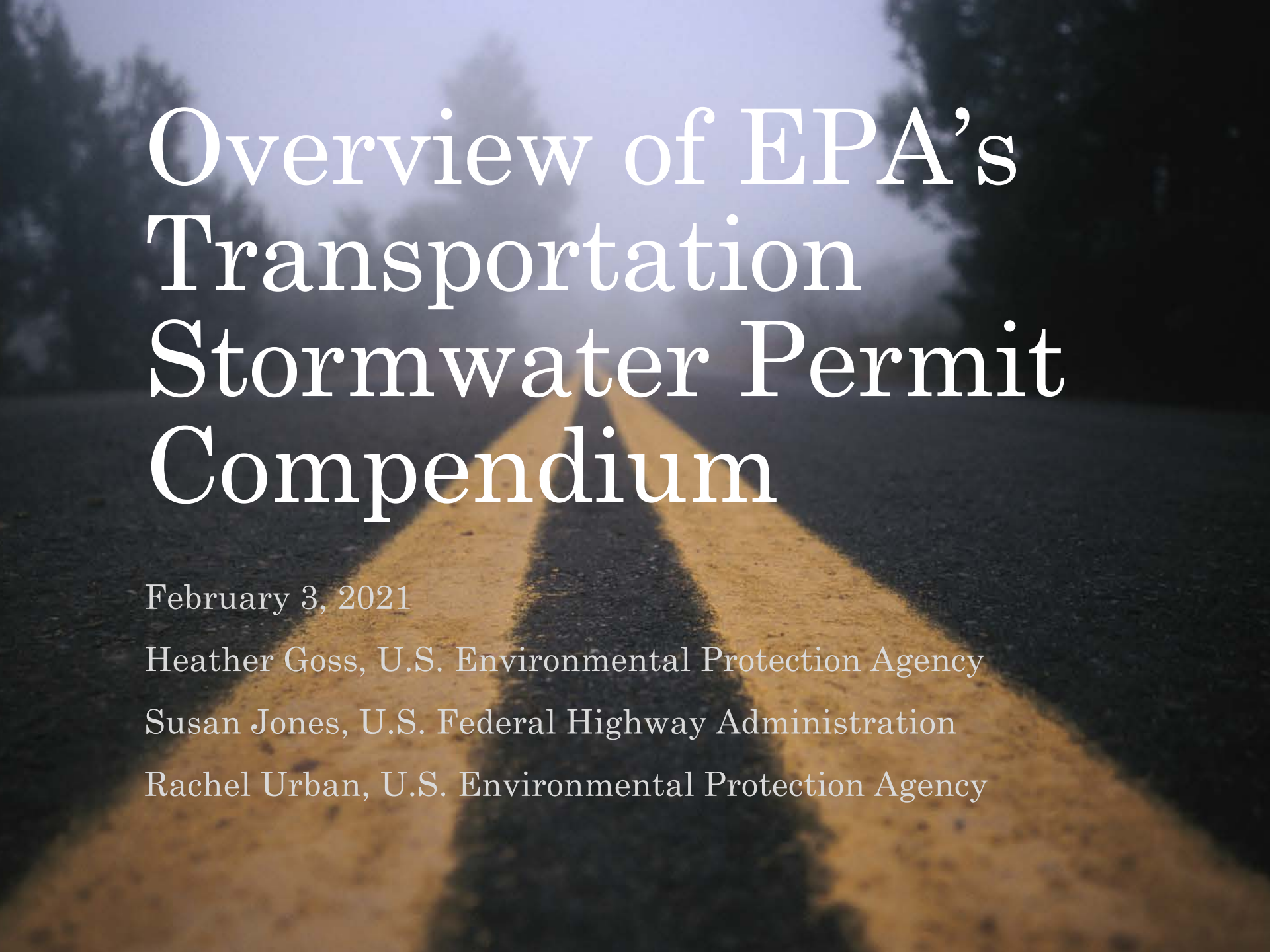


Overview of EPA's Transportation Stormwater Permit Compendium

February 3, 2021

Heather Goss, U.S. Environmental Protection Agency

Susan Jones, U.S. Federal Highway Administration

Rachel Urban, U.S. Environmental Protection Agency

Housekeeping

- This presentation is being recorded and will be made available via https://www.epa.gov/green-infrastructure/green-infrastructure-webcast-series
- All participants are muted to minimize background noise.
- To enlarge the slides, press the icon with the four outward pointing arrows on the top right of the slides.
- Technical issues or questions?
  - Contact us via the Question Box.

