Strategies for Surface Water Monitoring and Assessment

10-Year Vision for Watershed Planning in Massachusetts

Clean Water Act Vision Workshop: Watershed Planning Program
April 26, 2017

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Goals for Today

* Engage stakeholders in strategic planning
* Share state strategies and elements of a balanced monitoring program
* Expand MassDEP's understanding of monitoring conducted by non-DEP entities
* Build relationships and structures of collaboration to enhance-partnerships in data collection
* Generate ideas and receive feedback on how MassDEP can structure future engagement with stakeholders

* ***Follow-up workshops Fall of 2017***

Workshop Overview

MassDEP Perspective

* Background on CWA Programs and State's role
* MassDEP Monitoring & Assessment- baseline programs
* Challenges & Opportunities

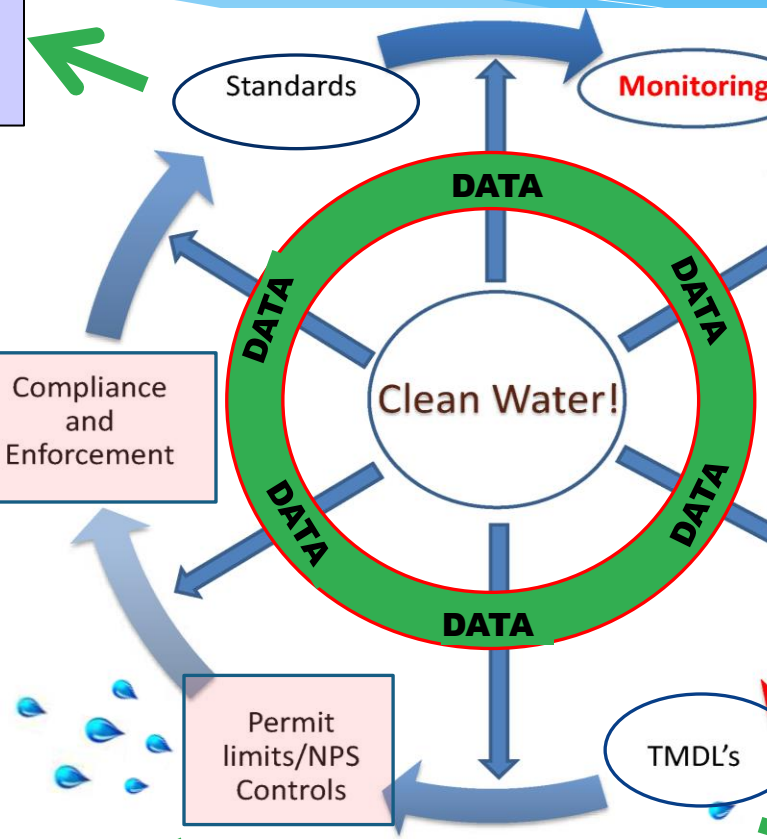
Panel and Breakout Sessions

* **Panel** - *Elements of a Balanced Monitoring Program*
* **Breakouts and group reports** - *What questions do we need to answer through monitoring? How is information used?*
* **Panel** –*Engagement & Integration for Monitoring & Assessment*
* **Collective Discussion -** *Engagement & Integration*

Clean Water Act – Management Process

Surface Water Quality Regulations
314 CMR 4
(review every 3 years)

Monitoring Strategy
(review every 10 years, and as needed)
Monitoring Plans
(annually)



Regions

Integrated Report
303(d), 305 (b)
(Every 2 years)

Regions

TMDL Reports --All Impaired Waters
(e.g., MEP, Boston Harbor)

CWA Monitoring Objectives

1. Assess the status or condition of Massachusetts' waters
   - Integrated Report
2. Develop, implement and evaluate pollution control strategies
   - NPDES Permits, TMDLs, Alternative Plans (NPS Watershed Plans)
3. Develop policies and standards and identify/explore emerging issues
   - E.g., Biological criteria, emerging contaminants
4. Measure the effectiveness of water quality management programs
   - Are standards met? (success stories, trends, delisting of impaired waters)

MassDEP Surface Water Strategic Monitoring Goal

Plan and implement a comprehensive monitoring program that serves all water management needs and addresses all State waters, including all waterbody types (e.g., streams, rivers, lakes, reservoirs, estuaries, coastal areas, wetlands and groundwater.

