

AMERICAN ASSOCIATION OF
STATE HIGHWAY AND
TRANSPORTATION OFFICIALS

AASHTO
THE VOICE OF TRANSPORTATION



U.S. Department of Transportation
Federal Highway Administration

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2012 AASHTO National Stormwater Practitioners Meeting

*Connecting the DOTs Through Collaboration
in Stormwater Management*

Webinar Agenda

- Welcome/Introduction of Presenters
- AASHTO Resources for Stormwater Practitioners
- National Meeting Overview
- U.S. EPA Update
- Best Practices and Post-Meeting White Paper
- Question/Answer Session

Presenters



- KATE KURGAN, Senior Program Manager for Environment American Association of State Highway and Transportation Officials



- SCOTT MCGOWEN, P.E., Chief Environmental Engineer California Department of Transportation



- RACHEL HERBERT, Physical Scientist USEPA Headquarters, Water Permits Division



- ANNA LANTIN, P.E., Vice President RBF Consulting, a Company of Michael Baker Corporation



AASHTO Update

Presented by
Kate Kurgan

Senior Program Manager for Environment

AASHTO Webinars

- Construction and Development Effluent Guidelines, December 2009
- Construction Effluent Guidelines: Numerical Limits are Coming, April 2011
- Efficient and Innovative Strategies for Achieving Better Environmental Performance, June 2011
- Post Construction BMP Selection – Runoff Management to Meet Quantitative Pollution Limits, June 2012

Stormwater References for DOTs

- Community of Practice Reports
 - Construction Stormwater Management
 - Effluent Limitations Guidelines
 - Total Maximum Daily Loads (TMDLs)
 - Post Construction BMPs
 - EPA Post-Construction Stormwater Rulemaking
 - Source Control
 - Operation and Maintenance BMPs
 - Program Effectiveness Assessment
 - Watershed Approach (in progress)



Stormwater Practitioner's Handbook

- Development and implementation of a stormwater management program
- Developing a Stormwater Management Plan (SWMP)
- Construction site stormwater compliance
- Integrating Best Management Practices (BMPs) into DOT project delivery
- Roadway maintenance stormwater practices and NPDES compliance
- TMDLs and other special requirements



AASHTO Contact

Kate Kurgan

Senior Program Manager for Environment

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Center Website:

<http://environment.transportation.org>



National Meeting Overview

Presented by
Scott McGowen, PE
Caltrans Chief Environmental Engineer

Meeting Facts

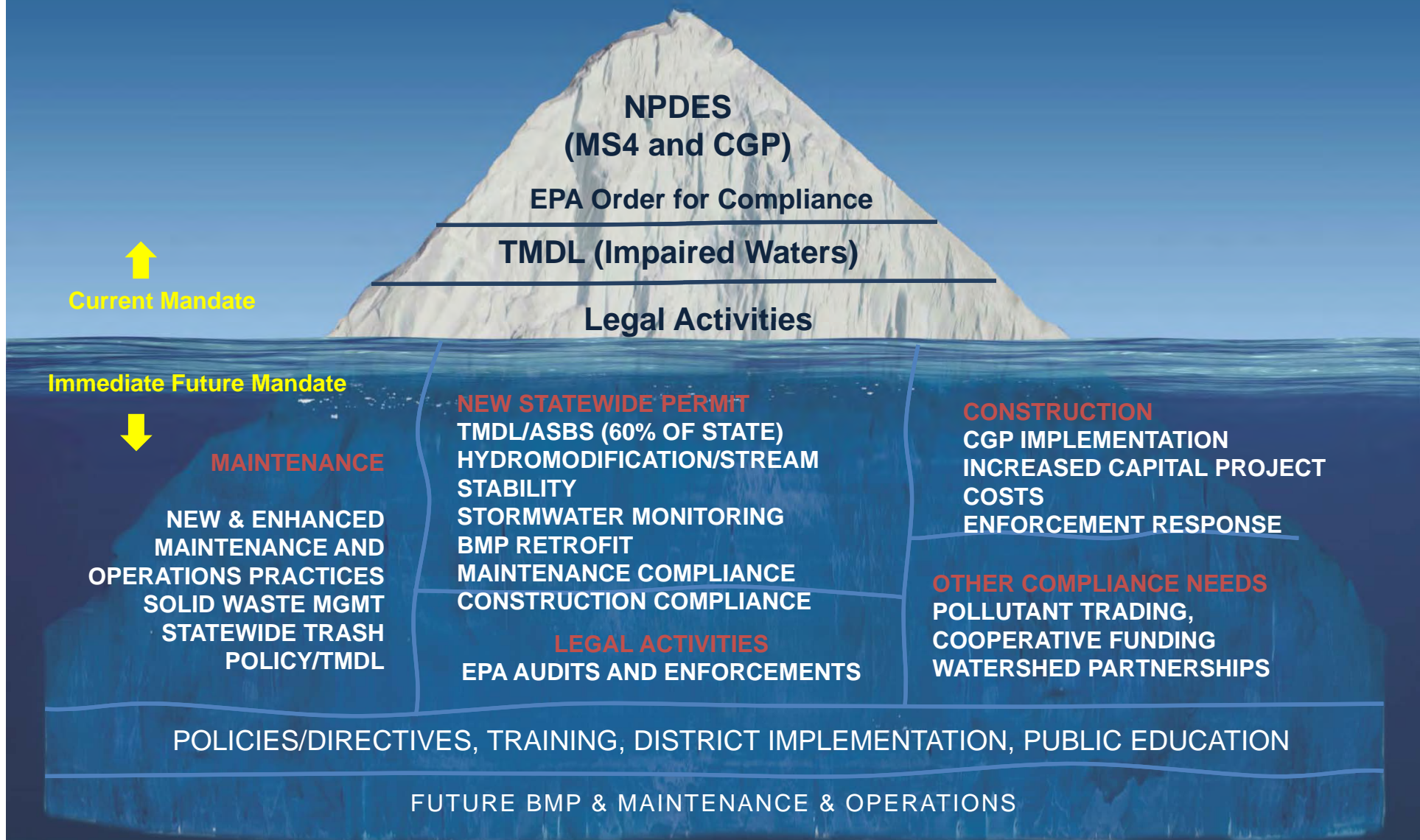
- 77 Attendees representing 44 of 52 DOTs, FHWA, AASHTO, Regulators
- 50% attended for the first time
- 75% with at least 5 years of stormwater experience
- 65% is from a DOT with less than 5 program staff members
- 66% from Environmental Division (26% from Engineering)
- Attendees background includes Technical, Policy, Program Management

Key Topics

- FHWA and AASHTO Update Stormwater Activities
- NPDES Permitting, Trends and Streamlining
- DOT Audit Process and How to Prepare
- Asset Management Programs
- Contemporary Post-Construction Stormwater Control
- DOT Peer Exchange
- Construction Stormwater Management
- The Watershed Approach

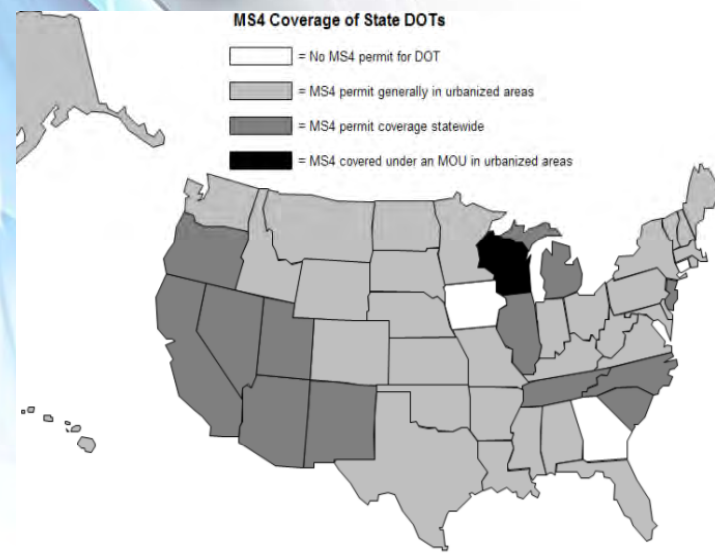


STORM WATER STRATEGY – Risk Management & Cost Control



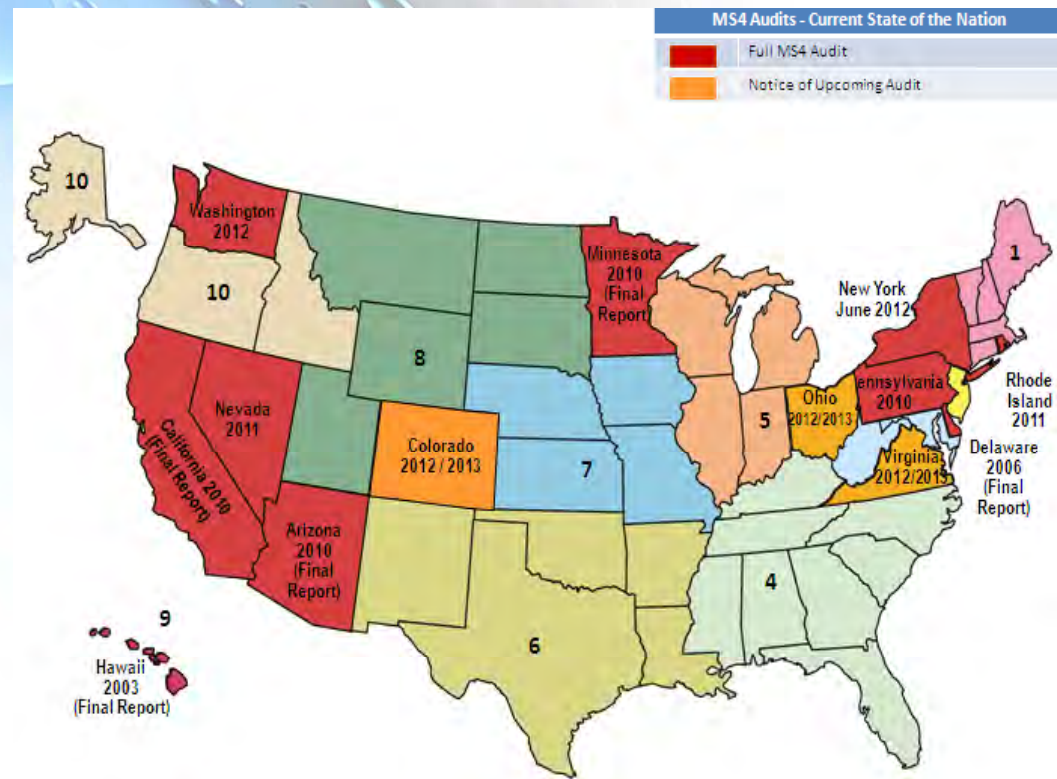
EPA Update

- EPA's Construction General Permit
- National Stormwater Rule Considerations
- Information Collection Request Survey

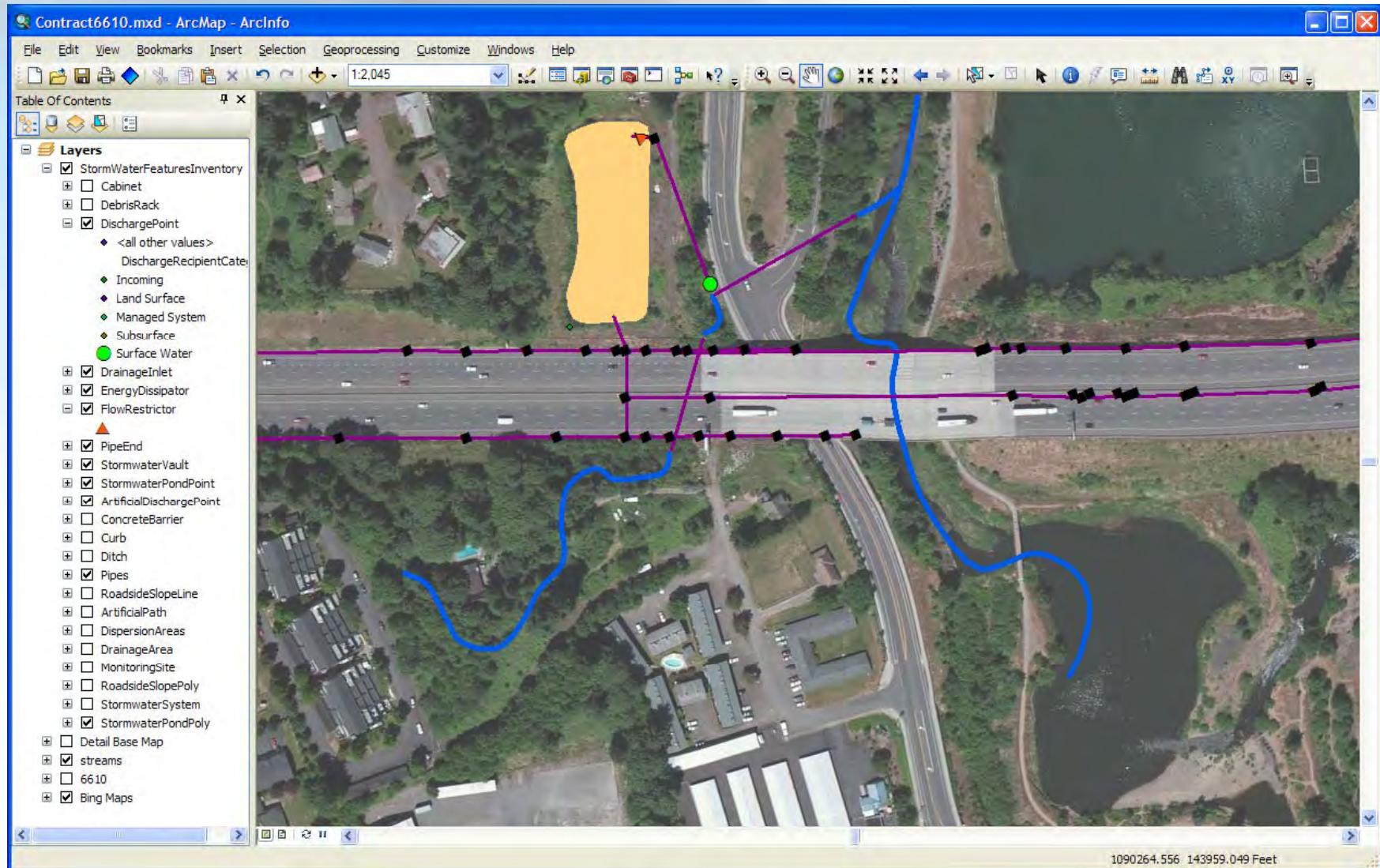


DOT Stormwater Audit by USEPA

- DOT Audits – Current State of the Nation
- Focused on field practices
 - Construction
 - Maintenance
 - Enforcement



Asset Management



Contemporary Treatment BMPs

(appropriate for the highway environment)

- Open Graded Friction Coarse (OGFC)
- Low Impact Development
 - Bioretention
 - Vegetated Treatment



Focused Construction Program

(erosion and sediment control for highway environment)

- Phased plan to protect receiving waters
- Tracking and inspection
- Final stabilization



Watershed Approach

(for stormwater management)

- EPA's guidance to participate in watershed planning with a diverse group of stakeholders
- Advantages and Disadvantages
- Alternatives
 - Stormwater in-lieu fee program
 - Offsite Mitigation (shared solution with locals)
- Applicability to TMDLs (Impaired waters program)

Be Prepared

- Learn from other DOT practices
- Evaluate current practices
- Understand the risks
- Awareness of upcoming regulation...

USEPA Stormwater Update



Rachel Herbert
EPA/Office of Water
Stormwater Permitting Team



Stormwater: A Growing Water Quality Concern

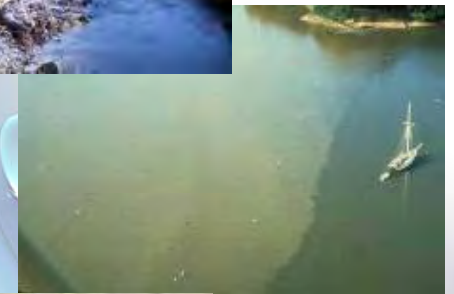
1. Increased amounts of stormwater and pollutants...



2. Enter the municipal separate storm sewer system (MS4) or is directly discharged to a nearby waterbody...



3. Which can lead to stream degradation and increased pollutants entering waterbodies





Key Elements Considered for the Proposed Stormwater Rule

1. Establish performance standards for discharges from newly developed and redeveloped sites.
2. Require certain regulated MS4s to develop a program to address discharges from existing sites (retrofits).
3. Extend protection of MS4 Program.
4. Consider separate, tailored requirements for transportation MS4s.
5. Designating Government-Owned Maintenance Yards as Industrial Sources.



Performance Standards

Why · What · Who · Where · When · How

Why and What

- Considering a retention-based performance standard to reduce pollutants resulting from the increased volume and velocity of stormwater discharges at newly developed and redeveloped sites.
- The volume of stormwater retained is a surrogate for the pollutants contained in the discharge.



