and groundwater.

Ask audience: What other kinds of pollutants they can think of. Then suggest the following list of additional pollutants:

- Pesticides
- Toxic chemicals
- Heavy Metals
- Nutrients from livestock
- Failing septic systems
- Pet waste
- Illegal dumping
- Trash

National Pollutant Discharge Elimination System (NPDES) Program

- Three Parts to NPDES Program
 1. Municipal Program (i.e. MDOT's Stormwater Program)
 2. Construction Program- Notice of Coverage
 - Phase I regulated 5 acres and larger
 - Phase II regulates any construction over 1 acre
 3. Industrial Program-Not applicable to MDOT



NPDES is more than just soil erosion sedimentation control it also includes a much broader scope of storm water management.

There are three main components of the Federal National Pollutant Discharge Elimination (NPDES) Program pertaining to storm water.

1. Municipal Program- Phase I and II – Discussed in this module, more detail on the next slide, MDOT Stormwater Management Program.
2. Construction Program- Phase I and II – This program is primarily focused on soil erosion and sedimentation control. You are familiar with this in your routine projects involving earth disturbance requiring weekly inspections.
3. Industrial Program- Phase I – This program does not impact MDOT

MDOT's NPDES Municipal Program

- Phase I - Six MDOT Phase I Storm Water NPDES permits
- Phase II - Applied for Statewide Permit March 10, 2003, over 300 cities in MI
- MDOT is actively participating with watershed groups including the Rouge River Watershed.



- According to the USEPA, storm water pollutants may affect:
 - water quality
 - recreational activities
 - aesthetic value (appearance, odor, etc.)
 - wildlife habitat
 - normal life-cycle of organisms and animals
- To address this concerns, in 1990, USEPA developed rules establishing Phase I of the National Pollutant Discharge Elimination System. Under the Phase I program, MDOT was required to apply for an NPDES Phase I Storm Water Permit. MDOT then developed a Stormwater Management Plan (SWMP) for each permit it holds.
- MDOT currently has six Phase I permits in Ann Arbor, Flint, Grand Rapids, Livonia, Sterling Heights, and Warren.
- The USEPA developed the Storm Water Phase II Program to further protect, preserve and improve public waters from storm water runoff. Phase II like Phase I requires MS4s, including MDOT, to apply and receive a Phase II storm water permit and then develop a storm water management plan.
- MDOT will also be required to have coverage in all MS4 Municipalities where state roads and storm sewers exist. There are approximately 300 such communities in the State of Michigan.

NPDES Permit Requirements

6 Minimum Measures

(National Pollutant Discharge Elimination System)

1. Public Education and Outreach
2. Public Involvement
3. Illicit Discharge Elimination Program
4. Pollution Prevention and Good Housekeeping
5. Construction Site Runoff Control
6. Post-Construction Runoff Control



MDOT, under permit requirements, must address and include 6 minimum control measures in its storm water management plan.

1. Public Education and Outreach- requires the permittee to have a public education program to promote, publicize, and facilitate watershed education for the purpose of encouraging the public to reduce the discharge of pollutants in storm water.
2. Public Involvement/Participation- requires the permittee to encourage public input in all aspects of the storm water management program.
3. Illicit Discharge Elimination Program-requires the permittee to develop a illicit discharge elimination program that will prohibit and eliminate illicit discharges to the permittee's drainage system.
4. Pollution Prevention and Good Housekeeping- MDOT has developed operation and maintenance practices which seek to reduce pollutant runoff from roadway facilities and maintenance operations. It also includes the development of a training program and the selection of appropriate BMPs that address typical pollutants sources.
5. Construction Site Runoff Control- The permittee is required to revise, as necessary, implement and enforce a program to address storm water runoff from areas of construction activity that discharge into the permittee's drainage system. Currently, MDOT has APA Status and a manual approved by MDEQ.
6. Post Construction Runoff Control- requires the permittee to implement and enforce a program to address storm water runoff from new development and redevelopment projects that discharge into the drainage system.

