

Protection Planning in 303(d) Program

EXAMPLES FROM CONNECTICUT

Building Protection into Watershed TMDLs

All Waters Approach

TMDL Includes:

- All waters with assessment unit ID
 - Impaired Waters (Restoration)
 - Waters that are not assessed or has insufficient information (Protection)
 - Fully Supporting Waters (Protection)
- Waters without Assessment Unit ID
 - To be added to TMDL in future when ID established

Legend

- Bacteria Monitoring Station
- Interstate
- US Route
- State Route
- State Boundary
- - - - Town Boundary
- CT 2020 Recreation Assessment Rivers**
 - Fully Supporting
 - Insufficient Information; Not Assessed
 - Not Supporting
- CT 2020 Recreation Assessment Lakes**
 - Fully Supporting
 - Insufficient Information; Not Assessed
 - Not Supporting
- Subregional Basin Study Area**
 - Muddy River
 - Unassessed Stream
 - Marsh
 - Unassessed Pond/Lake

Restoration Segments

- 1 Impaired*

Protection Segments

- 8 Fully Supporting
- 2 Insufficient Information

* TMDL Commitment = 1 segment

Water Quality Assessments French River Subregional Basin

Legend

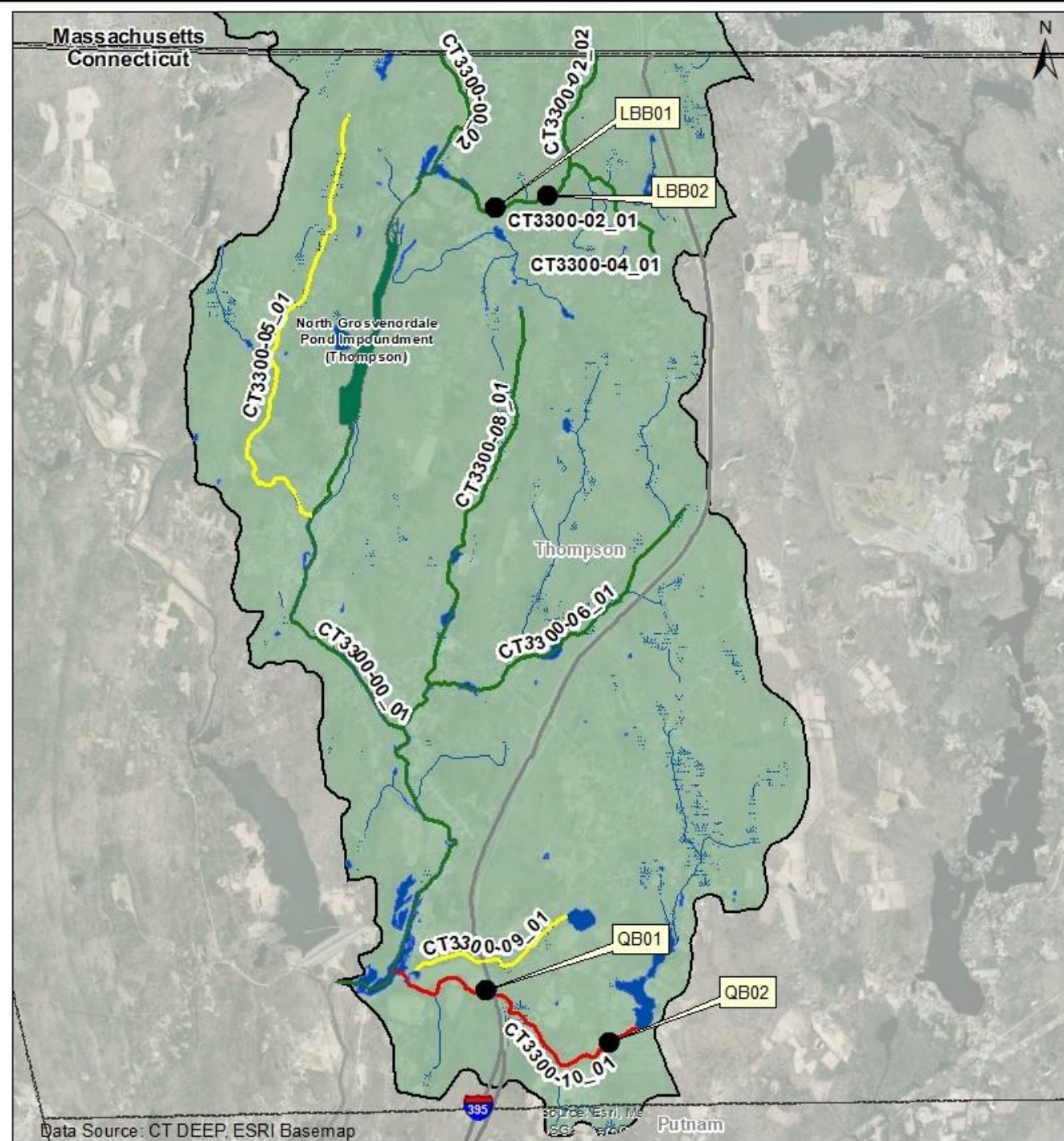
- Bacteria Monitoring Station
- Interstate
- US Route
- ▭ State Boundary
- - - Town Boundary
- Marsh
- Unassessed Pond/Lake
- Unassessed Stream
- CT Subregional Basin Study Area**
- French River
- CT 2020 Recreation Assessment Rivers**
- Fully Supporting
- Insufficient Information; Not Assessed
- Not Supporting
- CT 2020 Recreation Assessment Lakes**
- Fully Supporting



Created 2023



0 1 2 Miles



Restoration Segments

- 4 Impaired*

Protection Segments

- 2 Insufficient Information
- 6 Not Assessed

* TMDL Commitment
= 2 segment

Water Quality Assessments

Little River Subregional Basin

Legend

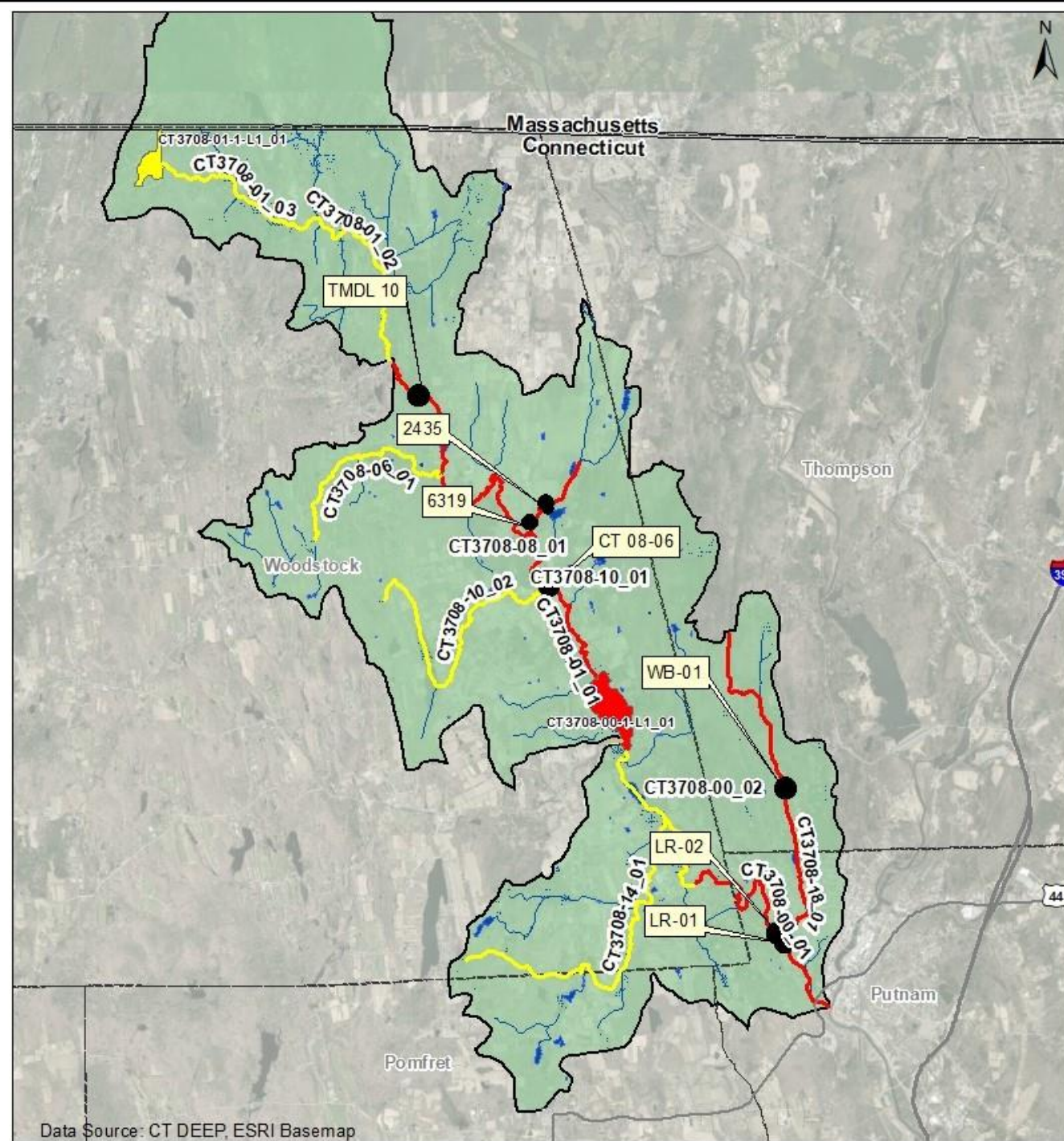
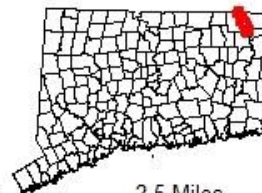
- Bacteria Monitoring Station
- Interstate
- US Route
- ▭ State Boundary
- ▭ Town Boundary
- ▨ Marsh
- Unassessed Pond/Lake
- Unassessed Stream
- CT Subregional Basin Study Area**
- Little River
- CT 2020 Recreation Assessment Rivers**
- Insufficient Information; Not Assessed
- Not Supporting
- CT 2020 Recreation Assessment Lakes**
- Insufficient Information; Not Assessed
- Not Supporting

