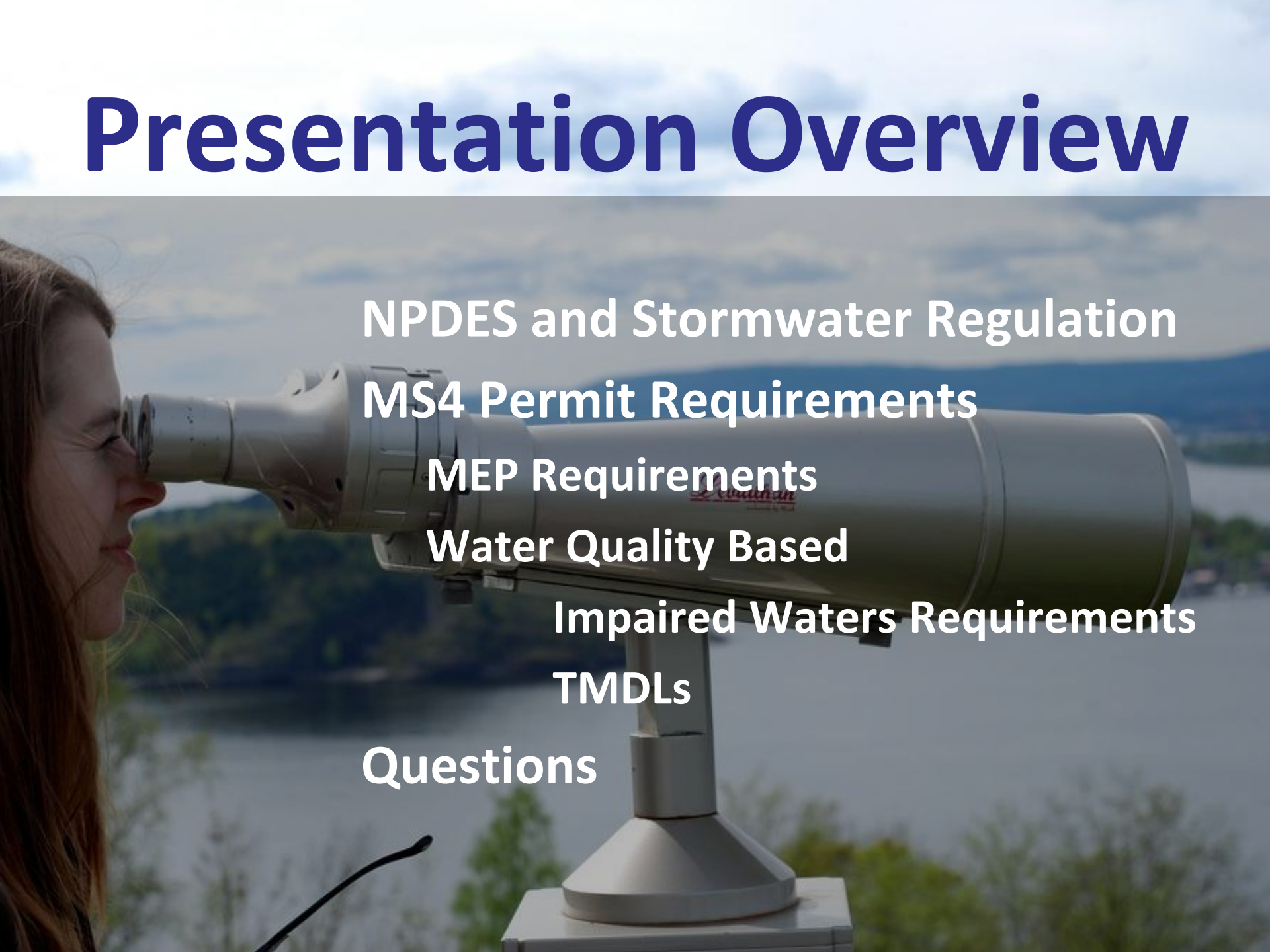
2014 Draft Massachusetts MS4 Permit

Newton Tedder
EPA New England

Presentation Overview



NPDES and Stormwater Regulation

MS4 Permit Requirements

- MEP Requirements
- Water Quality Based
  - Impaired Waters Requirements
  - TMDLs

Questions

This presentation is for informational purposes only. Any comments made by the presenter or attendees is not part of the administrative record for this draft permit. Any comments participants wish to be part of the administrative record must submit them in writing to EPA during the public comment period or orally during the public hearing.

Public Comment Period: September 30, 2014 – December 29, 2014

Public Hearing:

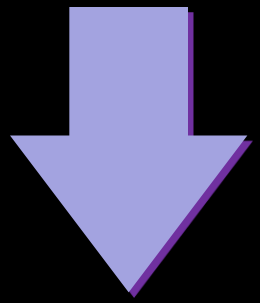
Date: November 19, 2014
Time: 1:00pm
Location: Leominster Public Library (Community Room), 30 West Street, Leominster, Massachusetts 01453.

Clean Water Act - 1972

Goal

CWA Section 4

All "point" sources
"discharging pollutants"
into "waters of the U.S."



Must obtain an NPDES permit from an authorized state or EPA

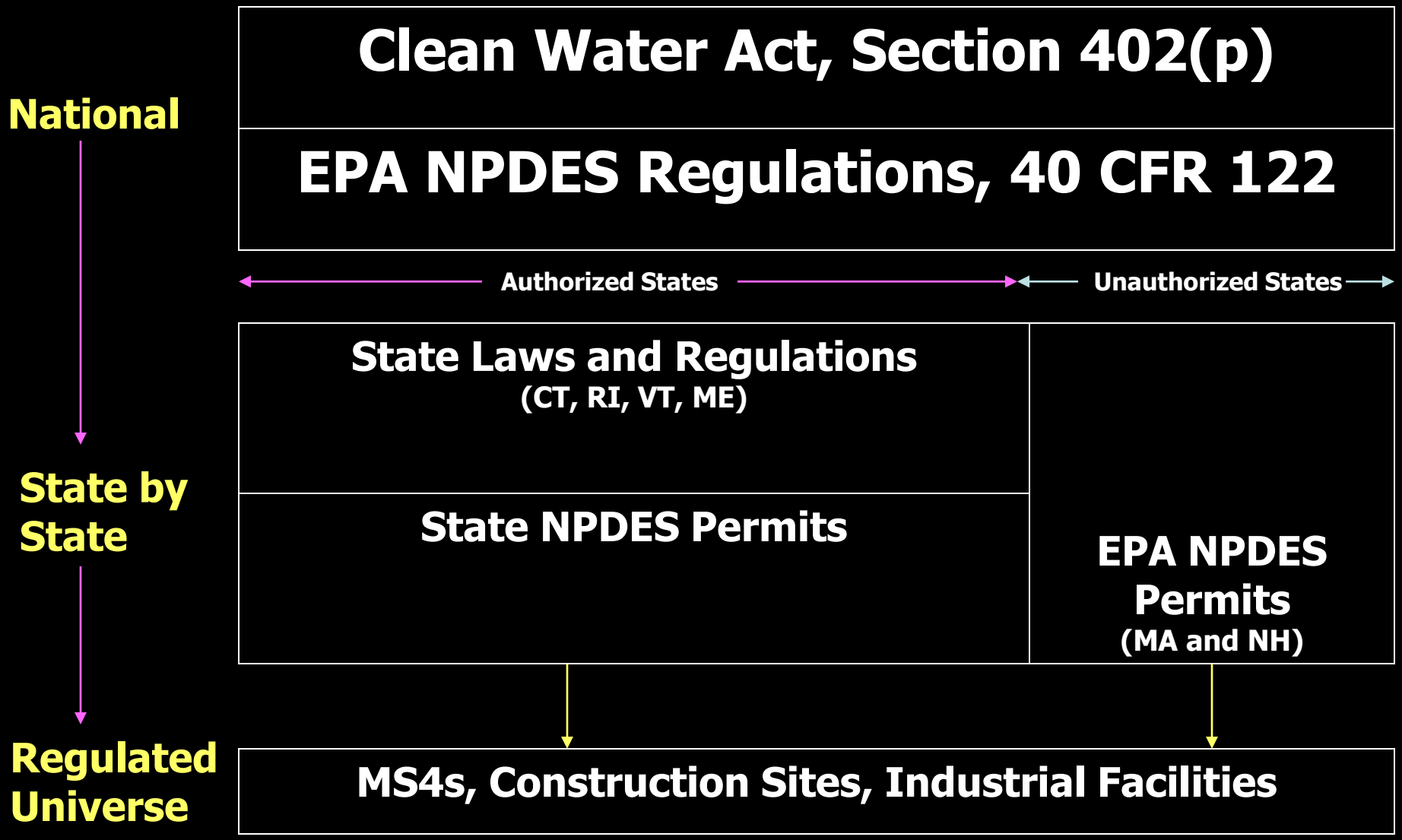
Nationwide Urban Runoff Program (NURP)