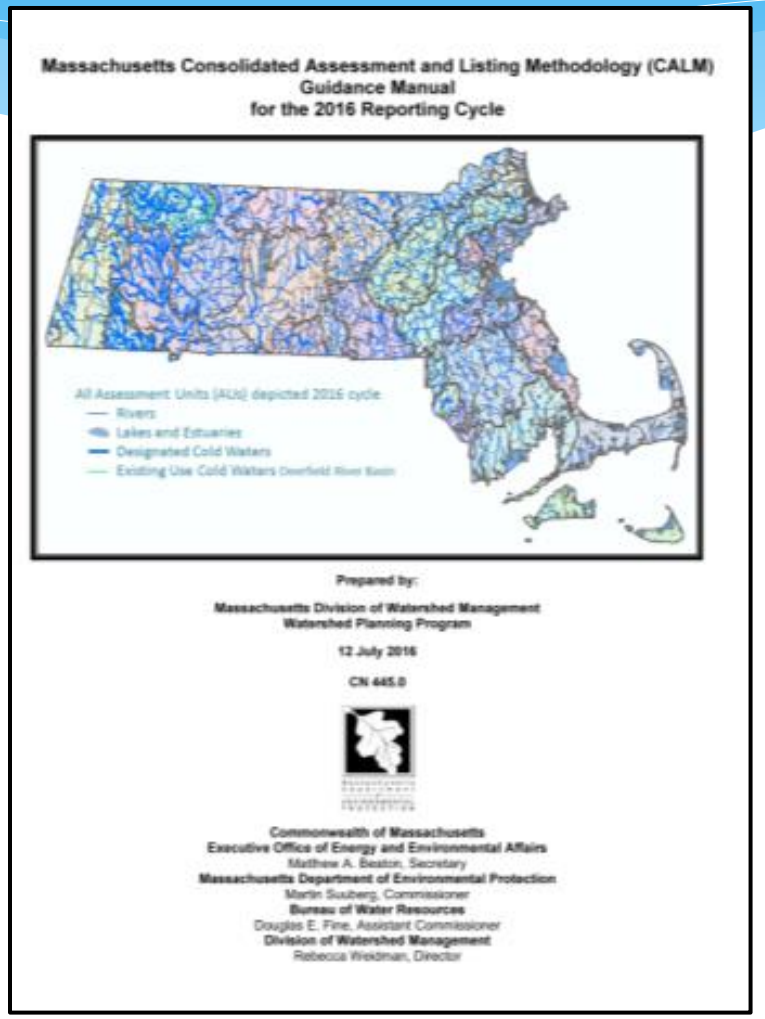
- ***Statewide Monitoring Strategy and Annual Plans***

MassDEP Strategic Assessment Goal

* *Document the methods for assessing surface water quality conditions for MassDEP staff and the public*

➢ ***Consolidated Assessment and Listing Methodology (CALM)***

www.mass.gov/eea/docs/dep/water/resources/07v5/2016calm.pdf



Massachusetts Consolidated Assessment and Listing Methodology (CALM)
Guidance Manual
for the 2016 Reporting Cycle

Prepared by:

Massachusetts Division of Watershed Management
Watershed Planning Program

12 July 2016

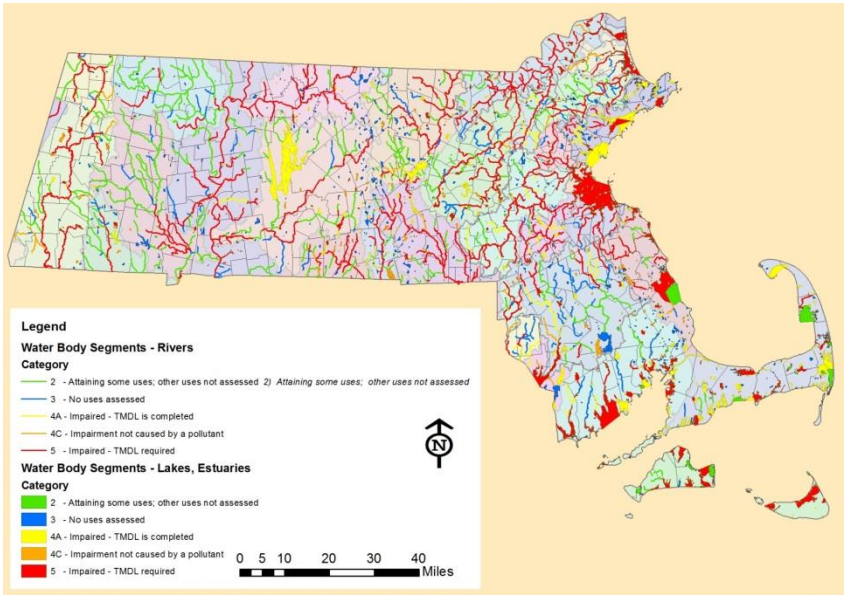
CN 445.0

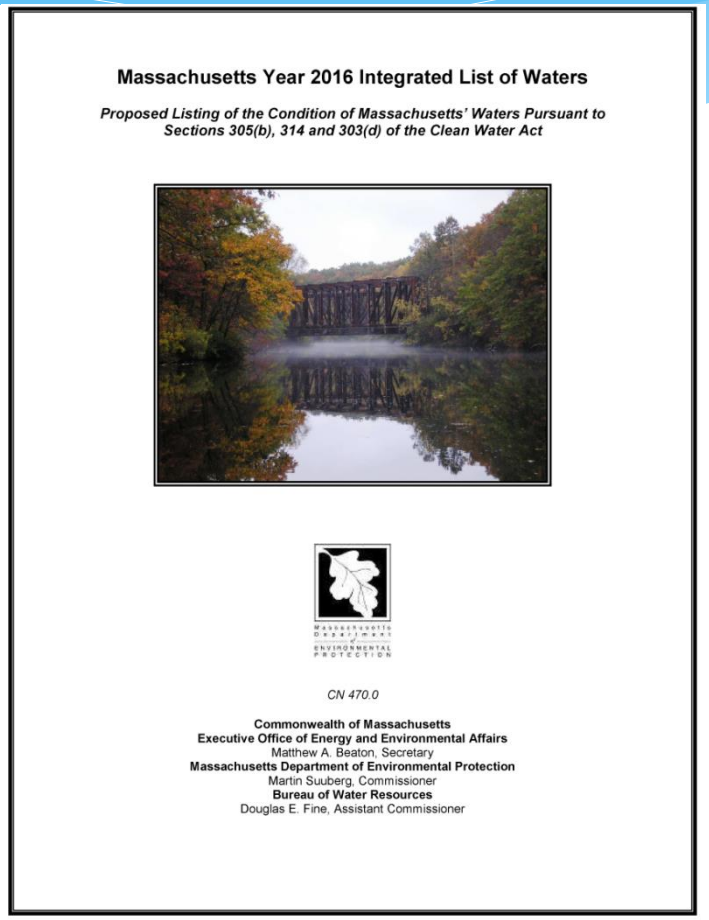
Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Matthew A. Beaton, Secretary
Massachusetts Department of Environmental Protection
Martin Suuberg, Commissioner
Bureau of Water Resources
Douglas E. Fine, Assistant Commissioner
Division of Watershed Management
Rebecca Weidman, Director

MassDEP Strategic Assessment Goal

* *Complete and document water quality assessment decisions in a timely and defensible manner using available and appropriate data*

➢ ***Integrated Report***





Massachusetts Year 2016 Integrated List of Waters

Proposed Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act

CN 470.0

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Massachusetts Surface Waters

Water Body Type	Value (units)
Rivers and Streams	13, 919 (miles)
Lakes and Ponds	196,121 (acres)
Coastal Waters	2,726 (sq miles)
Coastal Tidal Shoreline	1,519 (miles)
Wetlands	1,149,712 (acres)