*Some station locations are approximate.
** Roseland Lake is impaired for recreation for nutrients.



Created by
CTDEEP 2023

0 1.25 2.5 Miles



Data Source: CT DEEP, ESRI Basemap

State Listing Categories to Track Waters with Plans in Place

EPA Category

CATEGORY 1

The waterbody is meeting all designated uses.

CATEGORY 2

The waterbody is meeting some not all designated uses.

CATEGORY 3

There is Insufficient information to determine if any designated uses are met.

CT Sub-Category

1TMDL- Standards met, TMDL in place

1R-Standards met, Restoration Plan in place

1P*-Standards met, Protection Plan in place

2TMDL-Standards met, TMDL in place

2R-Standards met, Restoration Plan in place

2P*-Standards met, Protection Plan in place

3TMDL-Insufficient information, TMDL in place

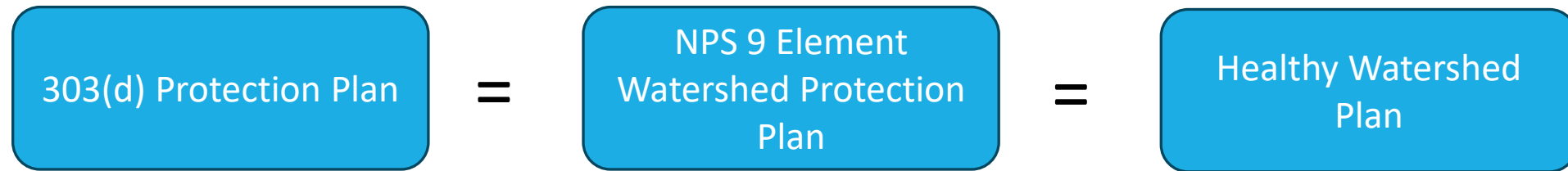
3R-Insufficient information, Restoration Plan in place

3P*-Insufficient information, Protection Plan in place

Developing a Protection Plan for 303d and
NPS Program Commitments:
A Work In Progress

Programmatic Approach for Protection Plans

General Principles

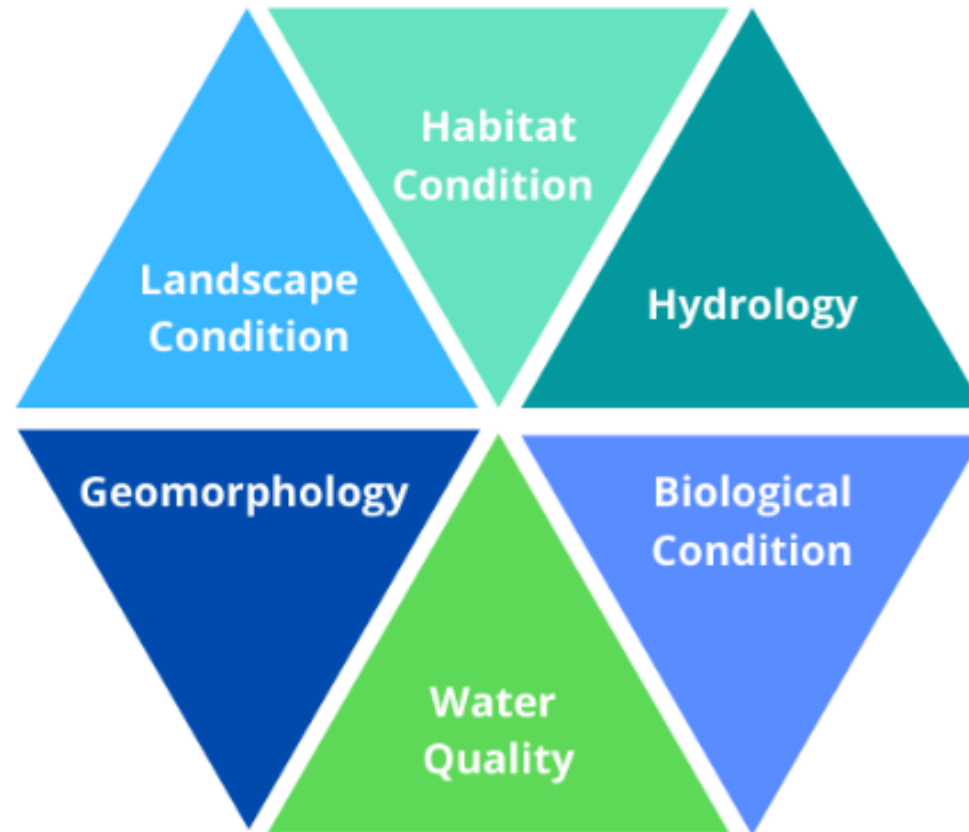


- Adjust components of plan to fulfill content recommendations for each program
- Allow for plan contributions from multiple agencies

Protection Plan Framework

Plan Components:

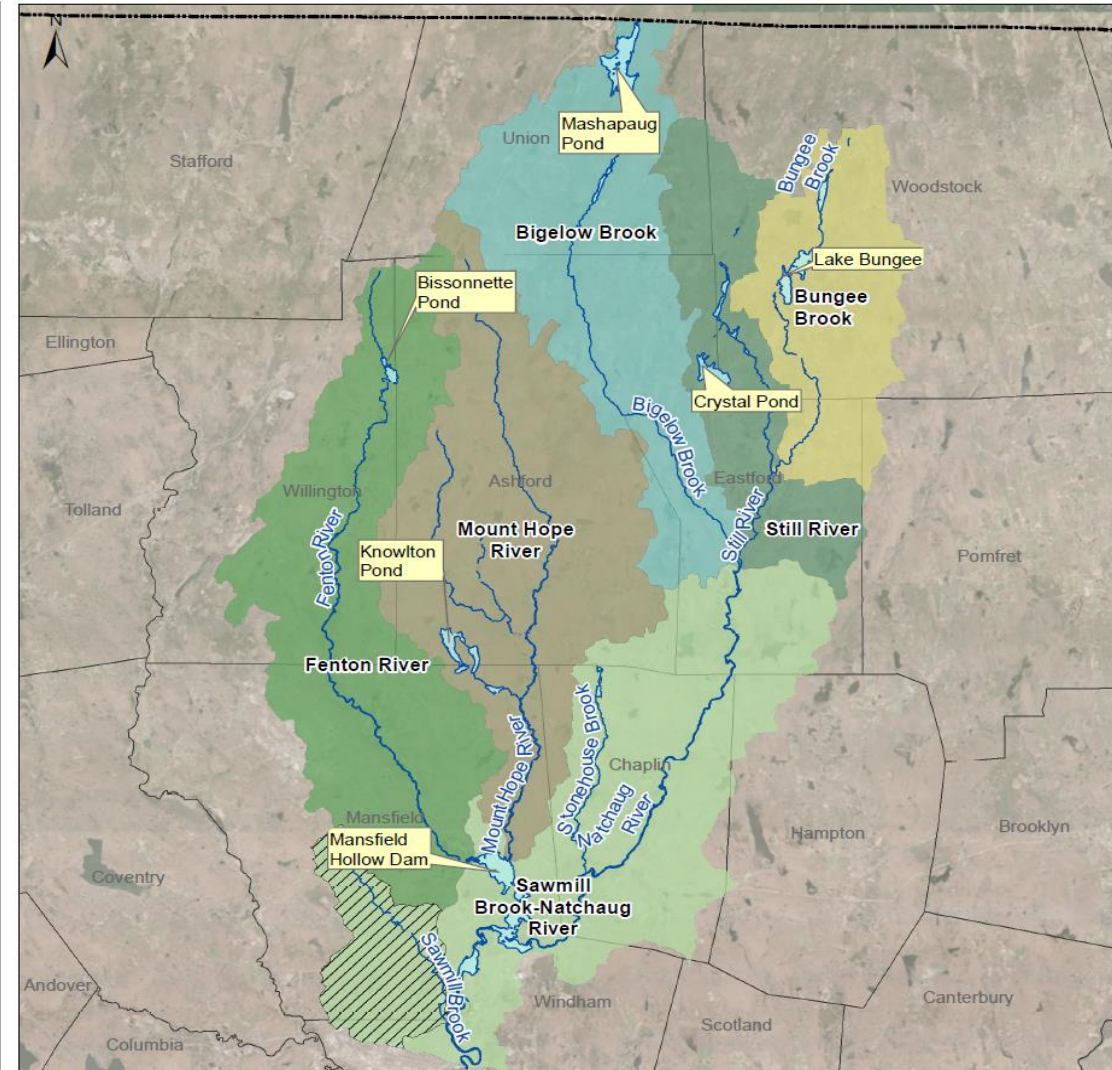
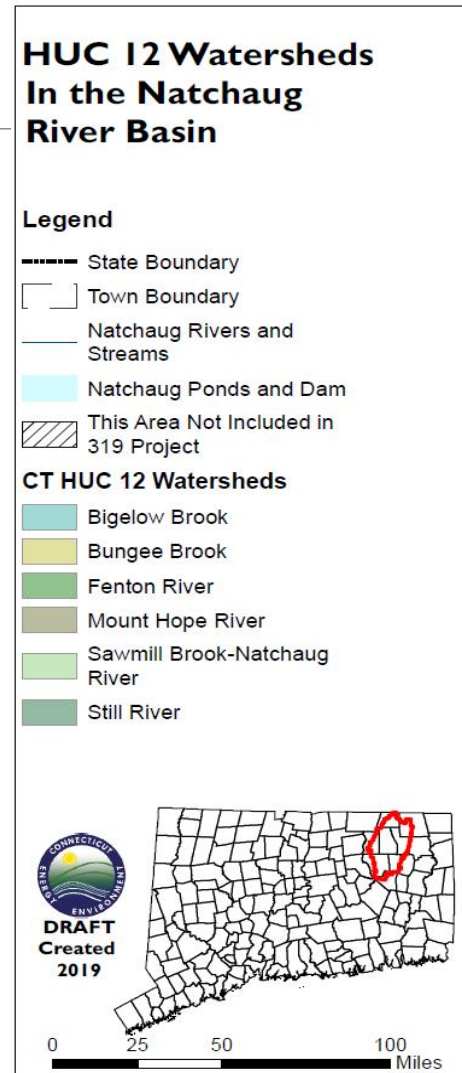
- 1) identification of healthy aspects within the watershed
- 2) identification of stressors which could lead to degradation of WQ in the future and
- 3) implementation planning and execution through a Watershed-based plan and implementation plan.



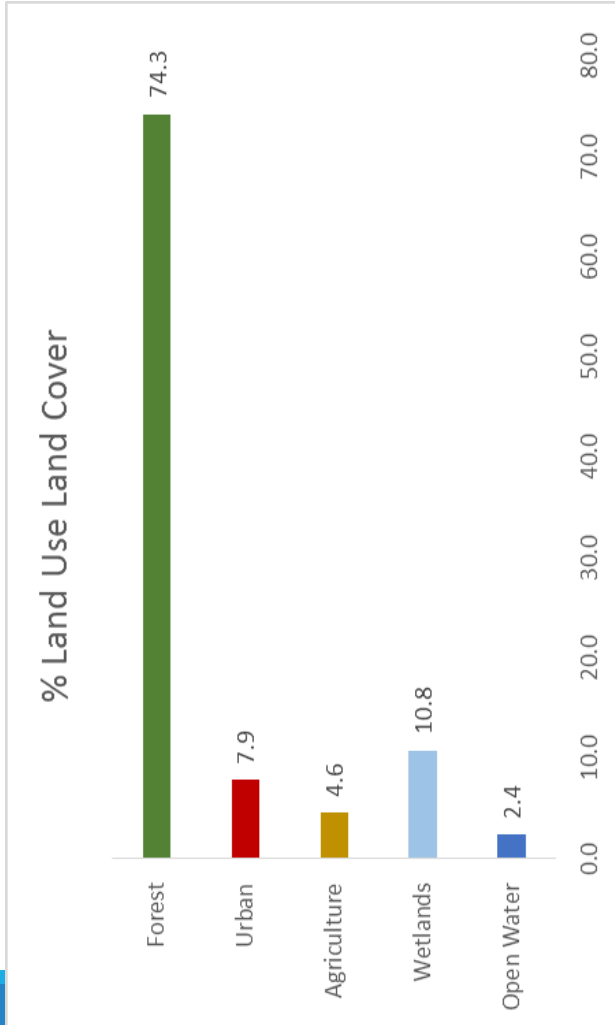
Attributes of Watershed Health: EPA Healthy Watershed Program

Example Lines of Evidence

- Water Quality Classification
- Land Use / Land Cover
- Agricultural activities
- Urban areas
- Impervious Cover
- Recreational Uses
- Protected Land
- Biological monitoring data
- Water temperature
- Stream Flows
- Nutrient enrichment