- Conducted by EPA between 1979 and 1983
- First comprehensive study of urban runoff pollution across U.S.
- Found high levels of heavy metals, fecal coliform, TSS, nutrients and hydrocarbons in urban runoff

Regulatory History

- Before 1987 stormwater considered a non-point source and not regulated
- Water Quality Act of 1987 required NPDES permitting of certain stormwater discharges
  - Medium and large municipalities (serving over 100,000 persons)
  - Industrial activities
  - Others, as determined by EPA, “to protect water quality”

Stormwater Regulatory Framework



Phase I Program

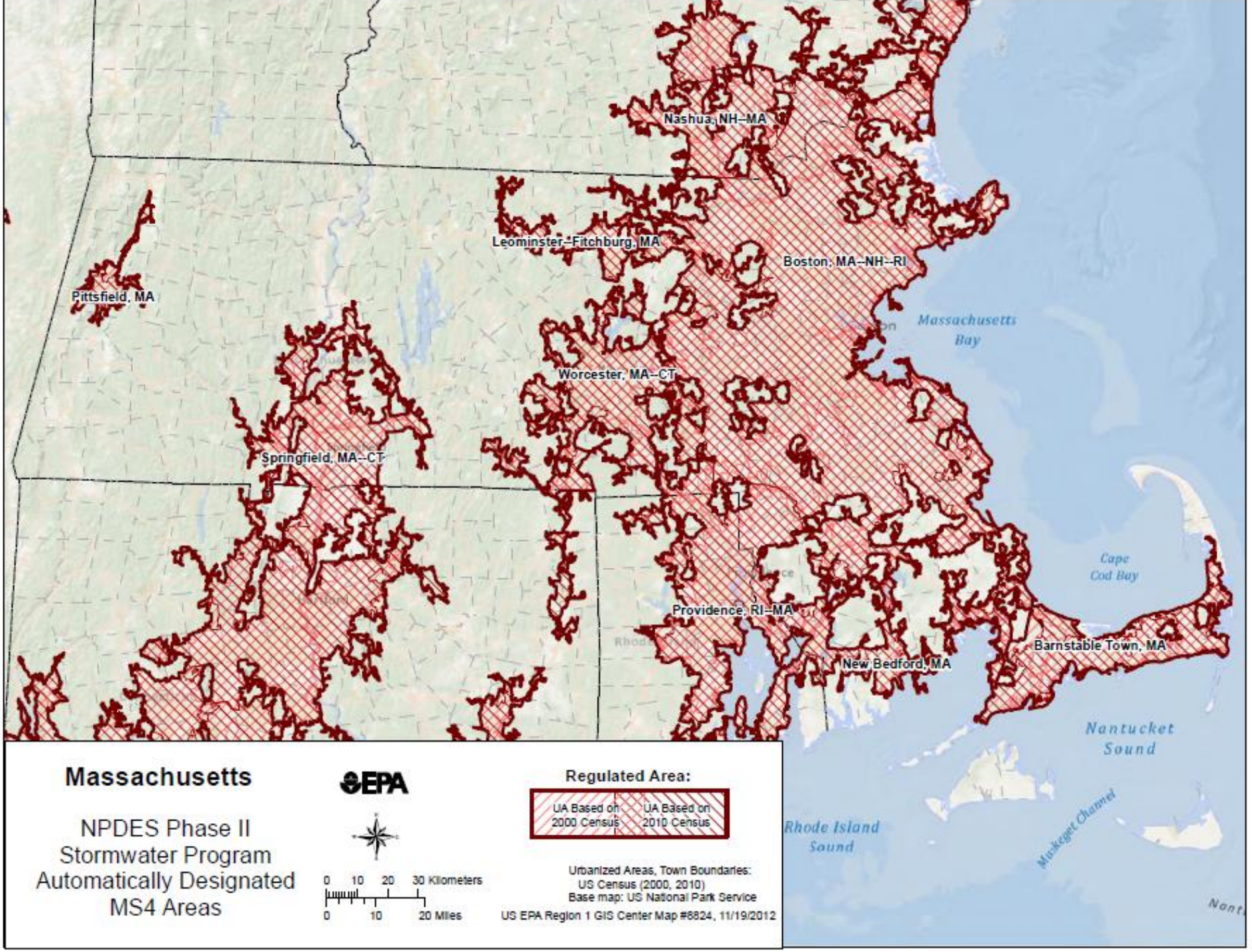
- Stormwater management program must reduce the discharge of pollutants to the maximum extent practicable (MEP) and protect water quality
- Medium and large municipalities (over 100,000)
- Industrial activity