Current Baseline Monitoring Program

* **Probabilistic**
  * Wadeable Streams (182 streams/state 2011-2015)
  * Lakes (75 lakes/state 2016-2018)
* **Targeted**
  * Reference Site Network (27 streams/state)
  * Effectiveness Monitoring (5 sites 2016)
  * Cyanobacteria bloom response (29 sites 2016)
  * Fish Toxics (varies)
  * Bacteria Source Tracking Southeast Region (20 sub watersheds)
  * Monitoring to Assess Climate Change (5 sites)

Current Baseline Monitoring Program

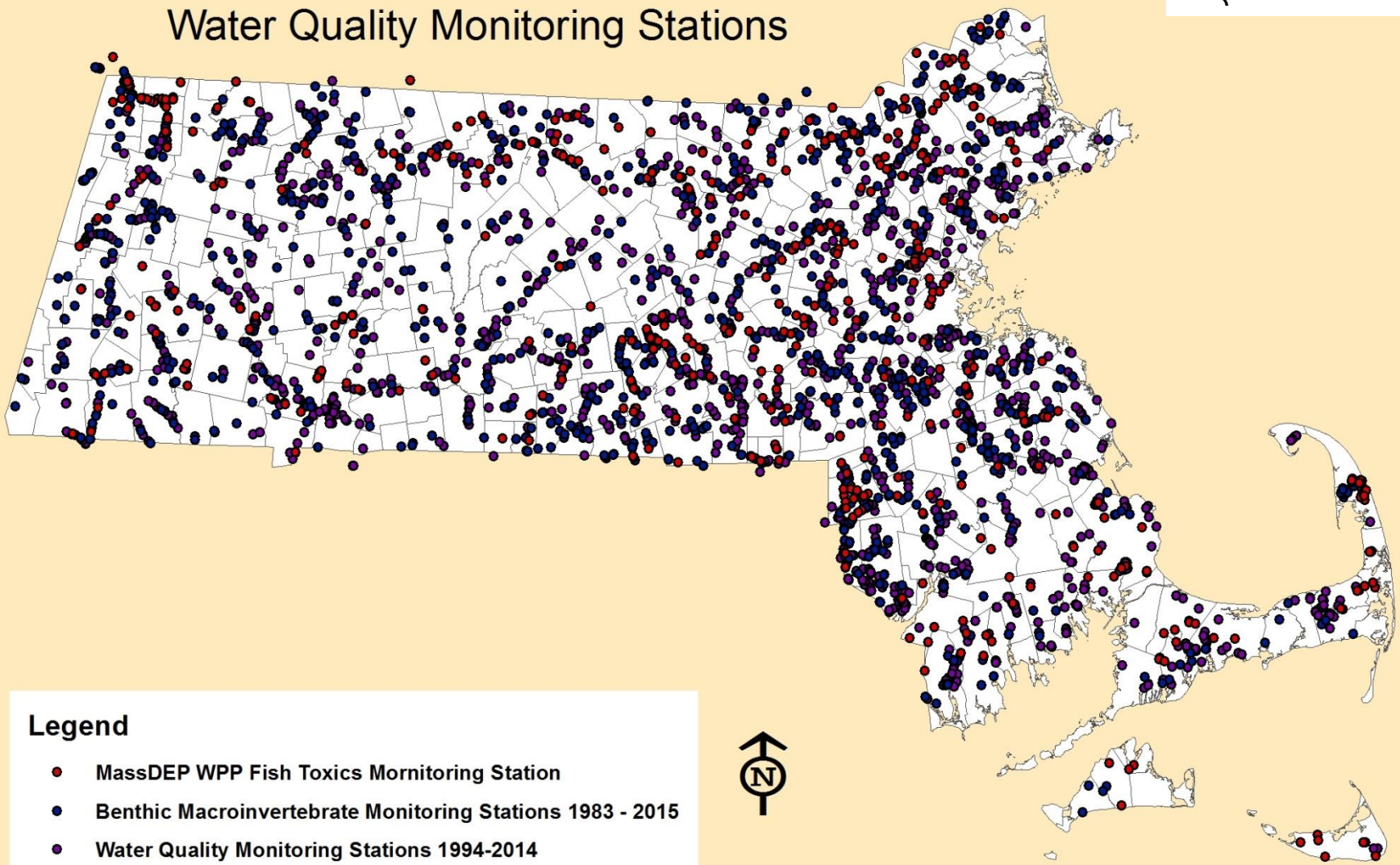
Targeted (cont.)