Land Use Land Cover



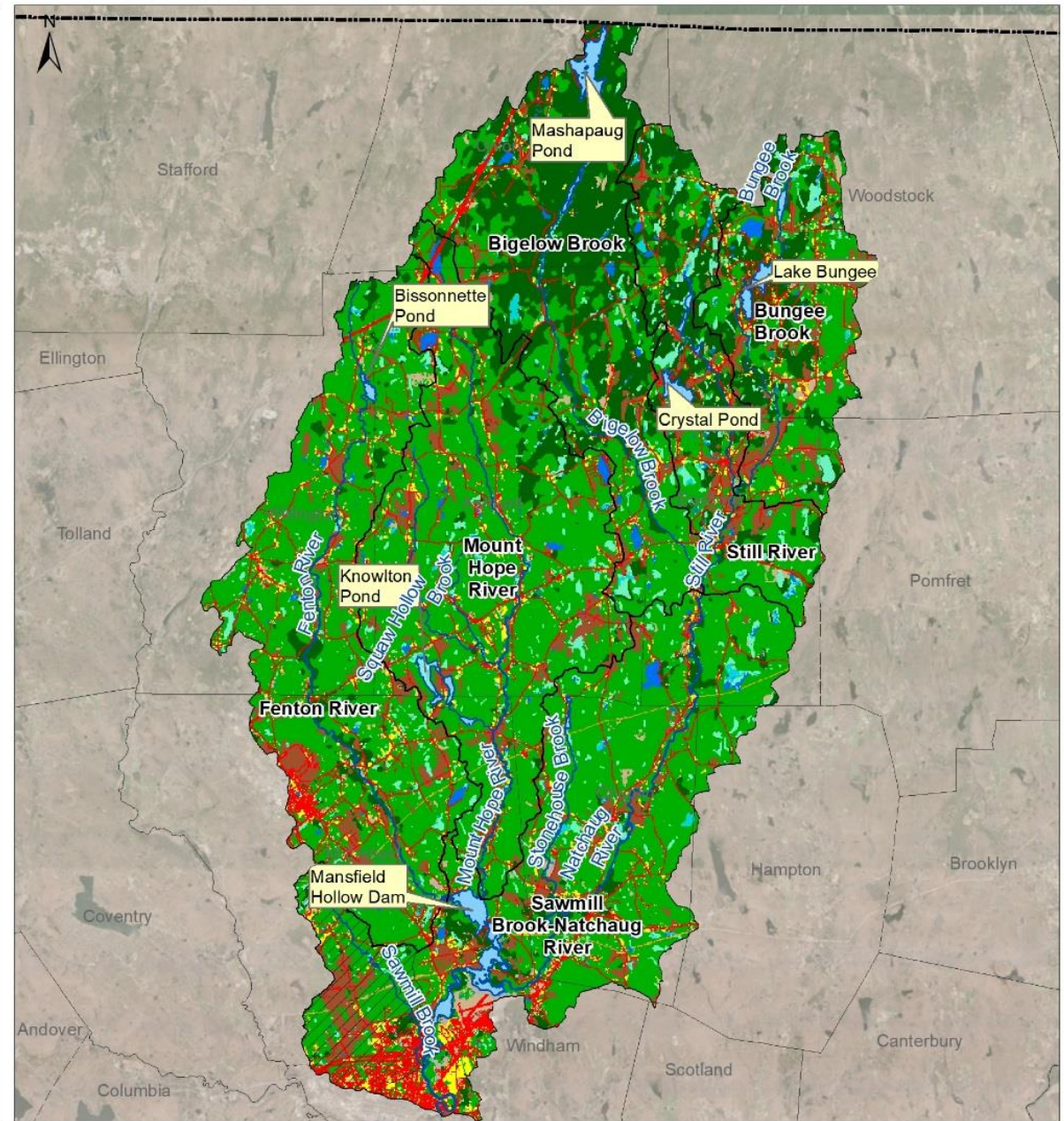
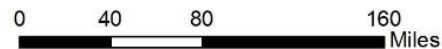
Land Use In the Natchaug River Basin

Legend

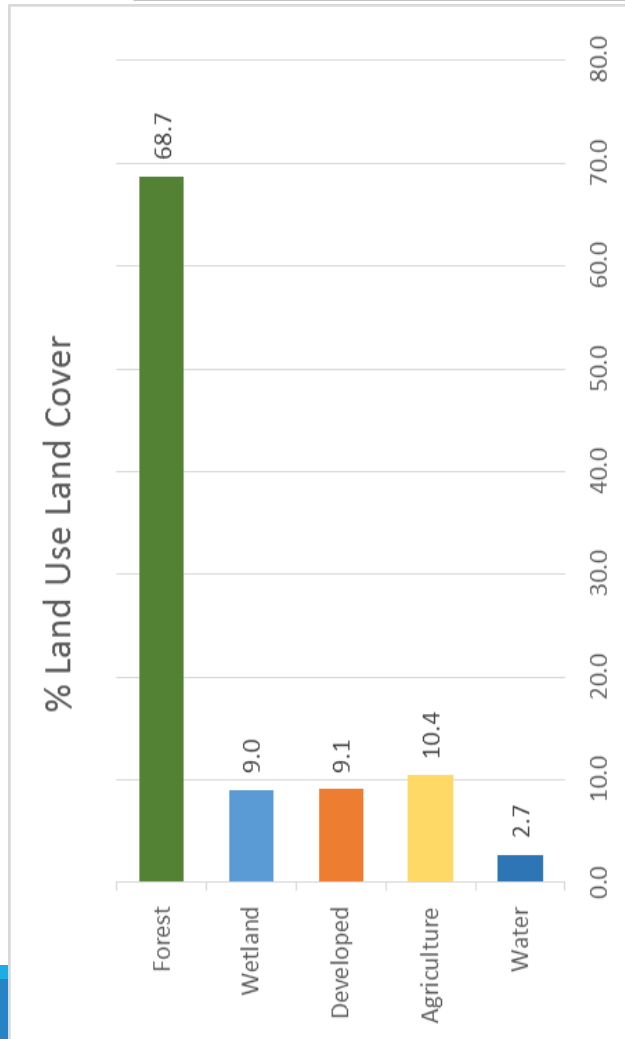
- State Boundary
 - Town Boundary
 - Natchaug Rivers and Streams
 - Natchaug Ponds and Dam
 - This Area Not Included in 319 Project
- 2015 Land Cover**
- Developed
 - Turf and Grass
 - Other Grass
 - Ag. Field
 - Deciduous Forest
 - Coniferous Forest
 - Water
 - Non-forested Wetland
 - Forested Wetland
 - Tidal Wetland
 - Barren
 - Utility (Forest)



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Riparian Corridors



Riparian Areas (300ft) In the Natchaug River Basin

Legend

- Town Boundary
- This Area Not Included in 319 Project

Riparian Zone (300ft) 2015 land cover

Land Cover

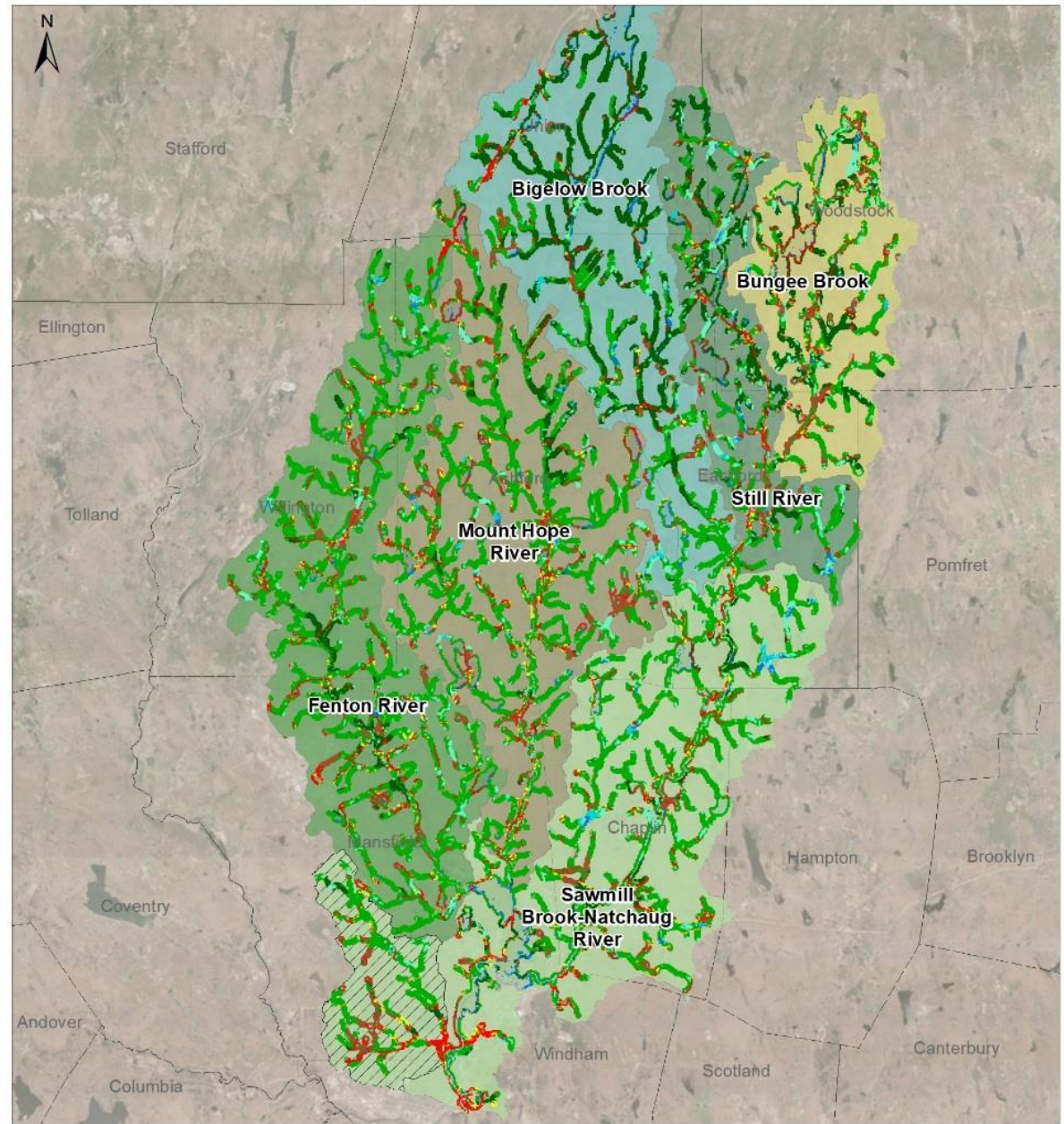
- Developed
- Turf and Grass
- Other Grass
- Ag. Field
- Deciduous Forest
- Coniferous Forest
- Water
- Non-forested Wetland
- Forested Wetland
- Tidal Wetland
- Barren
- Utility ROW (Forest)