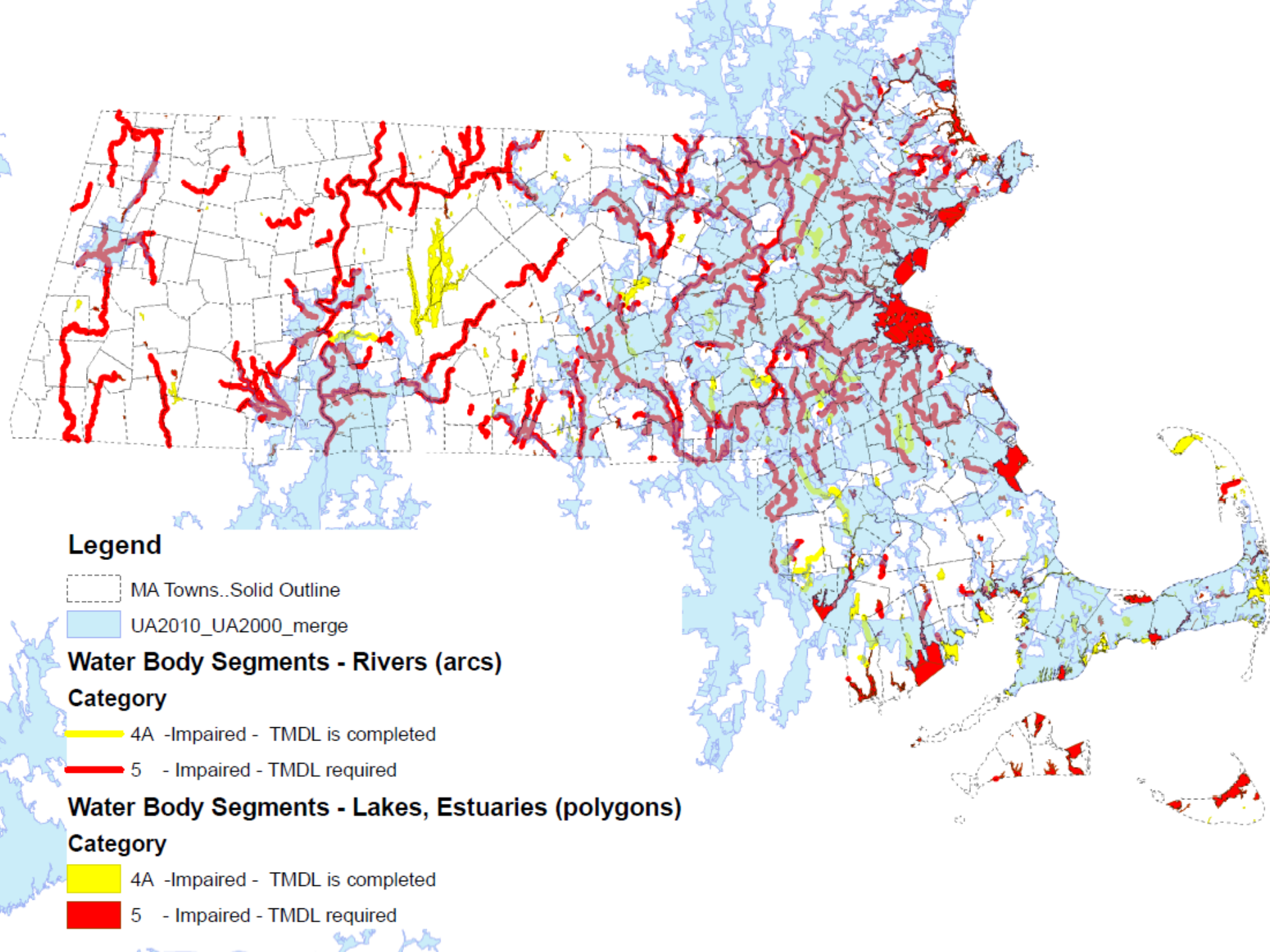
  (11 categories)
- Construction over

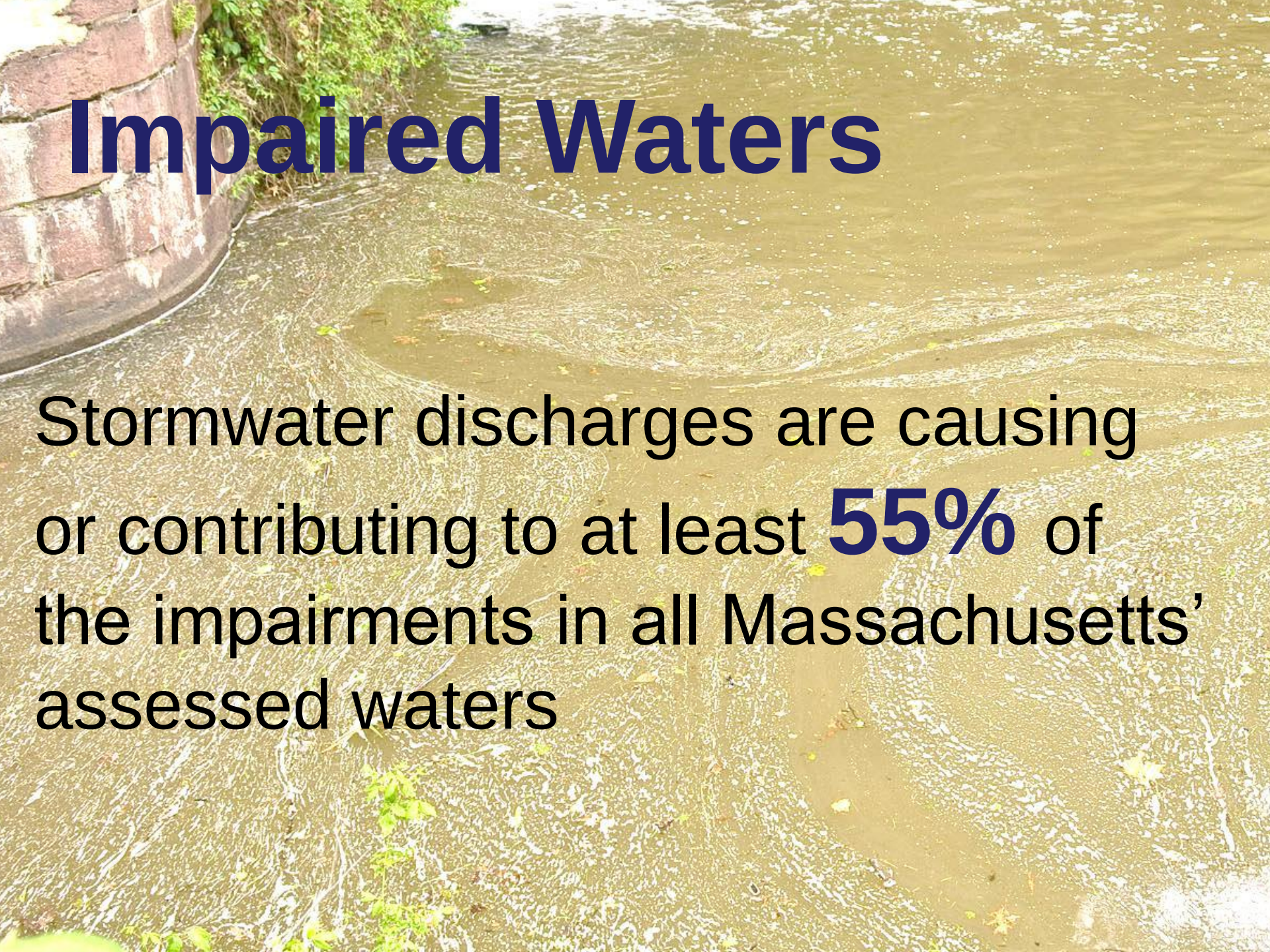
  5 acres

Phase II Coverage

- 1995 Report to Congress, EPA determined that small municipalities also needed regulation – Regulations passed in 1999
- Permitting authorities can also designate additional small MS4s that are outside of urbanized areas
- Includes non-traditional MS4s within urbanized areas, such as:
  - Military bases
  - Public universities
  - Prisons, etc.
- First Massachusetts Phase II Permit: 2003


Nashua, NH--MA
Leominster--Fitchburg, MA
Boston, MA--NH--RI
Pittsfield, MA
Massachusetts Bay
Worcester, MA--CT
Springfield, MA--CT
Cape Cod Bay
Providence, RI--MA
Barnstable Town, MA
New Bedford, MA
Nantucket Sound
Rhode Island Sound
Massachusetts
NPDES Phase II Stormwater Program Automatically Designated MS4 Areas
EPA
0 10 20 30 Kilometers
0 10 20 Miles
Regulated Area:
UA Based on 2000 Census
UA Based on 2010 Census
Urbanized Areas, Town Boundaries: US Census (2000, 2010)
Base map: US National Park Service
US EPA Region 1 GIS Center Map #8824, 11/19/2012


Legend
MA Towns..Solid Outline
UA2010_UA2000_merge
Water Body Segments - Rivers (arcs)
Category
4A -Impaired - TMDL is completed
5 - Impaired - TMDL required
Water Body Segments - Lakes, Estuaries (polygons)
Category
4A -Impaired - TMDL is completed
5 - Impaired - TMDL required



Impaired Waters

Stormwater discharges are causing or contributing to at least **55%** of the impairments in all Massachusetts' assessed waters

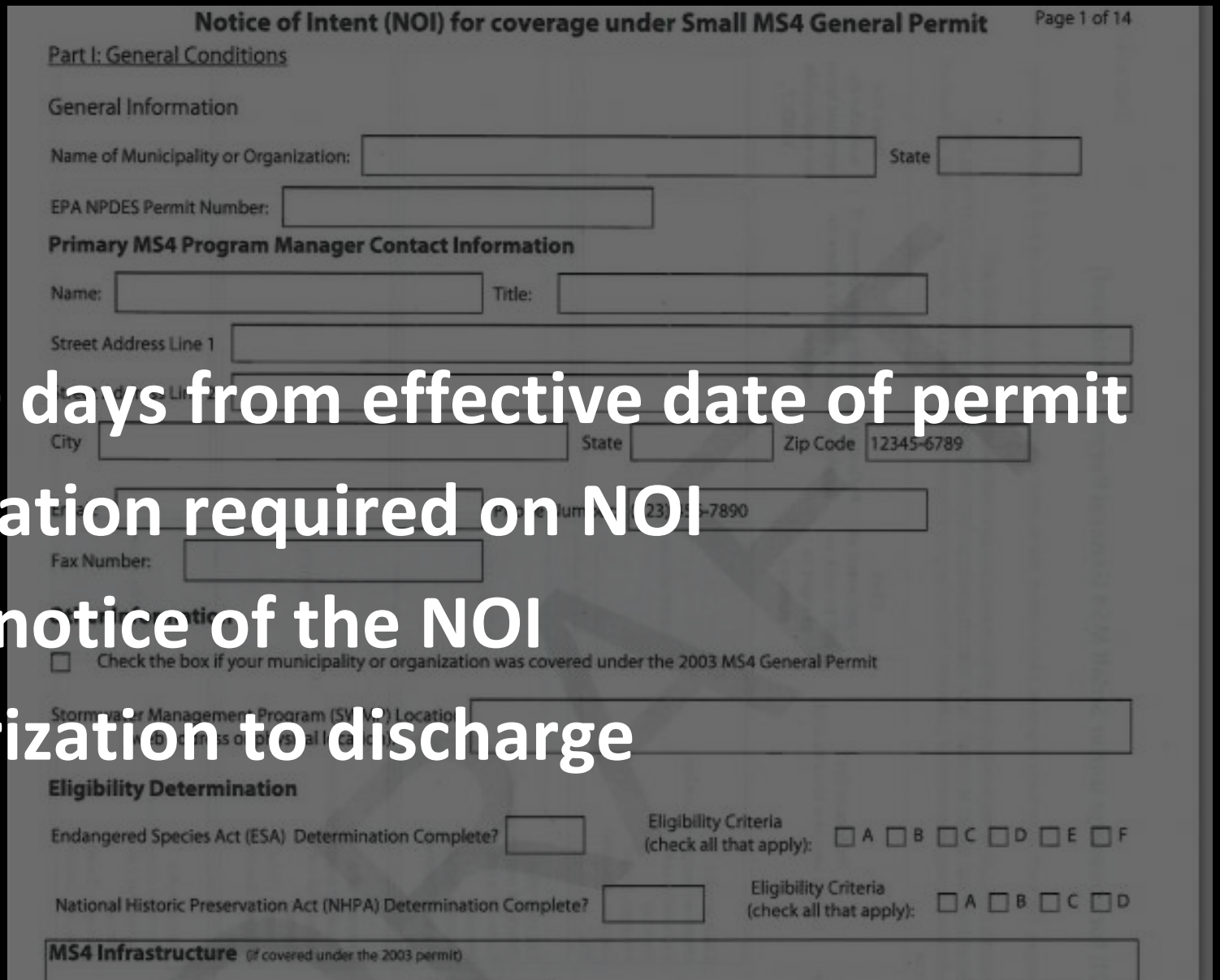
Draft Massachusetts MS4 Permit Requirements