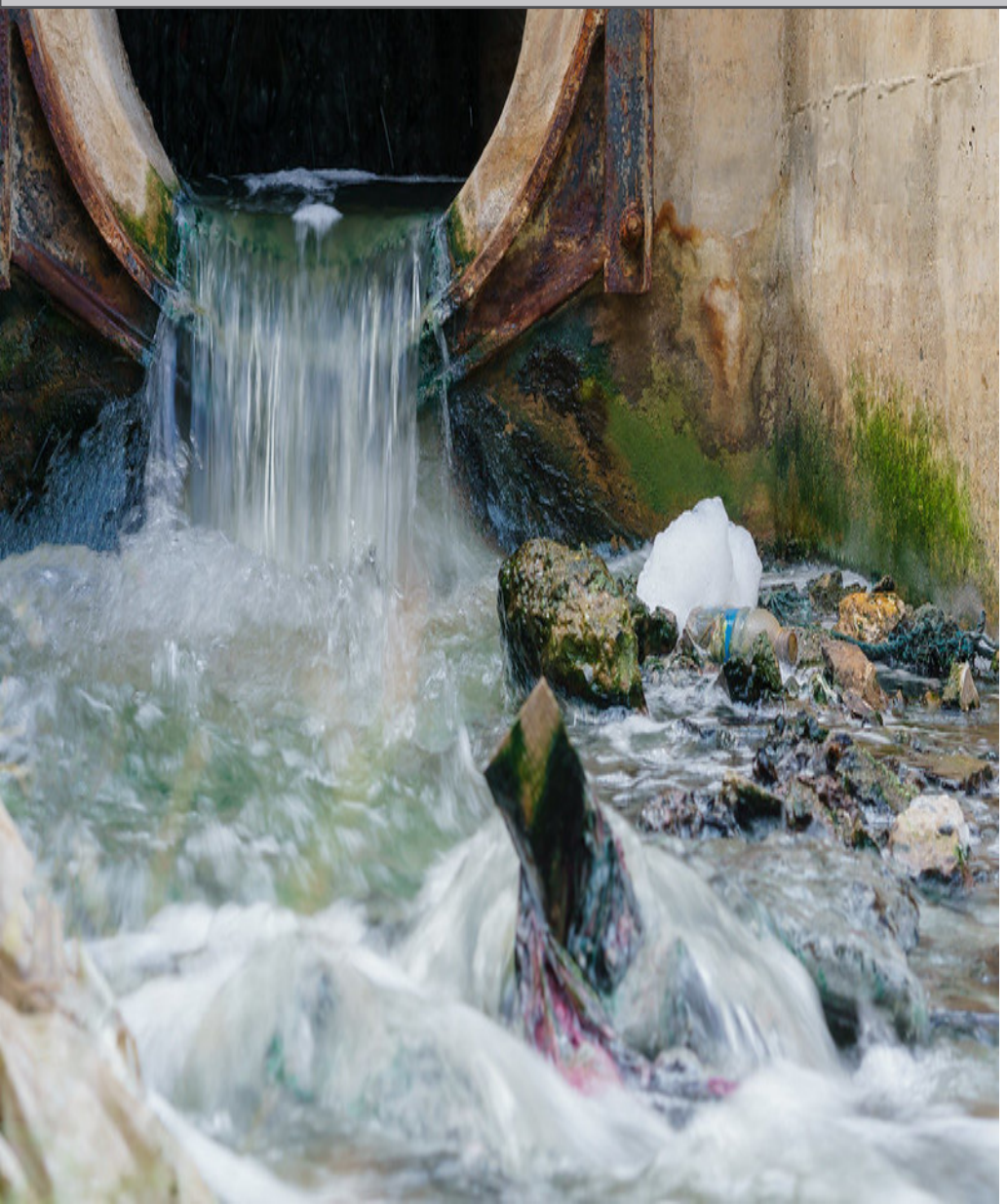
Goals of today's webinar

- Share background information on stormwater from roadways and on how "Transportation MS4s" may differ from "traditional" MS4s.
- Highlight components of MS4 permits that may be tailored for Transportation MS4s, and provide examples of different approaches compiled in the Transportation Stormwater Permit Compendium (August 2018, EPA-833-R-18-001).
- Questions?

Who can benefit from EPA's Transportation Stormwater Permit Compendium?

- NDPES stormwater permit writers
- State Departments of Transportation
- Other Departments of Transportation (municipality, county, district, etc.)

What is a Municipal Separate Storm Sewer System (MS4)?



A Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances that is:

- Owned by a public entity (state, town, etc.) that discharges to waters of the U.S.,
- Designed or used to collect/convey stormwater (e.g., storm drains, ditches),
- NOT a combined sewer, and
- NOT part of a sewage treatment plant or publicly owned treatment works.

What MS4 stormwater discharges are regulated?

1990 Phase I Stormwater Regulations

Requires medium and large cities or certain counties with populations of 100,000 or more obtain NPDES permit coverage for their stormwater discharges.

1999 Phase II Stormwater Regulations

Requires small MS4s in Census-defined urbanized areas, as well as MS4s designated by the permitting authority, to obtain NPDES permit coverage for their stormwater discharges. **Includes non-traditional MS4s such as Departments of Transportation (DOTs)**. Most Phase II MS4s are covered by statewide General Permits, however some states use individual permits.