Performance Standards

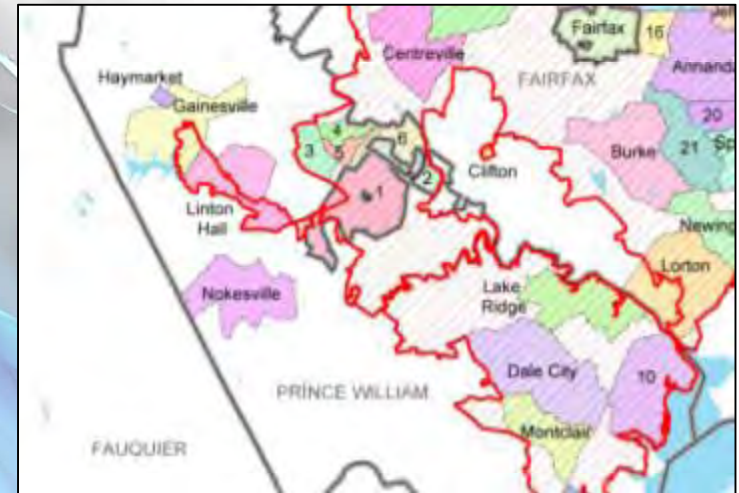
Why · What · Who · Where · When · How

Who

- All types of construction projects including residential, commercial, industrial, and institutional.
- Owner of a construction project which meets the site size threshold.
- Responsibility for proper operation and maintenance transfers to new owners of a property.

Where

- The standard could be applied to newly developed and redeveloped sites nationwide or only those sites discharging to regulated MS4s.



District of Columbia Metro Area Urbanized Area Map US Census 2000 (red hatched)

Applying the standard nationwide would create a level playing field for developers among municipalities and protect downstream communities from upstream development.



Performance Standards

Why · What · Who · Where · When · How

Begin Site
Design

File
Notice of
Intent

File
Notice of
Termination

Active Construction

Standard applies to discharges from the site →

Project Timeline

When

Would apply to stormwater discharges after construction is complete.

How

Cost effective ways to meet the standard

- Incorporate controls in the site design by preserving vegetation, reducing impervious cover
- Integrate green infrastructure practices into landscape or other areas which would manage the specified volume in the standard.
- Options for alternative solutions (e.g. off-site mitigation, payment-in-lieu)



Performance Standards

Why · What · Who · Where · When · How

Discharges from Redeveloped Sites

Recommend lower standard for redevelopment

- Recognize site constraints
- To encourage redevelopment to revitalize urban communities
- Considering additional incentives for smart growth and brownfields development

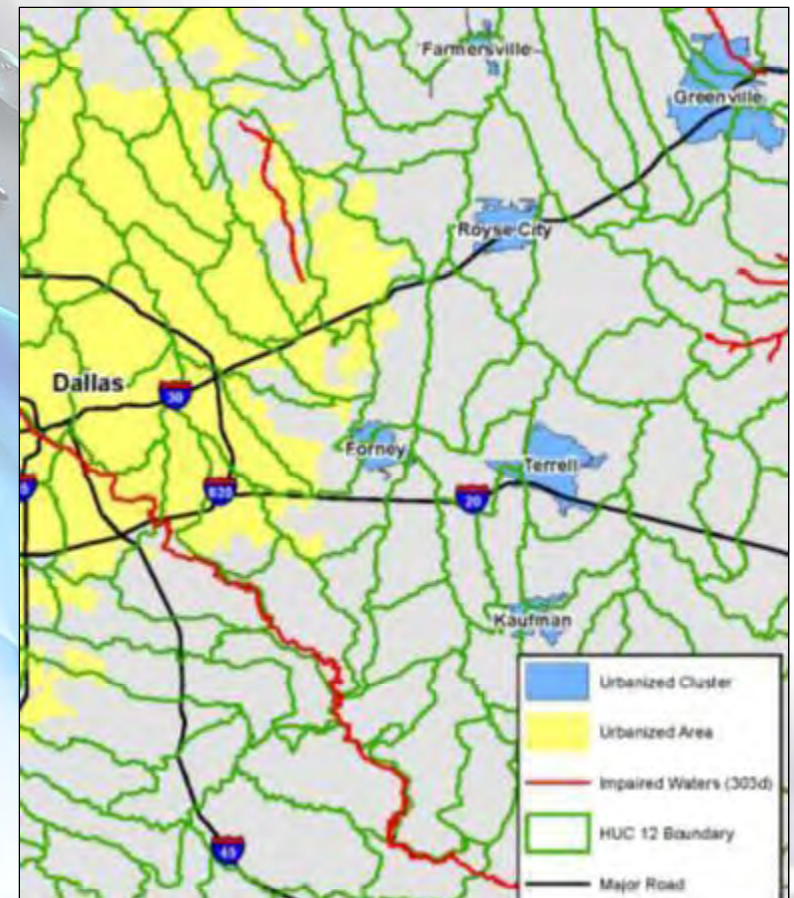


LA Infiltration Planters. Photo courtesy of Bill DePoto.



Extending the Protection of the MS4 Program

- Helps ensure standards are properly implemented which could reduce need for expensive retrofits later
- Builds on existing framework of local oversight
- Implements 6 minimum measures which help prevent contamination





Extending the Protection of the MS4 Program

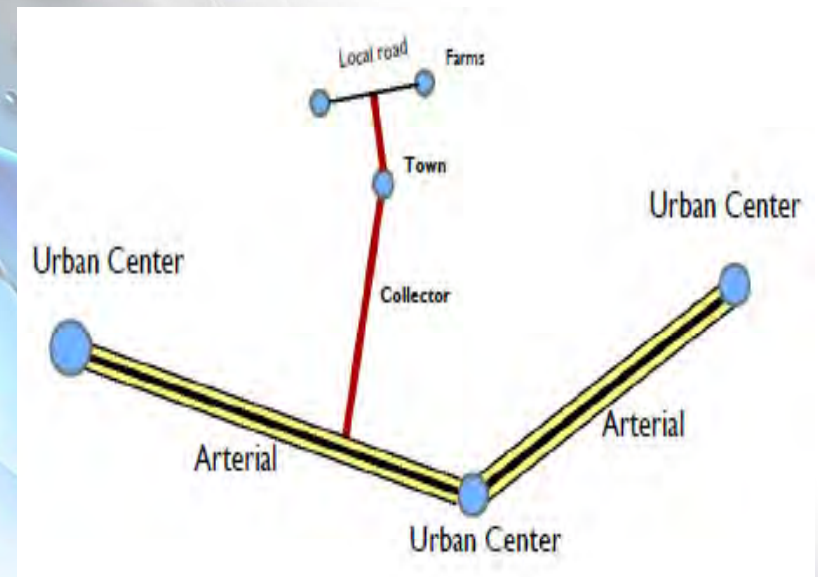
Options

1. Urbanized clusters as defined by Census (density of 1,000 people/mi²)
 - Reaches unregulated densely populated areas
 - Could specify a population threshold
2. Small watershed (HUC 12) which overlap with urbanized area
 - Reaches areas of high growth
 - Promotes watershed approaches
 - Could specify a population threshold



Extending the Protection of the MS4 Program to Principal Arterial Roads

- Federal Highway Administration Category: roads which connect urbanized areas with more than 50,000 people and urban areas
- Rulemaking could extend the MS4 program to all principal arterials or a subset of principal arterials
- 12 states currently apply the MS4 program to all state-owned roads





Separate, Tailored Requirements for Transportation MS4s

- Examining the activities that DOTs perform
- Reviewing the ICR data and other documents
- Considering tailoring requirements for transportation MS4s



Municipal Program to Manage Discharges from Existing Sites (Retrofits)

- Address existing degradation from existing sites and help restore urban waters
- Proposed approach could require certain regulated municipalities to:
 - Identify long term goals, highest priority projects and milestones
 - Integrate green infrastructure into projects cities are already doing
 - Implement through an iterative approach as part of stormwater management plan
- Could Apply to:
 - Regulated municipally-owned MS4s serving populations $\geq 100,000$
 - Regulated municipally-owned MS4s serving populations $\geq 50,000$
 - Could allow exemptions where municipally-owned MS4 discharges do not cause or contribute to violations of water quality standards

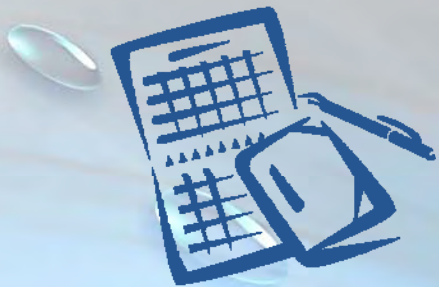


Designating Government Owned Maintenance Yards as Industrial Sources

- Vehicle and equipment maintenance is a regulated industrial activity, except for municipal maintenance yards
- Often have public administration SIC codes or some other non-regulated code not representative of their industrial nature
- 1995 *Storm Water Discharges Potentially Addressed by Phase II of the NPDES Storm Water Program, Report to Congress* identified government maintenance yards as one of the major unregulated sources

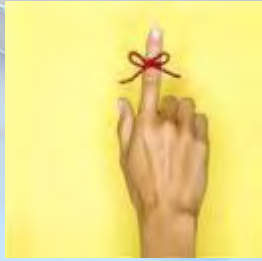
Pollutants of concern:

- organic and inorganic chemicals;
- fuels, such as coal and oil;
- paints;
- metals;
- solvents; and
- oil and grease.



Rulemaking Schedule

- Proposal: June 2013
- Final Action: December 2014
- www.epa.gov/npdes/stormwater/rulemaking



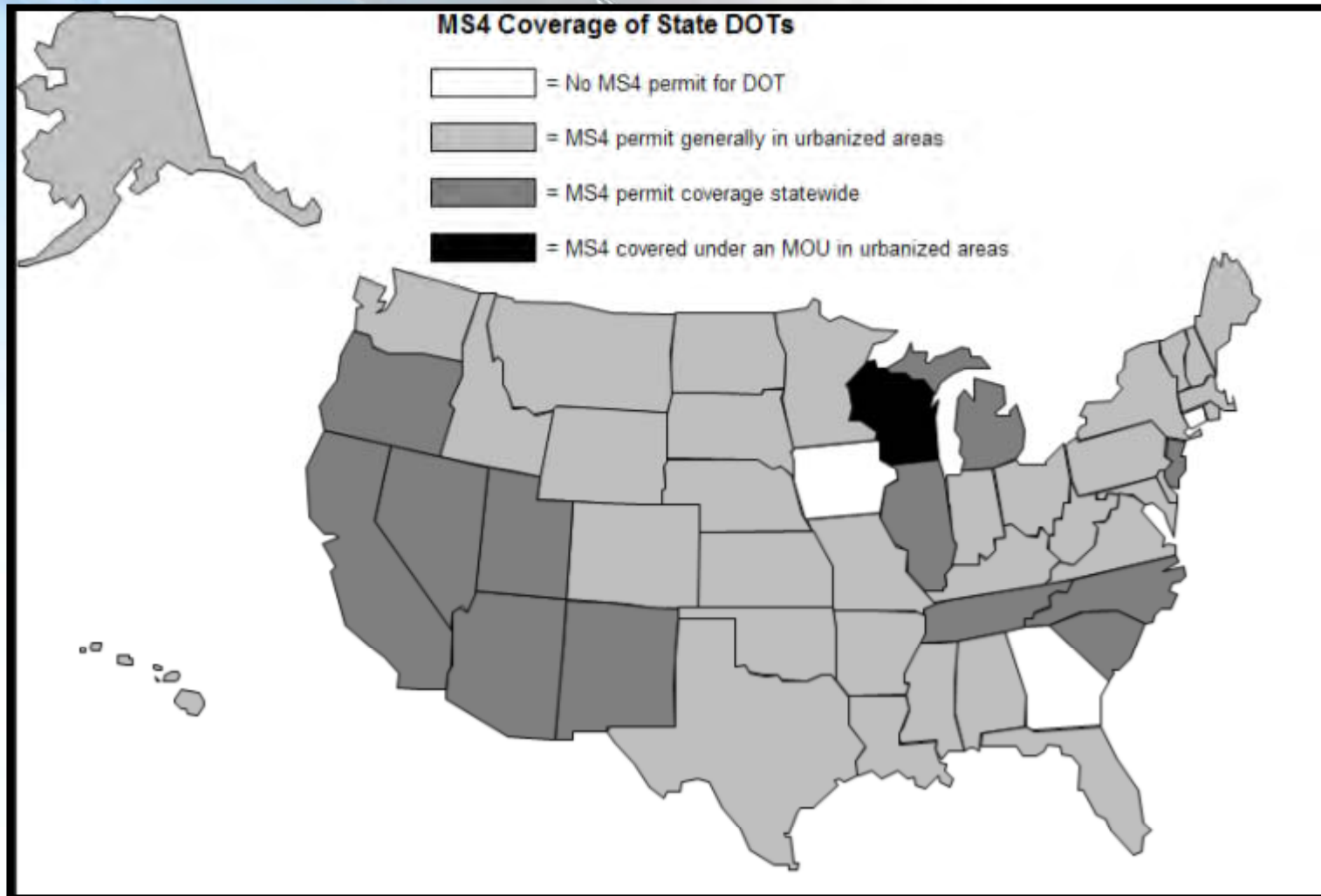
Information Collection Request (ICR) Process

Part A: Technical
Information

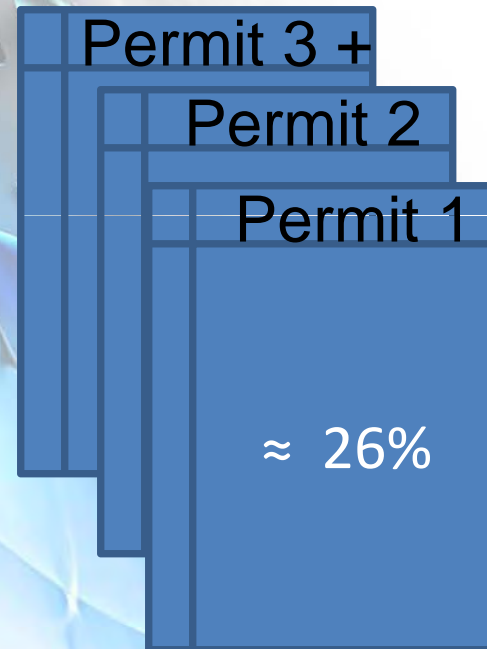
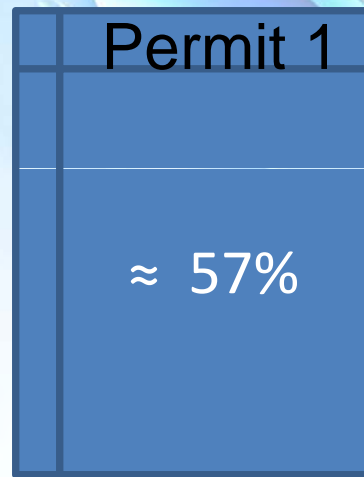
Part B: Financial
Information