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0 30 60 120 Miles



Stream Flow

Stream Flow Classification in the Natchaug River Basin

Legend

-  State Boundary
-  Town Boundary
-  Natchaug Rivers and Streams
-  Natchaug Ponds and Dam
-  This Area Not Included in 319 Project

Stream Flow Classification

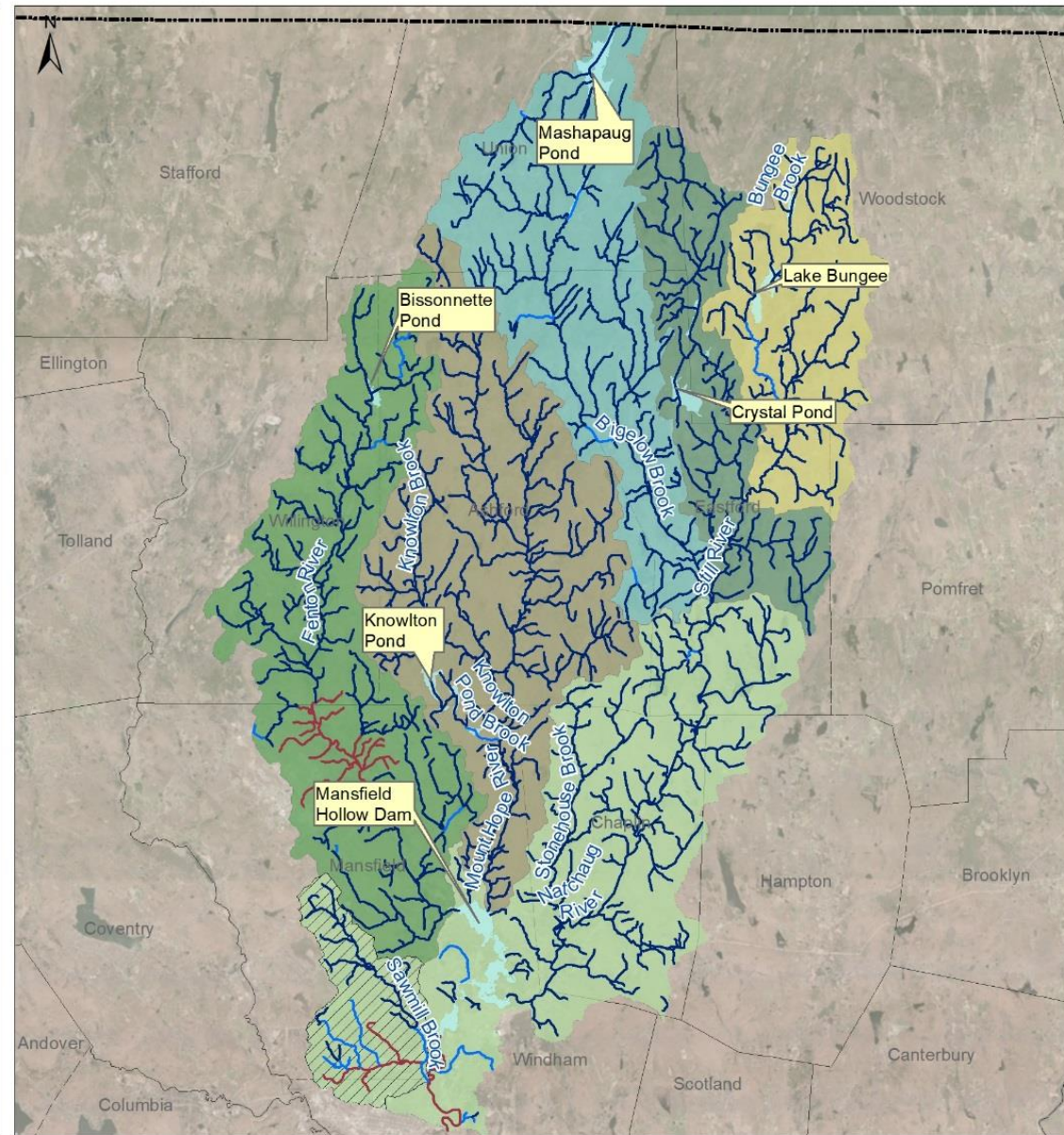
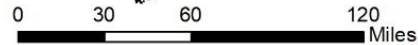
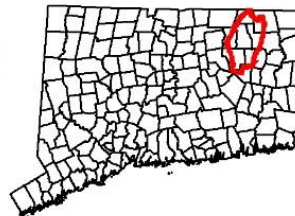
-  1
-  2
-  3

CT HUC 12 Watersheds

-  Bigelow Brook
-  Bungee Brook
-  Fenton River
-  Mount Hope River
-  Sawmill Brook-Natchaug River
-  Still River



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Protected Lands

Protected Open Space In the Natchaug River Basin

Legend

- State Boundary
- Town Boundary
- This Area Not Included in 319 Project
- ▨ NE Aquatics Secured Land

Protected Open Space DEEP 2011

- Federal
- Land Trust
- Municipal
- Private
- State

CT HUC 12 Watersheds

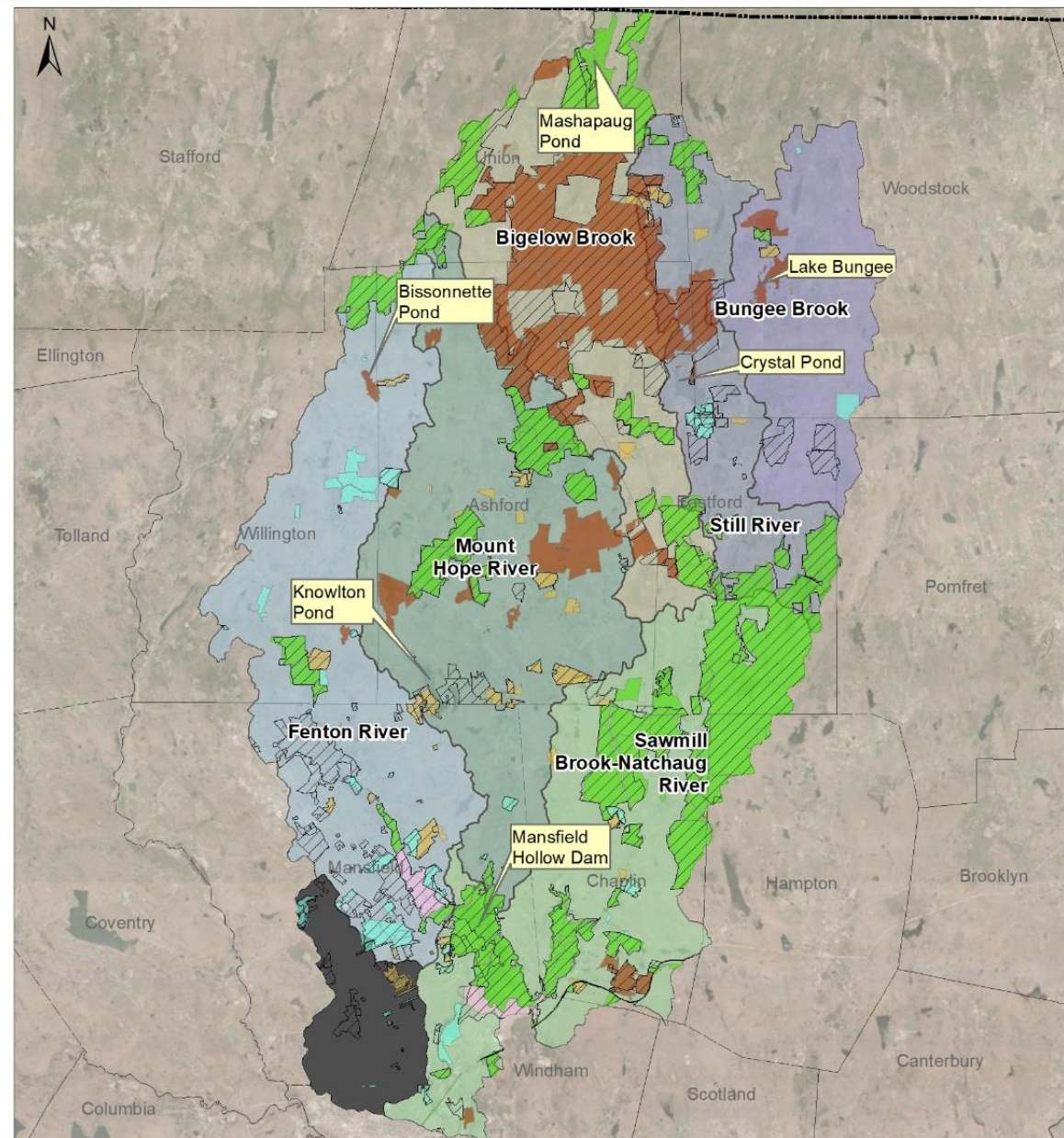
- Bigelow Brook
- Bungee Brook
- Fenton River
- Mount Hope River
- Sawmill Brook-Natchaug River
- Still River