Potential Pollutants in Stormwater Discharges from Roadways

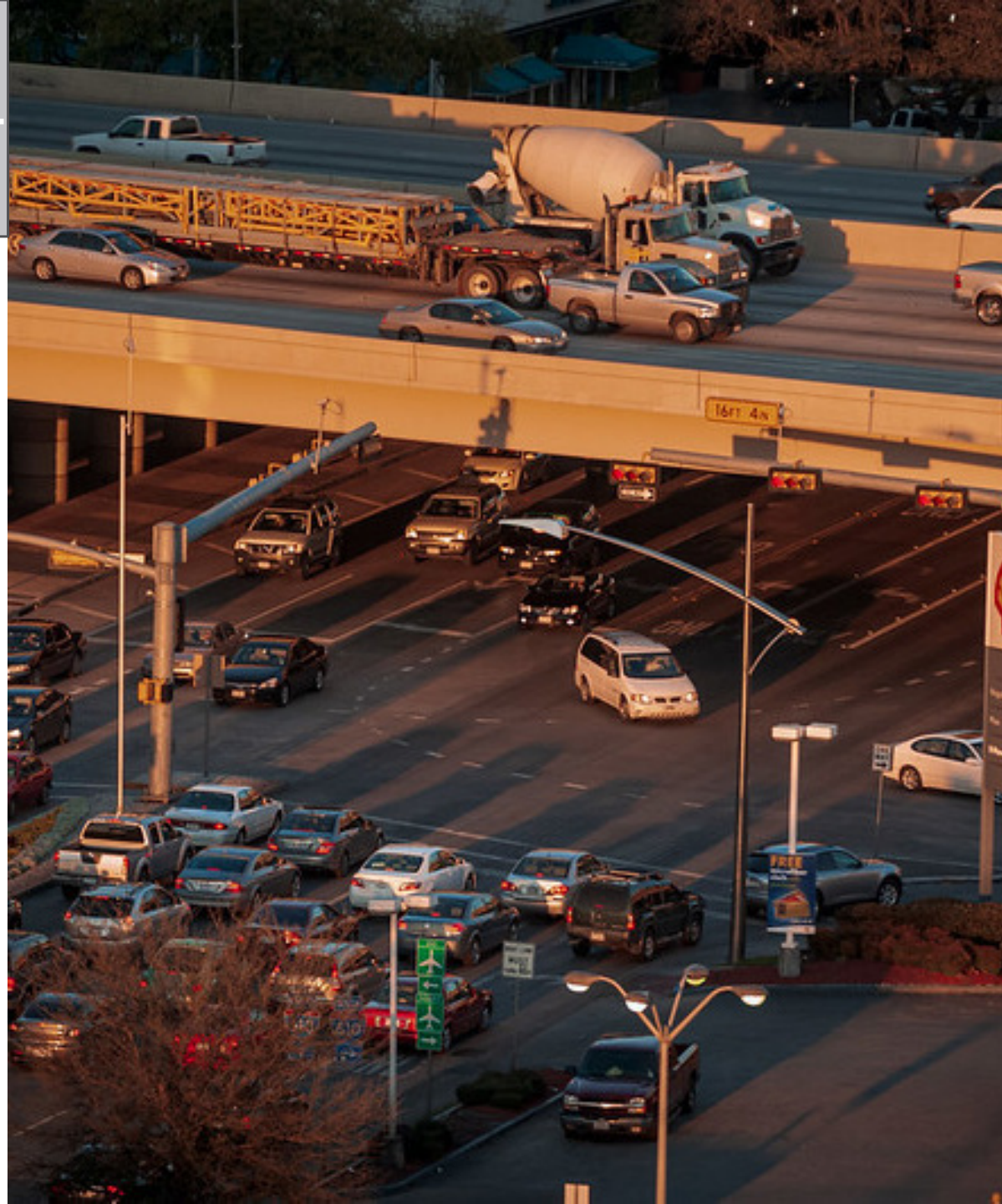
Pollutant	Site Median Pollutant Concentration (µg/l) from Urban Highways (Average Daily Traffic in vehicles per day (ADT) > 30,000)	Site Median Pollutant Concentration (µg/l) from Rural Highways (ADT < 30,000)
TSS (Total Suspended Solids)	142,000	41,000
VSS (Volatile Suspended Solids)	39,000	12,000
TOC (Total Organic Carbon)	25,000	8,000
COD (Chemical Oxygen Demand)	114,000	49,000
NO_3/NO_2 (Nitrate + Nitrite)	760	460
TKN (Total Kjeldahl Nitrogen)	1,830	870
Phosphorus as PO_4	400	160
Cu (Total Copper)	54	22
Pb (Total Lead)	400	80
Zn (Total Zinc)	329	80

Roadway Stormwater Discharge Pollutant Sources

Constituent	Primary Sources
Asbestos	Clutch and brake lining wear
Bromide	Exhaust
Cadmium	Tire wear, insecticide application
Chloride	Deicing salts
Chromium	Metal plating, engine parts, brake lining wear
Copper	Metal plating, bearing wear, engine parts, brake lining wear, fungicides and insecticides use
Cyanide	Anti-caking compound used to keep deicing salt granular
Iron	Auto body rust, steel highway structures, engine parts
Lead	Leaded gasoline, tire wear, lubricating oil and grease, bearing wear, atmospheric fallout
Manganese	Engine parts
Nickel	Diesel fuel and gasoline, lubricating oil, metal plating, brake lining wear, asphalt paving
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer use, sediments
Particulates	Pavement wear, vehicles, atmosphere, maintenance, snow/ice abrasives, sediment disturbance
Pathogenic bacteria	Soil litter, bird droppings, trucks hauling livestock/stockyard waste
PCBs, pesticides	Spraying of highway rights-of-way, atmospheric deposition, PCB catalyst in synthetic tires
Petroleum	Spills, leaks, blow-by motor lubricants, antifreeze, hydraulic fluids, asphalt surface leachate
Rubber	Tire wear
Sodium, Calcium	Deicing salts, grease
Sulphate	Roadway beds, fuel, deicing salts
Zinc	Tire wear, motor oil, grease

How are Transportation MS4s distinct from other MS4s?