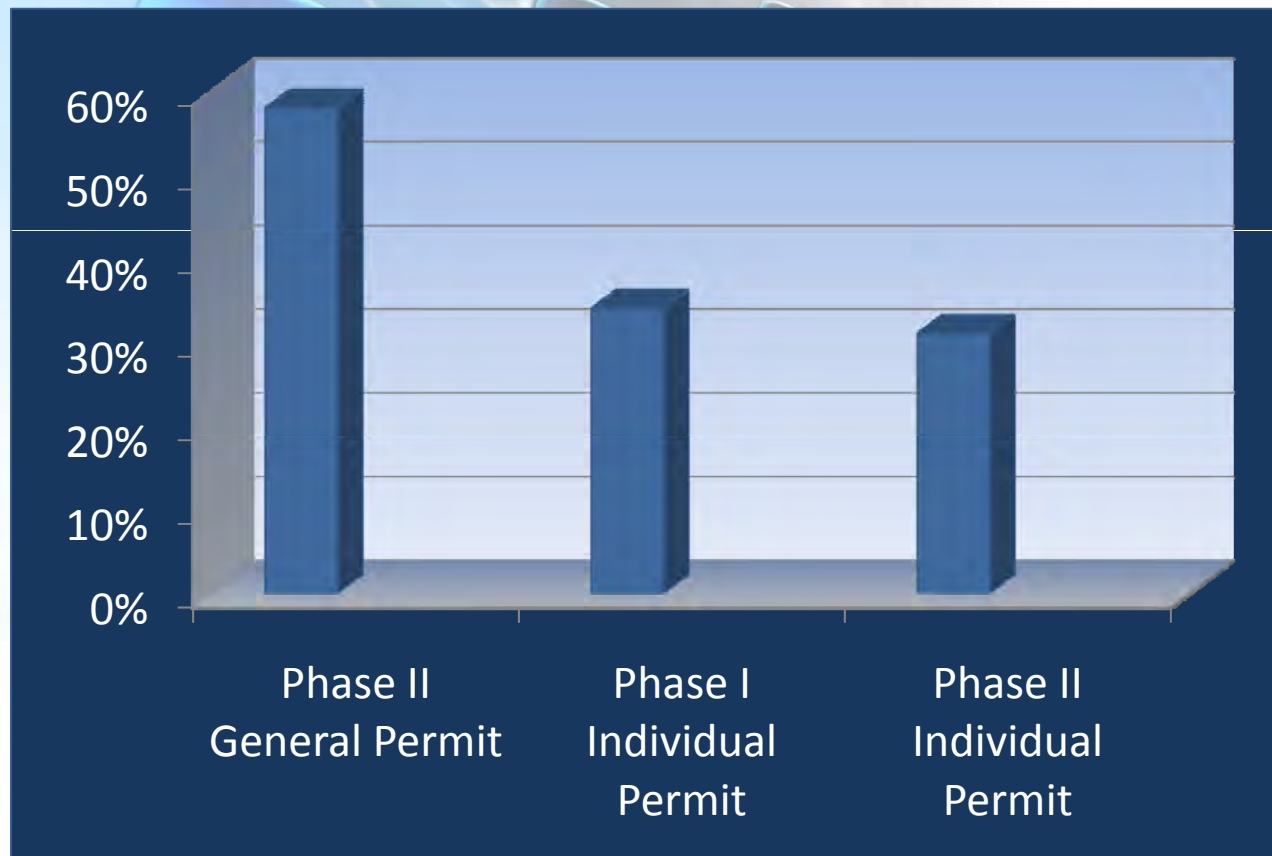
Permit Coverage



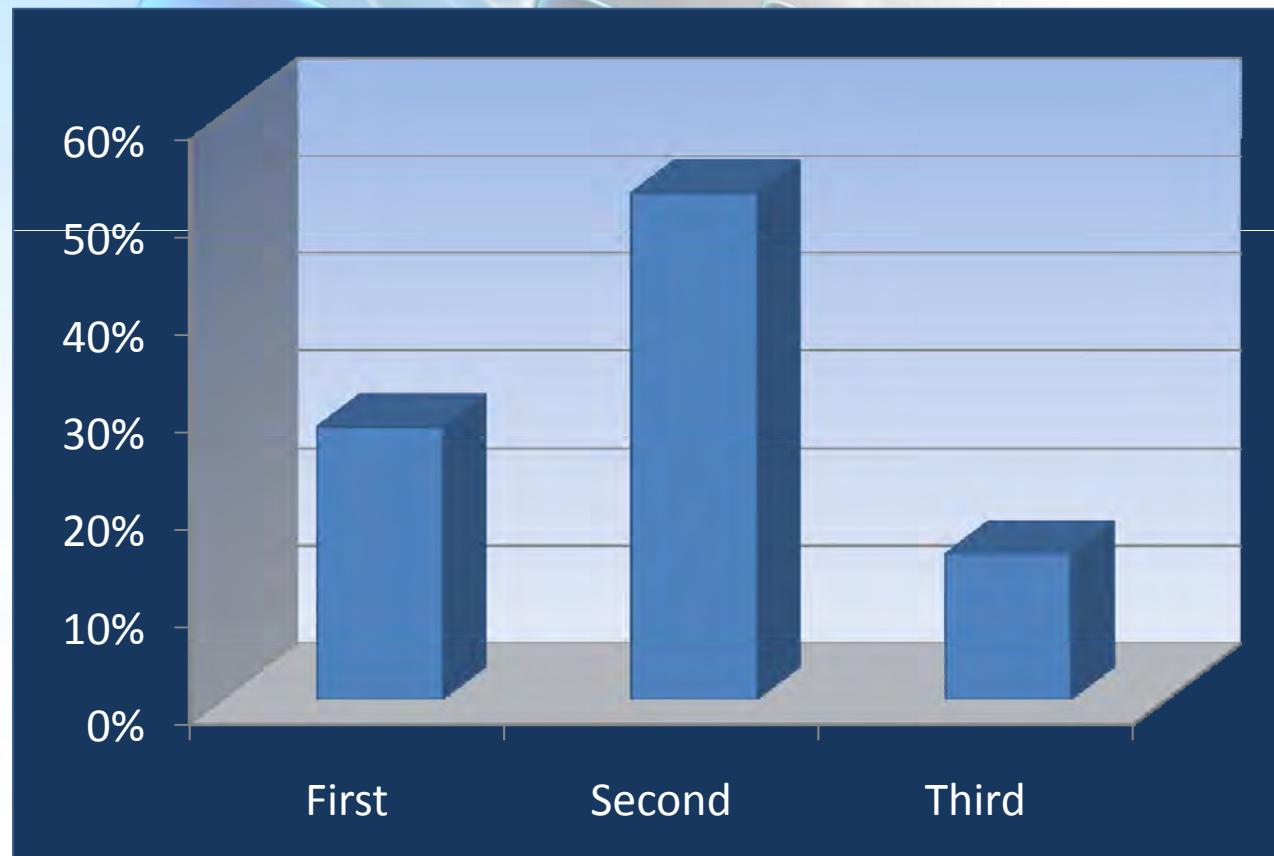
Number of Permits



Permit Types



Permit Terms





Administratively Extended Permits



58 months



5 months

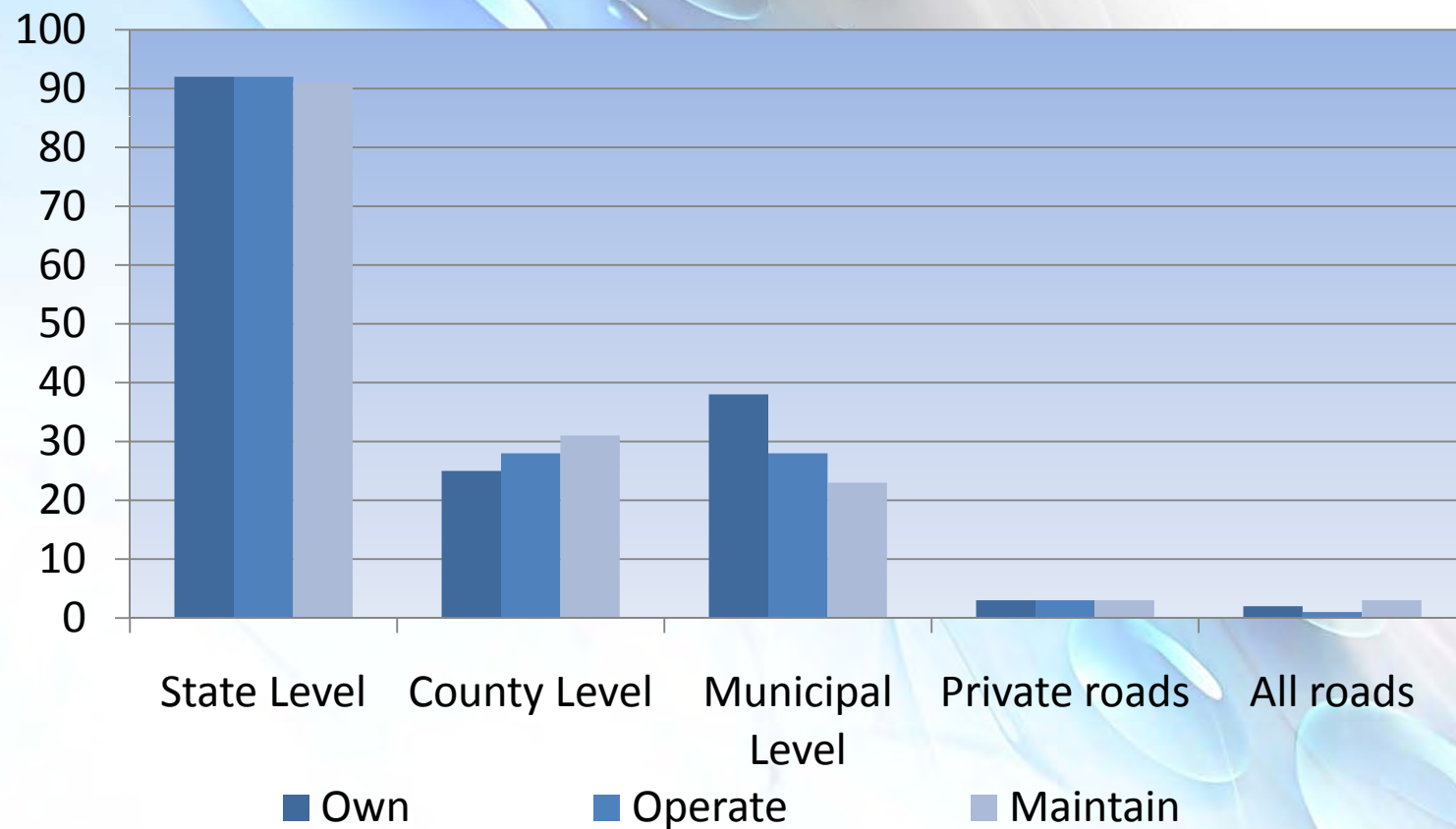
Administrative Approach





Type of Roads Covered

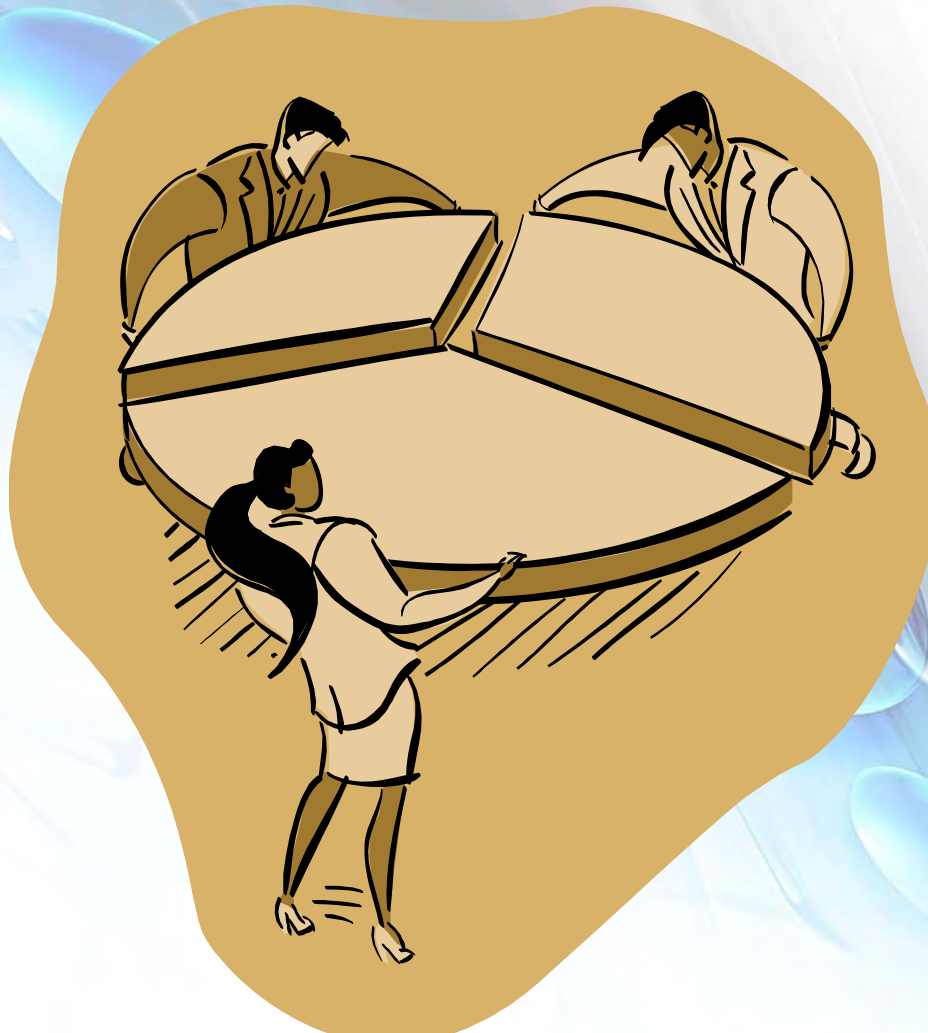
Types of Roads Owned, Operated, or Maintained by State DOTs



Locations Covered Under Permit



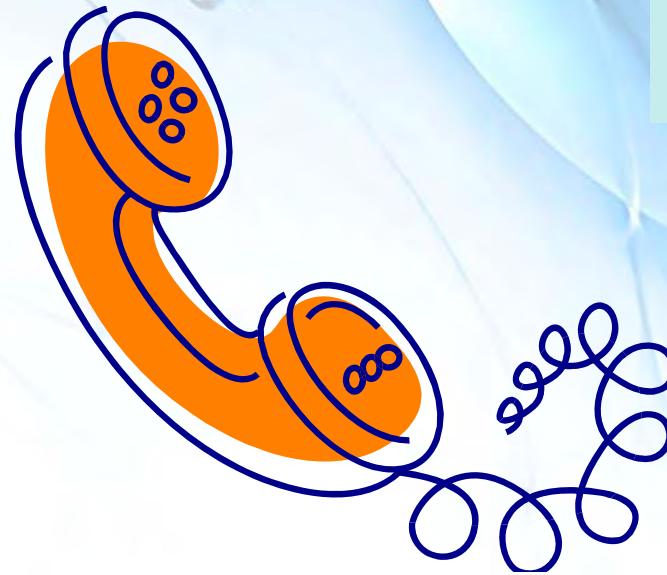
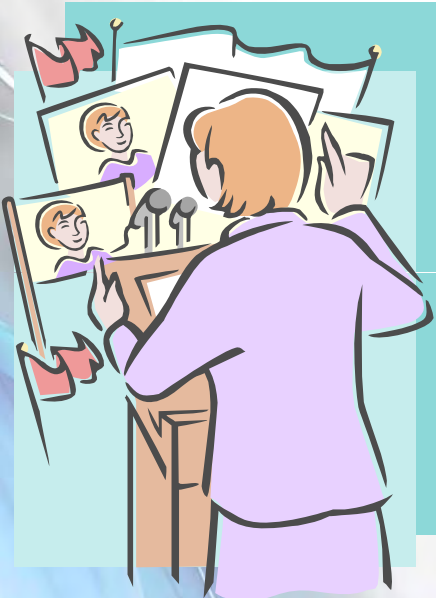
Shared Responsibilities



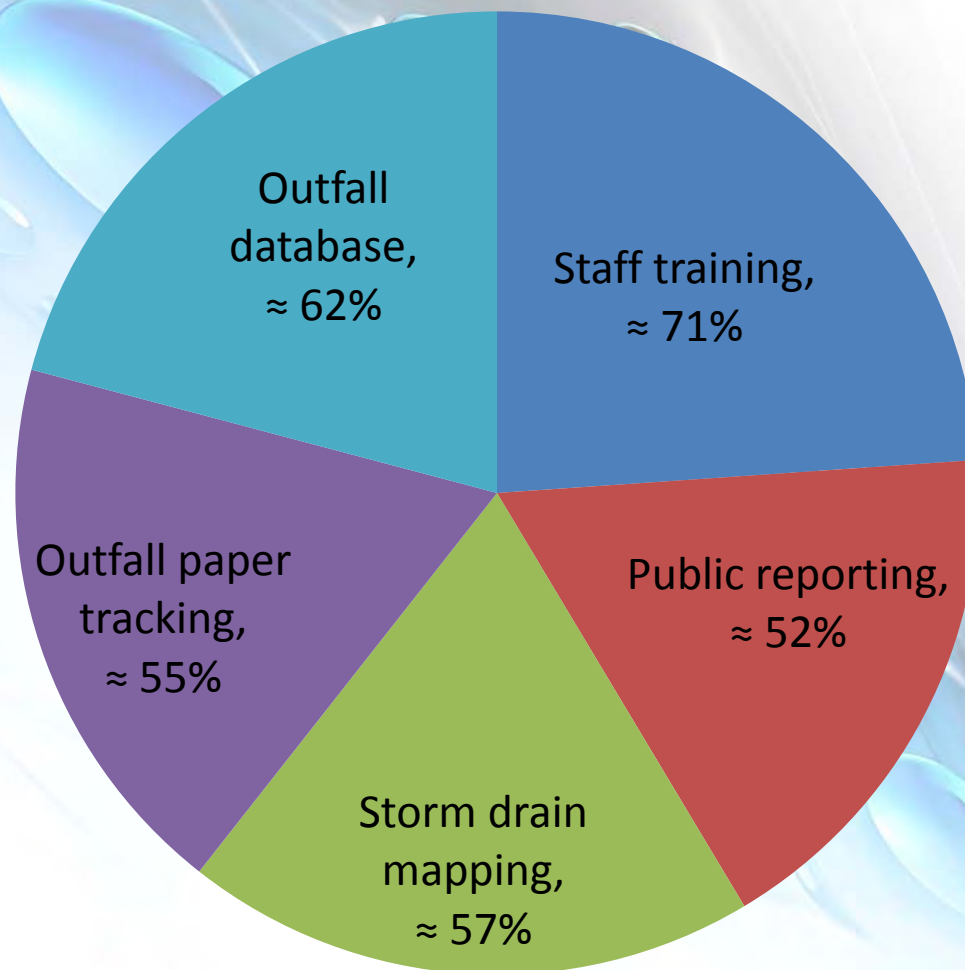
Public Education & Outreach



Public Involvement



Illicit Discharge Detection & Elimination



Construction



Post-Construction

> 50%



< 50%



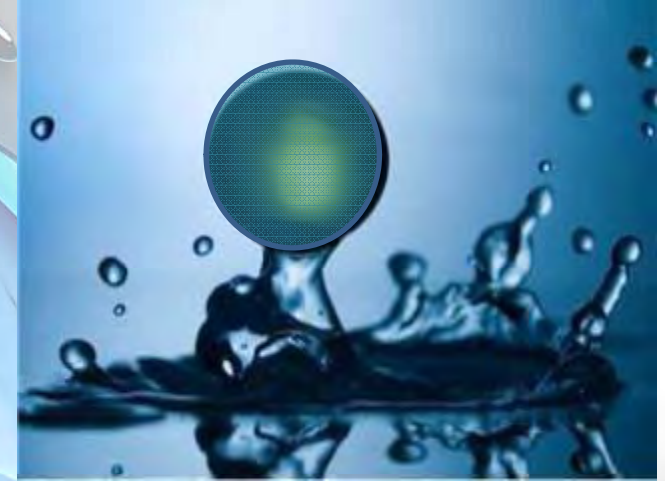


New Development, Redevelopment, and Maintenance



All over the map

Post-Construction Controls



Post-Construction: Operation & Maintenance



Post-Construction: Tracking





Post-Construction Standards

State DOT (Self-Imposed)

