

Developing and Implementing a Storm Water Management Program in a Transportation Agency



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Handbook Purpose/Objective

- Help transportation agencies develop and/or implement a stormwater management program that complies with Clean Water Act, National Pollutant Discharge Elimination System, and National Environmental Policy Act laws and regulations (**CWA, NPDES, NEPA**)
- Provide useful tips and transportation-specific references to help DOTs implement a successful stormwater management program

Handbook Outline

- ❑ Development and implementation of a stormwater management program
- ❑ Clean Water Act and NPDES
- ❑ State and local regulations
- ❑ Conducting a Program Effectiveness Assessment
- ❑ Developing a stormwater management plan
- ❑ Public education and outreach
- ❑ Construction stormwater compliance
- ❑ Integrating Best Management Practices into transportation project delivery
- ❑ Roadway maintenance stormwater practices
- ❑ Total Maximum Daily Loads and other special requirements
- ❑ Important stormwater management terms



Stormwater Management Program

Six Minimum Measures:

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

NPDES Program Requirements

□ State Regulations

- Cannot preempt federal law unless state law is more protective
- May regulate waters not federally regulated

□ Local Regulations

- Require transportation agencies to coordinate with adjacent NPDES permittees such as municipalities to enhance program effectiveness and ensure compatibility of stormwater quality approaches
- Good to partner with municipalities to leverage program elements and funding

NPDES Program Elements

- ❑ Management and Organization
- ❑ Monitoring and Discharge Characterization Program
- ❑ Project Planning and Design
- ❑ Construction
- ❑ Roadway Maintenance Activities
- ❑ Facility Operations
- ❑ Non-Departmental Activities

