



PG Environmental

MS4 Program Evaluations

Observations from National Field & Office-based Assessment Efforts

2016 EPA Region 6 Stormwater Conference

Who is this guy?

Jake Albright

B.S. in Chemistry, College of William & Mary



10 years of experience in a variety of NPDES program areas

- Municipal wastewater and drinking water lab tech, with involvement in industrial pretreatment program monitoring
- Technical consultant for a civil engineering firm specializing in designing, manufacturing, and installing post-construction stormwater management systems
- Environmental scientist who has conducted over 100 field and office-based NPDES compliance activities over the past 5 years

Who does he work for?



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NPDES Program Specialists

Compliance Evaluations and Assistance

- POTWs, SSOs, CSOs, MS4, Industrial, Construction, CAFO
- DOJ case support

Permitting

- Over 500 NPDES permits in the past 10 years

Economic, Regulatory, and Policy Analysis

Communications, Outreach and Much More...

PG MS4 Field Activities since 2009



Topics

- Brief history of the MS4 program
- Types of stormwater program evaluations
- Observations surrounding successful and unsuccessful programs
- Commonly observed compliance issues
- Future outlook for MS4 program implementation and compliance assessments
- Questions

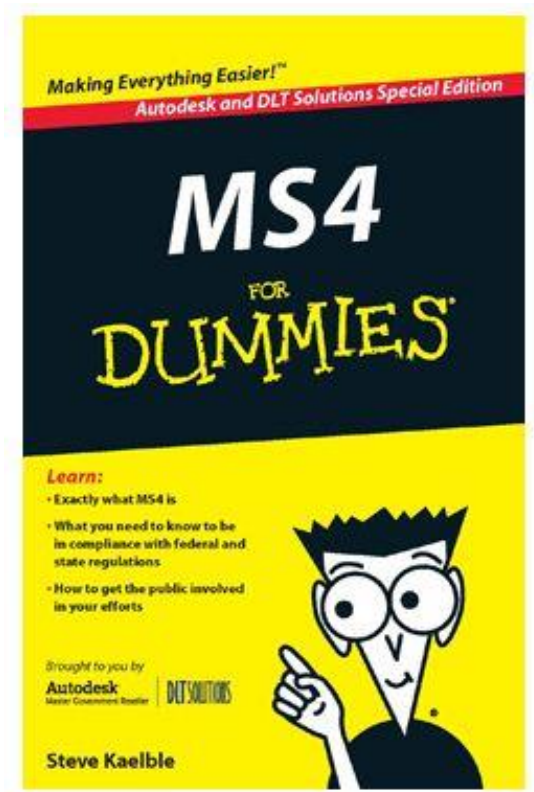


What's Not Included...

Comprehensive overview of MS4 program components and permit requirements

Visit EPA's website for MS4 resources

<http://cfpub.epa.gov/npdes/stormwater/munic.cfm>



A Brief MS4 Program History...

- **1987** – CWA amended to require implementation of a two-phase, comprehensive national program for addressing stormwater discharges
- **1990** – Phase I, requiring NPDES permits for stormwater discharges from medium and large MS4s generally serving populations of 100,000 or more
- **1999** – Phase II, requiring NPDES permits for a wider range of stormwater dischargers, including small MS4s and “non-traditional” entities



MS4 Program Today

- Widespread program development and implementation
- Many challenges...
 - Some are universal, some unique



MS4 Program Evaluation Activities

- Annual Report Reviews
- Desktop Audits
- Onsite Inspections/Audits
- State Program Reviews



Annual Report Reviews

Determining potential non-compliance through review of permittee self-reporting

Rating	Rating Summary
Satisfactory	The Permittee reported performing all of the activities specified in the Permit for the applicable reporting period. The Permittee provided the required supporting documentation for the activities performed.
Marginal	The Permittee reported performing some, but not all, of the activities specified in the Permit for the applicable reporting year (and/or the Permittee did not provide required supporting documentation).
Unsatisfactory	The Permittee reported performing none or few of the activities specified in the Permit for the applicable reporting year.

Annual Report Reviews

- Reviews can differ in complexity based on compliance objectives
- Can be used to identify general compliance trends at a local, regional, or state level

MS4 Phase I Program Assessment Form

Permittee Name: Permittee
 Co-permittee: Primary
 Annual Report Year: 5/1/2014–4/30/2015
 Date of Last State Inspection: 4/15/2009

Permit Number: GAS000000
 Issued: 6/11/2014
 SWMP Version: April 2015

The following table identifies the MS4 program elements which were reviewed for compliance with Permit requirements, assigns assessment ratings, and provides associated comments from the review.