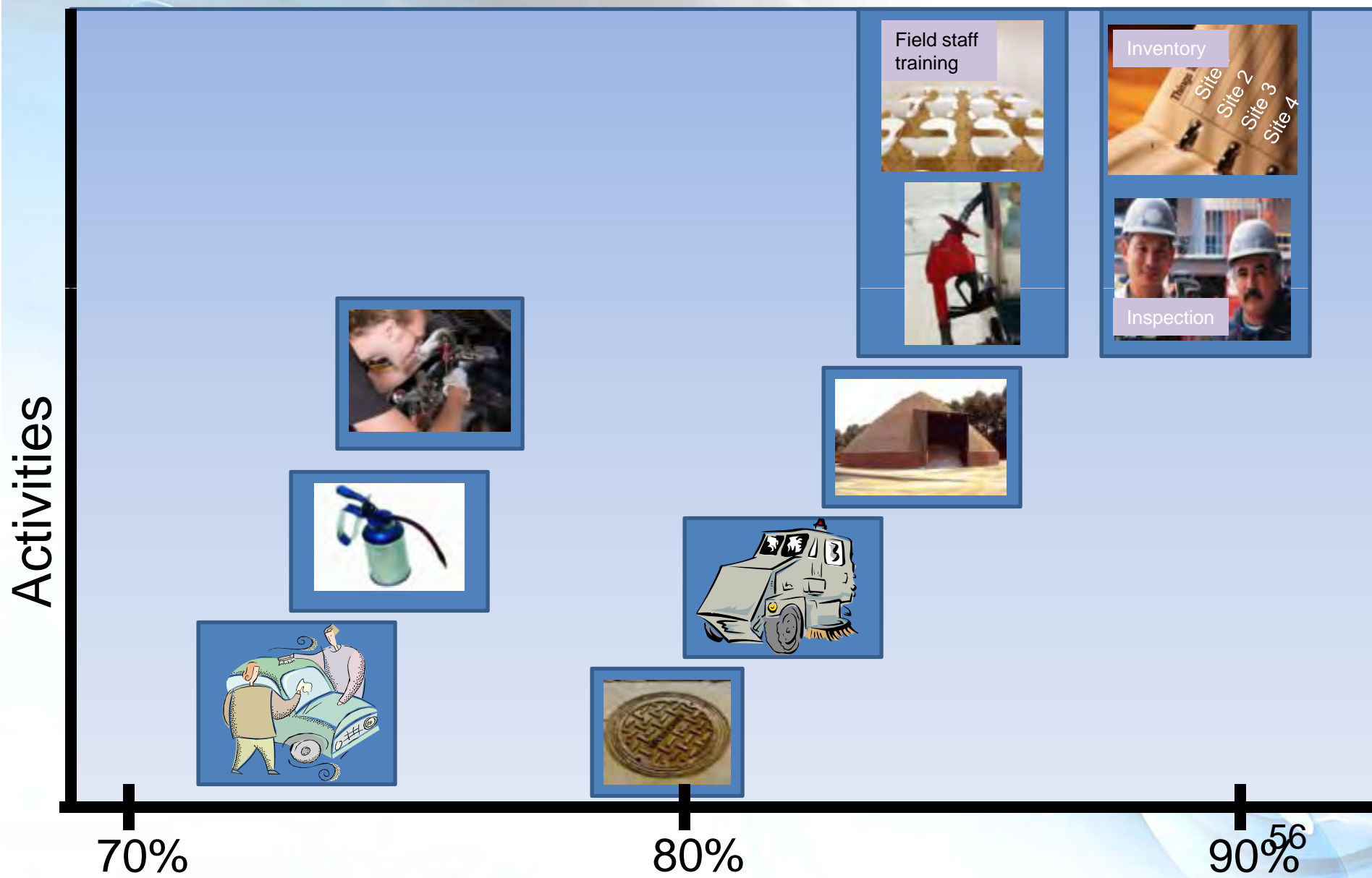
MS4 Permit

Construction Permit

Alternative Program to Comply with Performance/Design Standards



Pollution Prevention/Good Housekeeping



Retrofits

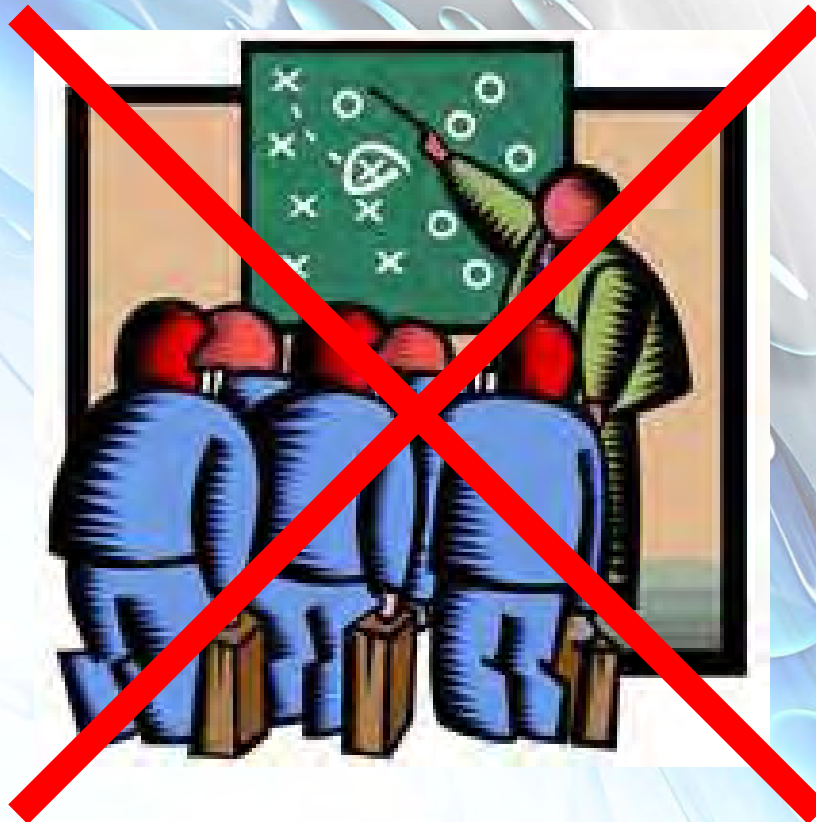
Comply with
permit

Comply
with TMDL

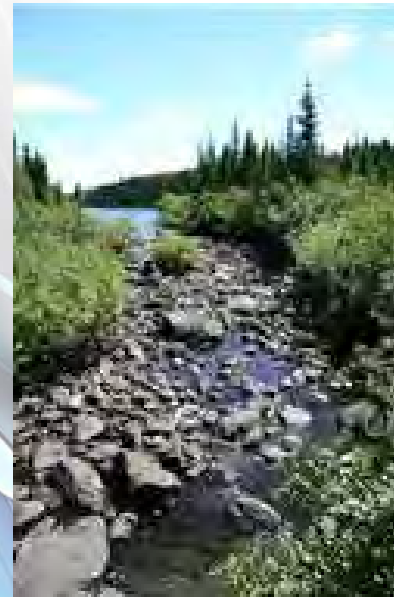
Flood
control



Capital Improvement Plans



Showing Progress





Thank You!



National Meeting Best Practices Overview

Presented by
Anna Lantin, PE
RBF Consulting
A company of Michael Baker Corporation

Best Practices Topics

- Stormwater Program Audits
- Asset Management
- Contemporary Post-Construction Controls
- Effective Focused Construction Program
- Watershed Approach

Post-Meeting White Paper

Definition
Importance to DOTs
Case Studies
Future implications
Considerations Moving
Forward
Key Contacts

- 3. The Audit Process and How to Prepare.....
 - 3.1. Definition.....
 - 3.2. Importance to State DOTs
 - 3.3. Case Studies
 - 3.4. Future Implications.....
 - 3.5. Consideration for Moving Forward.....
 - 3.6. Key Con
 - 3.7. Referen
- 4. Asset Manager
 - 4.1. Definitic
 - 4.2. Importa
 - 4.3. Case St
 - 4.4. Future I
 - 4.5. Consid
 - 4.6. Key Con
 - 4.7. Referen
- 5. Contemporary
 - 5.1. Definitic
 - 5.2. Importa
 - 5.3. Case St
 - 5.4. Future I
 - 5.5. Consid
 - 5.6. Key Con
 - 5.7. Referen

Center for Environmental Excellence by AASHTO
Stormwater Management White Paper

Connecting the DOTs through
Collaboration in Stormwater Management

Based on the
2012 AASHTO National Stormwater Practitioners Meeting

October 2012



Stormwater Program Audits



- Definition

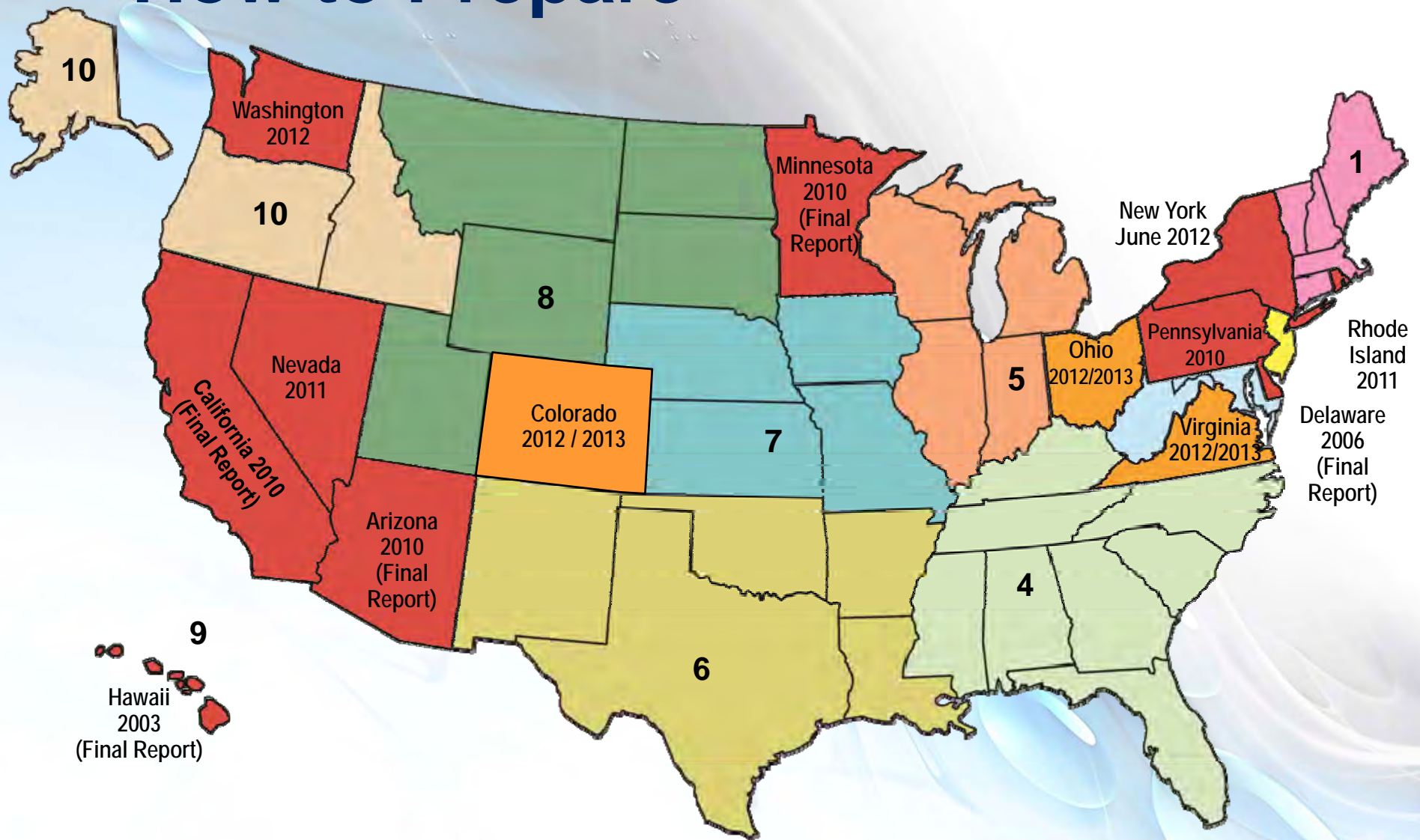
- EPA or state agencies with CWA authority delegated by the EPA may conduct audits to assess compliance with an NPDES permit - CWA Sections 308(a), 309(a)(3), (a)(4), and (a)(5)(A), as amended, 33 United States Code (U.S.C.) §§ 13 18(a) and 13 19(a)(3), (a)(4), and (a)(5)(A).

- Importance to State DOTs

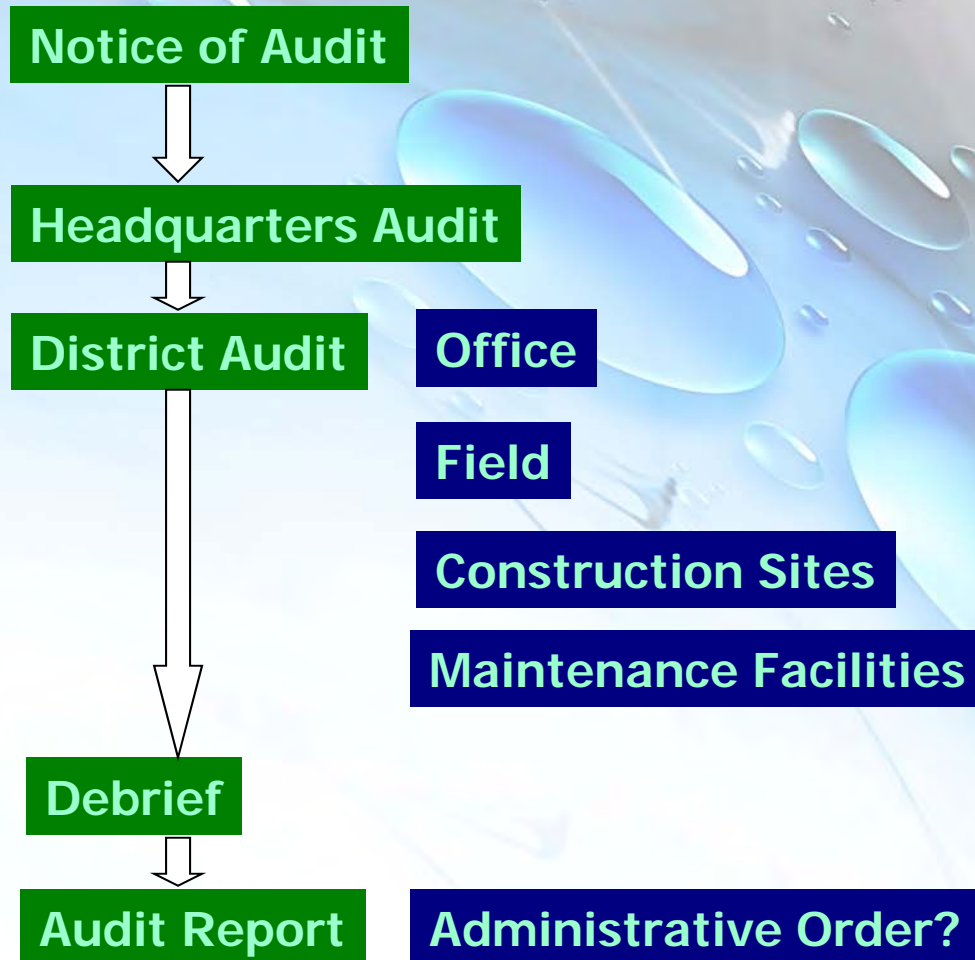
- DOT stormwater programs have been subject to audits by EPA and the delegated state regulatory agency.