NOI and SWMP

Required NOI Info

- Basic Info
- 2003 permit items
- Endangered Species
- Historic Properties
- BMPs
- Cert & signature

Notice of Intent - NOI



Notice of Intent (NOI) for coverage under Small MS4 General Permit

Page 1 of 14

Part I: General Conditions

General Information

Name of Municipality or Organization:

State

EPA NPDES Permit Number:

Primary MS4 Program Manager Contact Information

Name:

Title:

Street Address Line 1

City

State

Zip Code 12345-6789

Fax Number:

Check the box if your municipality or organization was covered under the 2003 MS4 General Permit

Eligibility Determination

Endangered Species Act (ESA) Determination Complete?

Eligibility Criteria (check all that apply): A B C D E F

National Historic Preservation Act (NHPA) Determination Complete?

Eligibility Criteria (check all that apply): A B C D

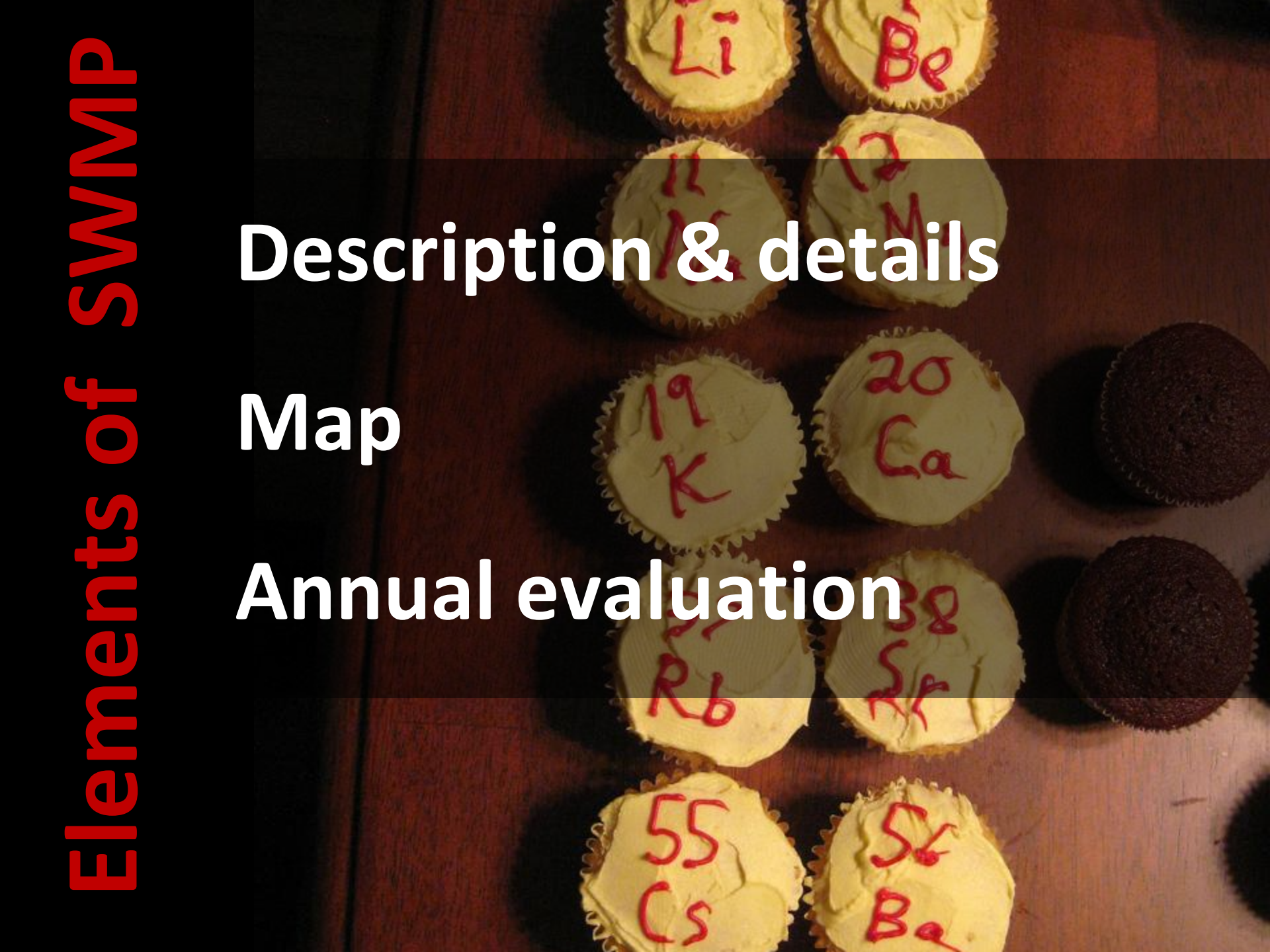
MS4 Infrastructure (if covered under the 2003 permit)

Due 90 days from effective date of permit

Information required on NOI

Public notice of the NOI

Authorization to discharge



Elements of SWMP

Description & details

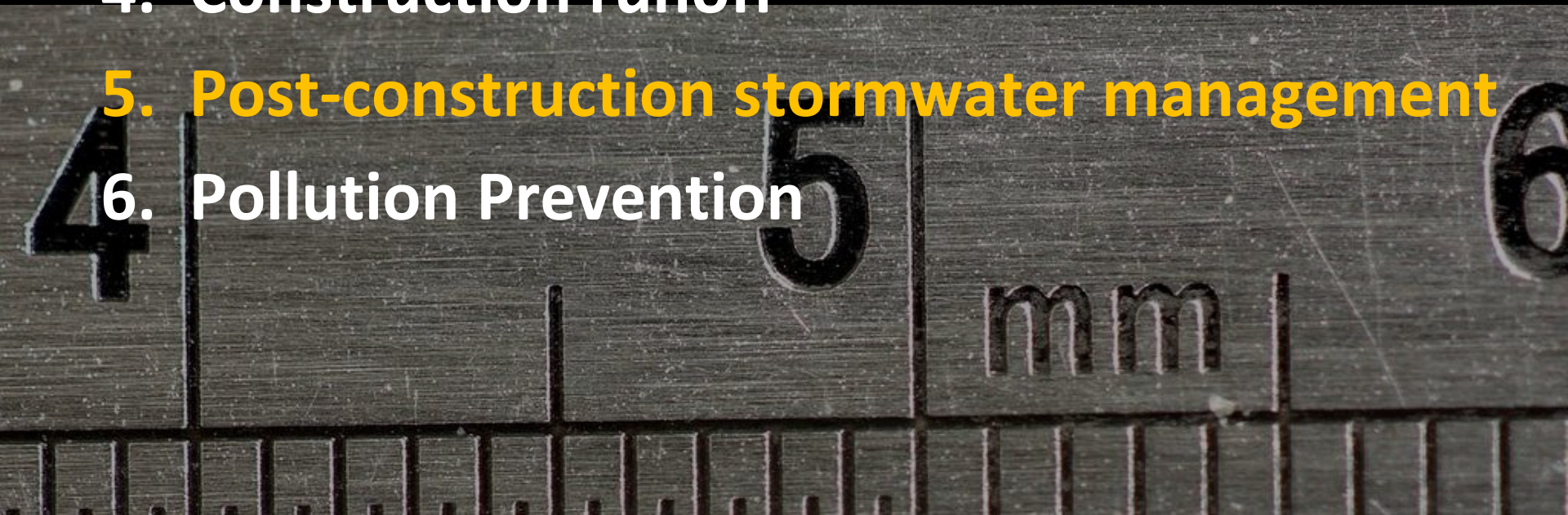
Map

Annual evaluation

MEP Requirements

Six Minimum Measures

1. Public education
2. Public involvement
3. Illicit discharge detection & elimination
4. Construction runoff
5. Post-construction stormwater management
6. Pollution Prevention



Shared Responsibility

The regulations, 40 CFR 122.35, allow for MS4s to share responsibility for the implementation of the six minimum measures