MDOT's Storm Water Management Plan

Focuses On:

- Highway runoff pollutants
- Illicit connections to storm sewers or drains
- Design, construction, and maintenance practices
- Public education and employee training



To address these issues and the six minimum measures required by the permit, MDOT has submitted a Storm Water Management Plan to MDEQ. This plan is briefly described in the upcoming slides.

Additionally, MDOT is in the process of developing a Drainage Manual to address design, construction, and the use of best management practices for MDOT projects.

This plan is available on the MDOT Stormwater Public Website and also each Regional Stormwater Coordinator has a copy.

Public Education Plan Activities



- Coordination with Phase 1 Communities
- Public Education Database
- Internal Training Program & Materials
- Public Web Site

<http://www.michigan.gov/stormwater>



•MDOT's public education activities have two specific target audiences:

- Employees and contractors
- General public

•The public web site was recently released and is a good source for additional data. Please take a look and check it out! www.michigan.gov/stormwater

•MDOT has developed an Internal Training Plan, which this presentation is a part of!!

MDOT Action Plan to Meet MDEQ Requirements

- General Training
- Staff-Specific Training
 - Regions, TSC, Design Support, Construction & Technology Area, Maintenance, & Real Estate
- Storm Water Information through MDOT Publications (Ex. MDOT Today)

Our Mission: Working Together... Better Roads, Cleaner Streams

Clean water is something that is easily taken for granted. According to the U.S. Environmental Protection Agency, the number one threat to water quality is polluted runoff. Runoff is precipitation that falls on highways and roads, then carries pollutants and debris into streams, rivers, lakes and ponds. Pollutants and debris can include sediment from construction sites, oil and leaking chemicals from cars and trucks, excess fertilizer from our yards, and a host of other pollutants. It will take our combined efforts to help

reduce the amount of potential pollutants that enter Michigan's waterways. One way to address this threat to water quality is to develop and implement a Storm Water Management Plan. This is exactly what MDOT is doing. This plan has a common mission: **Working Together, Better Roads, Cleaner Streams.** The three major components of the plan are the Efficacy Discharge Elimination System, the Public Education Plan, and the Storm Water Pollution Prevention Plan. ■



Tips to Keep Your Rivers, Lakes and Streams Clean

- Never dump anything down a storm drain!
- Use an oil pan when changing oil to keep fluids off the pavement. Check local body shops and quick lube to find a place to appropriately dispose of used oil.
- Dispose of pet wastes in a trash can.
- Leave grass clippings on your lawn as an alternative nutrient to fertilizer. If fertilizer is necessary, choose a slow-release product and use your seed to find out how much fertilizer your lawn actually needs.
- Wash your car on your lawn to excess water, chemicals, and dirt are filtered through the lawn.
- Keep household hazardous wastes - such as harsh cleaners, paints, car fluids and batteries - from entering lakes and streams by disposing at a household hazardous waste center.
- Use a broom (rather than a hose) to clean up grass clippings and dirt.
- Keep a trash bag in your car...and use it!

POLLUTION - Where Does it Come From?



Most contaminants are made up of common items used by millions. Businesses and homeowners must be diligent to take care of these items, and prevent them from getting on roads. You can help by taking care of your home, car, and lawn. At night we advise you to take care of your home, car, and lawn. At night we advise you to take care of your home, car, and lawn.

Future Articles Tell How You Can Help

This article is a preview to a series of articles that will appear in future publications of MDOT Today. The topics, their authors and topics what you can do to help protect Michigan's precious water resources.

• MDOT Storm Water Management Plan	• Household Items in Your Home
• What is Storm Water Runoff?	• Is Your Home Impervious?
• Storm Drain Blockages	• Proper Waste Practices?
• You Dumped What Down a Storm Drain?	• Car Care and Your Water
• Small Cuts to Your Lawn and Garden	• What's the Connection?

Note: A Web site currently under development will provide additional information plus links to related sites.

MDOT's general training plan aims to give the MDOT staff an awareness of the Storm Water Management Plan along with the requirements it has and how this affects the way MDOT does business. A brochure, litter bag, business card, and a series of articles have been developed to aid in this task. Look for future articles in MDOT Today!

An example article from MDOT today is shown on the right of the slide!