- Facility locations & limitations
- Pollutant sources & characterization
- Mission
- Authorities
- Communities
- Inspections & enforcement



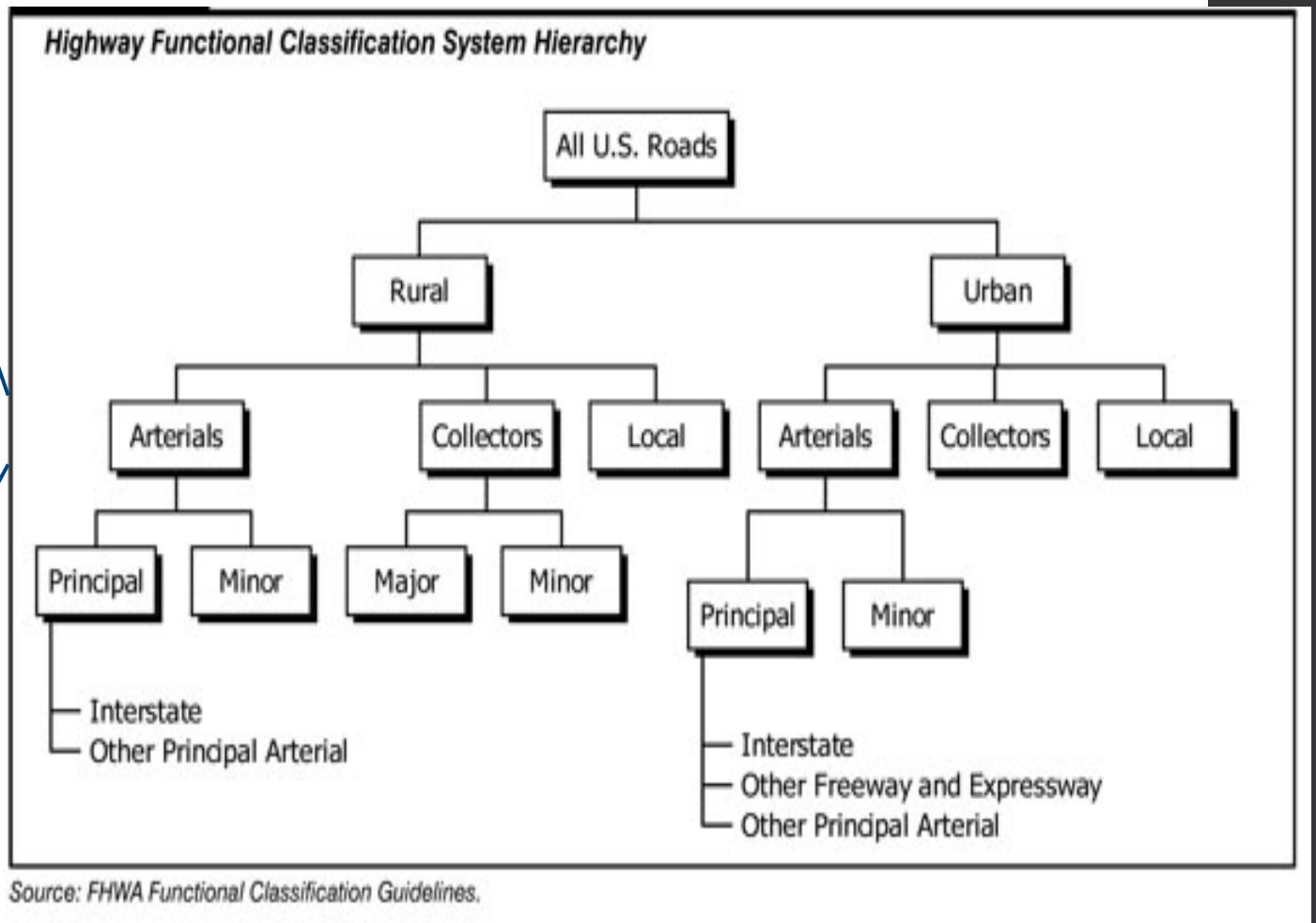
What Do MS4 Permits Typically Include?