Program or Area Reviewed	Permit Section	SWMP Section	Rating	Review Notes and Comments
Structural and Source Control Measures	Part 3.3.1	Section 1	M	<ul style="list-style-type: none"> • Part 3.3.1, Item 2.a of the Permit requires the Permittee to “conduct inspections of the MS4 structures so that 100% of the structures are inspected within the 5-year period. The permittee must conduct a percentage of inspections each year. The MS4 inspections shall be executed in accordance with the schedule contained in the SWMP.” Section 1.2.1 of the SWMP states the Permittee “has broken up the MS4 into five operational zones, and will perform inspections of the MS4 structures within one zone per year.” The Permittee reported that it did not complete all inspections in Maintenance Zone #1. The Permittee reported that the remaining inspections in Maintenance Zone #1 and all inspections in Maintenance Zone #2 will be completed during the 2015–2016 reporting period. • Part 3.3.1, Item 4.a of the Permit requires the Permittee to “implement street maintenance and cleaning procedures specified in the SWMP.” Section 1.4.1.A of the SWMP requires street sweeping to be performed on a quarterly basis in the commercial and industrial areas of the City. According to section 1.4.3 of the SWMP, the City’s schedule for street sweeping and roadside ditch maintenance activities is “ongoing, 2014–2019: Daily street sweeping and roadside ditch maintenance.” The Permittee reported that “0 miles were swept during this reporting period. The Street Sweeping program will begin in the 2015–2016 reporting period.” The City reported performing litter removal and roadside ditch maintenance activities. • Part 3.3.1 Item 5.b of the Permit requires the Permittee to “implement the procedures

Annual Report Reviews

Pros	Cons
<ul style="list-style-type: none">• Readily available	<ul style="list-style-type: none">• Often missing information or incomplete
<ul style="list-style-type: none">• Cost effective	<ul style="list-style-type: none">• Programs may look better on paper than in reality
<ul style="list-style-type: none">• Logistically efficient and uncomplicated	<ul style="list-style-type: none">• May only paint part of the picture
<ul style="list-style-type: none">• Can be helpful for targeting permittees for more thorough investigation	<ul style="list-style-type: none">• Further investigation would likely be needed to pursue formal enforcement

- *Annual report formats and reporting expectations differ state to state
 - Many states do not have a standard format, which can impact the efficiency of the review

Desktop Audits

Expands upon the annual report review process

- Involves the review of additional datasets (inventories, maps, SOPs, TMDLs, etc.)
- May include phone interviews with permittee personnel

Initial Documents Obtained

- ✓ Current permit
- ✓ Annual report(s)
- ✓ SWMP
- ✓ Previous compliance inspection reports and corresponding enforcement records

Audit Components

- ✓ Review of all or select program elements
- ✓ Review of recent compliance and enforcement history
- ✓ Evaluation of TMDLs and waterbody impairments
- ✓ Review of programmatic documents
- ✓ Discussions with permittee staff

Desktop Audits

May require further investigation

- Field work may be required for definitive compliance determinations
- No verification on the implementation status of procedures

Can be used to prioritize and target onsite inspections/audits

- EPA's Compliance Monitoring Strategy identifies this as an option for fulfilling inspection requirements*



Onsite Inspections and Audits

Most comprehensive evaluation

Requires more involved logistical coordination

- Travel and onsite activity scheduling
- May require one or more pre-inspection calls to coordinate

Expands upon report reviews and desktop audits

- Includes field visits and onsite interviews to evaluate minimum control measure compliance
- Allows for a more complete picture of day-to-day MS4 program implementation to be observed



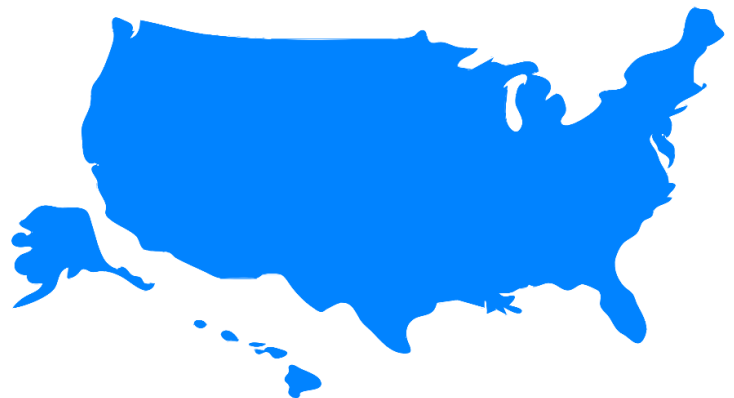
Preliminary Agenda for MS4 Program Inspection