DOT Audit Process and How to Prepare

MS4 Audits - Current State of the Nation	
	Full MS4 Audit
	Notice of Upcoming Audit



MS4 Audit Process (Typical)



- Inform Management and Key Staff (HQ/Districts)
- Prepare for Logistics
- Provide Documents
- Provide list of Construction Projects
- Provide list of Maintenance/Facilities
- Answer Questions

Key Findings (California and Arizona Audits)

- Improve program management
- Improve training, tracking, and inspections
- Implement Facility Pollution Prevention Plans
- Develop a robust illegal connection/illicit discharge (IC/ID) or Illicit Discharge Detection Elimination (IDDE) program.
- Inventory of all construction sites and improve the training program.
- Inspection, tracking of post-construction BMPs

Future Implications

- DOTs must be ready to respond to these changes by:
 - Improve program record keeping
 - Improving program effectiveness assessment;
 - Enhancing stormwater program asset management;
 - Shifting emphasis to high-performing BMPs;
 - Targeting high-priority problems;
 - Emphasizing staff training

Considerations for Moving Forward

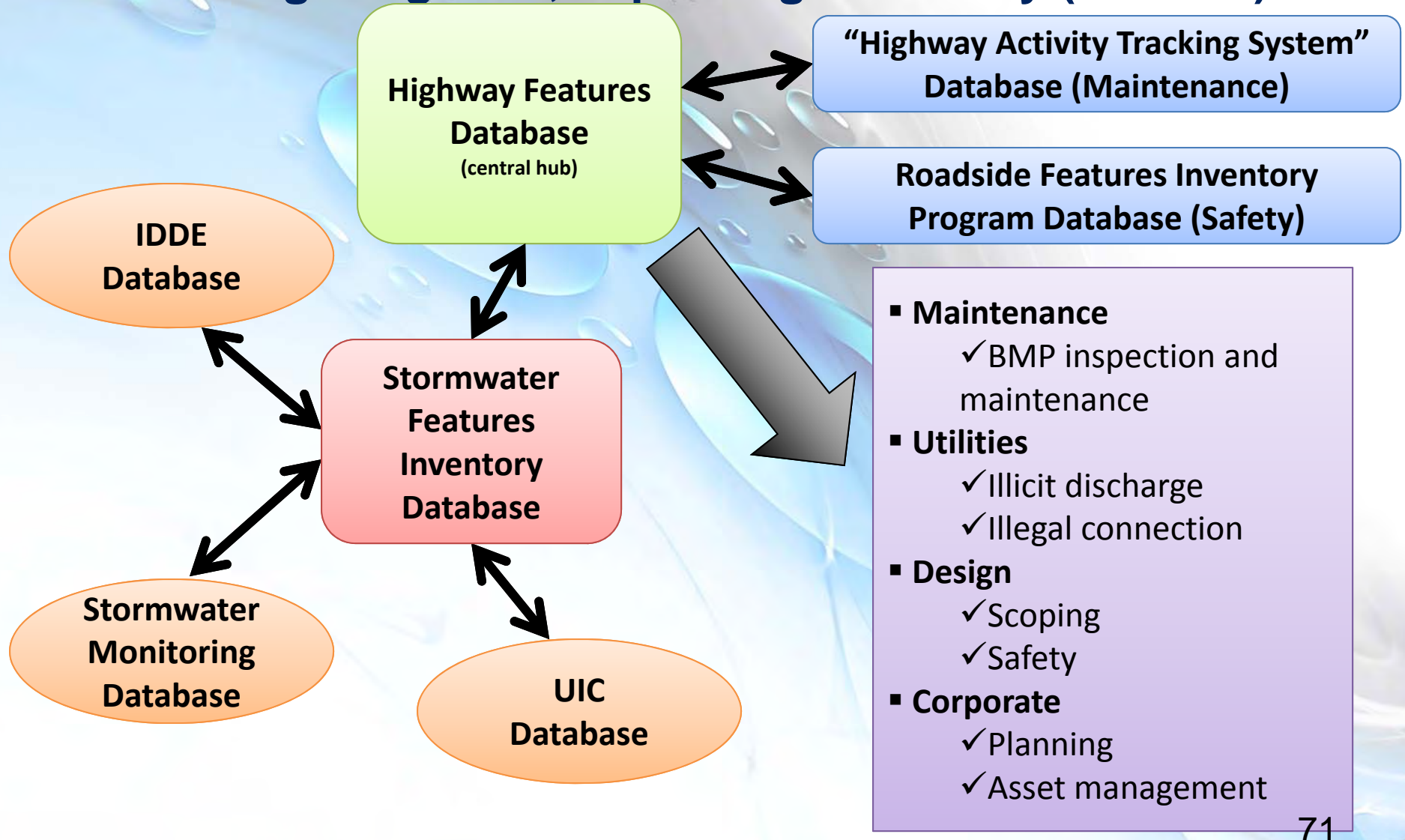
- Conduct self-audits
- Develop an internal inspection and enforcement program, and procedures to escalate/resolve compliance problems
- Improve organizational structure to improve program compliance

Asset Management

- Definition
 - Inventory, record keeping, maintenance
 - Evaluation of the condition and remaining service life of stormwater management systems constructed to mitigate the impacts of stormwater runoff.
- Importance to State DOTs
 - NPDES compliance
 - Resource planning of maintenance of stormwater controls (BMPs)

Asset Management

Linking Programs, Improving Efficiency (WSDOT)



Inventory of Stormwater Outfalls

Discharge Point Sub-types (WSDOT)

Five sub-types:

1. **Surface water** – Stormwater “outfall”
2. **Managed system** – MS4 or private interconnections
3. **Incoming** – Potential illicit discharges or illegal connections
4. **Subsurface** – Stormwater outfall/groundwater/dry well
5. **Land surface** – Other discharges



Outfall Inventory Process (WSDOT)

Outfalls are documented using two main processes:

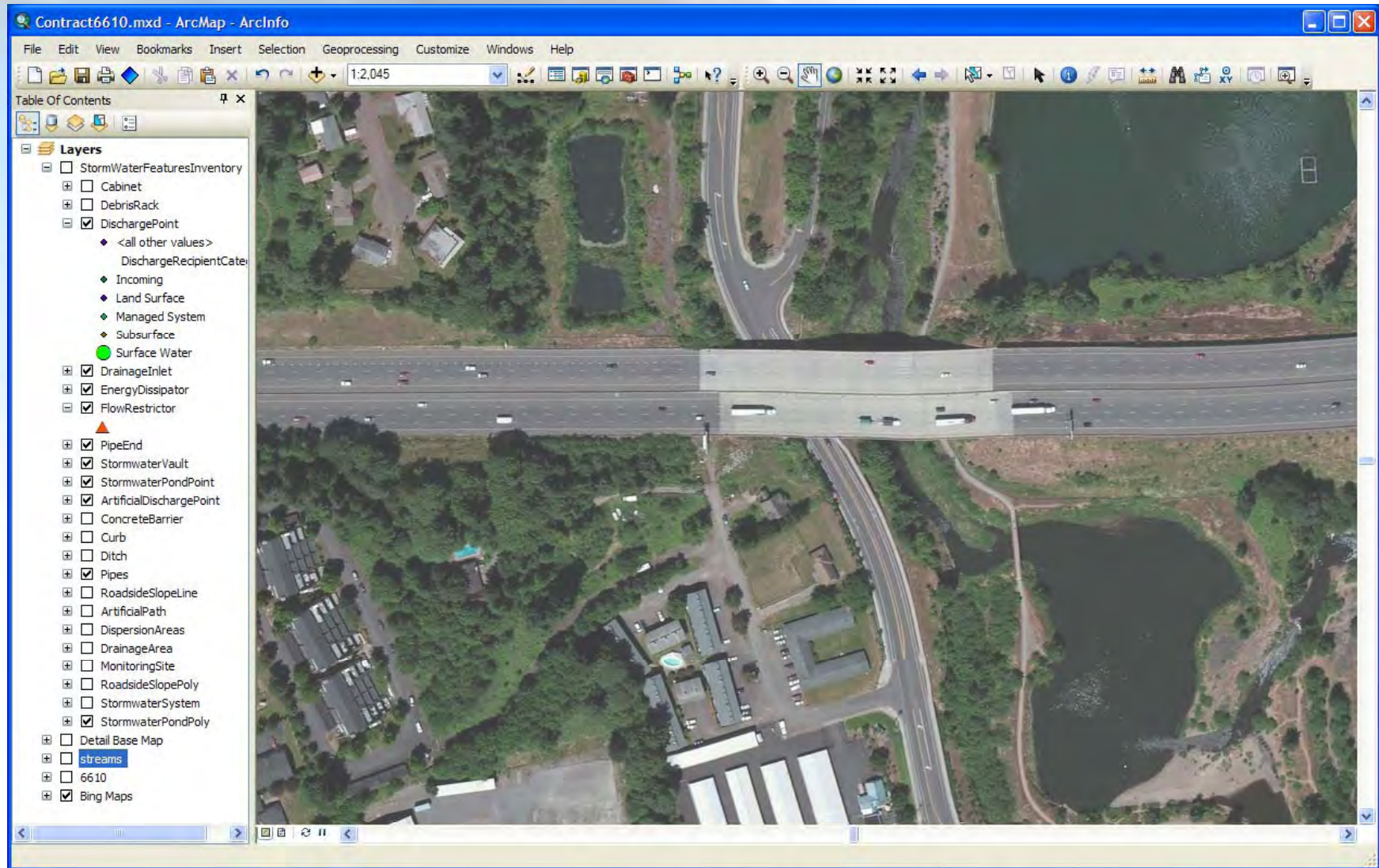
1. Office-based:

- Turning non-digital data into digital data such as geo-referenced as-builts
- Converting non-GIS based digital data (e.g., MicroStation .dgn files) into GIS format

2. Field-based:

- Using mapping grade GPS units to collect new stormwater outfall features
- Using data supplied from the office as a base to confirm and update, as needed, stormwater outfall locations.

Example: As-built Plan Digitizing (WSDOT)

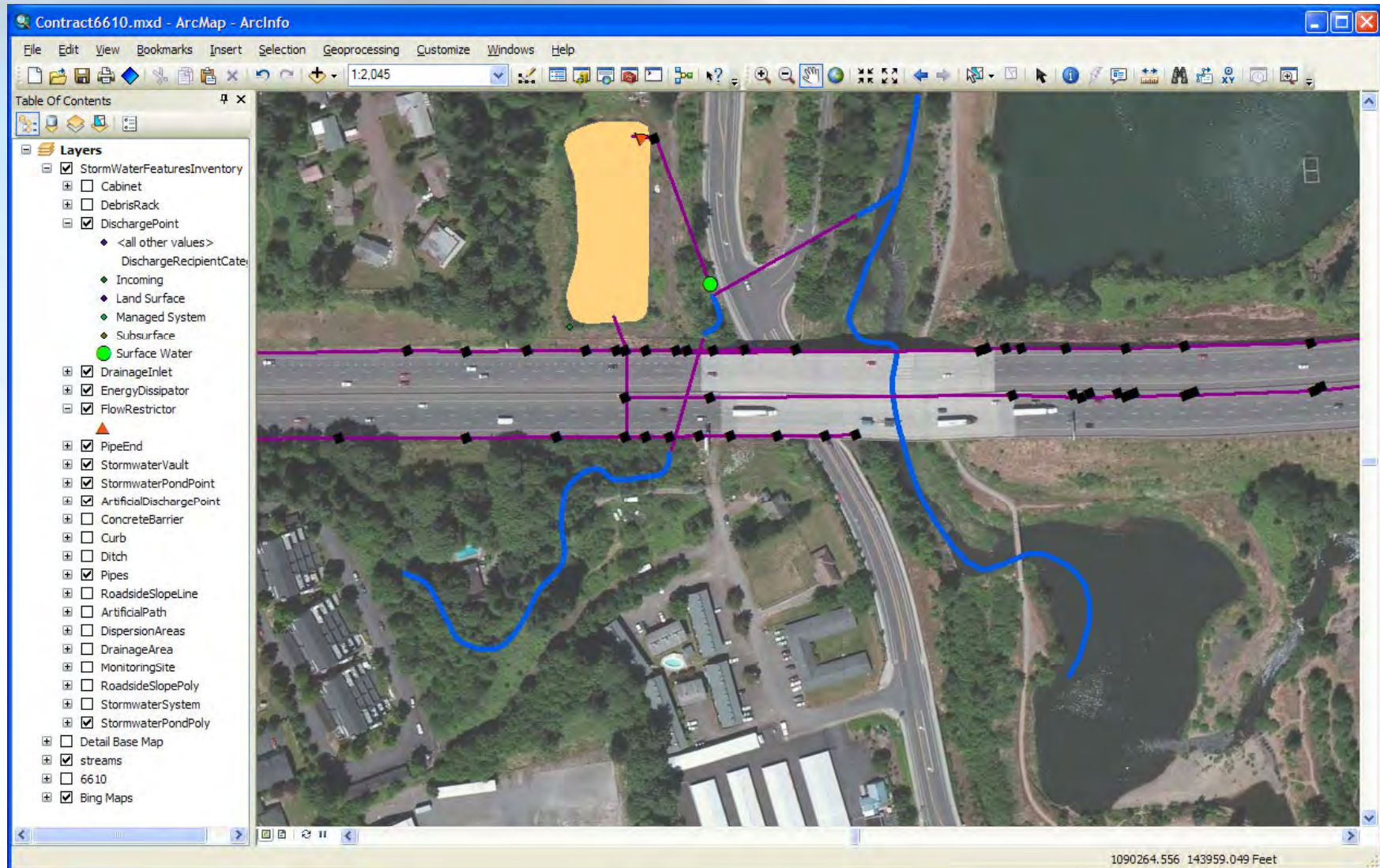


Add Stormwater Features

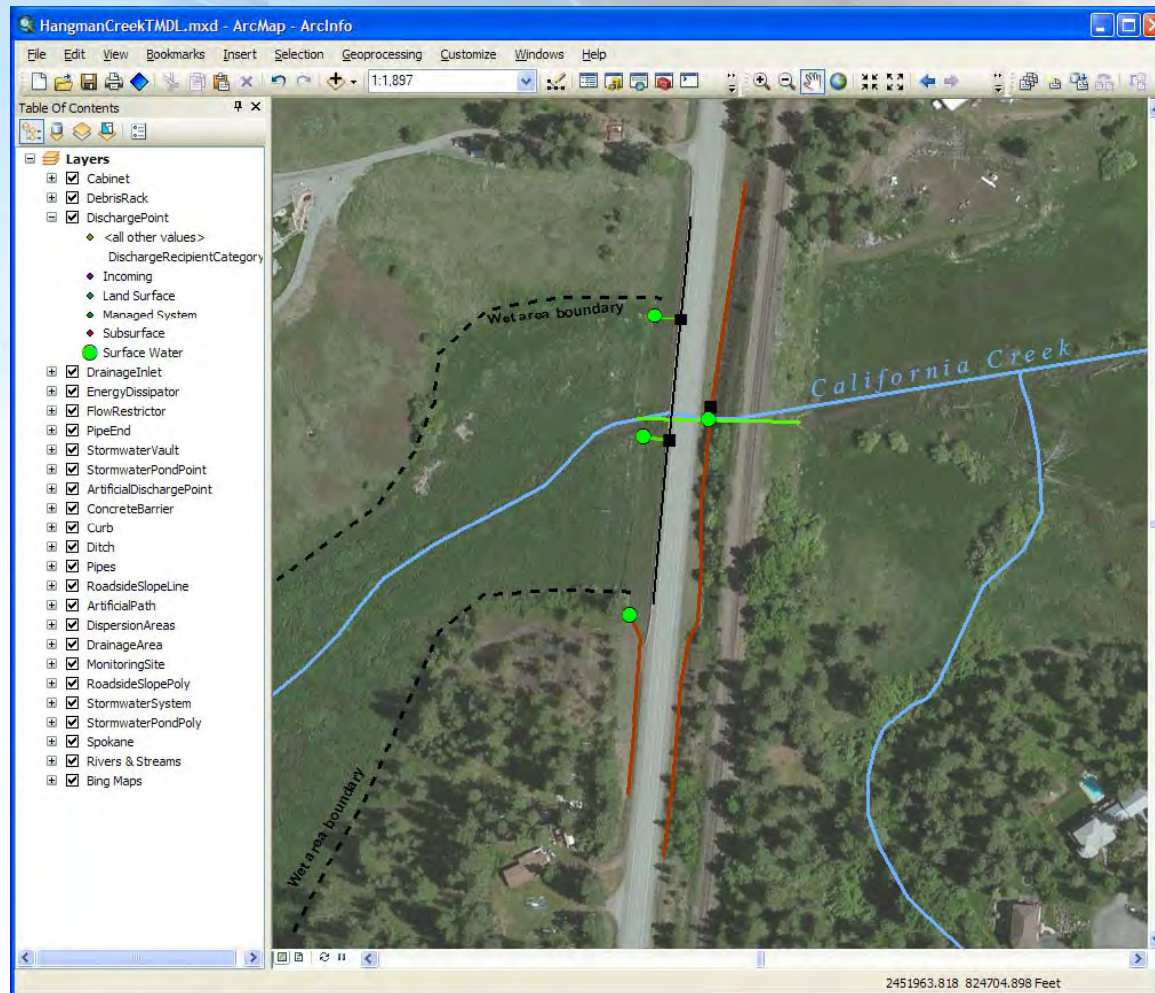
The screenshot displays the ArcMap interface with a project titled 'Contract6610.mxd'. The 'Layers' panel on the left lists various stormwater features, including 'StormWaterFeaturesInventory', 'Cabinet', 'DebrisRack', 'DischargePoint', 'DrainageInlet', 'EnergyDissipator', 'FlowRestrictor', 'PipeEnd', 'StormwaterVault', 'StormwaterPondPoint', 'ArtificialDischargePoint', 'ConcreteBarrier', 'Curb', 'Ditch', 'Pipes', 'RoadsideSlopeLine', 'ArtificialPath', 'DispersionAreas', 'DrainageArea', 'MonitoringSite', 'RoadsideSlopePoly', 'StormwaterSystem', 'StormwaterPondPoly', 'Detail Base Map', 'streams', '6610', and 'Bing Maps'. The main map area shows a drainage plan with a legend, a scale bar, and a title block. The title block includes the text 'WASHINGTON STATE DEPARTMENT OF TRANSPORTATION', 'SALMON CREEK TO I-205', 'DRAINAGE PLAN', and 'K03'. The map shows a network of pipes, catch basins, and other stormwater infrastructure. A yellow polygon highlights a specific area on the map.

