



# **Municipal Separate Storm Sewer Systems (MS4) Construction and Post-Construction Requirements**

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[adem.alabama.gov](http://adem.alabama.gov)

- MS4 Definition
- MS4 Permittees
- Construction Requirements
- Post-Construction Requirements
- LID/Green
- Possible Future Rulemaking

- An MS4 is a conveyance or system of conveyances that is:
  - Owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.;
  - Designed or used to collect or convey storm water (including storm drains, pipes, ditches, etc.);
  - Not a combined sewer; and
  - Not part of a Publicly Owned Treatment Works (sewage treatment plant).

- Phase I

- *Medium and large* cities or certain counties with populations of 100,000 or more (based on the 1990 census)
- Currently there are 37 permittees in the state (6 permits)
- ALDOT has a NPDES MS4 permit that covers areas throughout the state in MS4 areas (covers Phase I and Phase II areas)
- Individual NPDES Permit required

- Phase II

- Small MS4s (<100,000 population) located in “urbanized areas” as delineated by the latest census
- Currently there are 46 permittees in the state
- General NPDES Permit (ALR040000)

# ADEM Overarching Requirement

- Develop and implement a comprehensive SWMP to control the quality of storm water discharged from the MS4. This must meet the maximum extent practicable (**MEP**) standards in Section 402(p)(3)(B) of the CWA.
  - This shall be met by the development and implementation of a SWMP plan (SWMPP)



# Construction Site Runoff

- Develop/revise, implement and enforce an ongoing program to reduce, to the maximum extent practicable, the pollutants in any storm water runoff to the MS4 from qualifying construction sites
  - Qualifying construction site is any construction activity that results in a total land disturbance of one or more acres and activities that disturb less than one acre but are part of a larger common plan of development or sale that would disturb one or more acres.
  - Sites designated by the Permittee that may be less than one acre



# Construction Site Runoff (cont'd.)

- The program shall include the following, at a minimum:
  - Ordinance or other regulatory mechanism that requires effective erosion and sediment controls, as well as sanctions to ensure compliance
  - Require construction site operators to control waste
  - Procedures for site plan review to ensure the selection of effective erosion and sediment controls are consistent with the Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas



# Construction Site Runoff (cont'd.)

- The program shall include the following, at a minimum:
  - Mechanism for the public to report complaints
  - Inspections of construction sites to verify use and proper maintenance of appropriate best management practices (BMPs)
  - Training for the Permittee's construction site inspection staff
  - Implementation of an enforcement response plan (ERP)
  - Program to make available a list of education and training materials and resources for construction site operators in the appropriate application and maintenance of erosion and sediment controls.



# Post-Construction Requirements

- Post construction refers to the activities that take place after construction occurs and includes structural and non-structural controls including low impact development practices to obtain permanent stormwater management over the life of the property
- Develop and implement project review and enforcement procedures for qualifying new development and redevelopment projects, to the MEP
  - Qualifying new development and redevelopment projects means any site that results in a total land disturbance of one or more acres and activities that disturb less than one acre but are a part of a larger common plan of development or sale that would disturb one or more acres.



# Post-Construction Requirements

- The program, at a minimum, shall include the following:
  - Require landowners and developers to, the MEP, implement systems of appropriate structural and/or non-structural BMPs
  - Require landowners and developers to develop and maintain BMPs to ensure, to the MEP, that post construction runoff mimics pre-construction hydrology of the site. (Design Standard)
  - Encourage landowners and developers to incorporate the use of low impact development (LID)/green infrastructure where feasible
  - Adopt an ordinance or other regulatory mechanism to ensure the applicability and enforceability of post-construction BMPs at all new development and redevelopment projects
  - Require the submittal of post construction BMP plan for review.
  - Require the submittal of 'as built' certification



# Post-Construction Requirements

- The program, at a minimum, shall include the following (cont'd):
  - Perform and/or require the performance of post construction inspections to ensure that design standards are being met
  - Maintain or require the developer/owner/operator to keep records of post construction inspections and maintenance activities
  - Require and/or perform adequate long-term operation and maintenance of post construction BMPs