Public Education and Outreach

- Four Audiences
  - Residents
  - Businesses and commercial facilities
  - Developers
  - Industrial Facilities
- Two messages to each audience over the permit term

Public Involvement and Participation

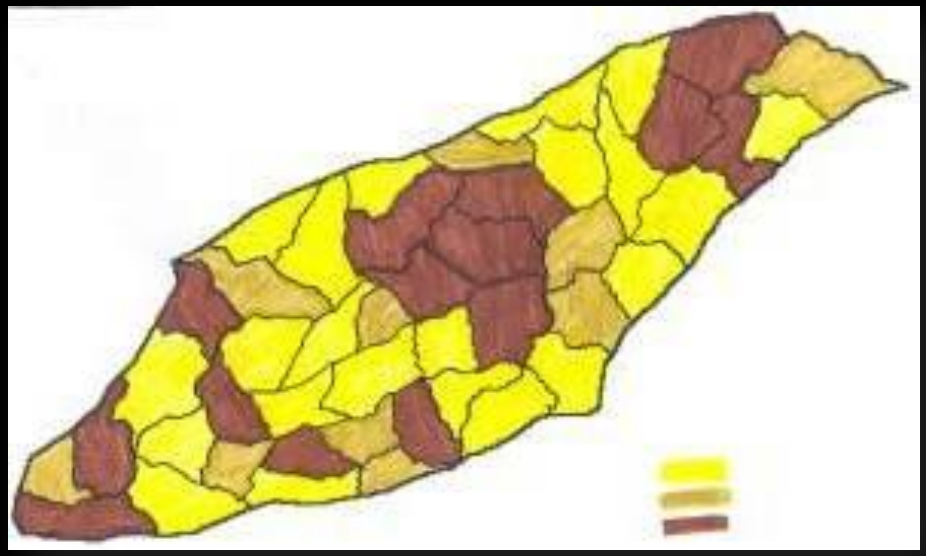
- Public review of SWMP
- Make all reports available to the public

Illicit Discharge Detection and Elimination (IDDE)

- Ordinance
- SSO inventory
- Identification of responsibility
- Outfall inventory and map
- Catchment rankings
- Detailed written IDDE program
- Tracking progress
- Screening

IDDE - Catchment Ranking

- Excluded Catchments
- Problem Catchments
- High Priority Catchments
- Low Priority Catchments

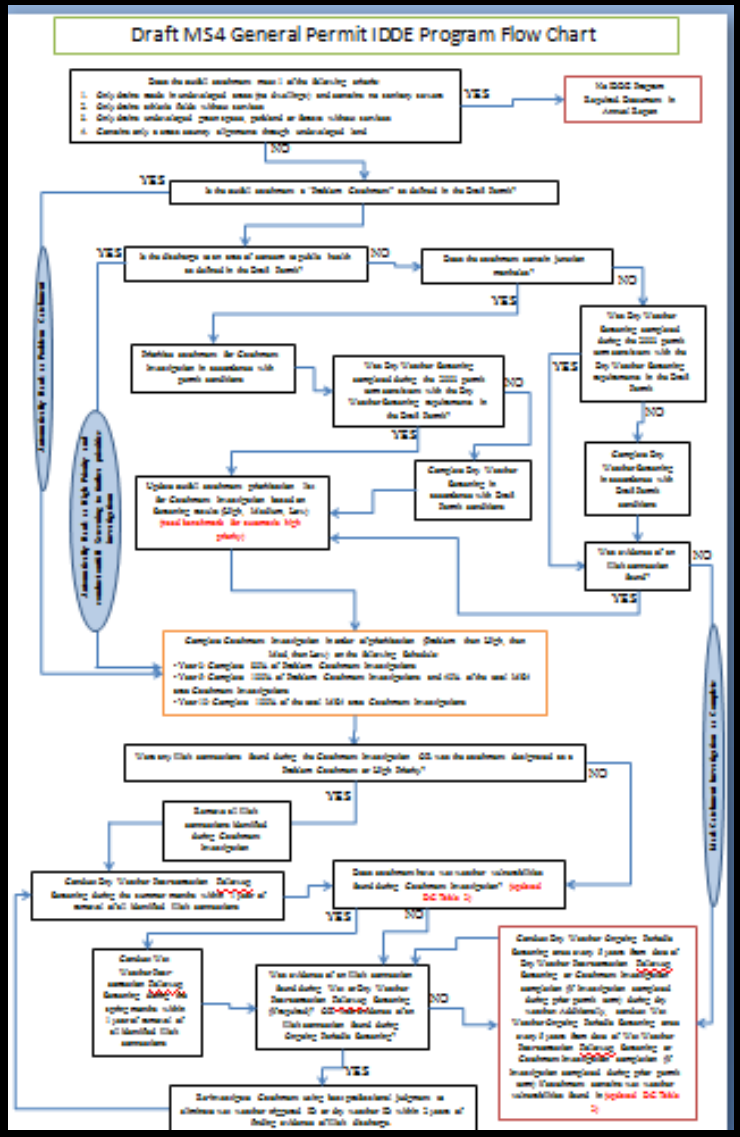


Dry Weather Screening

- Completed Year 3
  - Catchments Ranked High or Low Priority only

Wet Weather Screening

- Completed as part of IDDE procedure
  - Catchments with “System Vulnerability Factors” only

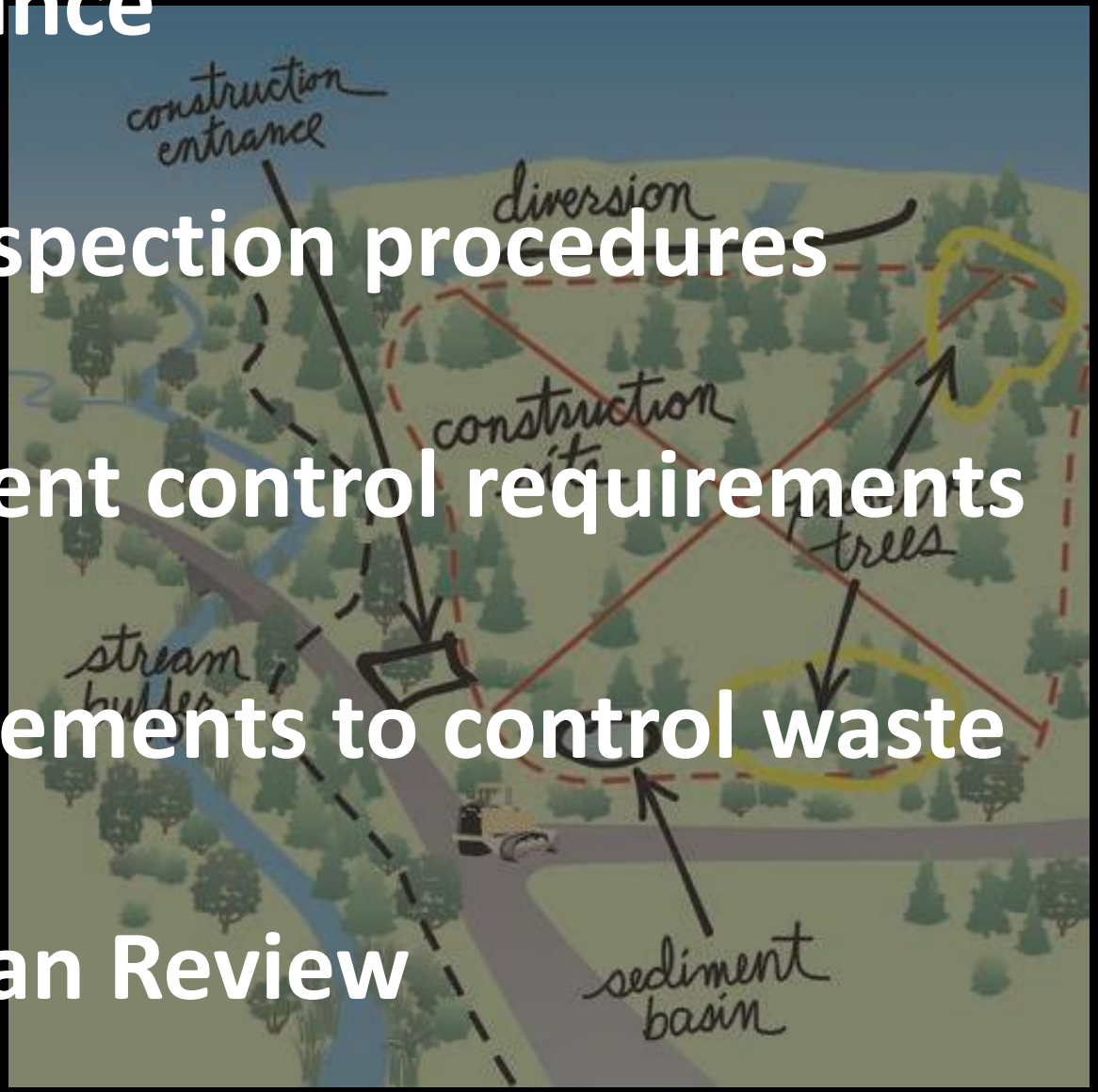


Screening

Residual chlorine, surfactants, ammonia, conductivity, salinity, temperature, bacteria and pollutant(s) of concern