Permits require regulated MS4s to develop, implement, and enforce a stormwater management program (SWMP) and typically include requirements related to:

- Construction
- Illicit Discharge Detection and Elimination
- Pollution Prevention/Good Housekeeping
- Post-Construction
- Public Education and Outreach
- Public Involvement/Participation
- Program Effectiveness
- Total Maximum Daily Loads (TMDLs)

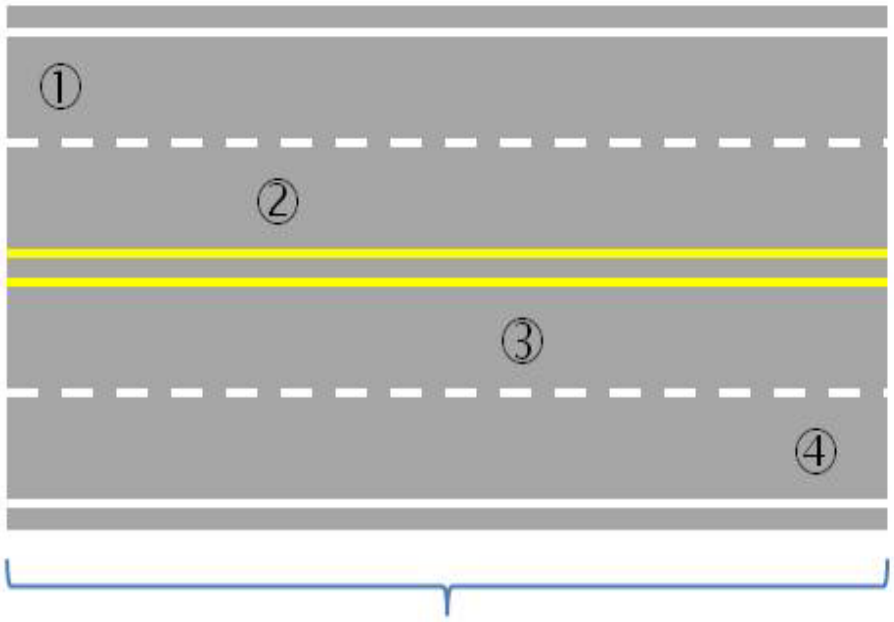
Functional Classification of Roads

Rural principal arterials connect almost all urbanized areas with more than 50,000 people and urban areas with more than 25,000 people.



Source: FHWA Functional Classification Guidelines.

Lane Miles:
Lengths of a section of road



A stretch of highway 1 mile in length with 4 lanes equates to 4 lane miles:

Lane ① + Lane ② + Lane ③ + Lane ④ = 1 mile + 1 mile + 1 mile + 1 mile = 4 lane miles

Categories of Typical Roadway Project Activities

- New construction
- Reconstruction
- Rehabilitation / resurfacing / restoration
- Maintenance

Organization of the Compendium

- Establishment of the Stormwater Management Program (SWMP)
- Roadways
- Facilities
- Storm Sewer Infrastructure
- Roadside
- Project Development
- Monitoring and Evaluation
- (and more!)

Legal Authority

Description

- DOTs often cannot pass “ordinances” nor do they have enforcement authority like a typical municipality. Legal authority may consist of policies, standards, or specific contract language.
- Non-traditional MS4 permittees also do not generally have the authority to impose a monetary penalty.

Permit Language Examples

- Acknowledging the DOT may need to develop policies or procedures to address permit requirements in the absence of ordinances.
- Establishing agreements with other agencies for enforcement where the DOT lacks authority.

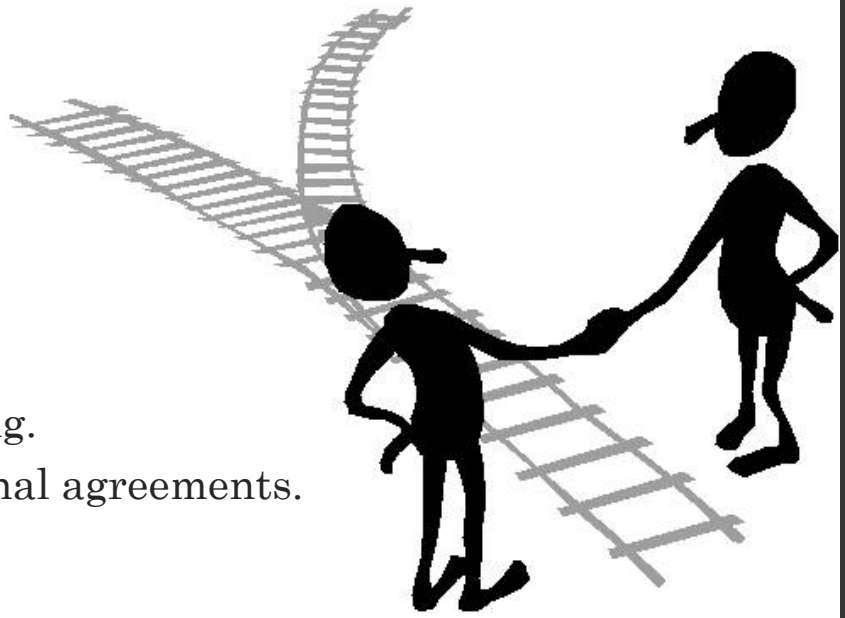
Shared Responsibilities

Description

- EPA's Phase II regulation allows a permittee to rely on other entities to satisfy its permit obligations to implement a minimum control measure.