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0 30 60 120
Miles



Agriculture

Agriculture In the Natchaug River Basin

Legend

- State Boundary
- Town Boundary
- Natchaug Rivers and Streams
- This Area Not Included in 319 Project

Ag. Field

p2015_4

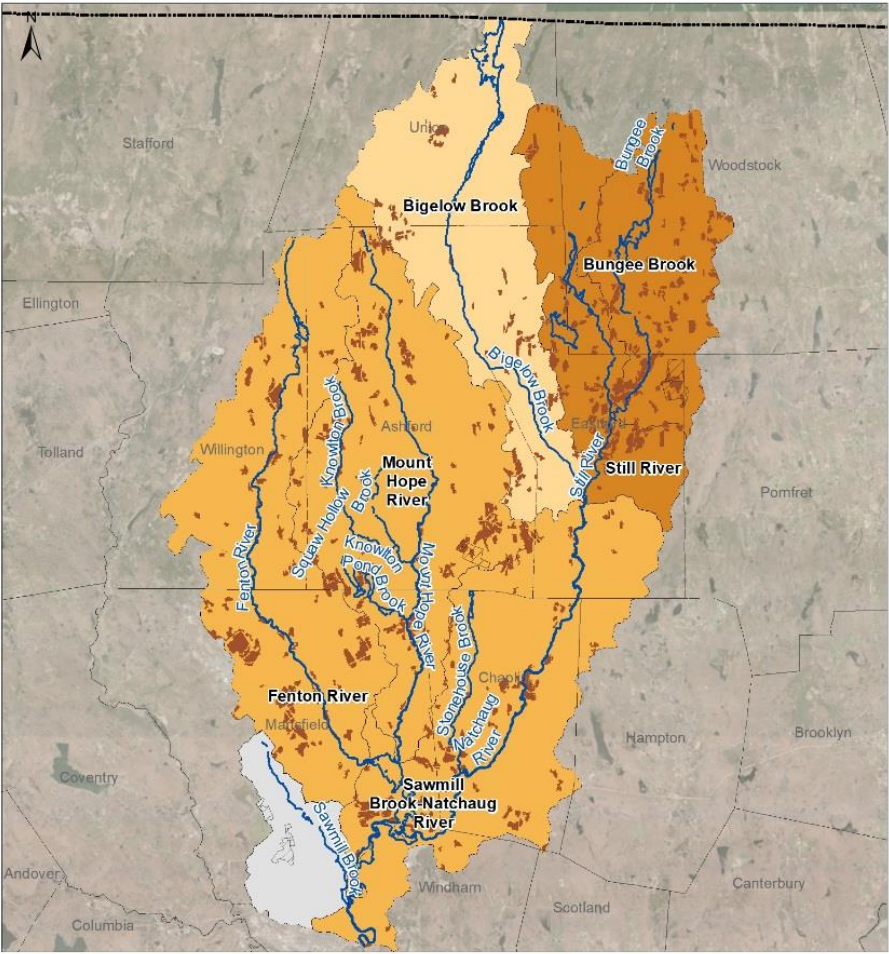
- 0.0 - 2.0
- 2.1 - 4.0
- 4.1 - 8.0
- 8.1 - 12.0
- 12.1 - 22.0
- 22.1 - 34.0
- Farmland Preservation Property



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0 30 60 120 Miles



Developed Areas

Developed Areas In the Natchaug River Basin

Legend

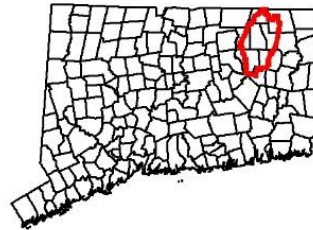
- State Boundary
- - - - - Town Boundary
- This Area Not Included in 319 Project
- Roads (Data from Uconn CLEAR)
- Buildings (Data from Uconn CLEAR)
- Other ((Data from Uconn CLEAR)

Developed p2015_1

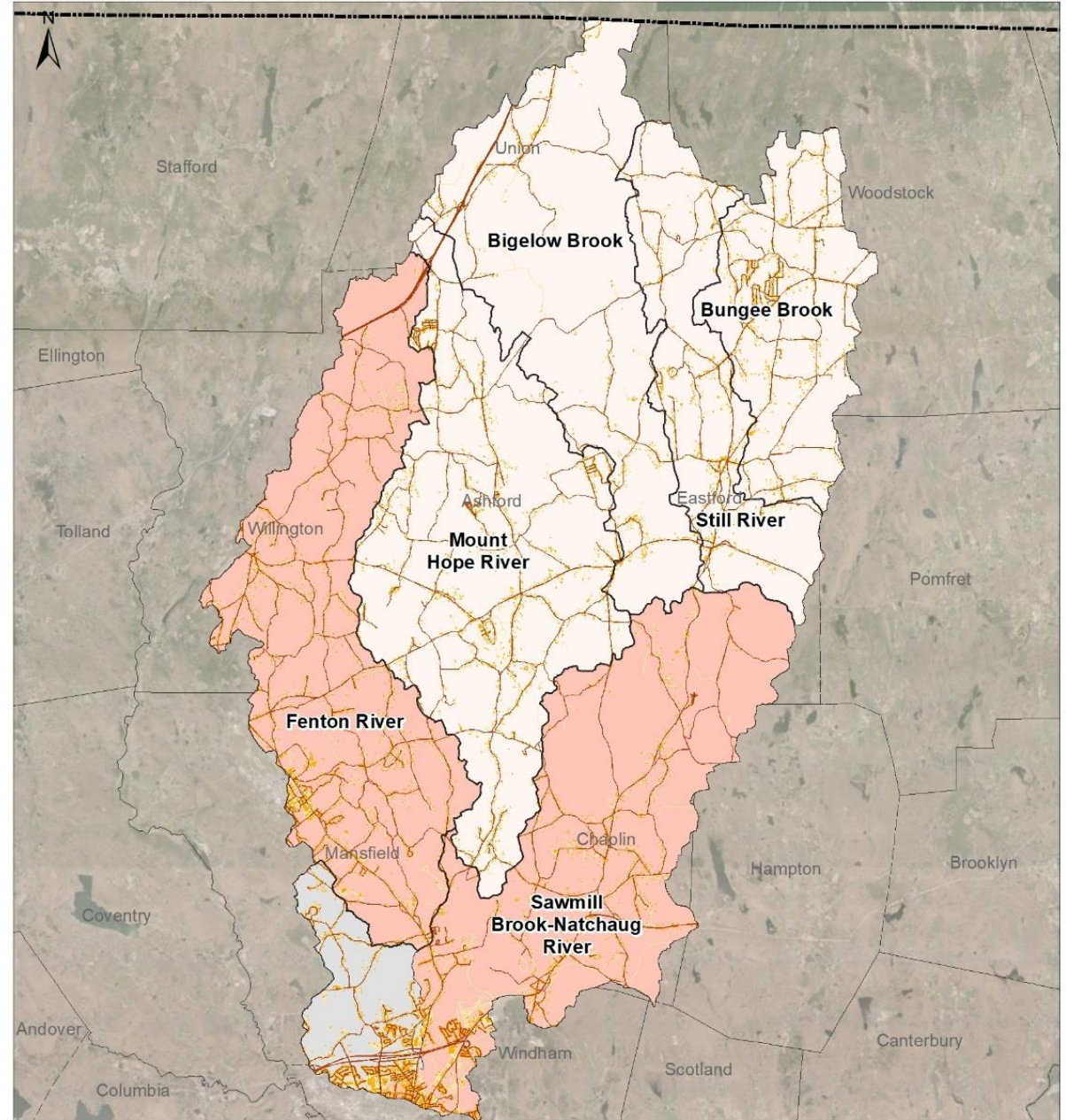
- 0.7 - 10.0
- 10.1 - 15.0
- 15.1 - 20.0
- 20.1 - 30.0
- 30.1 - 50.0
- 50.1 - 85.2