Construction Site Runoff Control

- Ordinance
- Site Inspection procedures
- Sediment control requirements
- Requirements to control waste
- Site Plan Review



Post-Construction Stormwater Management

Updated Ordinance

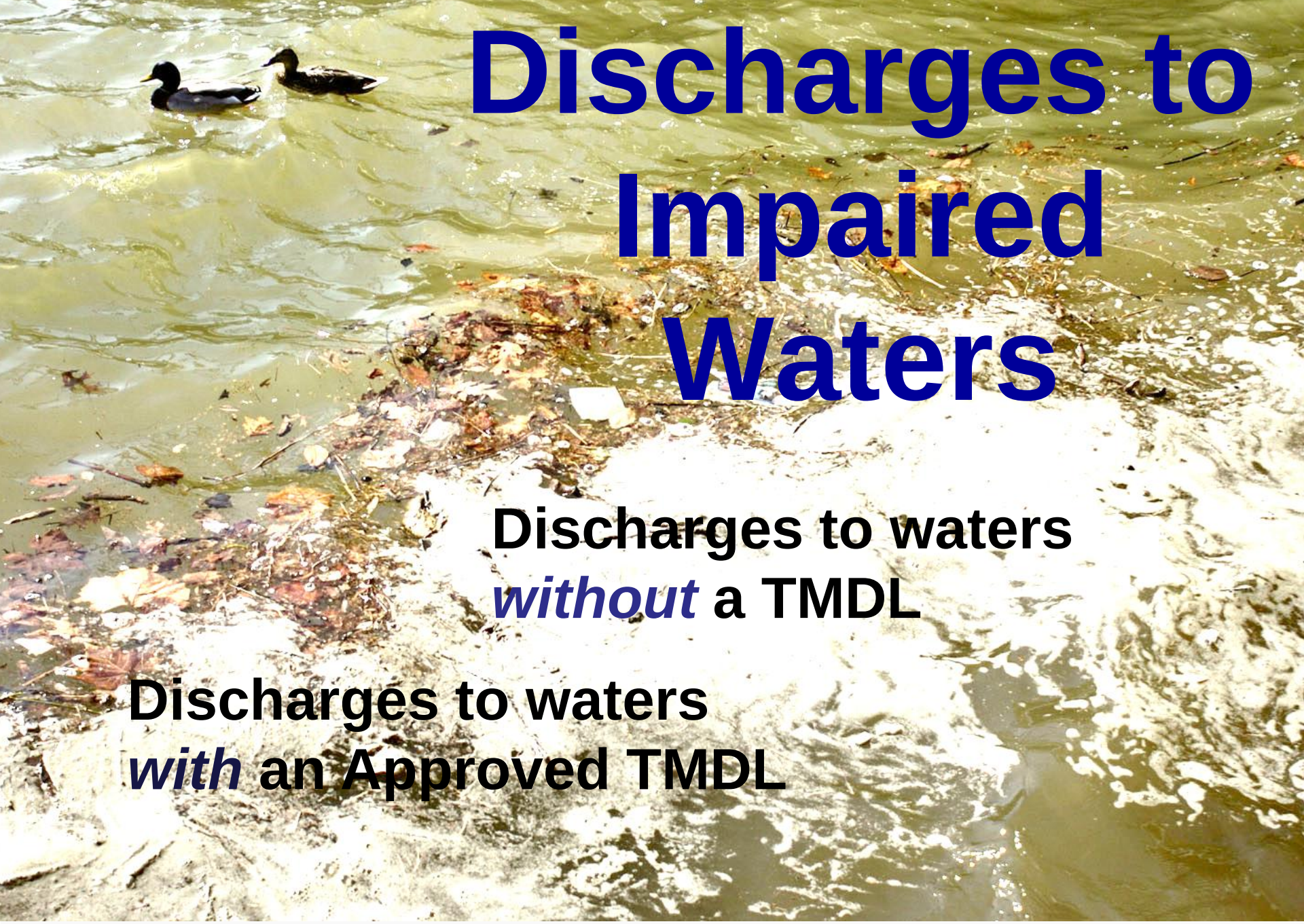
Retain and or treat the first 1” of runoff from IA on site from new and re-development disturbing ≥1 acre


Street design
&
Parking assessment
Green infrastructure
Tracking impervious area

Good Housekeeping

- O&M procedures
- Catch basin cleaning
- Street sweeping
- SWPPP

Water Quality Requirements



Discharges to Impaired Waters

Discharges to waters *without* a TMDL

Discharges to waters *with* an Approved TMDL

Approved TMDLs

Long Island Sound Nitrogen TMDL

Phosphorus and Metals TMDLs for Rhode Island Waters

Bacteria and Pathogen TMDLs

Charles River Phosphorus TMDLs

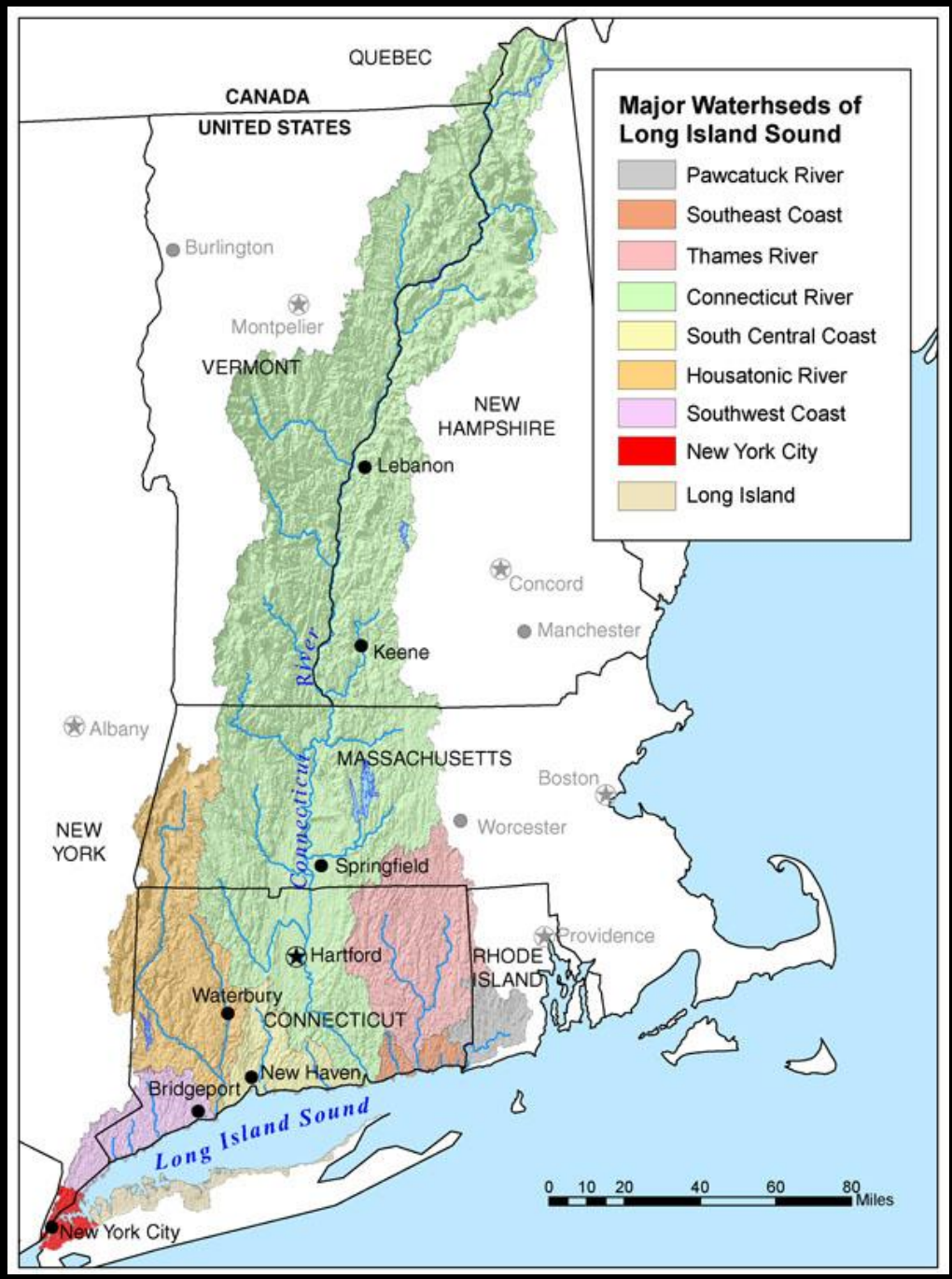
Lake and Pond Phosphorus TMDLs

Cape Cod Nitrogen TMDLs

Assabet River Phosphorus TMDLs

Long Island Sound TMDL

- Connecticut River Watershed
- Housatonic River Watershed
- Thames River Watershed