Permit Language Examples

- Specifying that relying on another entity is allowable.
- Requiring commitments in writing.
- Requiring formal interjurisdictional agreements.



Enforcement

Description

- Due to the linear nature of a road system, DOTs may need different strategies than municipalities for ensuring compliance with stormwater requirements.

Permit Language Examples

- Specifying the DOT's responsibility related to contractual requirements and removal of temporary sediment control BMPs.
- Specifying the process the DOT must use to notify the permitting authority (generally the state environmental agency) of permit noncompliance.

Public Education & Public Involvement

Description

- MS4 permittees include public education and public involvement in the SWMP to engender greater support for and compliance with the program.

Permit Language Examples

- Specifying that a DOT permittee may target outreach and education specifically to the "traveling public."
- Specifically identifying who "the public" is for the DOT.
- Listing specific target audiences to consider among the traveling public (e.g., truckers, pet owners, garbage haulers) when developing outreach.

TMDL Requirements

Description

- Transportation MS4s discharge in multiple TMDL watersheds, the pollutants are varied, highways have large numbers of outfalls, and DOTs have limited authority to control sources.

Permit Language Examples

- Specifying impaired waterbodies, pollutants of concern, and associated wasteload allocations in the TMDL.
- Requiring a GIS layer for urbanized/impervious areas within the coverage area of the permit.
- Specific requirements (e.g., monitoring, schedule for meeting requirements) to show consistency with TMDL(s).

Winter Storm Management

Description

- DOT winter maintenance operations often involve deicing techniques and/or anti-icing techniques that use a variety of chemicals such as salts.

Permit Language Examples

- Requiring characterization of deicers used and documentation of application data.
- Not authorizing direct discharge of snow disposal into receiving waters.
- Specifying proper storage of de-icing and anti-icing materials.

Non-Industrial Facility Inventory & Management

Description

- DOTs often have facilities other than roads that are covered by the MS4 permit (for example, parking lots, rest areas, and maintenance yards).

Permit Language Examples

- Requiring inventory of specific facilities (such as maintenance yard facilities) and related potential pollution sources.
- Describing facilities management practices.
- Mandating development of standard operating procedures (SOPs) for spill prevention and response.
- Requiring facility inspections to ensure indoor drains are sealed or go to sanitary sewers.

Storm Sewer Cleaning

Description

- DOTs often have hundreds or thousands of catch basins, outfalls, inlets, and BMPs to track, operate, and maintain. Many DOTs find it helpful to develop maintenance requirements that systematically prioritize schedules and inspections based on water quality and other criteria.

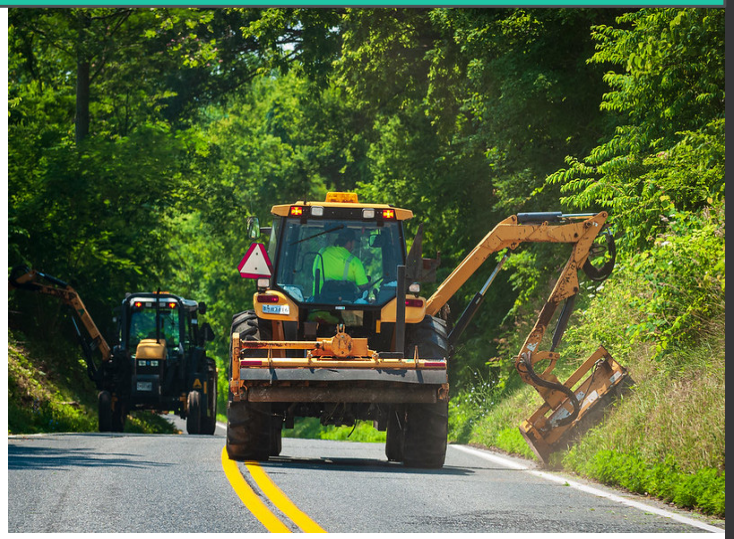
Permit Language Examples

- Specifying catch basin inspection and cleaning frequencies.

Vegetation Management

Description

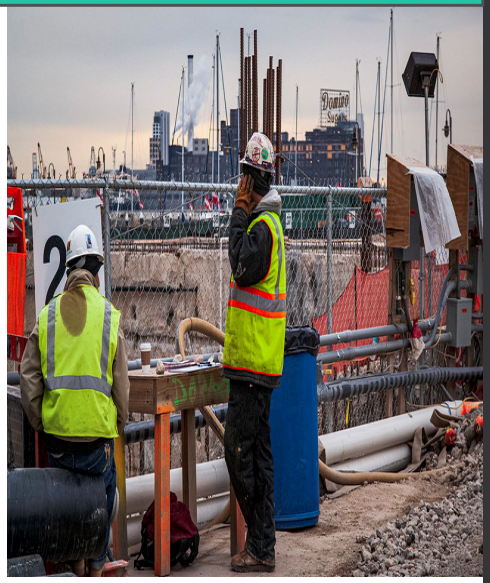
- DOTs are responsible for managing roadside vegetation for many reasons including safety, stormwater drainage, supporting pollinator habitat, managing invasive species, and aesthetics.



