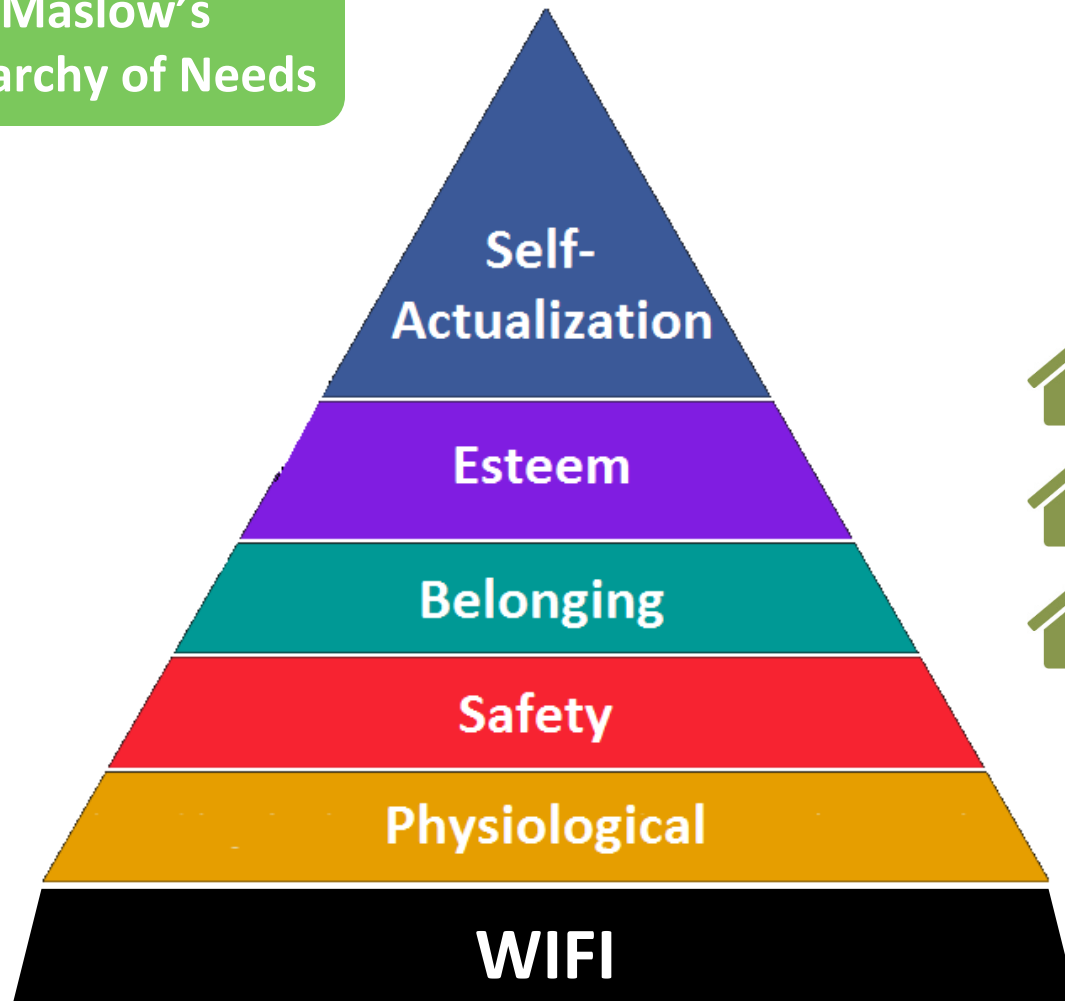




Bob Hartzel, CLM, CPESC
Principal

Massachusetts Watershed Based Plans

Maslow's
Hierarchy of Needs



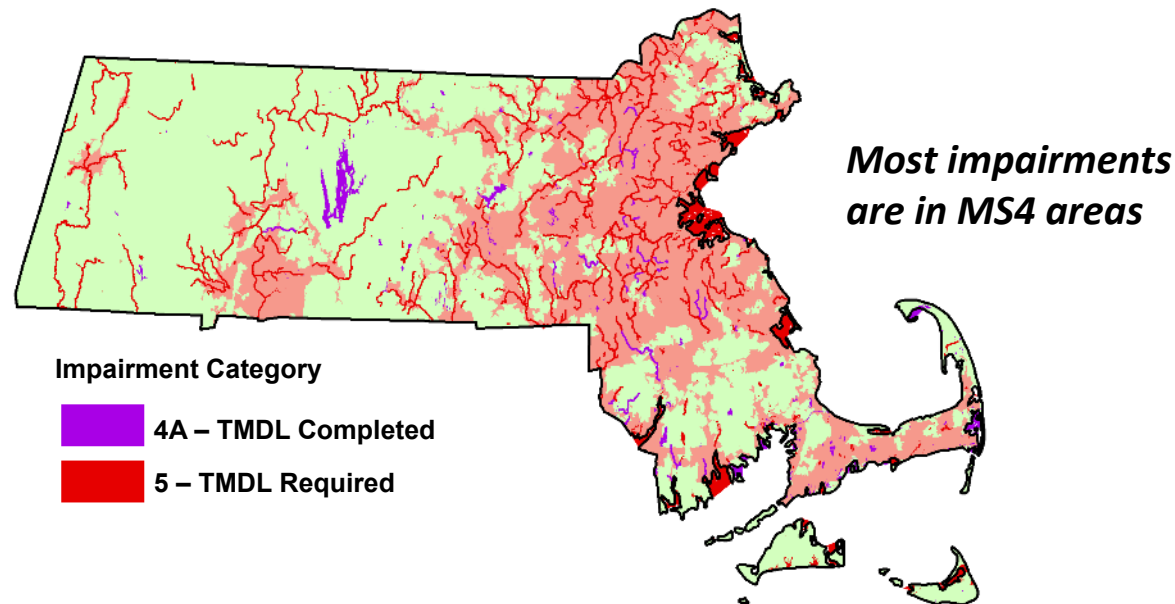
or



Massachusetts Watershed Based Plans

Massachusetts s.319 Program Challenges