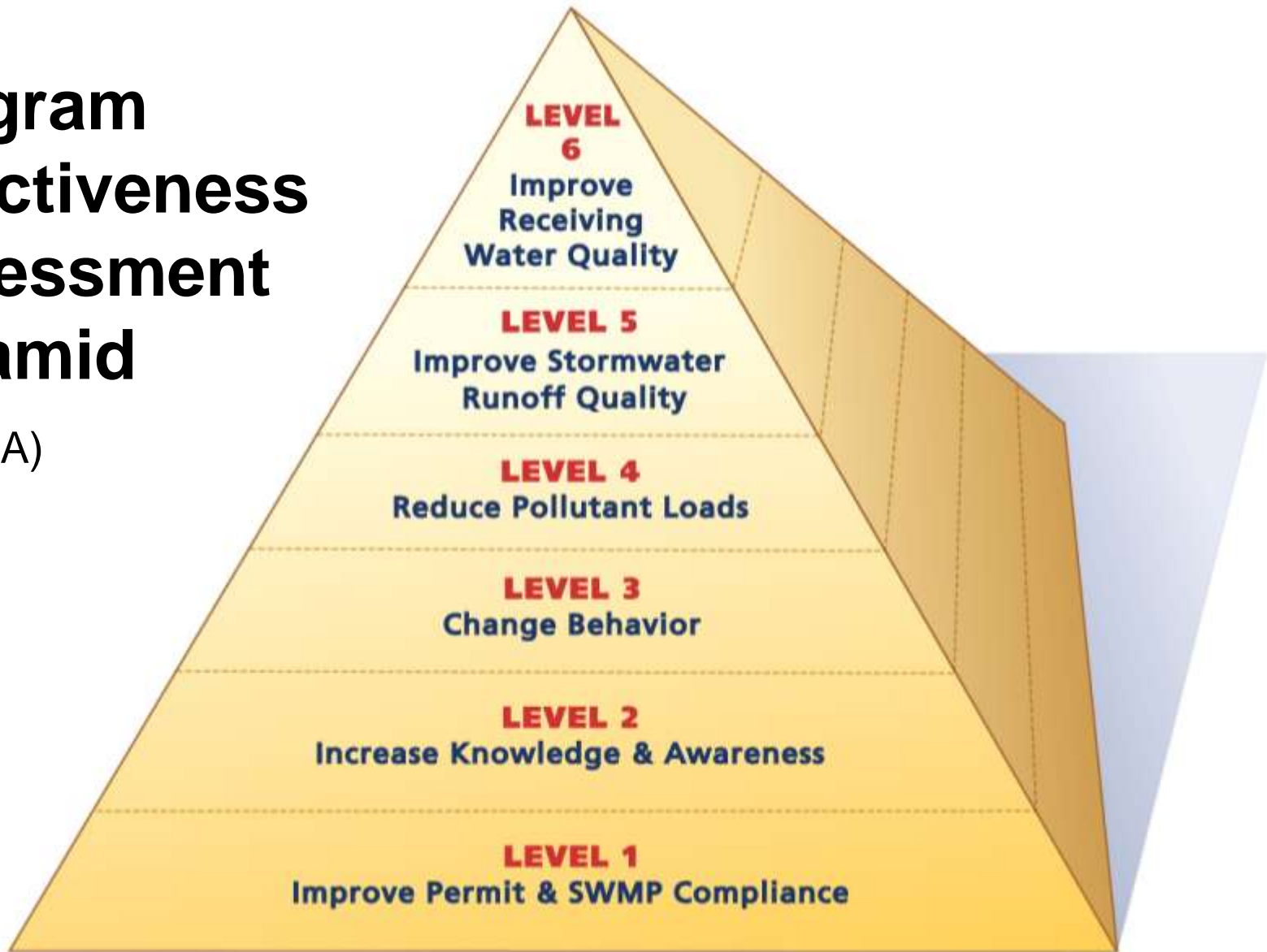


NPDES Program Elements, continued

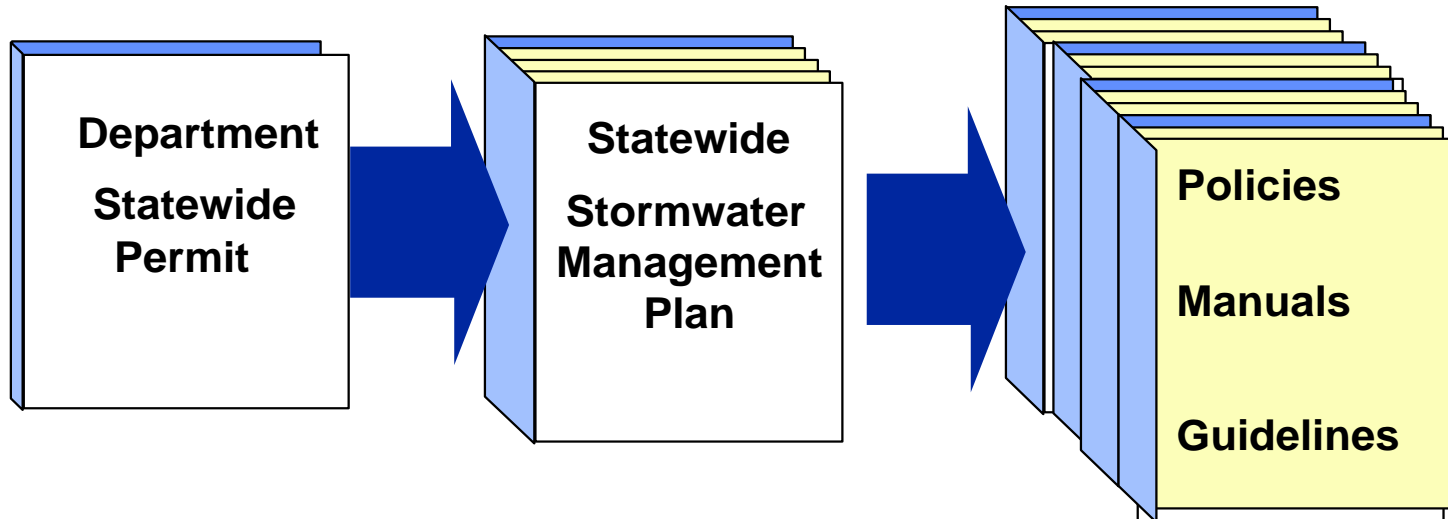
- Non-Stormwater Activities/Discharges
- Training
- Public Education and Participation
- Location-Specific Activities
- Program Evaluation
- Measurable Objectives
- Reporting

Program Effectiveness Assessment Pyramid

(CASQA)