October 4-5, 2016

Day	Time	Team 1 Program/Agenda Item	Team 2 Program/Agenda Item
Tuesday	8:30 am - 9:00 am	Introductions & Opening Meeting	
	9:00 am - 9:30 am	Follow-up Discussions for Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping for Municipal Operations (Office)	
	9:30 am - 10:30 am	Follow-up Discussions for Construction Site Stormwater Runoff Control and Post-Construction Stormwater Management (Office)	
	10:30 am - 12:00 pm	Construction Site Stormwater Runoff (Field)	Pollution Prevention/Good Housekeeping for Municipal Operations (Field)
	12:00 pm - 1:00 pm	Lunch Break	
	1:00 pm - 4:00 pm	Construction Site Stormwater Runoff (Field)	Pollution Prevention/Good Housekeeping for Municipal Operations (Field)
	4:00 pm - 4:30 pm	Recap and Logistics Planning for Wednesday	
Wednesday	8:30 am - 12:00 pm	Post-Construction Stormwater Management (Field)	Illicit Discharge Detection and Elimination (Field)
	12:00 pm - 1:00 pm	Lunch Break	
	1:00 pm - 2:30 pm	Post-Construction Stormwater Management (Field)	Illicit Discharge Detection and Elimination (Field)
	2:30 pm - 3:30 pm	Internal Discussion	
	3:30 pm - 4:30 pm	Closing Discussion (Tentative time slot)	

State Program Reviews

- Some EPA regions have begun formally reviewing state NPDES stormwater programs
- May involve all components of the stormwater program, not just MS4 (e.g., construction and industrial)
- Best accomplished through records review and in-person interviews with key regulatory and field staff
- May include visits to regional offices and other program support entities (e.g., conservation district offices)
- Can be a useful tool in opening up conversation between state and federal regulators



State Program Reviews

- ✓ Management and oversight (central v. regional)
- ✓ Permitting and compliance
- ✓ Implementation responsibilities
- ✓ Tracking mechanisms and record keeping
- ✓ Local delegation
- ✓ Budgets and resources



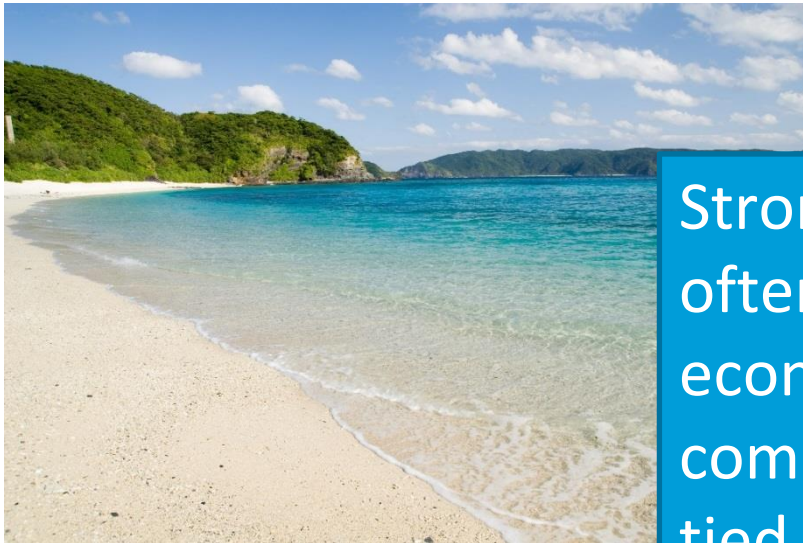
Recipe for Success

- Dedicated personnel and reliable funding
- “Big Dog” support
- Meaningful and enforceable legal authorities
- Informed and engaged communities
- Empowering appropriate staff to effectively carry out compliance and enforcement activities
- Open communication and lesson sharing between jurisdictions and departments
- Learn from past experiences and have a desire to improve



Recipe for Success (cont.)

- Use of technologies for robust and organized tracking mechanisms
- Analysis and utilization of gathered data to inform program activities
- Training!