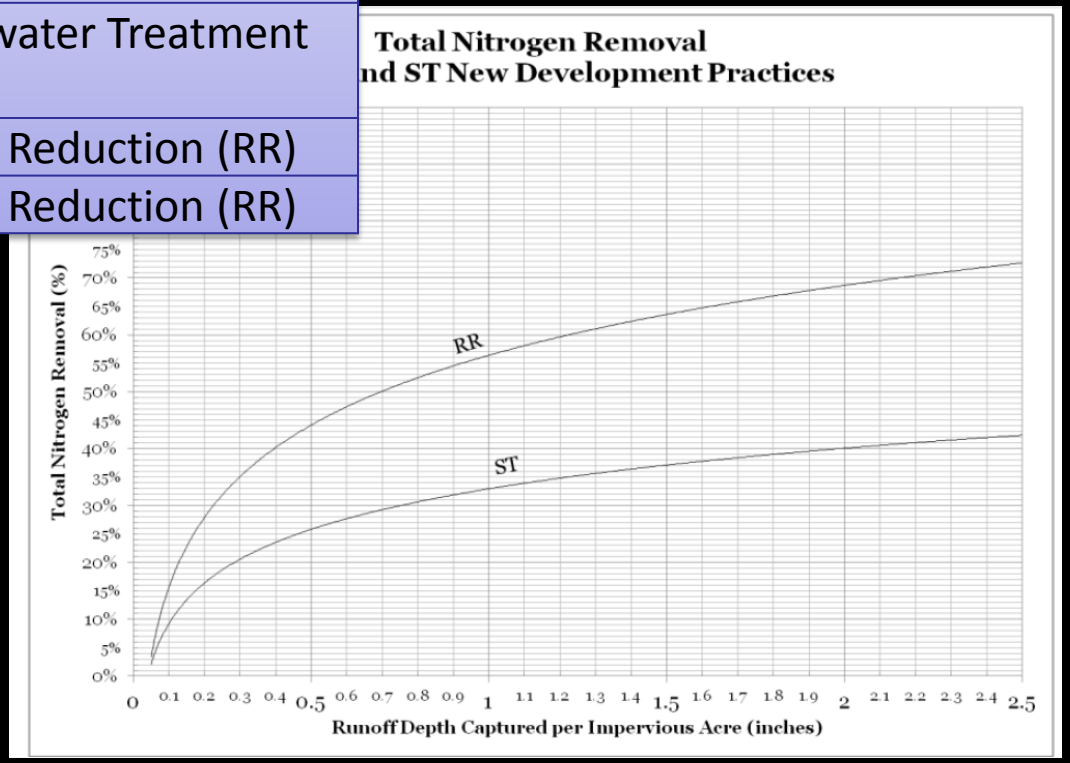
N Reduction Through Enhanced BMPs

Nitrogen Source Identification Report

- Due Year 4
- Delineate potential N sources
- ID potential retrofits
- 1 demonstration project by year 6

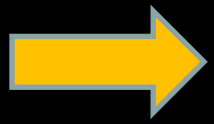
Tracking – Structural BMPs

Structural BMP	Classification
Infiltration Trench	Runoff Reduction (RR)
Infiltration Basin or other surface infiltration practice	Runoff Reduction (RR)
Bioretention Practice	Runoff Reduction (RR)
Gravel Wetland System	Stormwater Treatment (ST)
Porous Pavement	Runoff Reduction (RR)
Wet Pond or wet detention basin	Stormwater Treatment (ST)
Dry Pond or detention basin	Runoff Reduction (RR)
Water Quality Swale	Runoff Reduction (RR)



Lake and Pond Phosphorus TMDLs

EXCESSIVE PHOSPHORUS



- Reduced clarity
- Noxious scums
- Toxic blooms
- Surface waters choked with plant matter
- Low dissolved oxygen for aquatic life (e.g., fish)

Urban Stormwater Phosphorus

Tends to be associated with very fine particles ~ 40 microns

Much is washed from impervious surfaces with small amounts of rainfall (e.g., 0.3 inches)

Stormwater controls must have filtration component to be effective

LPCP Components

LPCP Component	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Legal Analysis															
Funding source assessment															
Define LPCP scope (LPCP Area)															
Calculate Baseline Phosphorus, Allowable Phosphorus Load and Phosphorus Reduction Requirement															
Description of planned nonstructural and structural controls															
Description of Operation and Maintenance (O&M) Program															
Implementation schedule															
Cost and Funding Source Assessment															
Complete written LPCP															
Full implementation of nonstructural controls.															
Required P reduction Milestone (20% or required reduction)															
Required P reduction Milestone (40% or required reduction)															
Required P reduction Milestone (70% or required reduction)															
Required P reduction Milestone (100% or required reduction)															

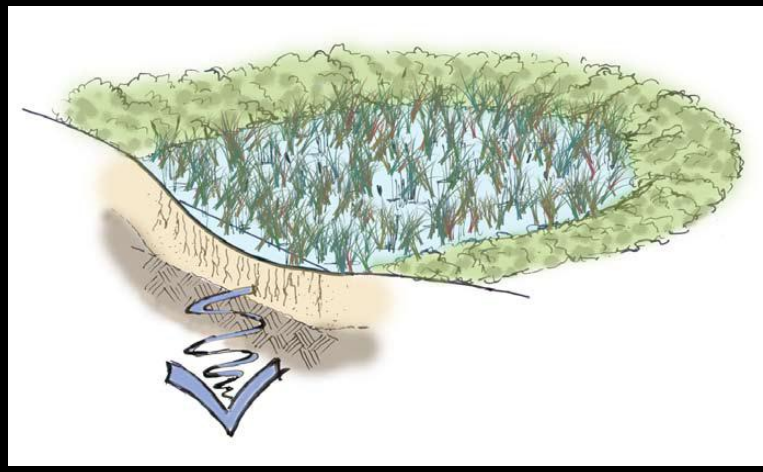
Enhanced Non-Structural Best Management Practices Eligible for Phosphorus Reduction Credits (BMPs)

- Enhanced non-structural Best Management Practices
  - Enhanced sweeping program (1-15% credit)
  - Semi-annual catch basin cleaning (2% credit for P)
  - No application of fertilizers containing phosphorus (50% credit for lawns)
  - Weekly leaf litter and organic debris collection program (5% credit for P)

Attachment 2 to App. F to Permit provides methodology for calculating default phosphorus reduction credits for enhanced non-structural Best Management Practices

Structural Best Management Practices for Phosphorus Reduction Credit

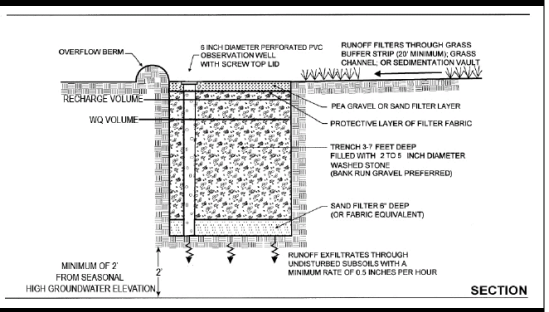
- Infiltration practices are highly effective at managing stormwater runoff
  - Surface infiltration (e.g., basins, swales, rain gardens)
  - Subsurface infiltration (e.g., trench and chambers)