# Varying Design Standards

State	Size Threshold	Volume Control Requirement		
		Retention	Treatment	Exception
Alabama	1 acre disturbed area	Narrative Standard		
Florida	4,000 sq ft imperv area	Must meet predevelopment volume in closed basins only	Varies by WMD - from first 1/2 inch runoff to 1.25 times percent imperviousness plus 1/2 inch runoff for online retention systems	
Georgia	1 acre disturbed area		Treat runoff from 85% of storms (1.2" rainfall)	
Kentucky	1 acre disturbed area		Manage 80 <sup>th</sup> percentile precipitation event (0.75") <sup>2</sup>	
Mississippi	1 acre disturbed area	Narrative Standard		
North Carolina	1 acre disturbed area; coastal-non residential: 10,000 sf IC; residential w/in 1/2 mile shellfish waters: 10,000 sf IC		Non-Coastal: 1" rainfall; Coastal: 1.5" rainfall	
South Carolina	1 acre disturbed area	1,000 ft from shellfish waters, retain 1.5" of rainfall	Volume control varies by practice	
Tennessee	1 acre disturbed area	Infiltrate, evapotranspire, harvest, or use first 1" of rainfall		If retention standard cannot be met, 80% TSS removal standard applied to remaining volume

Source: [http://www.epa.gov/npdes/pubs/sw\\_state\\_summary\\_standards.pdf](http://www.epa.gov/npdes/pubs/sw_state_summary_standards.pdf)



# LID/Green Infrastructure

- **Green Infrastructure** refers to systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater or runoff on the site where it is generated.
- **Low Impact Development (LID)** is an approach to land development that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product.



# LID/Green Examples

- Riparian Buffers
- Vegetated Filter Strips
- Constructed Wetlands
- Bioretention Areas
- Permeable Pavement
- Rain Gardens
- Green Roofs
- Rainwater Harvesting (Rain Barrels)



# LID/Green Implementation Considerations

- Natural Constraints
  - Landscape
  - Soils
  - Depth to Groundwater
- Regulatory Constraints
  - Environmental Requirements
  - Wetlands
  - Endangered Species
  - Local Requirements
- Man-Made Constraints
  - Existing Infrastructure
  - Electrical Lines
  - Septic Drain Fields
  - Wells



# Benefits of LID/Green Infrastructure

- Improved Stormwater Management
  - Reducing Stormwater Volume
  - Decreasing and Delaying Peak Discharge
  - Preventing/Reducing Pollution
  - Recharging Groundwater
- Reduced Costs
  - Reducing Energy Needs
  - Reducing Water Demand
  - Reducing Maintenance Costs
- Enhanced Community Well-Being
  - Improving Neighborhood Aesthetics
  - Cooling Cities
  - Increasing Property Values

- LID Handbook for Alabama
- EPA Stormwater Program Website
  - [http://cfpub.epa.gov/npdes/home.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/home.cfm?program_id=6)
- EPA Low Impact Development Website
  - <http://water.epa.gov/polwaste/green/>
- Water Environment Research Foundation
  - <http://www.werf.org/i/a/ka/Stormwater.aspx>
- Municipalities Throughout the Country



# Rulemaking

- EPA has initiated a national rulemaking that will affect MS4s. The following items are under consideration:
  - Developing performance standards for newly developed and redeveloped sites to address storm water as projects are being built
  - Options for expanding the protections of the municipal separate storm sewer system program (MS4)
  - Options for establishing and implementing a municipal program to reduce discharges from existing development
  - Evaluate establishing a single set of minimum requirements for regulated MS4s
  - Options for establishing specific requirements for transportation facilities



## Rulemaking (cont'd)

- EPA expected to have proposed rule out by June 10, 2013 - DELAYED
- Proposed rule will not only affect MS4s but potentially areas outside of designated MS4s
- Will have an impact on design of developments and redevelopments
  - Post-construction storm water management will have to be a forethought not an afterthought



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