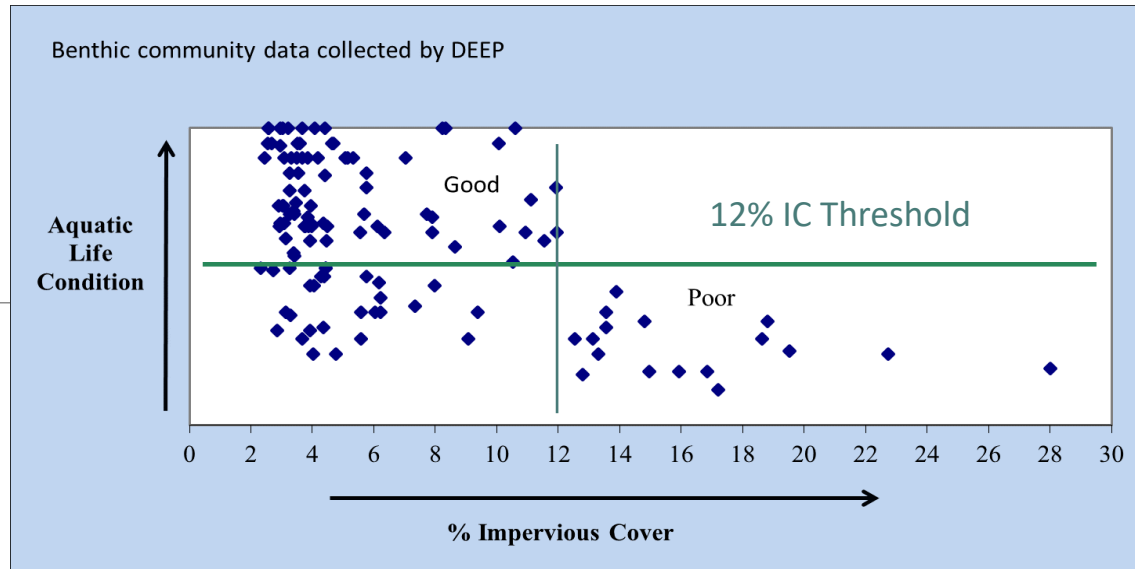
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2019



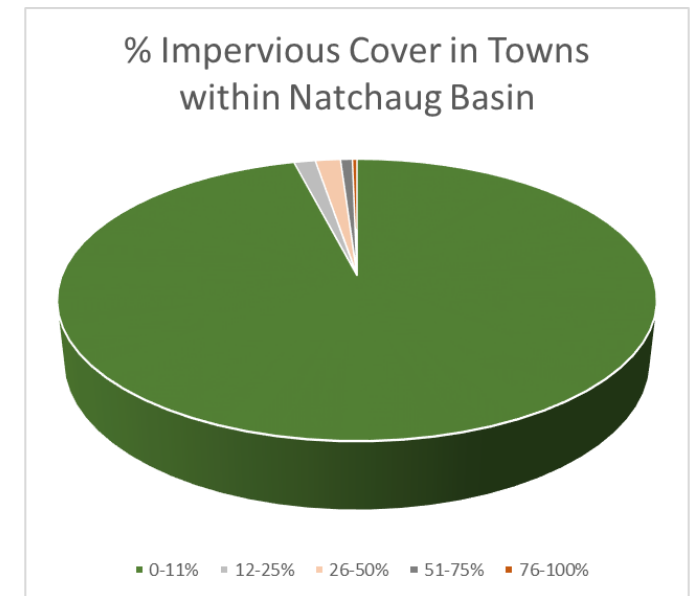
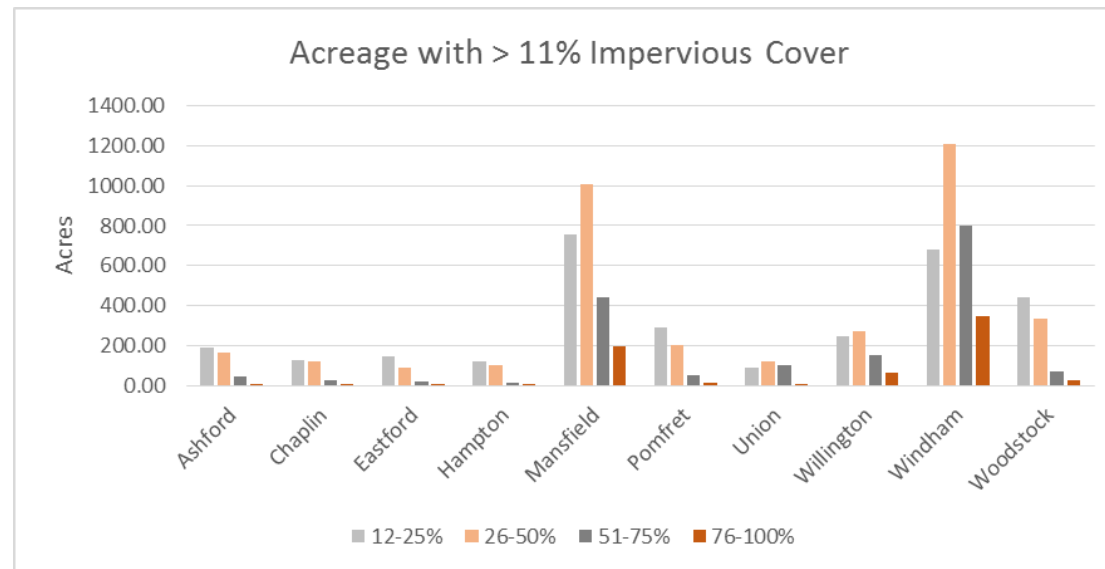
0 30 60 120
Miles



Impervious Cover



Town	% >11%
Ashford	1.6%
Chaplin	2.3%
Eastford	1.4%
Hampton	1.5%
Mansfield	9.0%
Pomfret	2.2%
Union	1.7%
Willington	3.5%
Windham	20.6%
Woodstock	2.3%



Potential Sources

Potential Sources in the Natchaug Watershed

Remediation

- Hazard Notification (7)
- Landfill Monitoring (2)
- Potable Water Program (10)
- Property Transfer Program (4)
- Residential Fuel Oil Tank (3)
- State Remediation Program (3)
- Voluntary Remediation Program (2)

Permits

- ★ Community Subsurface Sewage Disposal-Existing Facilities (14)
- ★ Discharge of Swimming Pool Wastewater (2)
- ★ Part B Municipal Stormwater MS4 (3)
- ★ Stormwater Associated with Industrial Activity (12)
- ★ Stormwater Discharge Associated with Commercial Activity (2)
- ★ Underground Injection (3)
- Landfill (7)
- Leaf Compost Facility (3)
- Transfer Station (7)
- Volume Reduction Plant (1)