Permit Language Examples

- Establishing a minimum standard for herbicide application.
- Requiring collection and disposal of unused vegetation management chemicals.
- Requiring DOT contractors to be trained and certified.
- Specifying consultation with other state agencies or universities in selecting pest control methods.

Encroachment Permitting



Description

- DOTs often require encroachment permits to allow certain construction, installation, and repair-related activities within, under, or over a state right-of-way. When available, some DOTs have used encroachment permits to ensure that third parties act consistent with MS4 permit requirements.

Permit Language Examples

- Requiring permittee to educate industrial facility owners/operators about impacts to the storm sewer system.
- Requiring permittee to inspect encroachment permit construction projects.
- Requiring permittee to control 3rd party activities within the right-of-way.

Active Construction Stormwater Controls

Description

- Highway improvement projects under active construction can release pollutants when it rains or snow melts.

  DOTs often use advance planning to determine ways to reduce these discharges through both structural and non-structural practices.

Permit Language Examples

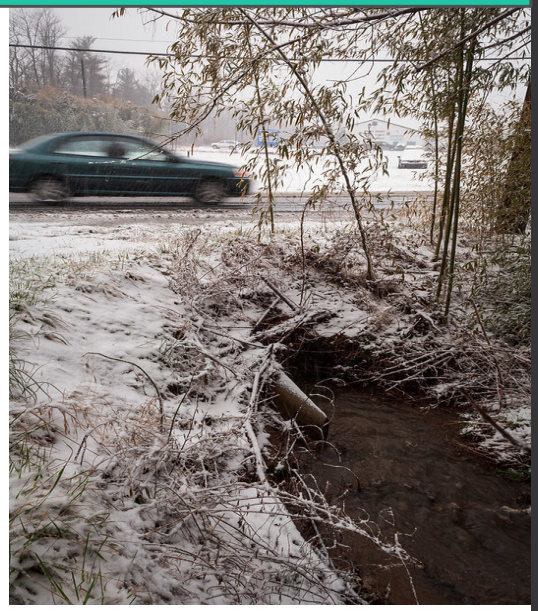
- Notification to the permitting authority if any contaminated soils will be involved in the project.

New Roads

Lane Widening

Road Realignment

Post-Construction Stormwater Controls



Description

- After active construction ends on a roadway project, post-construction stormwater controls are important to reduce pollutants in stormwater discharges from the roadway.

Permit Language Examples

- Identifying specific standards that apply to development and redevelopment and including links for easy access.
- Including specific thresholds based on imperviousness and disturbed area.
- Requiring development of a stormwater Best Management Practice (BMP) toolbox, or prioritizing specific types of BMPs.
- Green infrastructure…

What is Green Infrastructure?

Green infrastructure: "…the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters." (Clean Water Act 502)

- "Gray" stormwater infrastructure is designed to move urban stormwater away from the built environment.
- Green infrastructure uses plants, soils, and other media to capture and treat stormwater at its source.

Post-Construction Stormwater Controls

Description

- Transportation projects present opportunities to incorporate green infrastructure to meet post-construction stormwater management requirements, plus deliver multiple environmental, social, and economic benefits.

Permit Language Examples

- Requiring consideration of green infrastructure during the design phase for new and redevelopment sites.
- Requiring incentivization of green infrastructure for private and public sector projects.

Urban projects can incorporate "Green Streets" to enhance safety, improve aesthetics, stimulate community investments, and provide other benefits.

Off-Site Stormwater Management

Description

- Transportation projects may have limited opportunities to manage stormwater impacts in the existing right-of-way (ROW). Allowing pathways to meet post-construction requirements off-site may be an option.

Permit Language Examples

- Allowing post-construction stormwater controls to be placed elsewhere in the same watershed rather than only on-site.

Monitoring

Description

- Assessing the effectiveness of the stormwater management program allows the permittee to track progress in complying with permit provisions and identify which parts of the program need to be modified to protect/improve water quality.

Permit Language Examples

- Requiring monitoring of BMP effectiveness at a minimum number of specific types of facilities (e.g., rest areas, maintenance facilities).
- Requiring wet weather monitoring to compare discharges from roadways with and without control measures.
- Requiring monitoring of vegetated filter strips.
- Requiring baseline monitoring for specific different highway types (urban, rural, different geographic areas).