- Nearly half of MA regulated as MS4
- 319 funds cannot* be applied to regulated stormwater
- Problems require complex, multi-year projects
- An integrated approach to polluted runoff is needed



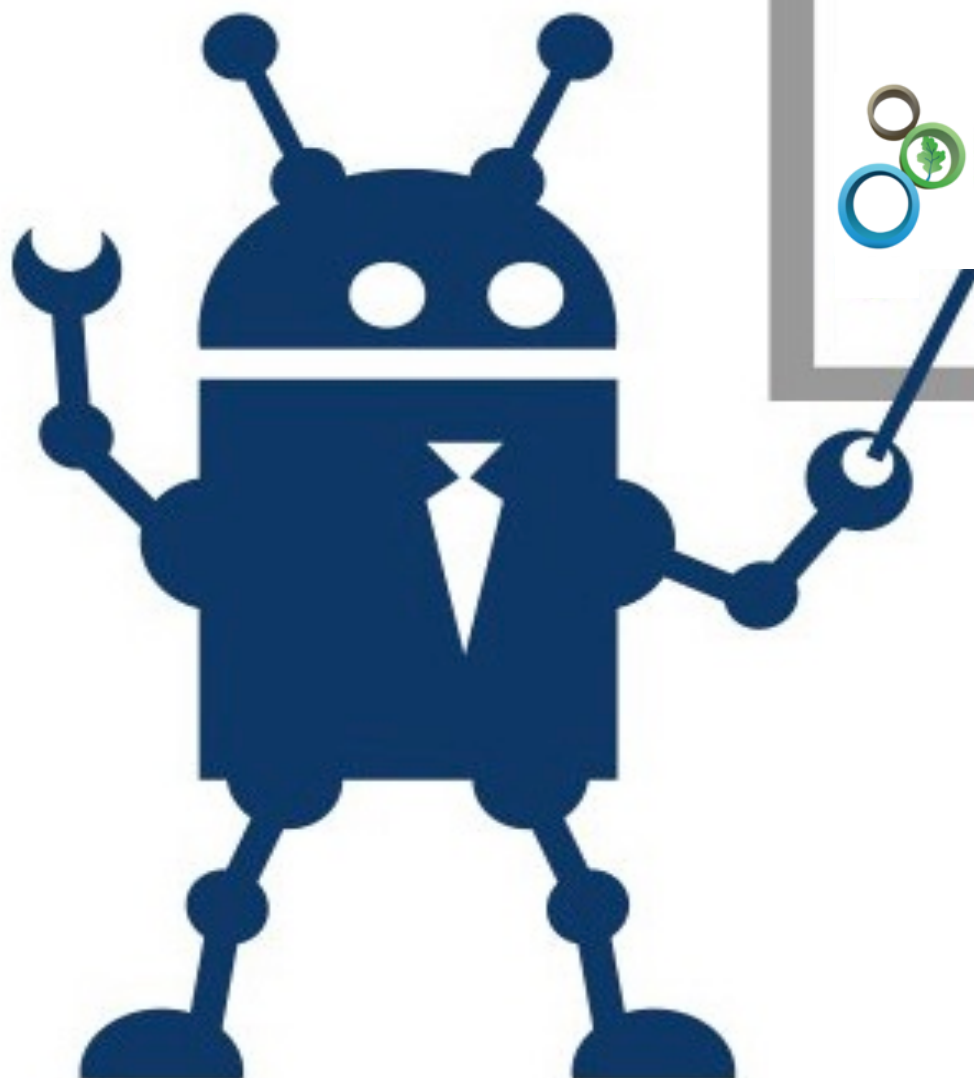
Massachusetts Watershed Based Plans

WBPs not just for 319s!