The staff-specific training is geared toward specific areas of MDOT that perform or have an affect of water quality and decisions that affect water quality.

Illicit Discharge Elimination Activities



- Inventory of Outfalls in MDOT Right-of-Way
- Field Investigation and Follow-Up for Suspected Problems
- Mapping of Outfalls into ArcView GIS and Database
- Responsible for Water Quality at MDOT Outfalls



•An **outfall** is defined as: the point at which the MDOT defined stormwater drainage system exits the MDOT ROW, enters a non-MDOT drainage system, or enters a U.S. water body.

•The illicit discharge elimination activities include completing an inventory and field investigation for all outfalls in the MDOT right-of-way for the Phase I communities.

•All the outfall information is being tracked in Arc View GIS with yearly updates using construction and as-built drawings.

•This process is approximately 95% complete for the Phase I Communities. After MDOT receives its Phase II permit, this program will be expanded to all MDOT Right of Ways in Michigan that are within the municipal boundaries of Phase II communities named in the the Federal Register and confirmed by the Michigan Department of Environmental Quality.

MDOT Storm Water Pollution Prevention

- Storm Water BMP Development for MDOT Projects
- Use of MDEQ PEAS Phone Number to Report Illicit Discharges **1-800-292-4706**
- Provided MDOT Outfall Maps for Local Emergency Personnel in:
 - Ann Arbor, Flint, Grand Rapids, Warren, Sterling Heights, and Livonia



MDOT has developed information on Storm Water Best Management Practices (BMPs) for use on MDOT projects. These BMPs will be documented in the new MDOT Drainage Manual. It will explain how to choose BMPs and where design detail sheets can be found.

MDOT also worked with MDEQ to share the Pollution Emergency Alerting System (PEAS), hotline for reporting illicit connections. The procedure for using PEAS will be explained in detail in Module 4, Illicit Discharge Elimination Program. **1-800-292-4706**

Drainage Manual

- Outline of MDOT's Policy and Procedure for the Design of Drainage Facilities
- Chapter 9: Storm Water Best Management Practices (BMPs)
 - BMPs are both structural and managerial practices used to treat, prevent, or reduce water pollution.



The Drainage Manual is being developed to provide MDOT designers and design consultants MDOT's guidance in the design of drainage facilities and outline for MDOT's design and operation personnel. The Drainage Manual will address all drainage issues, with a special focus on water quality concerns and best management practices.

MDOT's Storm Water Management Program best management practices (BMP's), which are structural and managerial practices used to treat, prevent, or reduce water pollution will also be included in the manual.

Please contact Kristin Schuster or Gary Croskey in MDOT's Design Support Area for any questions about the Drainage Manual.

What is the Value of MDOT's Storm Water Management Program?

- **Improve Water Quality**
- **Promote Public Awareness**
- **Develop Pollution Prevention Programs in MDOT**
- **Manage Storm Water Runoff**
- **Eliminate Illicit Discharges**



Discuss list on slide. In addition to these items, the Storm Water Management Program was developed to comply with mandatory State and Federal Regulations.

Where to Learn More

- MDOT's Public Web Site
 - Download the Storm Water Management Plan & Annual Report
- MDOT Articles & Brochures
- Coming Soon: Stormwater Resource Center!

<http://www.michigan.gov/stormwater>



Examples of work done as part of MDOT's Internal Training Plan; from left to right are, an example article from MDOT today, and the brochure developed for public education on MDOT's Storm Water Management Plan.

More information can be seen on yet another example of MDOT's Internal Training Program, the MDOT public web site. This site is found by first going to MDOT's web page: <http://www.michigan.gov/stormwater> going to the bottom of the page and clicking "here" to go to MDOT's Storm Water Management Web site. MDOT's Phase I Storm Water Management Plan and Annual Report for July 2001 through June 2002 are available to download on MDOT's public website.

Training Videos and other resources will be found in the Stormwater Resource Center for check out. The location of the Stormwater Resource Center has yet to be determined. It will likely be housed in the MDOT Lansing Library.

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Please contact the following individuals in the region for more information on MDOT's Storm Water Management Program.