Specific Transportation Compendium Example

Permit requires permittee to have its chief legal counsel annually certify that it has adequate legal authority to implement and enforce each of the key regulatory requirements from 40 CFR 122.26.d(2)(i). (Part E.2.b.2)			
Effective Date 7/1/2013	Permittee California DOT	Citation 40 CFR 122.26(d)(2)(i); 40 CFR 122.34(b) (including (b)(3), (b)(4), and (b)(5))	Link to Permit http://www.swrcb.ca.gov/board_decisions/adopted_orders/water_quality/2012/wqo2012_0011_dwq.pdf

Excerpt from California DOT permit:

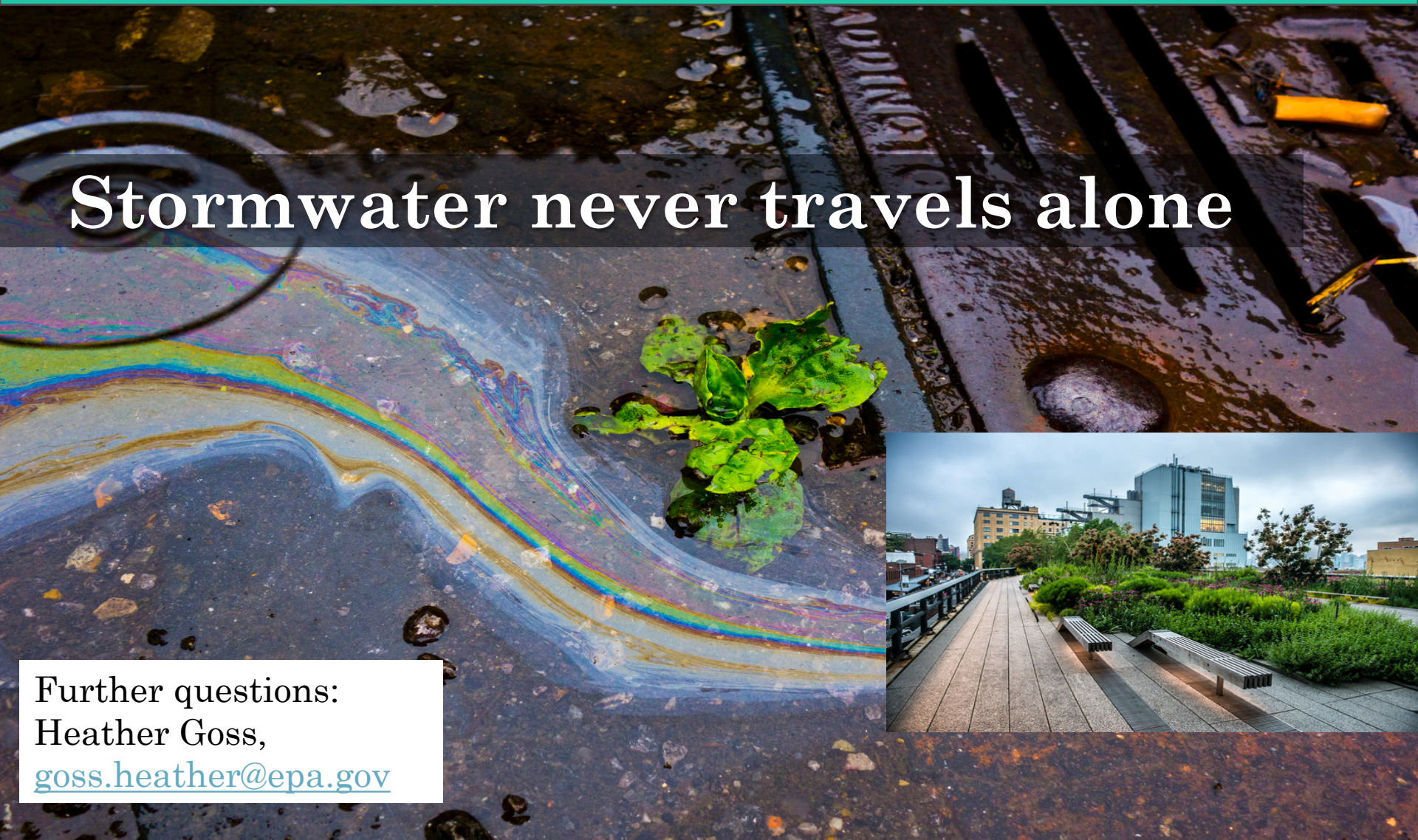
a) "The Department shall establish, maintain, and certify that it has adequate legal authority through statute, permit, contract or other means to control discharges to and from the Department's properties, facilities and activities.

a) The Department has provided a statement certified by its chief legal counsel that the Department has adequate legal authority to implement and enforce each of the key regulatory requirements contained in 40 Code of Federal Regulations sections 122.26(d)(2)(i)(A-F). The Department shall submit annually, as part of the Annual Report, a ***CERTIFICATION OF THE ADEQUACY OF LEGAL AUTHORITY.***"

Related Resources

- Permit writers may also find the following EPA resources from the *Compendium of MS4 Permitting Approaches* helpful when developing DOT MS4 permits:
  - *Introduction*
  - *Part 1: Six Minimum Control Measures*
  - *Part 2: Post-Construction Standards*
  - *Part 3: Water Quality-Based Requirements*
- EPA's MS4 Permit improvement Guide
- EPA information on Long-term Stormwater Planning
- EPA information on Integrated Planning for Stormwater and Wastewater
- NCHRP October 2019 report "Approaches for Determining and Complying with TMDL Requirements Related to Roadway Stormwater Runoff"
- NCHRP Domestic Scan 16-02 "Leading Landscape Design Practices for Cost-Effective Roadside Water Management"

Questions?



Further questions:
Heather Goss,
goss.heather@epa.gov