Stormwater Management Plan



Enforceable Regulatory Documents

*Internal
Department
Documents*

Stormwater Management Plan

- ❑ Describes DOT program and addresses stormwater pollution control related to planning, design, construction, operation and maintenance, and dewatering
- ❑ Requires implementation of BMPs to reduce or eliminate toxic pollutants using BAT¹ and reduce or eliminate conventional pollutants using BCT²
- ❑ Applies to discharges exiting site via BMPs and stormwater conveyances agency's system

¹ BAT = Best Available Technology Economically Achievable

² BCT = Best Conventional Pollutant Control Technology

Key Issues to Consider

- ❑ Program Framework
- ❑ Program Resources and Funding
- ❑ Program Implementation
- ❑ Program Operation and Maintenance
- ❑ Compliance Pitfalls
- ❑ BMP Retrofit

Program Framework

- ❑ Stormwater management program in place covering 6 minimum measures
- ❑ Jurisdictions with stormwater management programs affecting transportation facilities to facilitate coordination
- ❑ Clear understanding of state and federal stormwater requirements applicable to transportation
- ❑ SWMP developed
- ❑ Adequate legal authority to implement program
- ❑ Management structure to assign responsibilities / delegate authority
- ❑ Basic policies in place

Resources and Funding



- ❑ Program fiscal analysis
- ❑ Annual stormwater management program budget
- ❑ Staffing analysis
- ❑ Adequate staff with proper training to implement program, experienced consultants available to assist
- ❑ Additional resources to address new requirements or changes in the NPDES permit or TMDLs
- ❑ State and federal funding sources for transportation stormwater management programs/grants

Program Implementation

- ❑ Include project stormwater requirements in planning, project development, maintenance, and operations; establish water quality assessment guidelines
- ❑ Program for collaboration with other MS4s
- ❑ Establish BMP identification and selection procedures
- ❑ Highway occupancy permit activities or other third party encroachments
- ❑ Staff training program
- ❑ Inventory of current practices for stormwater management program credit
- ❑ Communication with upper management and across agency divisions to communicate stormwater management program requirements

Operation and Maintenance

- ❑ Develop maintenance protocols
 - treatment BMPs
 - slope stabilization
 - storm drain system maintenance
 - roadway sweeping
- ❑ Develop pollution prevention plans for facilities
- ❑ Develop vegetation management programs
- ❑ Monitoring and reporting system to track operation and maintenance of treatment BMPs constructed



Compliance Pitfalls

- ❑ Third-party activities in right-of-way and air space leases
- ❑ Compliance with state or federal Construction General Permit
- ❑ Annual program report that includes measurable objectives
- ❑ Partnership with regulators; regular attendance at agency meetings
- ❑ Program and requirements understood by upper level management
- ❑ QA/QC program in place for construction site and maintenance facility stormwater compliance
- ❑ Competent in-house legal or contract legal staff with knowledge of stormwater and related regulations, especially CWA expertise
- ❑ Stormwater requirements included in contracts for construction projects

BMP Retrofit



- ❑ Established policy for retrofit of treatment BMPs
- ❑ Track and comment on 303(d)-Listed waterbodies throughout the state
- ❑ Develop procedure to compute BMP lifecycle costs



Infiltration basin



Media Filter



Biofilter Strip/Infiltration Trench



Detention basin

Practical Tips

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Connection/Illegal Discharge (IC/ID)
4. Construction Site Water Quality
5. Post Construction Water Quality
6. Pollution Prevention and Good Housekeeping
7. Special and Other Requirements

1. Public Education and Outreach

- Management Practices for Public Education
 - Coordinate outreach program with other permittees in the area
 - Repeat message through various media (print, radio, television, internet, outdoor signage)
 - Target message to intended audience; identify demographic in each region and tailor accordingly
 - Focus on water quality needs by watershed
 - Assess program effectiveness using assessment tools

DOT Anti-Litter Campaigns

- ❑ *Don't Trash Arizona*
- ❑ *Don't Trash California*
- ❑ *No More Trash (Missouri DOT)*
- ❑ *Don't Lay That Trash on Oklahoma*
- ❑ *Don't Mess with Texas*
- ❑ *Swat-A-Litterbug (North Carolina DOT)*
- ❑ *Keep Pennsylvania Beautiful*
- ❑ *Think Green, Keep Mississippi Clean*