* Total Maximum Daily Load - Nutrient reduction
  * **Long Island Sound** (VT-NH/MA flow gauge)
  * **Mt Hope Bay/Taunton River** (2 Dissolved Oxygen Buoys)
  * **Massachusetts Estuaries Project** (70 Embayments, water quality studies & modeling)
  * **Blackstone** (Stateline water quality station)
  * **Mystic River** (Field support river loading)
  * **Assabet** (Duckweed biomass surveys)
  * **Monponsett Pond** (water quality & modeling)
  * **White Island Pond** (water quality & modeling)

What is the challenge?

MassDEP WPP Fish Toxics, Benthic Macroinvertebrate and Water Quality Monitoring Stations

Benthic =946
FishTox = 428
WQ = 2618



Legend

- MassDEP WPP Fish Toxics Mornitoring Station
- Benthic Macroinvertebrate Monitoring Stations 1983 - 2015
- Water Quality Monitoring Stations 1994-2014

N

0 5 10 20 30 40
Miles

What is the Opportunity?

Optimize collaboration between MassDEP and non-DEP monitoring programs

Water Quality Data Sources

Massachusetts State Agencies

- MassDEP- Drinking Water
- MassDEP- Wetlands and Waterways
- MassDEP- Watershed Planning and Permitting
- MassDEP- - Massachusetts Estuaries Project (MEP)
- MassDEP- - Wastewater Management
- Office of Coastal Zone Management (CZM)
- Department of Conservation and Recreation (DCR)
- Department of Fish and Game (DFG)- Division of Marine Fisheries
- DFG - Division of Fisheries and Wildlife
- Department of Public Health (DPH)
- Massachusetts Water Resources Authority (MWRA)
- MassGIS land use, impervious cover