- MS4 SWMPs
- TMDL program vision / alternative TMDLs
- Lake /watershed groups
- Municipal planning efforts
- Education/outreach
- Partner programs and agencies



Project Vision



Project Vision

**Thousands of watersheds - carefully
tailored to the correct scale for planning**



Rivers



Lakes/Ponds



**Coastal
Watersheds**



MS4s

Project Vision



Simplify and support statewide WBP development with web-based **resources, tools, and guidance.**

9 Required Elements of a WBP

- A. ID causes /sources of pollution requiring control.
- B. Determine pollutant load reductions needed.
- C. Develop measures to achieve water quality goals.
- D. Determine technical/financial assistance needed.
- E. Information/education component.
- F. Develop implementation schedule.
- G. Develop interim milestones to track implementation.
- H. Develop criteria to measure progress towards goals.
- I. Monitoring component.



choose your watershed



review & add information sources



develop your plan

The 9 Elements

Element A:

Identify *causes and sources* that need to be controlled to achieve necessary pollutant load reductions.



The 9 Elements

Element B:

Determine ***pollutant load reductions*** needed to meet water quality goals



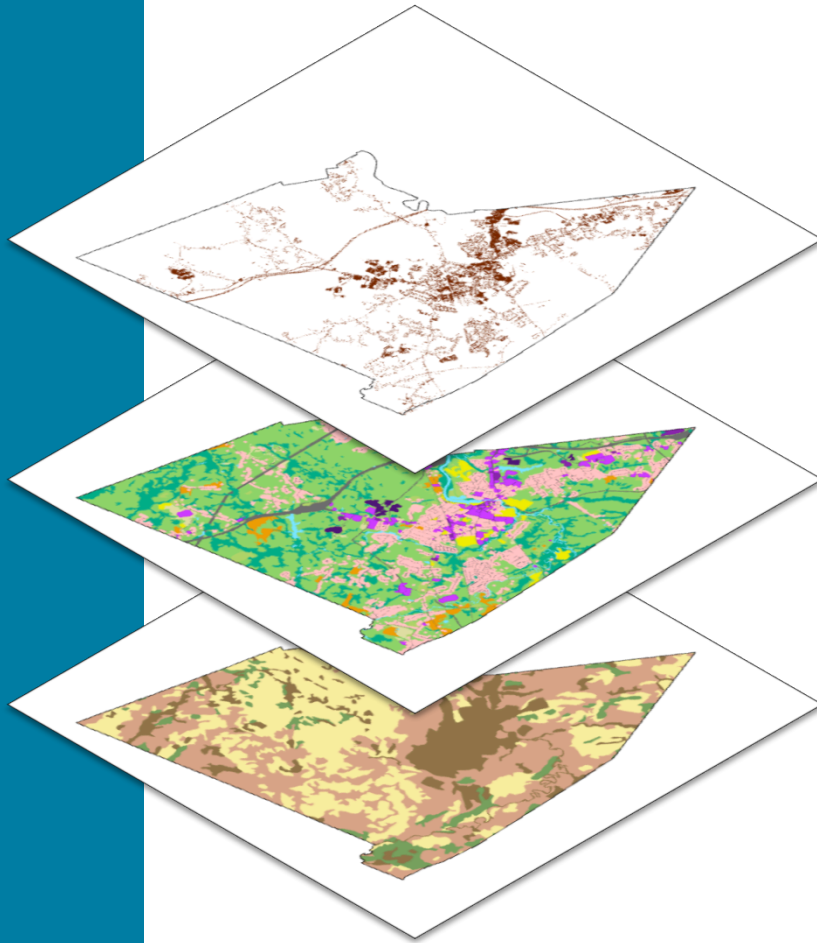
The 9 Elements

Element C:

Develop *management measures* to achieve water quality goals.