76

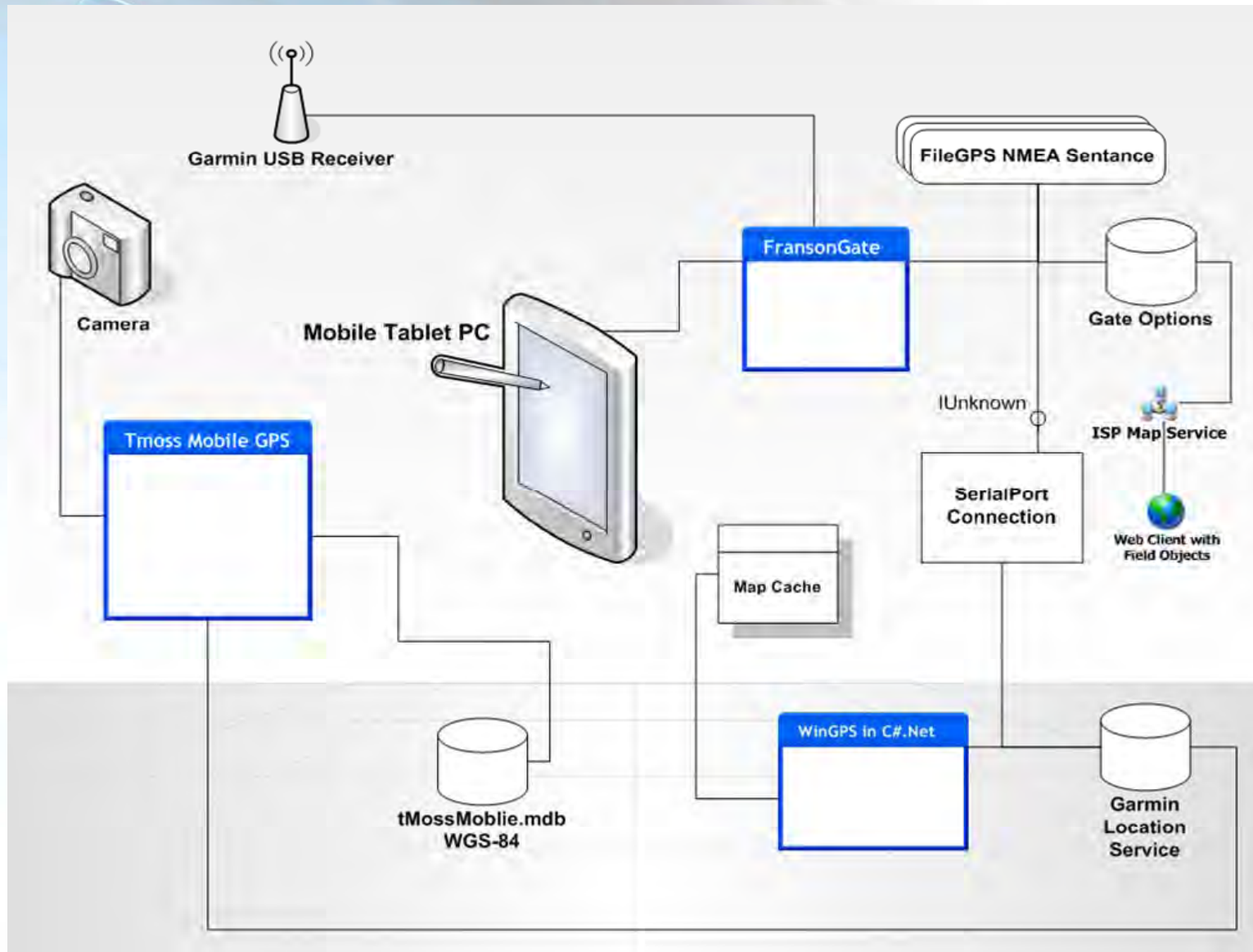
Field-Verify (WSDOT)



Field-based Data Collection (WDOT)



Storm Water Inspection Tool (CDOT)



If maintenance or replacement of the structure is required, a work order is automatically generated and sent to the appropriate maintenance supervisor and the work is scheduled. When the work is completed, information on costs, labor, and materials is then included as attribute data for that structure for later analysis.



tMoss Mobile GPS

tMoss (GPS) for OutFalls

6/27/2011 9:46:54 AM

Route: **160A** 2757
RefPt: **83.946**

☒ NeedsMMSvisit
☐ NeedsMMSvisit

(((GPS)))

timeTaken	satCou	lat_DD	long_DD	Altitude
6/8/2011 11:54:28 AM	11	37.252728	-107.876825	1928
6/8/2011 11:54:26 AM	11	37.252728	-107.876825	1928
6/8/2011 11:54:17 AM	11	37.252728	-107.876825	1928
6/8/2011 11:54:13 AM	11	37.252728	-107.876825	1928

Alt: **1921.2**
Lat: **37.261456**
Long: **-107.876734**
GpsTime: **6/8/2011 11:10:46 AM**
guId: **6_8_2011_11_10_46_AM_37.261456-107.876724_1928_11_2757**

Main | Route Location | Object Details | Photo Gallery | CORIS Inventory | Hydrology

Image 1:

C:\Program Files\GpsGate\ImageLib\6_8_2011\IMG_0014.JPG

Image Gallery

Image 2:

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Image 3:

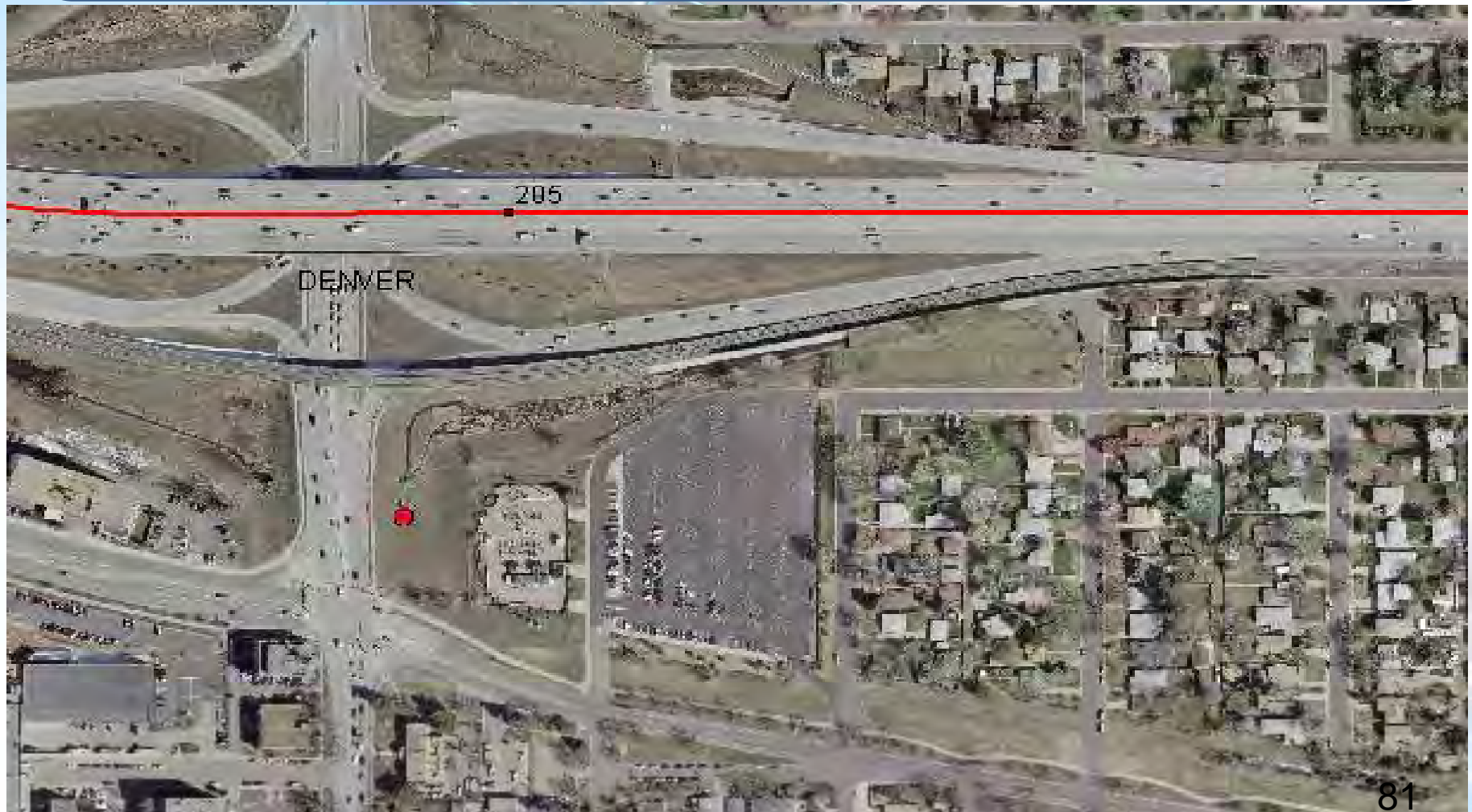
C:\Program Files\GpsGate\ImageLib\6_8_2011\IMG_0016.JPG

Image 4:

C:\Program Files\GpsGate\ImageLib\6_8_2011\IMG_0017.JPG

Record: 92 of 96 Filtered Search

Field inspectors are connected to the GIS database “live” during a site inspection with a Notebook. The MapView 2 application allows them to locate via GPS the structure to be inspected, view past inspection results including photo documentation, directly input current inspection results and photo documentation “real time.”



SWIT Performance (CDOT)

- Average time on site reduced from 15–18 minutes to 6–8 minutes
- Direct input of data into GIS
- Post processing of data minimized
- Easily adapted for use with annual Permanent BMP inspections

NCDOT Asset Management Program

- Conduct comprehensive statewide surveys
 1. Maintenance Condition Survey
 2. Bridge Condition Survey
 3. Pavement Condition Survey
- Establish Performance Standards
 - Outcomes with Targets: Bridge deck ratings in good condition; Pavement markings visible

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Devices and Locations (NCDOT)

Types

- Bioretention Basin
- Filtration Basin
- Infiltration Basin
- Dry Detention Basin
- Wet Detention Basin
- Hazardous Spill Basin
- Stormwater Wetland
- Swale
- Level Spreader

Locations

- Existing rights-of-way
- Interchanges and ramps
- Bridges
- Rest areas
- Industrial facilities
- Weigh stations



Performance Measures

Level of Service (LOS) Rankings (NCDOT)

- **Development of Performance Measures and Targets**
- **Level of Service Ratings**
 - **LOS A** – Some aging and wear but no major deficiencies
 - **LOS B** – Minor structural deterioration and maintenance needs identified
 - **LOS C** – Moderate structural deterioration and maintenance needs identified but is still functioning properly
 - **LOS D** – Serious deterioration in a least one structural item and major maintenance needs identified. Function is inadequate
 - **LOS F** – Device has general or complete failure

Why Level of Service? (NCDOT)

- LOS Rating Value ?
- Compliance
- Asset Management
- Data Driven Decisions
- Resource Prioritization
- Accountability



Future Implications and Considerations for Moving Forward

- Create an asset management program
- Integrating asset management with NPDES program requirements
- Resource estimation and budget forecasting based on maintenance triggers and frequencies of BMP maintenance.
- DOTs may also apply for Federal funding or assistance for BMP maintenance; a well designed asset management program can assist in this area

Contemporary Post-Construction Stormwater Treatment Program

- Pavement
 - Open Graded Friction Course (OGFC), Porous Pavement, Reservoir
- Low Impact Development
 - Vegetated Treatment and Volume Retention



Porous Pavement? (Maine DOT)

- Proven technology
 - Over 20 years worldwide
 - Applications in colder climates
- Porous Pavements achieve three WQ criteria
 - Detains Peak Stormwater Flow Rate
 - Pollutant Filtration
 - Temperature Mitigation
- Other advantages
 - Reduced ambient tire noise
 - Reduced traffic spray during rain events
 - Reduced road glare when wet

MaineDOT – Design Cross Section

OGFC

ATPB

Reservoir
Stone

Filter
Material



3"

6"

15"

6 – 12"

Asphalt Treatment Pavement Base (ATPB) Placement (Maine DOT)



Open Graded Friction Course (OGFC) Placement

- Southbound Lanes – August 27, 2009



Perceived Risks (Maine DOT Experience)

- Surface Pavement Raveling
 - Two years in and no signs of this
- Surface Pavement Rutting
 - Not an issue to date, even at turn lanes
- Pavement clogging from off-site sand tracking
 - Regular sweeping keeps this in check
- Flash freezing of OGFC
 - Both UNH and MaineDOT have seen no evidence
 - No water in system, so no freezing
- Sub base freezing during winter
 - Again, no issues with this

Maintenance (Maine DOT Experience)

- No Sand application, Salt only
- Regenerative Air Vacuuming in all seasons



Low Impact Development (LID)

- Goal of LID – “To reduce runoff and to mimic a site’s predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, filtering, storing, evaporating, and detaining stormwater runoff close to its source.” (EPA 901-F-09-003, April 2009)

Minimize Concentrated Discharges

- Runoff must sheet flow off the roadway, no curb and gutter.

Legacy Nature Preserve

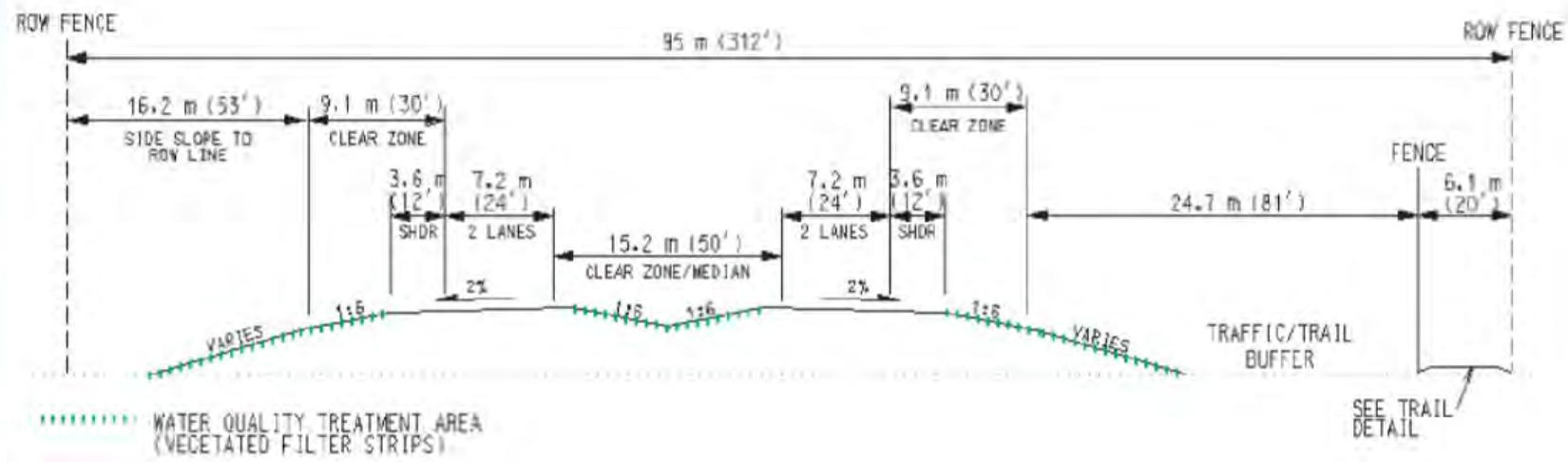
Agricultural lands



Legacy Parkway Looking North (Utah DOT)

Vegetated Filter Strips (Utah DOT experience)

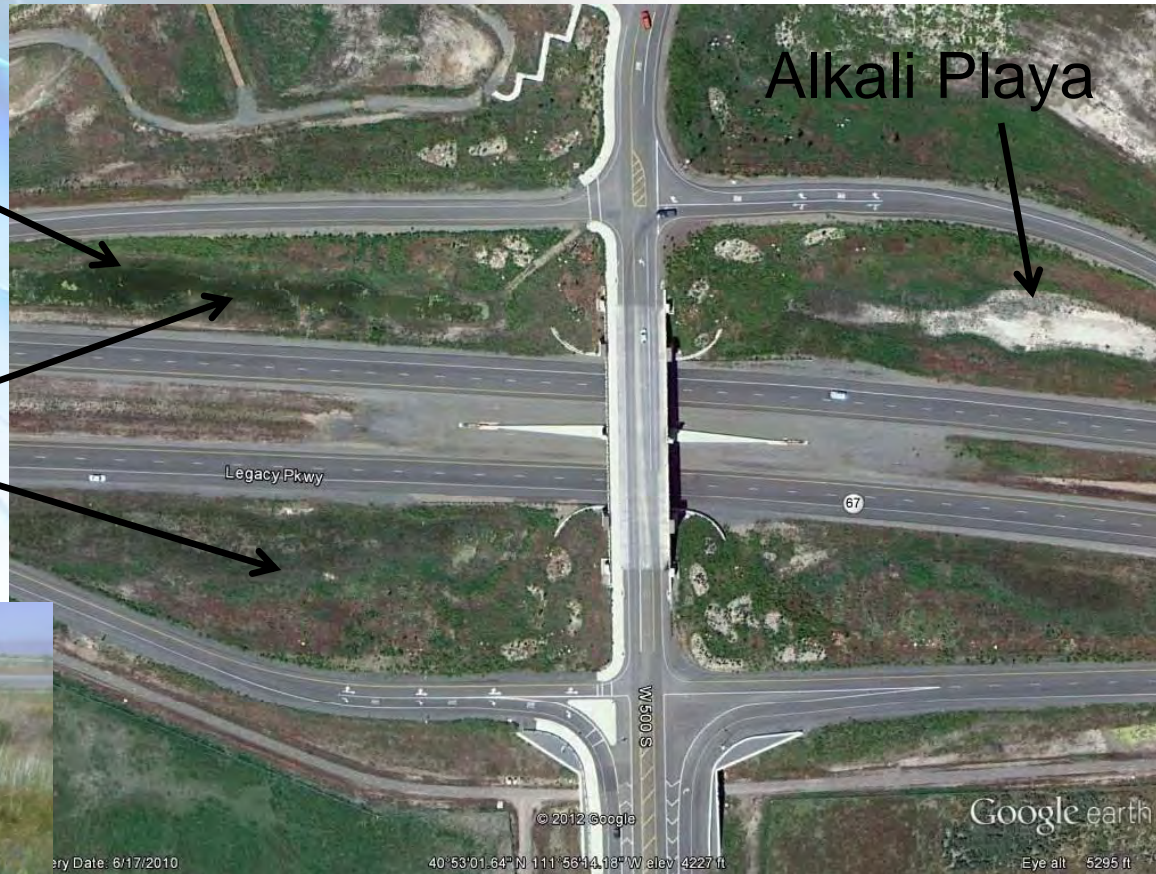
- Allows stormwater to Infiltrate, reducing runoff volumes, velocities and erosion.
- Captures and filters a major portion of TSS and associated metals, nutrients, etc.
- Recommended by the State Regulators



Stormwater Detention/Retention (Utah DOT)

Pipe inlet 2
feet above
toe of fill

Retention
Areas &
Wetlands



Alkali Playa



Considerations for Moving Forward

- Reduce capital, O&M costs of post-construction BMPs
- Measures that operate passively with minimum maintenance over their design life.
- Use existing highway and drainage infrastructure to meet the rulemaking requirements.
- Update guidance to incorporate measures and approaches for treatment BMPs that can be easily incorporated into existing infrastructure
- Pursue research on practices that can be easily incorporated into existing infrastructure.