2. Public Participation and Involvement

- ❑ Broad public support
- ❑ Short implementation schedules
- ❑ Broad base of expertise and economic benefits
- ❑ Management Practices for Public Participation



Public Participation Examples

- ❑ **“Adopt-a-Highway”** programs encourage individuals or groups to help remove roadside litter and debris and to report illegal dumping
- ❑ **Public meetings, workshops, and citizen panels** provide input concerning appropriate stormwater management policies and BMPs
- ❑ Participation with other **agencies, schools or communities at public events** encourages education, employment outreach, and public safety



3. Illicit Connection/Illegal Discharge (IC/ID)

- Management Practices for IC/ID
 - Prepare storm sewer system map showing location of outfalls and waters of the United States that receive discharges from those outfalls
 - Develop plan to detect and address non-stormwater discharges, including illegal dumping, into storm drain system
- IC/ID program focus
 - Illegal dumping
 - Dry weather flow
 - Training of personnel
 - Homeless populations

4. Construction Site Water Quality

- ❑ Procedures for site plan review of construction plans that consider potential water quality impacts
- ❑ Procedures for site inspection and enforcement of erosion and sediment control measures
- ❑ Sanctions to ensure compliance by contractors
- ❑ Determine appropriate BMPs to mitigate impacts of construction site runoff
- ❑ Construction Stormwater Practices and Compliance

Construction Stormwater Practices and Compliance

- ❑ Erosion and sediment control measures and practices
- ❑ Pollutants used during highway construction or operation



5. Post Construction Water Quality

- ❑ Characterize pollutants in discharges
- ❑ Identify practices that can reduce discharge/pollutants in discharge
- ❑ Plan and design highways to minimize impact
- ❑ Minimize effects of maintenance activities
- ❑ Minimize impacts of facilities operation
- ❑ Monitoring and Discharge Characterization, Typical Pollutants: suspended solids, dissolved and total metals (copper, lead, zinc), nutrients (nitrogen and phosphorus), trash

5. Post Construction Water Quality, continued

- Best Management Practices
 - Structural BMPs: stormwater retention/detention, infiltration, vegetation
 - Non-structural BMPs: street sweeping , curb alternatives, roadside litter and debris control, pesticide use management, fertilizer use reduction
- Stormwater integration
- Roadway maintenance stormwater practices and compliance