Stronger programs are often observed where local economies and communities are closely tied to water resources

Unsuccessful Programs

- Many lack entire program elements
- Lack of interdepartmental program coordination (Rogue Departments)
- Desire to do only the bare minimum (sometimes less)
- Lack of documentation
- Inadequate resources and funding
- Enforcement action clearly necessary
- Lack of “Big Dog” support



Common IDDE Compliance Issues

- Lack of mapping/mapping inconsistencies
- Lack of procedures for how to conduct IDDE investigations
- Lack of tracking for IDDE events and resolution
- IDDE programs that are largely reactionary spill response programs
- Failure to conduct dry weather screening or follow-up analytical monitoring
- Lack of system characterization to determine if a discharge is 'illicit' or not



Common Pollution Prevention & Good Housekeeping Compliance Issues

- Lack of facility / operations inventory
- Fixed facilities lack adequate controls
- Poorly defined responsibilities
- Lack of SWPPP or equivalent plan
- Stormwater BMPs not maintained
- Lack of (or non-effective) training
- Lack of detailed documentation, data generation, and tracking



Lead by example...the condition of municipal facilities can be telling of the condition of the overall program.

Common Construction Compliance Issues

Legal Authority / Enforcement

- Ordinance does not specify correct disturbance threshold
- Do not address “other wastes” at sites
- Lack of authority for penalties
- **Lack of ERP with clear escalation steps**
- **Unwilling to enforce**
- Lack of documentation

Plan Review

- Criteria unclear; no checklist / form for documentation
- No verification of CGP coverage
- Do not assess BMP adequacy
- Public projects less stringent

Common Construction Compliance Issues (cont.)

Site Inventory / Tracking

- Information lacking in inventory
- No system for inspection prioritization or for tracking inspections / complaint response
- Stagnant / abandoned sites not accounted for

Site Inspection / BMP Findings

- ESC BMPs not installed properly or maintained
- MS4 focuses exclusively on sediment control
- MS4 does not compare conditions to approved plans
- Inspection frequency not adequate
- Failure to document inspections and observations
- ESC not primary focus of MS4 inspector

Post-construction Program Observations

- Shift in focus from ensuring BMPs are implemented to **ensuring they are operated and maintained in perpetuity**
- Lack of targeted/preferential BMP application
- Lack of specific or enforceable standards for post-construction controls
- Failure to adequately design and implement O&M programs
- Lack of authority and/or management support to deny variances and pursue corrective actions or enforcement at private BMPs
- Creating BMP inventories can be challenging!



Plan Review Issues

- Applicable projects not being identified and too liberal use of exemptions
- Advanced training not provided to plan reviewers
- Lack of SOPs or checklists for plan review
- Inadequate feedback loop from the field
- Reluctance to address redevelopment
- Minimal consideration for long-term O&M



BMP Construction and Tracking Issues

- MS4 staff and contractors unfamiliar with GI designs and operability
- As-built inspections are not conducted or inadequate – resulting in unapproved/inappropriate design modifications
- Site design and source control BMPs are marginalized
- Tracking systems are not accounting for inevitable changes with GI
- Lack of reliable acceptance testing



BMP Inspection and O&M Issues

- Inadequate frequency or process for private BMP inspections
- Lack of maintenance standards/plans/agreements and failure to use standards during inspections
- Inspectors have not received training about BMP proper function
- Maintenance needs identified only during flooding events (i.e., reactive) – presumption that they are working otherwise
- Reluctance to use enforcement



Successful Program Attributes

- Have established and clear standards
- Have specially trained plan reviewers and inspectors
- Deploy the same process for private and public BMPs
- Track BMPs effectively – maximize data and GIS for tracking and performance (e.g., asset management)
- Have a multi-layered process to ensure BMPs operate in perpetuity



Successful Program Attributes

- Recognize the program requires strategic thought
- Seek and apply 'Big Dog' support
- See Post-Construction as the cornerstone of their overall water quality improvement program



Common Overall Program Observations

- Many programs have not identified overall program goals
- Need to consider whether program activities have a tangible benefit
- Communicate with the regulator!
- Ties to actual water quality data and other data sets are critical for evaluation
- Lack of documentation and data tracking prevents programs from even attempting to determine program effectiveness
- Data is often collected but not used to inform program decisions...
- Determining MS4 program effectiveness is challenging!



Where are MS4 programs and policies headed from here?

- **Continued BMP proliferation**
 - Overcoming O&M challenges
- **Increased focus on pollutants of concern and TMDLs**
 - Integrated into BMP design and implementation
 - Begin to see more compliance activities and enforcement related to TMDL compliance
- **More regulations geared toward promoting LID and GI**
- **Technical assessments of BMP performance**
- **More quantitative assessments of program effectiveness**



Where are MS4 programs and policies headed from here?

- **More robust asset management and data tracking systems in MS4 programs**
 - MS4 programs are becoming more complex and should be treated similarly to other infrastructure programs
- **Increased use of remote and real-time monitoring**
- **Continued development and implementation of innovative stormwater technologies**
- **Progress with “One Water” paradigm shift and integration with other water-related programs**



Questions?