Effective Focused Construction Program

- Construction contract administration to ensure contractor compliance
- Inspection, tracking, monitoring, and enforcement of field implementation of erosion and sediment control measures; and
- Improvements on BMP practices appropriate for site runoff controls during highway construction



Field Inspection Tool (Nebraska DOR)

- Inspection program installed on user machines that allows them to record inspections and track corrective actions.
- User Friendly Interface.
 - Notes and Guidance
 - Sync Reminders
 - Glowing buttons notify inspectors of pending corrective actions.
 - Pre-defined actions add to consistent reporting.
 - Reminder emails can be sent to inspectors to notify them upcoming or missed inspections
 - Permit References
 - Photo Upload Feature

Screenshot of Field Inspection Tool (Nebraska)

ECOD Tool - 1135

NDOR
Nebraska
Department of Roads

ECOD - Projects List

1135.0

Created on 6/4/2012

Corrective Actions Sync with HQ Log out

Projects

Inspection	Name	Control Number	Date of last inspection	CAL
	WAVERLY - GREENWOOD	12469	6/4/2012	
	Example Inspection Report	11111	6/4/2012	
	56TH STREET - WAVERLY INTERCHANGE	12477	6/1/2012	
	ROSE CREEK BRIDGE NORTHEAST OF HUBBELL	42663	6/1/2012	
	KEARNEY EAST	42653	5/31/2012	
	KEARNEY EAST BYPASS INTERCHANGE	42103A	5/31/2012	
	Chadron Maintenance Yard	None	5/31/2012	
	MAYWOOD - CURTIS	70630	5/31/2012	
	MISSOURI RIVER BRIDGE APPROACH, BELLEVUE	22176	5/31/2012	
	PROSSER SPUR	42482	5/31/2012	
	MINDEN EAST & SOUTH	71028	5/31/2012	
	BIG SPRINGS - BRULE	60939	5/31/2012	
	RULO BRIDGE, MAIN SPANS	12381A	5/30/2012	
	RULO BRIDGE, MISSOURI APPROACH	12381C	5/30/2012	

Screenshot of Field Inspection Tool (Nebraska DOR)



ECOD Tool - 1135

NDOR
Nebraska
Department of Roads

ECOD - Inspection Information
Project: Example Inspection Report

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Cancel  Save and Continue 

Inspection Information

*Type of inspection:

*Inspection date:

Primary inspector: Gabe Robertson Inspector Certification number: Expires:

Inspectors present:

*Weather during previous 24hrs:

Project status: Construction

Description of current construction activity:

Date of most recent precipitation since last inspection (leave blank if none):


Amount that fell (inches):

Describe additional precipitation that fell prior to this date if applicable:

Are monitoring reports current?: ☐ No ☐ Yes ☒ Not required






Screenshot of Field Inspection Tool

ECOD Tool - 1135

**ECOD - Environmental Inspection**
Project: Example Inspection Report

1135.0

Created on 6/4/2012

[Home](#)  [Checklist Questions](#)  [Field BMPs](#)  [Summary](#)  [Edit Report](#) 

Checklist Questions (Limit your response to 100 characters)

Documentation

1. Is a complete notice posted in a publicly accessible location near where the construction activity is underway? Notice must include a copy of NOI, SWPPP Location and Contact Person with Phone Number.

☒ Yes
☐ No
☐ N/A

Notes:

2. Is the Environmental Commitment Document and SWPPP available for review during normal business hours? Document the SWPPP location in the Notes field.

☒ Yes
☐ No
☐ N/A

Notes:

3. Are inspection reports current and complete? Reports should cover all disturbed areas and must include findings of inspection and the corrective actions required.

☒ Yes
☐ No
☐ N/A

Notes:

4. Is the description of construction and waste materials stored on-site documented and up to date in the SWPPP? (Refer to the Non-Sediment Pollutant Inventory Sheet included in SWPPP)

☒ Yes
☐ No
☐ N/A


Notes:

5. Is there a Spill Prevention Plan on-site?

☒ Yes
☐ No
☐ N/A

Notes:






Screenshot of Field Inspection Tool






ECOD - Environmental Compliance Oversight Inspection
Project: Example Inspection Report

1135.0

Created on 6/4/2012

[Home](#)  [Checklist Questions](#)  [Field BMPs](#)  [Summary](#)  [Edit Report](#) 

BMP Category

-  Erosion Control
-  Sediment Control
-  Good Housekeeping

Notes

- 6 foot minimum overlap at splice point of silt fence material
- Steel posts no wider than 6 feet apart
- Install prior to grubbing activity, approximately 6 feet from the toe of the slope
- Install along contours to avoid concentrated flows
- Trench silt fence in ground then compact the soil to avoid undermining
- Remove sediment once it accumulates to 1/2 the height of exposed fabric
- Max drainage area is 1/4 acre per 6 feet of silt fence length

BMP

Erosion Checks, Type Wattle (Ditch Application)

Temporary Earth Check

Temporary Rock Check

Temporary Bale Check

Silt Trap

Traps and Basins - Sediment Traps

Traps and Basins - Sediment Basins

Barriers - Topsoil

Slash Mulch

Silt Fence

Area Inlet Protection

Curb Inlet Protection



Outlet Protection

Berms and Diversions

Other

Sediment Control - Silt Fence

- BMP Location:** [Same as Previous](#)
- BMP Problem:**
 - ☐ Installation
 - ☐ Maintenance
 - ☐ Missing
 - ☐ Environmental Commitment
 - ☐ Documentation
 - ☐ Other
- BMP non-compliance:**
- Action items:**
 - ☐ **Immediate action required** (select this only in situations where there is an imminent threat to the environment)
- Upload pictures** (can do this at report edit also)
[Upload](#)
[Upload](#)
[Upload](#)
- Other actions** (this is required if you have not picked an item from step 4 above)
- Comments (225 Character limit):**

[Delete this BMP](#)  [Save BMP](#) 

106

Screenshot of Field Inspection Tool (Nebraska)

Summary of findings

<u>Previous (unresolved) Corrective Actions</u>	<u># Corrective Action Findings</u>
Total number of previous (unresolved) corrective actions:	7
<u>Documentation Corrective Actions</u>	<u># Corrective Action Findings</u>
Total number of documentation corrective actions:	0
<u>BMP Corrective Actions</u>	<u># Corrective Action Findings</u>
Total number of BMP corrective actions:	0
Total combined number of corrective actions:	7

Certification

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

This document has not yet been electronically signed by Gabe Robertson.

Make Draft



Sign and Seal Now



NOTE: This report was formatted to print on 6/4/2012. It represents the most current information available for this inspection period at the time it was formatted on the user's computer.

Original NDOR stormwater inspection records shall be maintained with the SWPPP document in compliance with NPDES Permit for Stormwater Discharges from Construction Sites to Waters of the State of Nebraska Part III.I.

Corrective Action Log (Nebraska DOR)

- Automatically populated with inspection report findings
- Follow up is required to close-out corrective actions.
- Overdue and pending corrective actions are highlighted.
- Project inspection notification emails include hyperlink to corrective action log for project.
- Punch-list Print Feature



1135.0

Created on 6/4/2012

[Back](#)
[New Inspection](#)
[Punch List](#)
[Sync with HQ](#)
[Log out](#)

☐ Show pending and corrected.

Corrective Actions

Type of inspection: Monthly Compliance Inspection (Establishment Phase)

CA	Seq	Inspection type	Inspection date	Inspection report	BMP	Location	Problem	Immediate Action Required	CA completed on	Days old	Due date
	1	Environmental Compliance Oversight Inspection	5/31/2012		Temporary Erosion Control Plan	NoteBook	Are the locations of concrete washout facilities identified on the Temporary Erosion and Sediment Control Plan?	No		4	6/7/2012
	2	Environmental Compliance Oversight Inspection	5/31/2012		Documentation	NoteBook	Is a complete notice posted in a publicly accessible location near where the construction activity is underway? Notice must include a copy of NOI, SWPPP Location and Contact Person with Phone Number.	No		4	6/7/2012
	3	Environmental Compliance Oversight Inspection	5/31/2012		Temporary Erosion Control Plan	NoteBook	Are the locations of all sediment and erosion control BMPs currently installed on the project identified on the Temporary Erosion and Sediment Control Plan?	No		4	6/7/2012
	4	Environmental Compliance Oversight Inspection	5/31/2012		Secondary Containment	Station 321 Right	BMP is missing	No		4	6/7/2012
	5	Environmental Compliance Oversight Inspection	5/31/2012		Silt Fence	Station 345-348 left	BMP is missing	No		4	6/7/2012
	6	Environmental Compliance Oversight Inspection	5/31/2012		Documentation	NoteBook	Is the description of construction and waste materials stored on-site documented and up to date in the SWPPP? (Refer to the Non-Sediment Pollutant Inventory Sheet included in SWPPP)	No		4	6/7/2012

Email Distribution Lists (Nebraska DOT)

- Completed inspection reports are automatically emailed to pre-defined groups for review.
- Email contains web links to both the inspection report and corrective action log located on the NDOR server.

868 - Environmental Compliance Oversight Inspection submitted on 5/31/2012 for Example Inspection Report

■ NDOR - ECOD <Ronald.Poe@nebraska.gov>

Sent: Mon 6/4/2012 11:00 AM

To: ■ Robertson, Gabe

Here is a link to view the report:

<http://www2.dor.state.ne.us/ecod/code/ndor/current/admin/widgets/reports/report1.aspx?departure=0495c487-4a06-4929-b127-0fc74b186a5d&pdf=yes>

Here is a link to see the corrective actions:

<http://www2.dor.state.ne.us/ecod/code/ndor/current/ncals/widgets/ncals/e.aspx?p=e7fd374f-490c-49c1-a5ef-9ef4e34221d4>

ALDOT's Five Pillars

...Of Construction Stormwater Management

- Manage the Communication
- Manage the Work
- Manage the Water
- Manage the Erosion
- Manage the Sediment



Plans Reviews (Alabama)

Erosion & Sediment Control Plan Sheets must be **Phased!**

- Initial
- Intermediate
- Final

Phased E&SC Plan Sheets (Alabama)

Initial Phase:

As clearing begins and prior to any grubbing or grading work.

Stabilized Construction Entrances

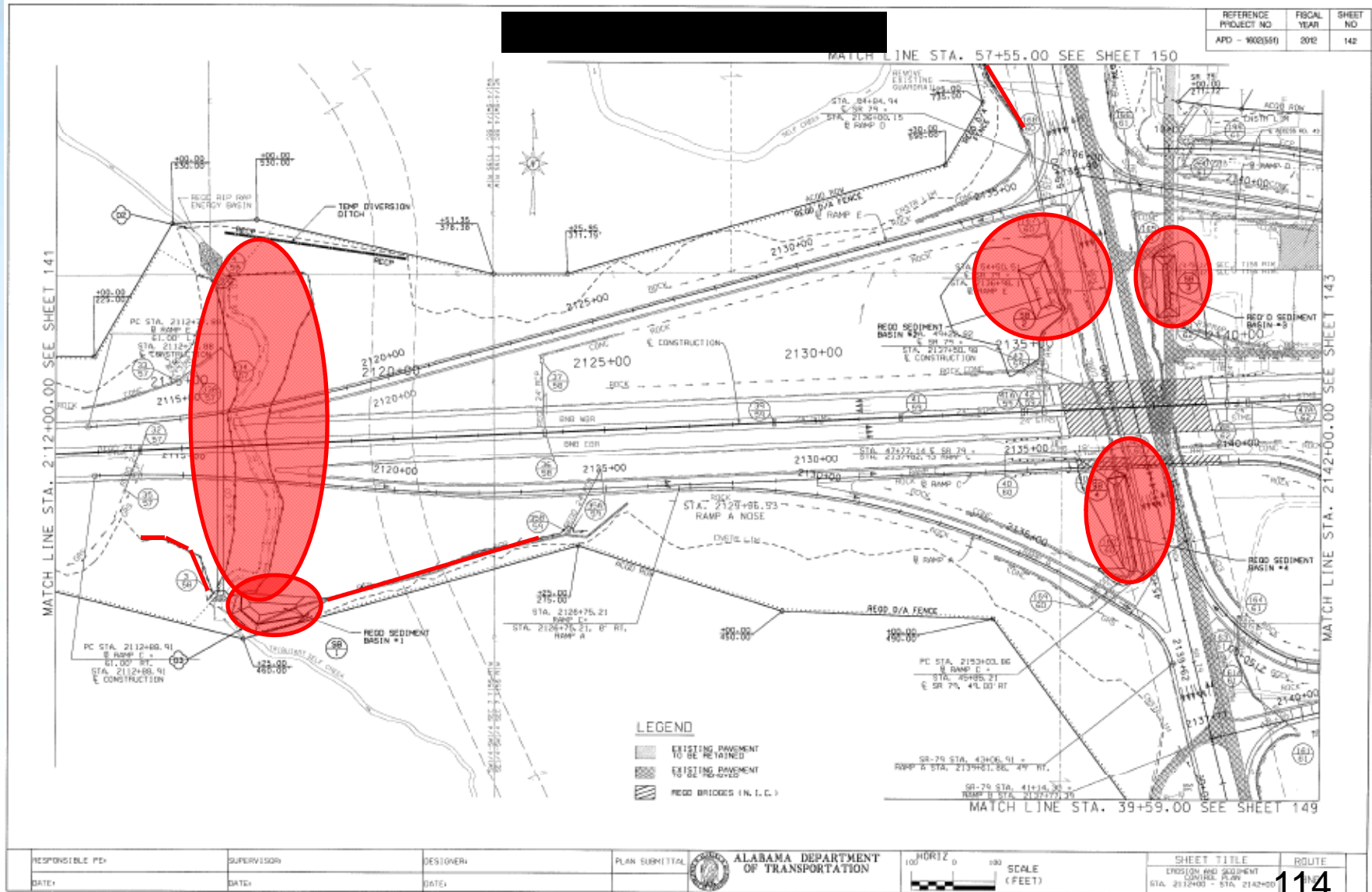
Perimeter Barriers

Stream Protection

Temporary Sedimentation Basins

Vegetated Buffers

Initial Phase



Initial Phase

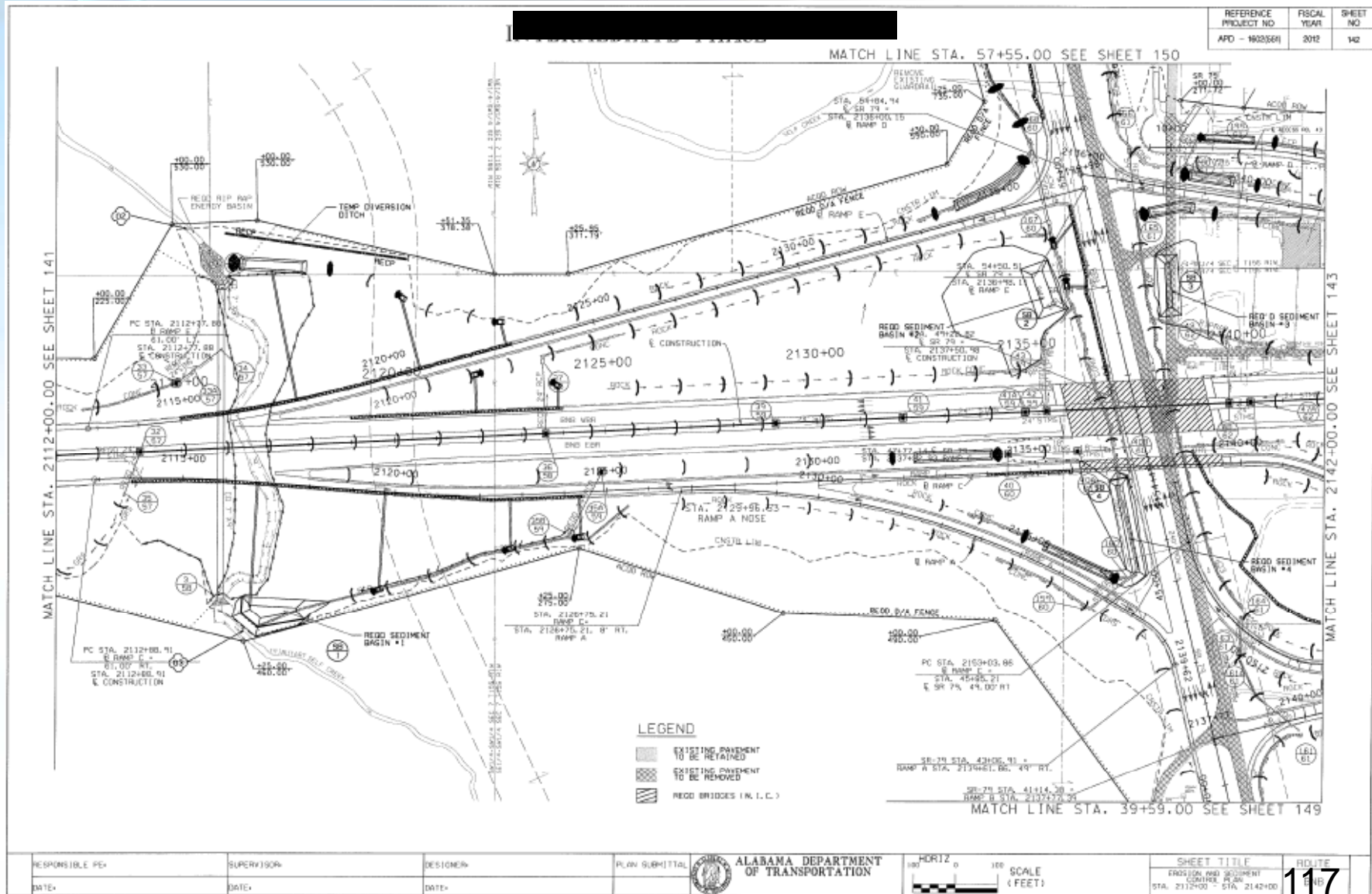


Phased E&SC Plan Sheets (Alabama)