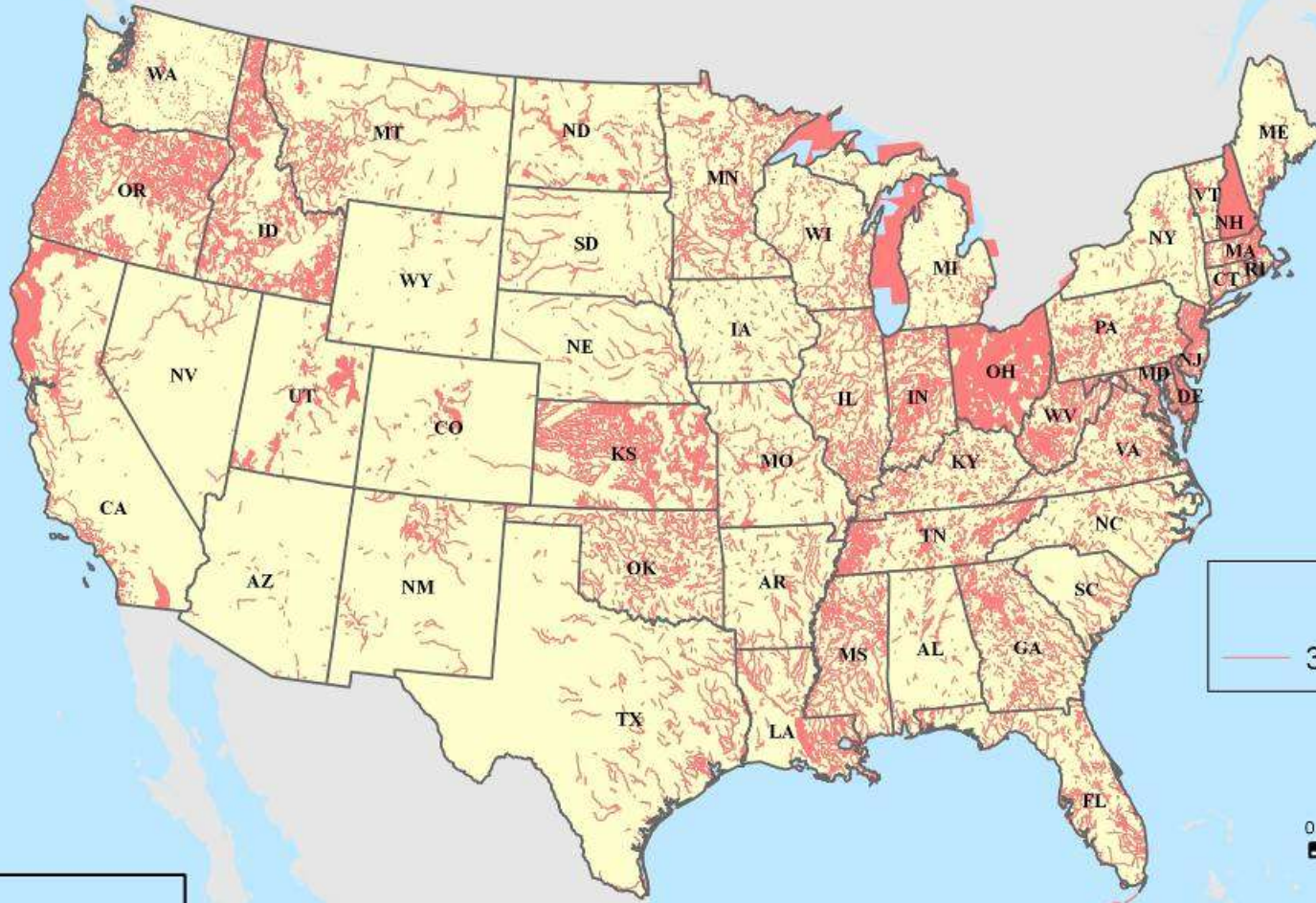
6. Pollution Prevention and Good Housekeeping

- ❑ Operation and maintenance program development/implementation
- ❑ Employee training on incorporating pollution prevention/good housekeeping techniques into operations
- ❑ Effective spill response and control program: spill prevention measures, spill response procedures, spill cleanup procedures, reporting, and training
- ❑ Clean vehicles and equipment where runoff does not discharge to storm drain system
- ❑ Repair vehicles and equipment indoors so cleaning fluids or spills do not enter storm drain system; perform outdoor repairs only during dry weather
- ❑ Minimize the exposure to rain and runoff of materials stored onsite
- ❑ Use alternative, less toxic products when available

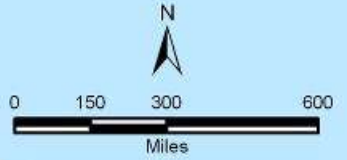
7. Special and Other Requirements: TMDLs

- ❑ Sediment
- ❑ Pathogens (*E. coli*, bacteria)
- ❑ Suspended solids
- ❑ Metals (copper, lead, and zinc)
- ❑ Nutrients (nitrogen, phosphorus)
- ❑ Trash
- ❑ Dissolved Oxygen
- ❑ Temperature
- ❑ pH (acidity/alkalinity)
- ❑ Organochlorines
- ❑ Mercury
- ❑ Salts

303(d) Listed Water Bodies



Legend
— 303(d) Listed Waterbody



The Future

- ❑ Stormwater programs nationally are in flux. New tools and new approaches will be needed to stay in compliance. Items to watch:
 - TS4 Permit
 - National guidance for TMDLs for DOTs
 - True Source Control
 - Emerging BMPs
 - ❑ Permeable Friction Course
 - ❑ Linear Filtration Devices
 - ❑ Batch Detention
 - ❑ Soil Amendments

Resources / Websites to Reference

- ❑ Statutes, regulations, and guidance documents cited in Handbook; additional materials and sample documents, available on the Center for Environmental Excellence by AASHTO web site: <http://environment.transportation.org>
- ❑ Center for Environmental Excellence's Technical Experts available to provide strategic environmental and focused environmental management technical advice; visit Center Technical Assistance Program (CTAP): http://environment.transportation.org/center/tech_experts

Questions and Discussion

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