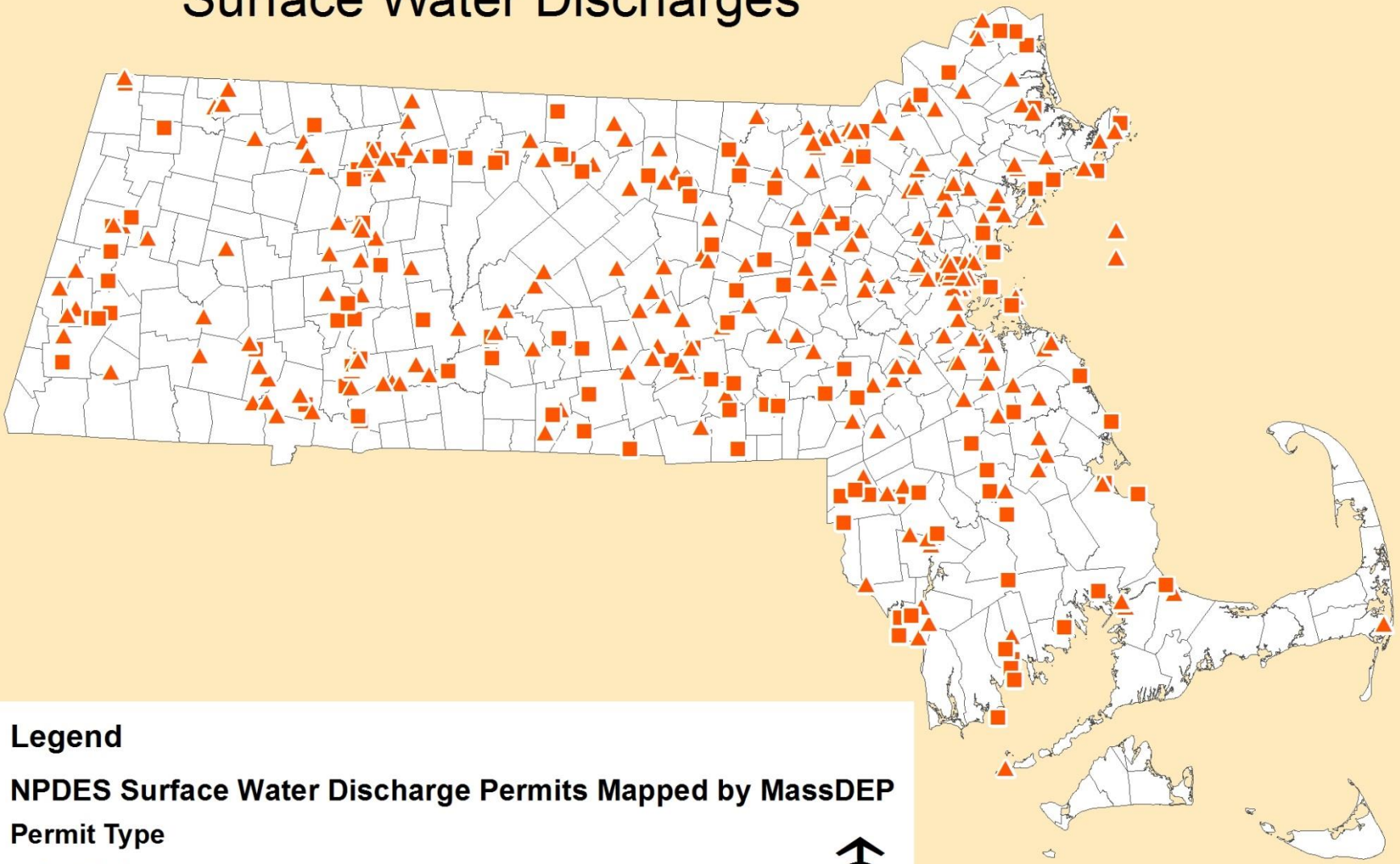
Federal Agencies

- U.S. Geological Survey
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- National Oceanographic and Atmospheric Administration