Intermediate Phase:

- As needed, as work is ongoing and advancing towards completion.
- May include BMPs from the previous phase.
- Temporary Diversions
- Ditch Checks
- Sumps
- Inlet Protection (Stage 1 or 2)
- Temporary Slope Drains
- Earth Berms
- BMPs for Material Stockpiles

Intermediate Phase



Intermediate Phase

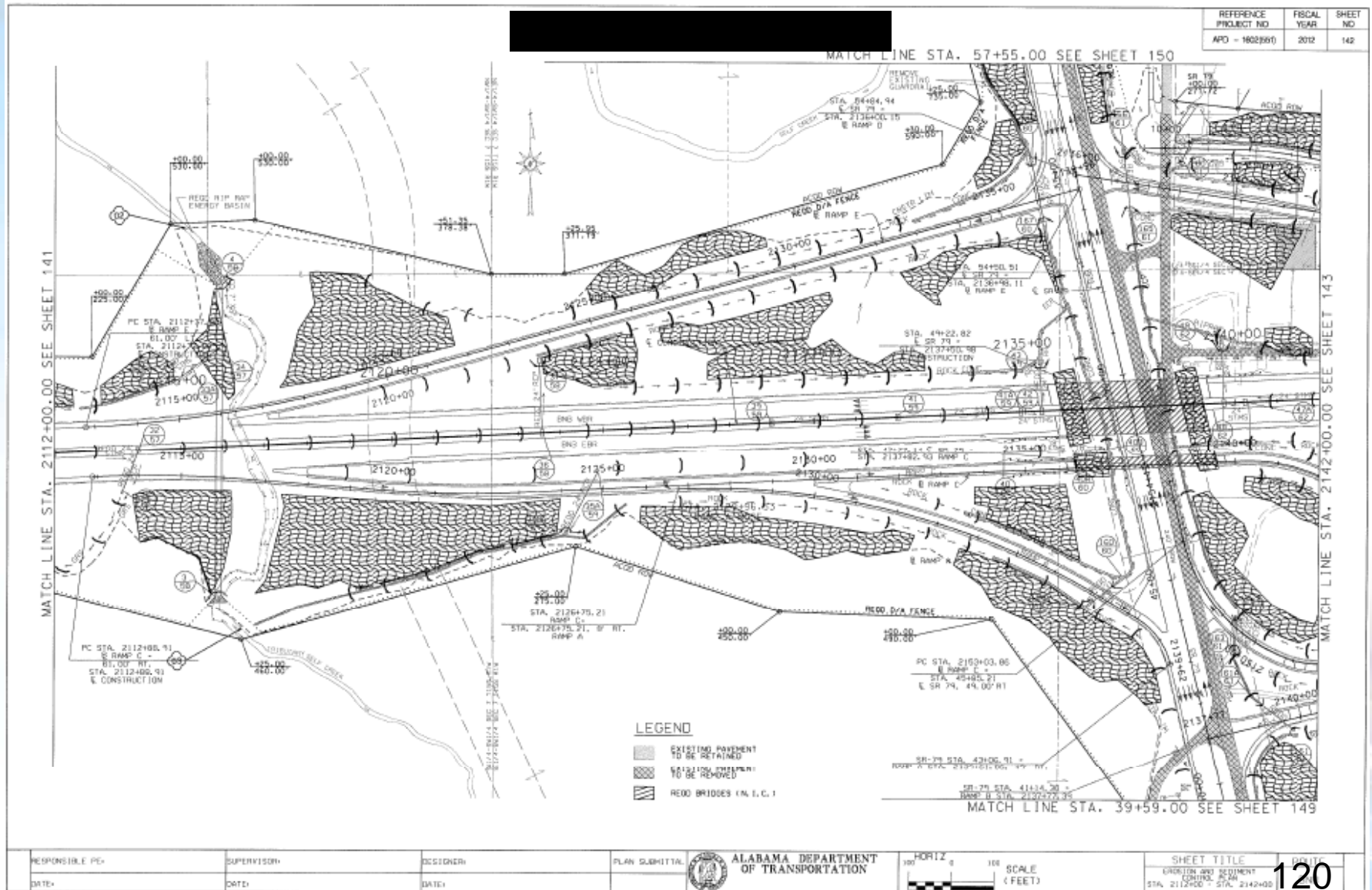


Phased E&SC Plan Sheets

Final Phase:

- As work is completed and permanent vegetation is established.
- May include BMPs from the previous phase.
- Inlet Protection (Stage 3 or 4)
- Permanent Stabilization
- Erosion Control Products
- Ditch Linings
- Sand Bag Ditch Checks

Final Phase



Final Phase



Considerations for Moving Forward

- Focus on staff training, procedures, and quality assurance and quality control in construction stormwater program implementation.
- Dedicated program and include in capital construction budgets to implement and inspect BMPs during construction.
- Contract time may also need to be increased to limit the portion of the site that is active at any time, and to schedule large earthmoving operations outside of the rainy season.

Watershed Approach

- U.S. EPA describes the watershed approach as having the following characteristics:
 - Hydraulically defined
 - Involves all stakeholders
 - Strategically addresses priority water resource goals (such as water quality and habitat)
 - integrates multiple programs
 - based on sound science
 - aided by strategic watershed plans
 - uses adaptive management

Contractual tools used by DOT

- Memorandums of understanding (MOU)
- Intergovernmental agreements
- Cooperative agreements
- Methods to apply
 - Mitigation and/or BMP retrofit
 - Policy of in-lieu fees
 - Purchases offsite or outside the right-of-way.

Mitigation Fund Approach as part of CDOT's New Post-Construction Program

- One Statewide Mitigation Fund
- Money comes off the top of CDOT's entire construction budget
- Money used for high priority water quality improvement projects across the state
- Opportunity to collaborate with local government and watershed groups
- "Bigger Bang for the Buck!"

Fund Administration (CDOT example)

- Joint Committee
- Estimated \$10 million annual contribution
- Funds can pay for:
 - Project-related BMPs
 - Watershed-based improvements
 - Joint ventures
 - Projects inside or outside of MS4 areas

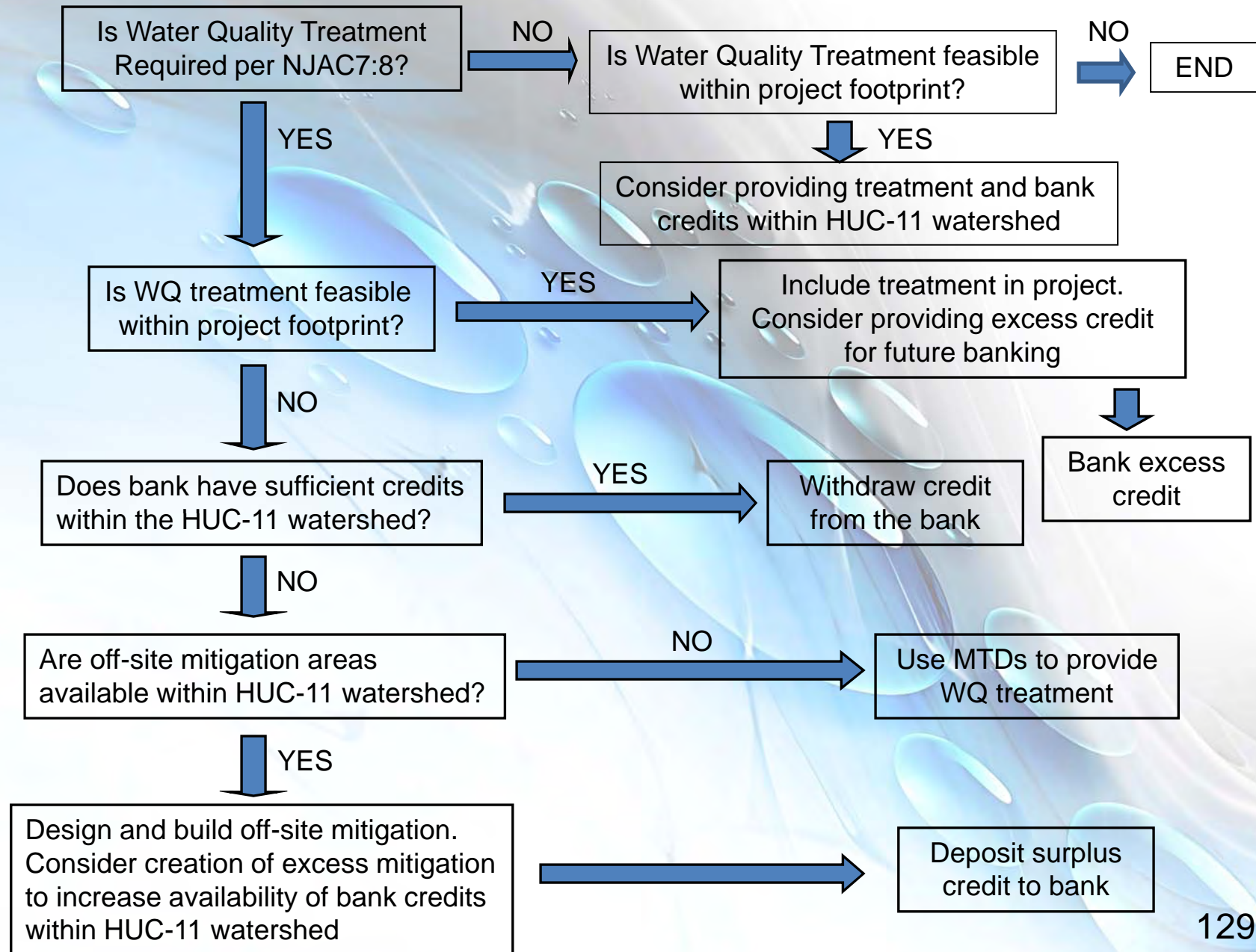
The Joint Committee (CDOT example)

- Will make decisions on what projects should be funded
- Include representation from all CDOT regions and input from key external agencies
- Develop a 3-5 year plan that identifies priority projects

Benefits of the Fund (CDOT example)

- Larger projects can be funded
- Uses tax dollars more effectively
- Ensures long-term O&M of BMPs through agreements and collaboration
- Reduces future maintenance costs by building fewer BMPs

NJDOT Stormwater Mitigation Banking Process



Considerations for Moving Forward

- Investigate whether the legal authority needs to be expanded.
- Dedicate staff to policy oversight, compliance, and enforcement, as well as reporting and tracking of watershed projects.
- Implement watershed programs and provide implementation support.

Acknowledgement

(Many, many hours of contribution from DOTs nationwide)

David	Ahdout	New Jersey	Roy	Mills	Virginia
Henry	Barbaro	Massachusetts	James	Murphy	Nevada
Cornelius	Barmer	Maryland	Kenneth	Pace	North Carolina
Jerry	Chaney	Utah	Skip	Powe	Alabama
Paul	Corrente	Connecticut	Karuna	Pujara	Maryland
Vincent	Davis	Delaware	Rick	Renna	Florida
Barry	Fagan	Alabama	Michelle	Reynolds	Wisconsin
William	Fletcher	Oregon	Gabe	Robertson	Nebraska
Amy	Foster	Texas	Greg	Russell	Tennessee
Rik	Gay	Colorado	Kristin	Schuster	Michigan
Hans	Gucker	Ohio	Kenneth	Stone	Washington
Mark	Hemmerlein	New Hampshire	Wendy	Terlizzi	Arizona
Matthew	Lauffer	North Carolina	Stephen	Tibbetts	Maine
Andrew	McDaniel	North Carolina	Nick	Tiedeken	Minnesota
Scott	McGowen	California	Meredith	Upchurch	District of Columbia
			Rick	Willard	Colorado
			Todd	Williams	Arizona

Questions?

- Please submit your questions through the “chat” window
- Speakers:



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Scott McGowen
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Rachel Herbert
USEPA

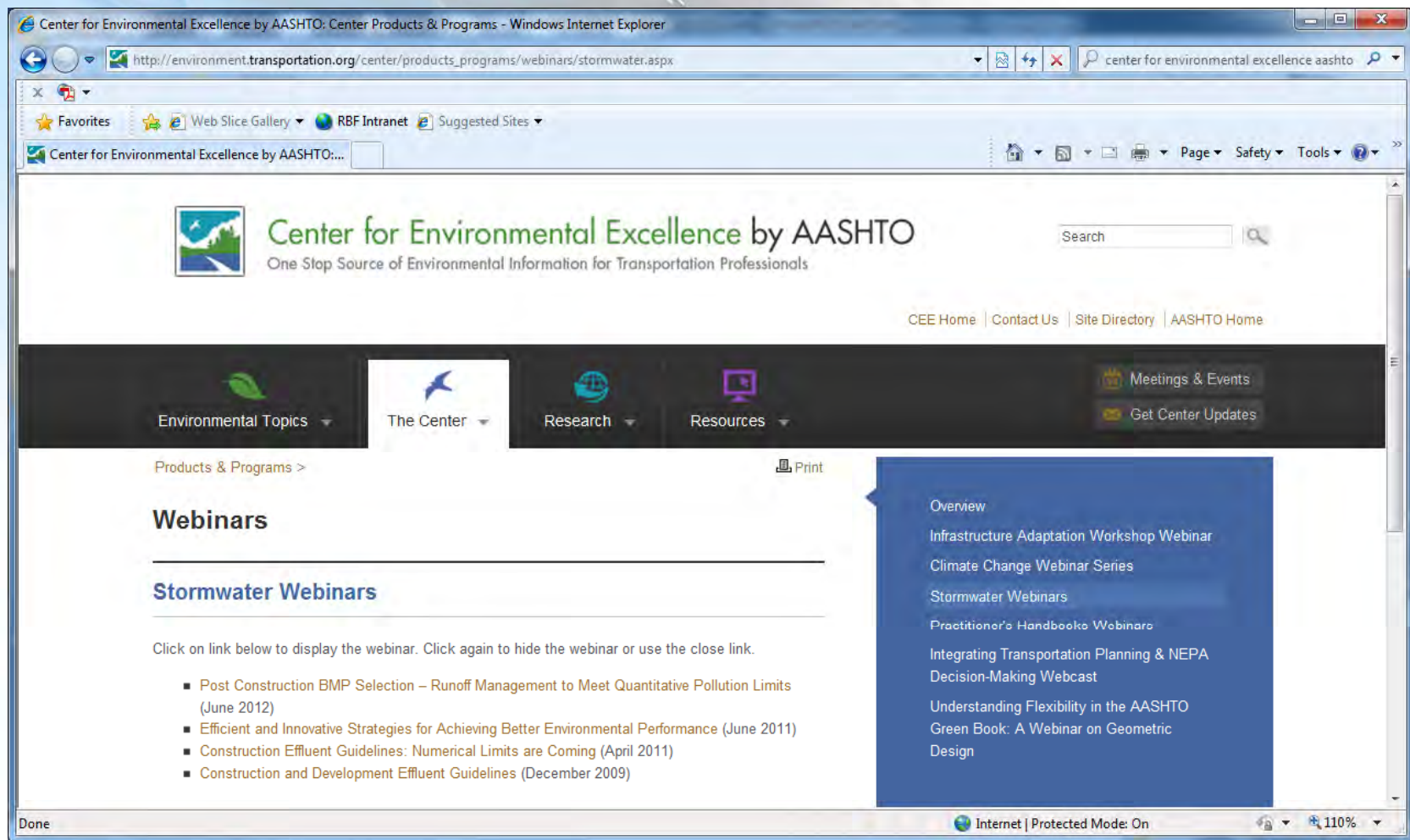
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http://environment.transportation.org/center/products_programs/webinars/stormwater.aspx



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Federal Highway Administration