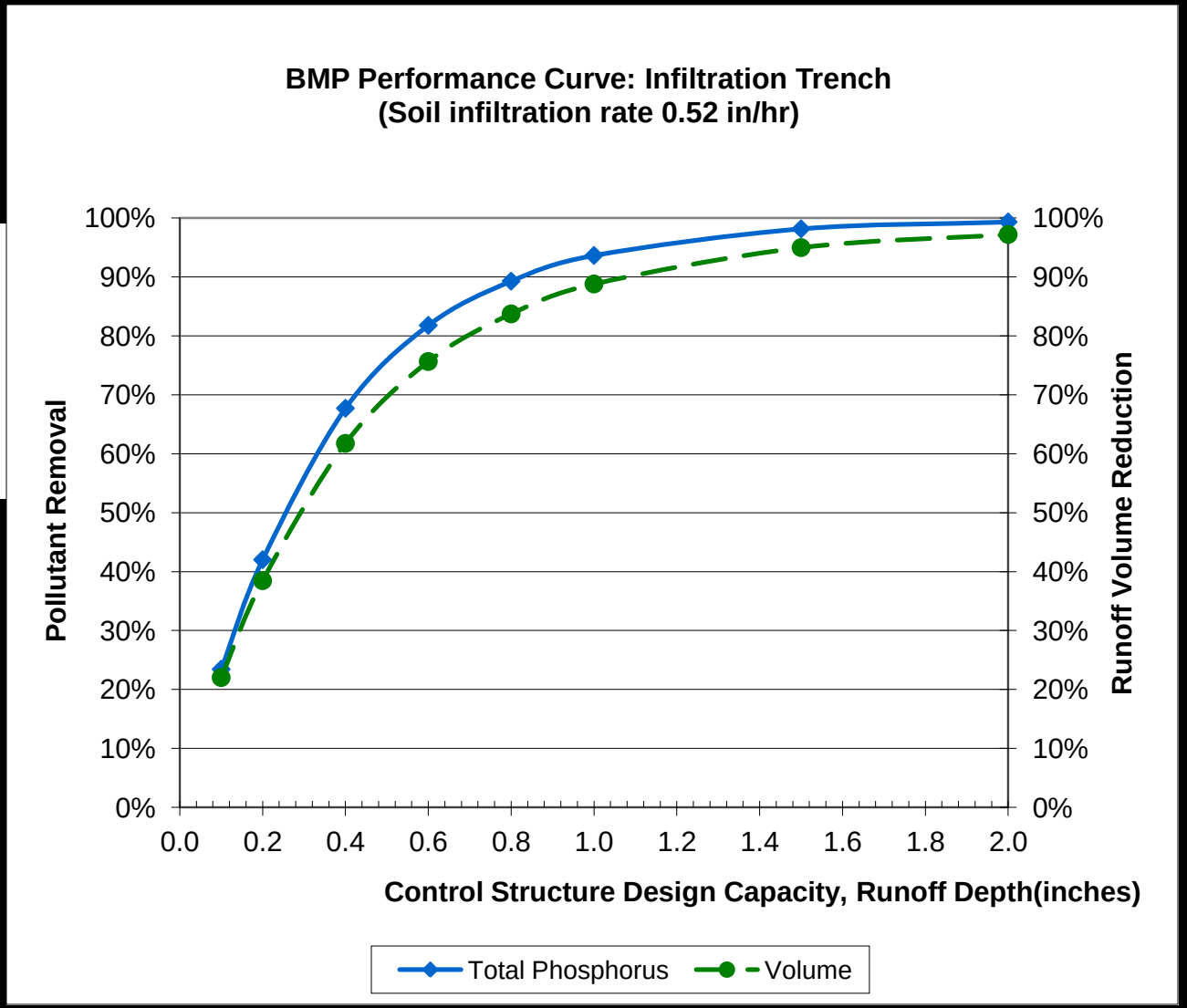


Excellent for phosphorus and bacteria removal and replenishing ground water aquifers

Long-Term Cumulative Performance Curve for Infiltration Trench

Attachment 3 to Appendix F of draft MA MS4 Permit





Other Structural BMPs for Phosphorus Reduction Credit (continued)

- Bio-filtration systems
- Filter systems
- Gravel wetlands
- Commercial or proprietary treatment systems
- Permeable pavements
- Etc.

Attachment 3 to App. F to the Permit provides a methodology to calculate phosphorus removal credits for several structural BMPs based on physical storage capacity

Discharges to Waterbodies *Without* an Approved TMDL

Additional requirements for Bacteria, Nutrients, Solids, Chloride, Metals and Oil and Grease

NSQD urban stormwater

Parameter	Count	Median	Geometric Mean	Minimum	Maximum	25%	75%
Phosphorus Total (mg/l)	1967	0.25	0.26	0.02	10	0.15	0.42
Total Nitrogen (mg/L)	1763	2.0	2.0	1.0	7.0	1.0	3.0
Fecal Coliform (colonies/100 ml)	524	4500	3578	2.0	5230000	800	26000
Total E Coli (colonies/100 ml)	25	1100	1366	10	35000	460	8500
Chloride (mg/l)	57	6.0	7.0	1.0	350	4.0	10
Turbidity (NTU)	12	106	98	16	630	43	176
Total Suspended Solids (mg/l)	2046	45	46	1.0	2405	22	95
Oil and Grease Total (mg/l)	390	5.0	4.8	0.2	570	2.5	8.5
Zinc Total (ug/l)	1592	105	89	1.4	3050	50	190

Discharges To Bacteria Impaired Waters

- If discharge contains illicits remove in 60 days

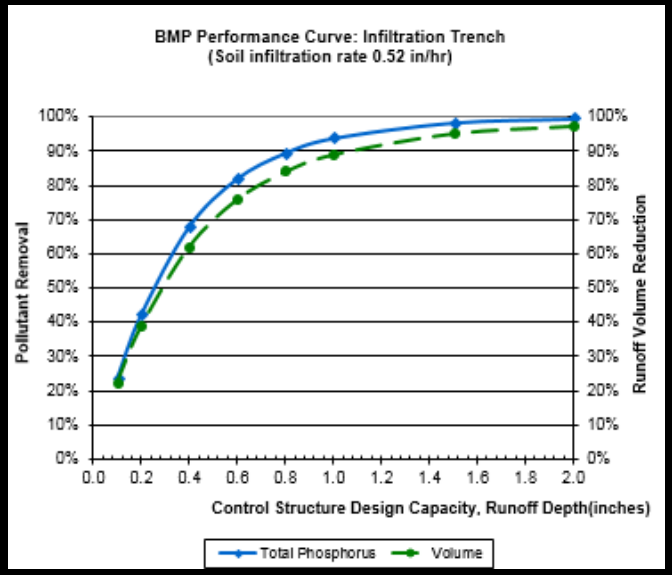
- Additional BMPs
  - Public Education
  - IDDE

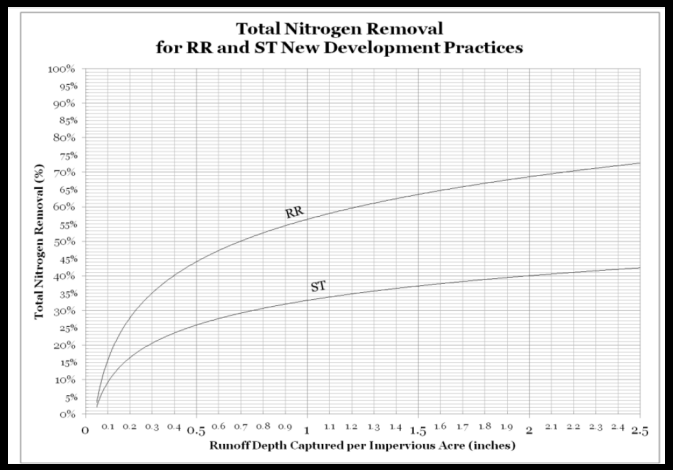
Discharges To Nutrient Impaired Waters or their Tributaries

Enhanced BMPs

- Public Education
- New Development/ Redevelopment
- Good Housekeeping

Nutrient Source Identification Report





- Due Year 4
- Delineate potential N or P sources
- ID potential retrofits
- 1 demonstration project by year 6
- Tracking of N or P reductions through implementation of structural BMPs

Discharges To Chloride Impaired Waters

Salt Reduction Plan

- Track the amount of salt applied
- New or modified equipment
- Adopt application rate guidelines
- Training for applicators
- Equipment Calibration
- No Salt Zones

Discharges To Chloride Impaired Waters (cont)

Additional BMPs

- Mechanism to ensure private industry and commercial sites cover salt piles
- Public Education
- New Development and Redevelopment

Discharges To Sediment, Metals or Oil and Grease Impaired Waters

- If discharge contains illicits remove in 60 days
- Additional BMPs
  - New Development/ Redevelopment
  - Good Housekeeping

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Impaired waters, Algae, Bacteria, Sediment/trash, Salt, LID Street images, BMP near reservoir, Catch Basin - Credit: EPA

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Long Island Plume - http://www.wnpr.org

Long Island Sound Watershed - USGS

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All pictograms sourced from EPA HQ

Thank you

Questions ?

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Draft Permit Documents: http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html