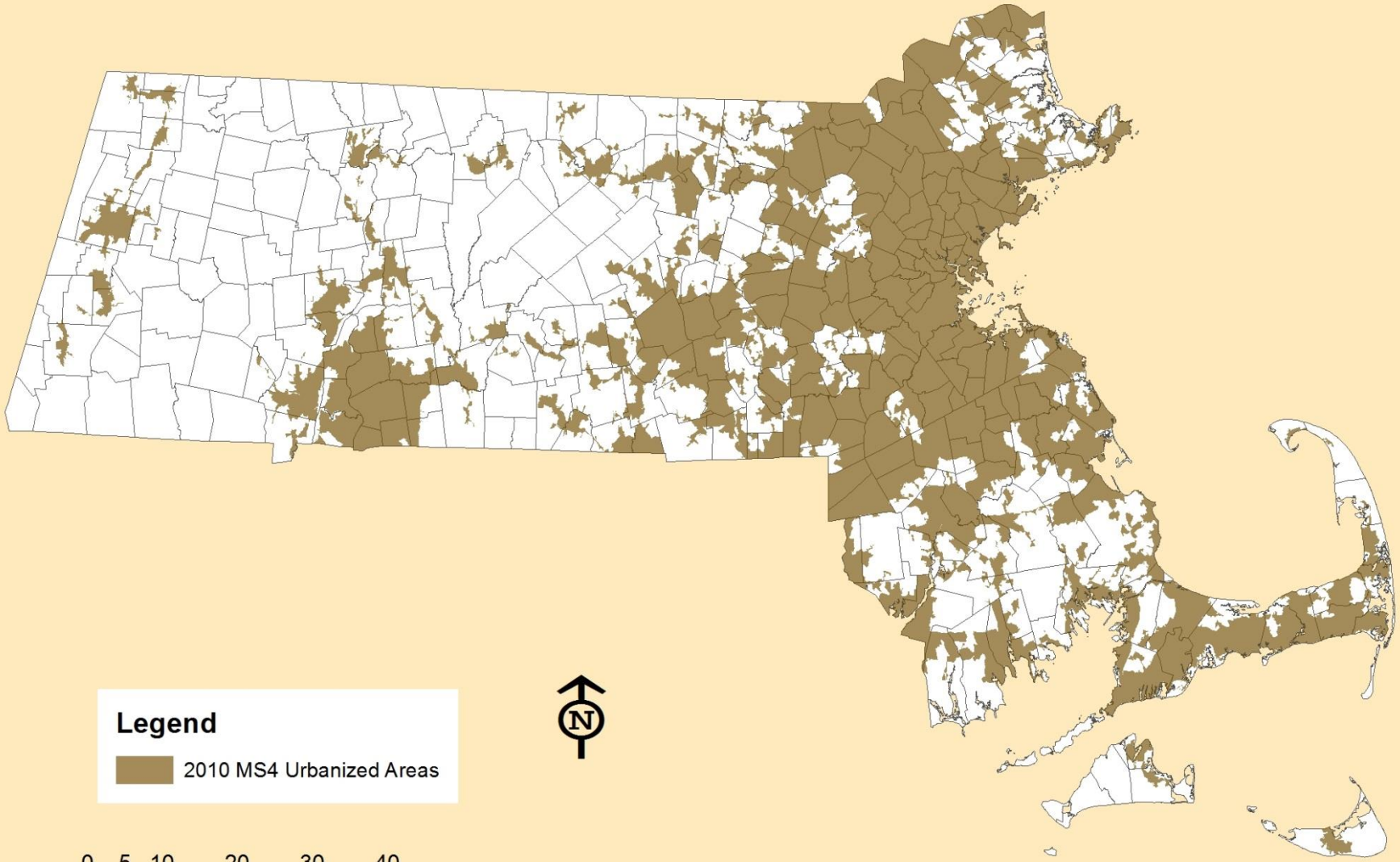
Other Sources

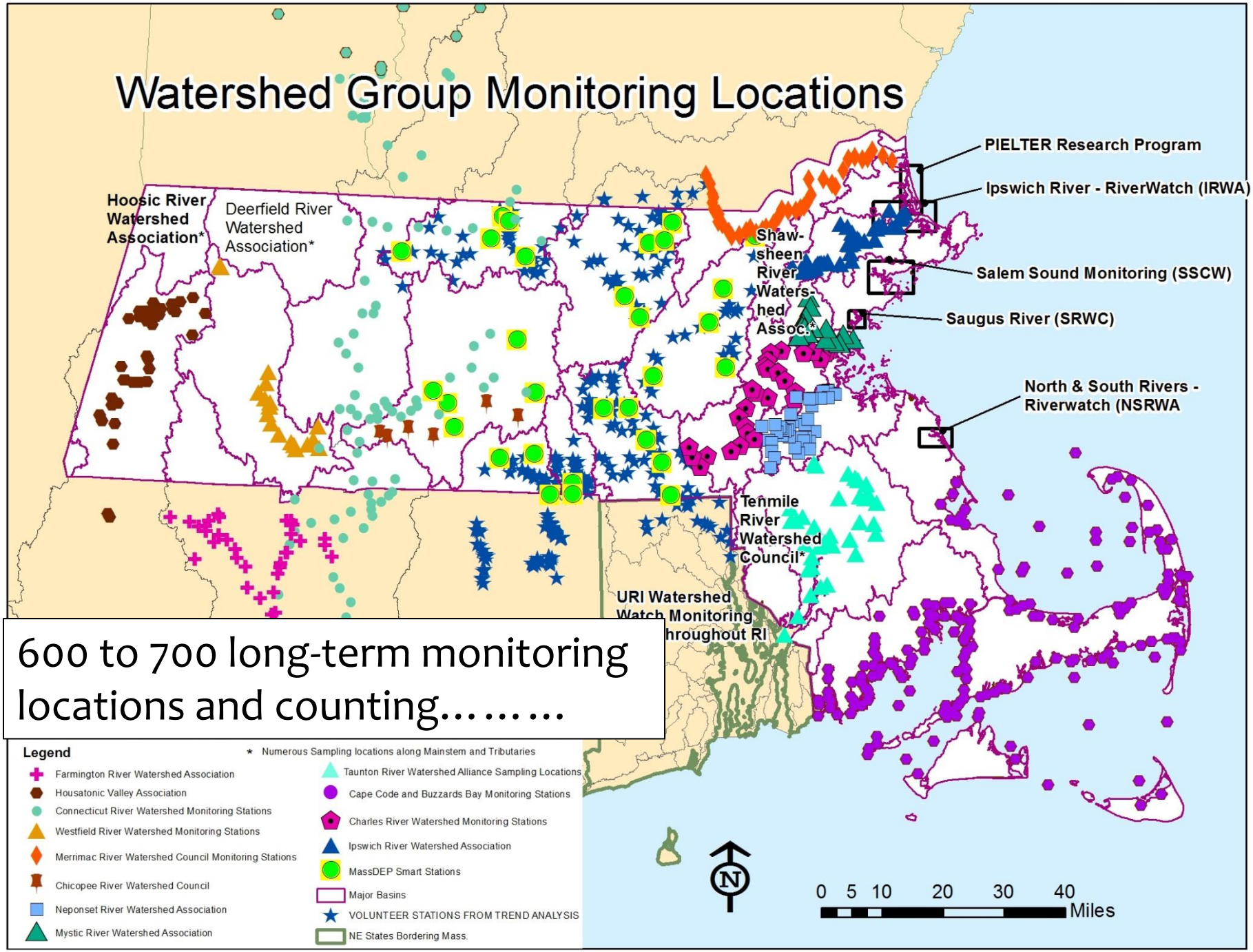
- Massachusetts Water Resources Research Center
- Colleges, Universities & academic institutions
- Watershed and lake associations
- Citizen monitoring programs
- Municipal Conservation Commissions
- NPDES Permit Monitoring Requirements
- Municipal Facilities Plans
- Environmental consultants

Massachusetts 314 CMR 3 Surface Water Discharges



MS4 Urbanized Areas in Massachusetts




Watershed Group Monitoring Locations
PIELTER Research Program
Ipswich River - RiverWatch (IRWA)
Salem Sound Monitoring (SSCW)
Saugus River (SRWC)
North & South Rivers - Riverwatch (NSRWA
Hoosic River Watershed Association*
Deerfield River Watershed Association*
Shaw-sheen River Waters-hed Assoc.*
Tenmile River Watershed Council*
URI Watershed Watch Monitoring hroughout RI
600 to 700 long-term monitoring locations and counting……..
Legend
★ Numerous Sampling locations along Mainstem and Tributaries
Farmington River Watershed Association
Housatonic Valley Association
Connecticut River Watershed Monitoring Stations
Westfield River Watershed Monitoring Stations
Merrimac River Watershed Council Monitoring Stations
Chicopee River Watershed Council
Neponset River Watershed Association
Mystic River Watershed Association
Taunton River Watershed Alliance Sampling Locations
Cape Code and Buzzards Bay Monitoring Stations
Charles River Watershed Monitoring Stations
Ipswich River Watershed Association
MassDEP Smart Stations
Major Basins
VOLUNTEER STATIONS FROM TREND ANALYSIS
NE States Bordering Mass.
N
0 5 10 20 30 40
Miles

Summary

Challenge	Opportunity
➢ Resources are tight	➢ Leverage partnerships and cross-program integration (4 mgmt. goals)
➢ Data collection is expensive	➢ Optimize data usability – increase consistency of QA
➢ Increasing number of data collectors	➢ Technology improves opportunities for data sharing
➢ Many data gaps	➢ Align MassDEP and non-DEP monitoring activities

Rowing together to Protect and Restore the Waters of the Commonwealth