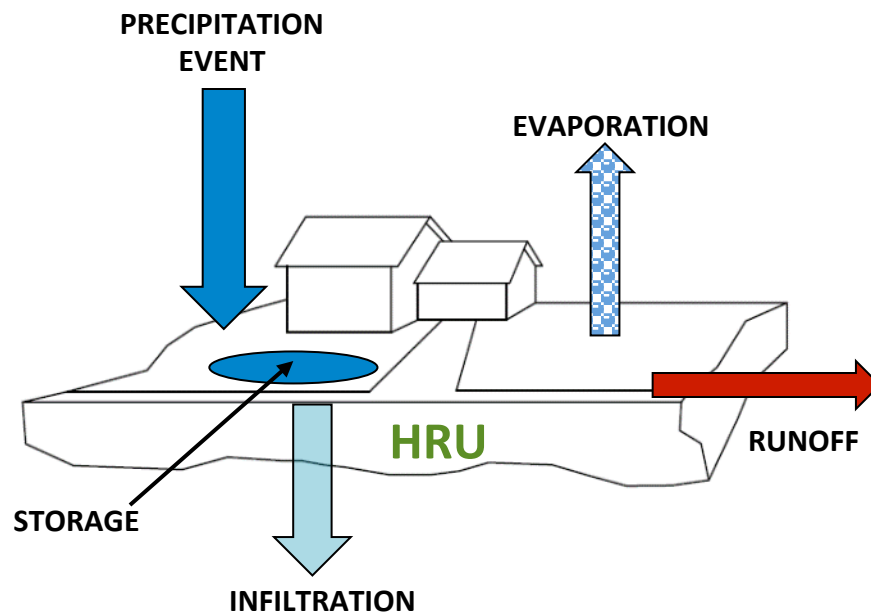
Water Quality Modeling



Hydrologic Response Unit (HRU) Characterization:

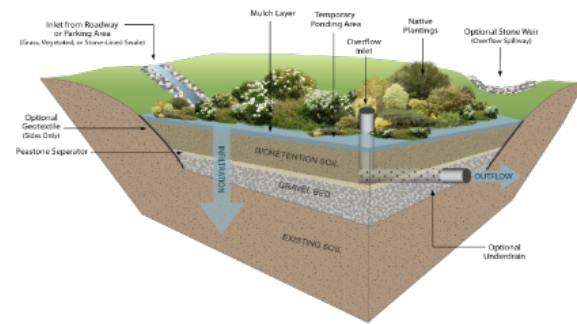
- Impervious Cover (MassGIS)
- Land Use (MassGIS)
- Soil Hydrologic Group (USDA)

Water Quality Modeling



Hydrologic Response Unit (HRU)

Used to calculate annual
pollutant loads



BMP

Estimate performance for
P, N and TSS...and cost

The 9 Elements

Element D:

Estimate the *technical and financial assistance* needed to implement the plan.



The 9 Elements

Element E: Public Information and Education



The 9 Elements

Element F: Implementation Schedule

Element G: Interim Measureable Milestones



The 9 Elements

Element H: Criteria to measure progress

Element I: Monitoring



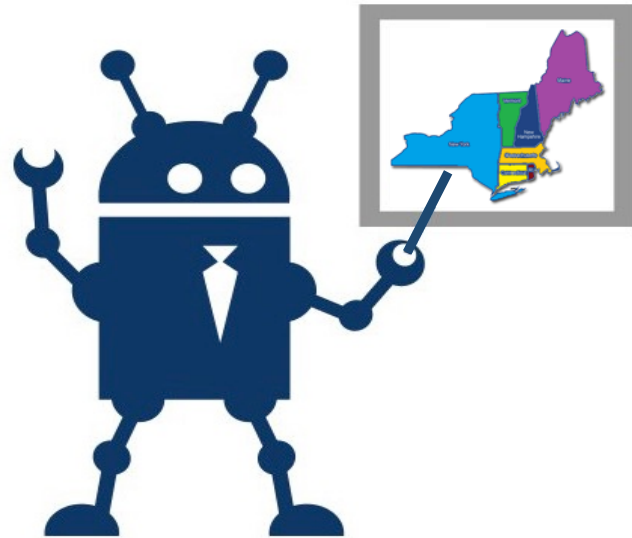


MASSACHUSETTS watershed·based plans

Get Started!



WBP Adaptations?



- **Alternate modeling approaches**
- **Include lake trophic modeling**
- **Unified approach to river/lake watersheds**
(make sure confluence points and “pour points” are accurate)
- **Incorporate state-specific resources**
 - [NHDES 2014 Surface Water Quality Assessment Viewer](#)
 - [RI MS4 Stormwater Discharge Outfall Viewer](#)
 - [CT-ECO maps/geospatial data](#)



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