Prioritizing Pollutant Removal from Municipal Stormwater

Implementation of Illicit Discharge Detection and Elimination Programs Under MS4 Permits

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Municipal Separate Storm Sewer System (MS4) Permits

- Phase 1: Individual Permits
  - Boston & Worcester
- Phase 2: General Permit
  - 260 municipalities

MA Small MS4 General Permit

- Section 2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program
- Objective: The permittee shall implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges
- Definition: An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater…

IDDE Requirements

- System Mapping
- Assessment & Priority Ranking of Outfalls
  - Rank outfalls in terms of potential to have illicit discharges
  - Rank determines priority order for screening and investigation

Assessment & Priority Ranking of Outfalls

- Initial Ranking
  - Problem Outfalls: existing data indicates illicit discharges; no screening needed
  - High Priority Outfalls: discharge to receiving waters with public health concerns (beaches, shellfish beds, recreational use, water supply, etc.) or have characteristics making them likely to have illicit discharges
  - Low Priority Outfalls: have characteristics making them less likely to have illicit discharges

Assessment & Priority Ranking of Outfalls

- Dry Weather Screening
  - All High and Low Priority Outfalls
  - Sample after no more than 0.1 inches of rain in previous 24 hours
  - Look for flow
  - If flowing, sample and test
  - Use test results to update ranking
  - New ranking used to prioritize for catchment investigation to identify and remove source of pollution to the maximum extent practicable

Assessment & Priority Ranking of Outfalls

- Wet Weather Screening
  - All outfalls with potential vulnerability to illicit discharges
  - Sample after storm event that produces a discharge from the outfall
  - Use test results to update ranking
  - New ranking used to prioritize for catchment investigation to identify and remove source of pollution to the maximum extent practicable

Worcester Storm Water Management Program (SWMP)

- Worcester original SWMP in 1999
- Revised SWMP in 2015
- Uses dry weather screening results to rank outfalls for investigation
- Wet weather screening of outfalls with no dry weather flow or low E. coli results from dry weather screening

Worcester SWMP

Prioritization Ranking System

SWMP Catchment Prioritization Ranking System				
Each outfall will be rated and prioritized based on the following:				
Group	Measure	Points		
A-geo	Within 1/4 mile of a public bathing beach	15		
	Discharges to water body that has a public bathing beach	10		
	Discharges within the watershed of a water body that has a public bathing beach	5		
	no public bathing beaches in watershed	0		
B-bact	E. coli > 10,000	25		
	E. coli 1000-10,000	15		
	E. coli <1000	5		
C-struct	# of twin invert manholes >20	15		
	# of twin invert manholes 6-19	10		
	# of twin invert manholes 1-5	5		
	# of twin invert manholes = 0	0		
D-chem	Ammonia > or = 1 ppm	20		
	Ammonia < 1ppm but > 0 ppm	10		
	Ammonia 0 or non detect	0		
E-flow	Dry weather flow high	15		
	Dry weather flow medium	7		
	Dry weather flow low	1		
	No dry weather flow	0		
F-bio	Biological indicators present	10		
	Biological indicators absent	0		
		total		
		100	Max possible	
		5	Min possible	
	Maximum total score not to exceed 100 points			
	Only 1 row in each group can have a score			
	Outfall investigation priorities			
	Priority 1: 76-100 pts			
	Priority 2: 51-75 pts			
	Priority 3: 26-50 pts			
	Priority 4: 0-25 pts			

Worcester SWMP

- Results to date (2015 & 2016)
  - 195 Outfalls dry weather screened
    - Priority 1-0
    - Priority 2-1
    - Priority 3-28
    - Priority 4-166
  - 15 of 61 outfalls wet weather screening complete
  - 510 manhole inspections complete
  - 1 illicit connection identified and removed

Summary

- MS4 Permits direct municipalities to prioritize efforts at stormwater pollutant removal by focusing on public health protection and vulnerability to pollution under the IDDE Program
- Municipalities are required to remove pollutants to the maximum extent practicable and systematically investigate stormwater systems