Birds on Property

- ✈ 5 - 27000 (4)

Dairy Cattle on Property

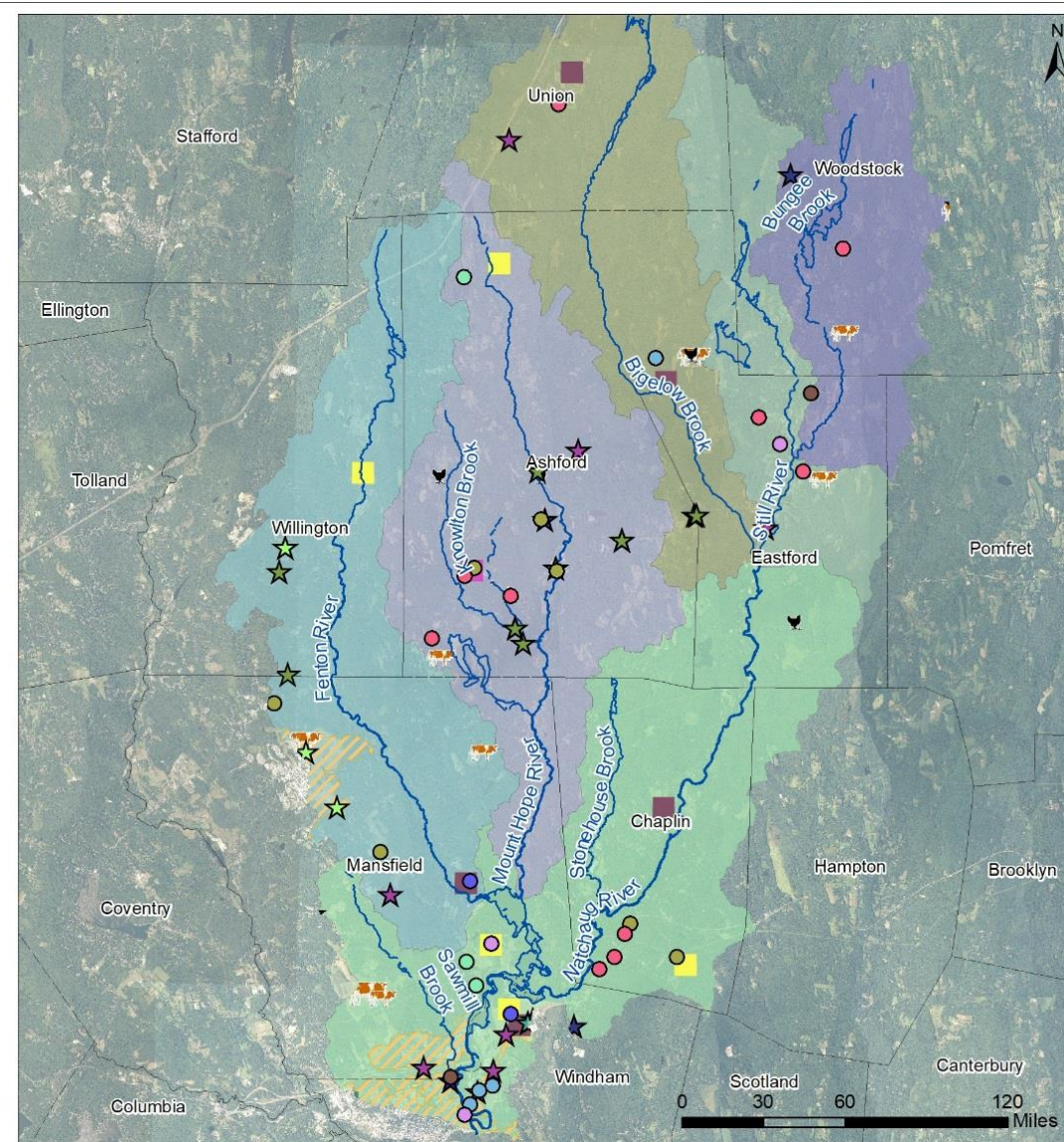
- 🐄 84 - 180 (5)
- 🐄 181 - 380 (3)
- 🐄 701 - 1300 (1)

Sewer Service

- ▨ Serviced (4)

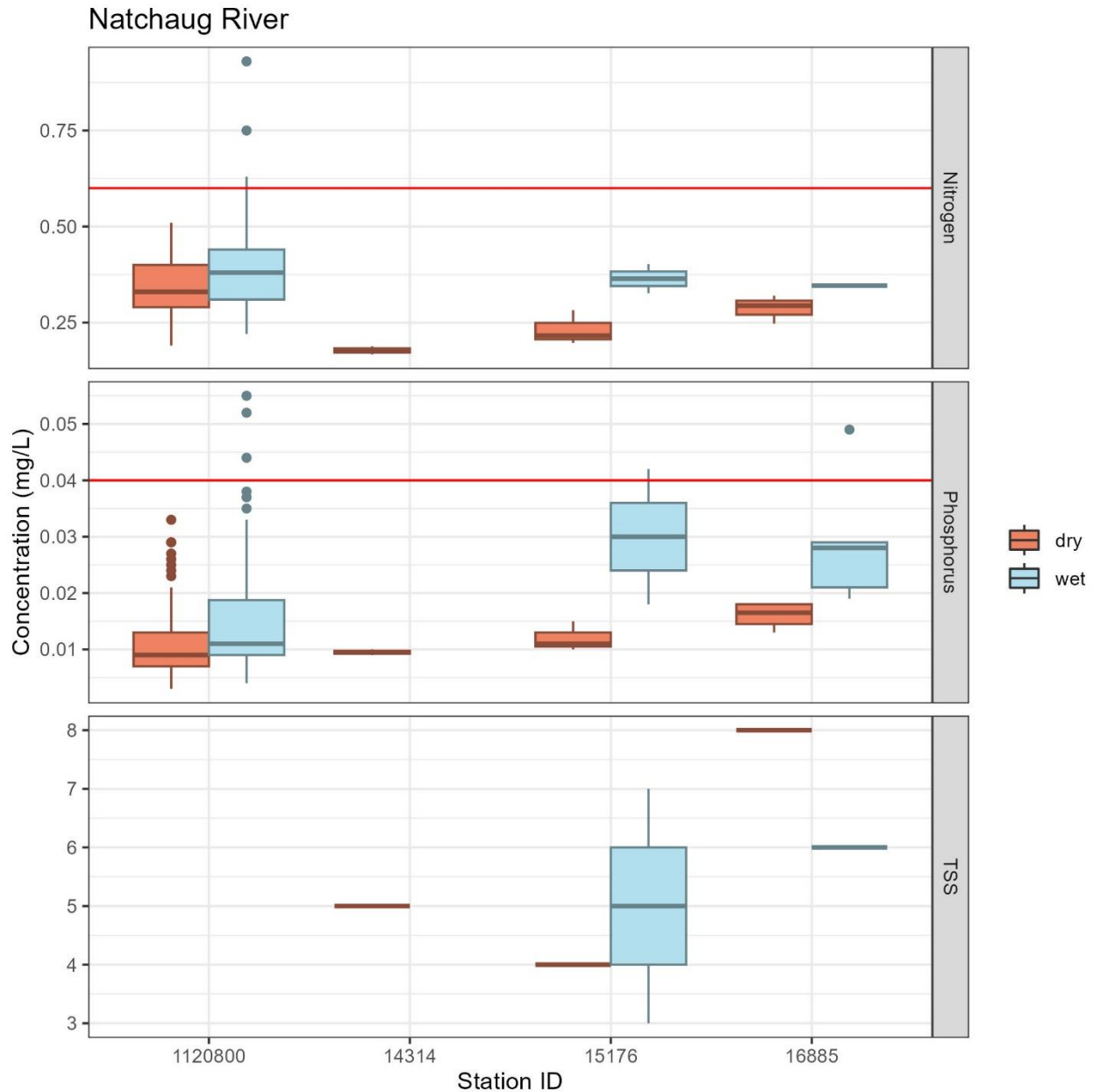


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Initial Data Evaluation

For each individual chemical, evaluated the amount present under wet and dry conditions at each station, looking for patterns upstream to downstream



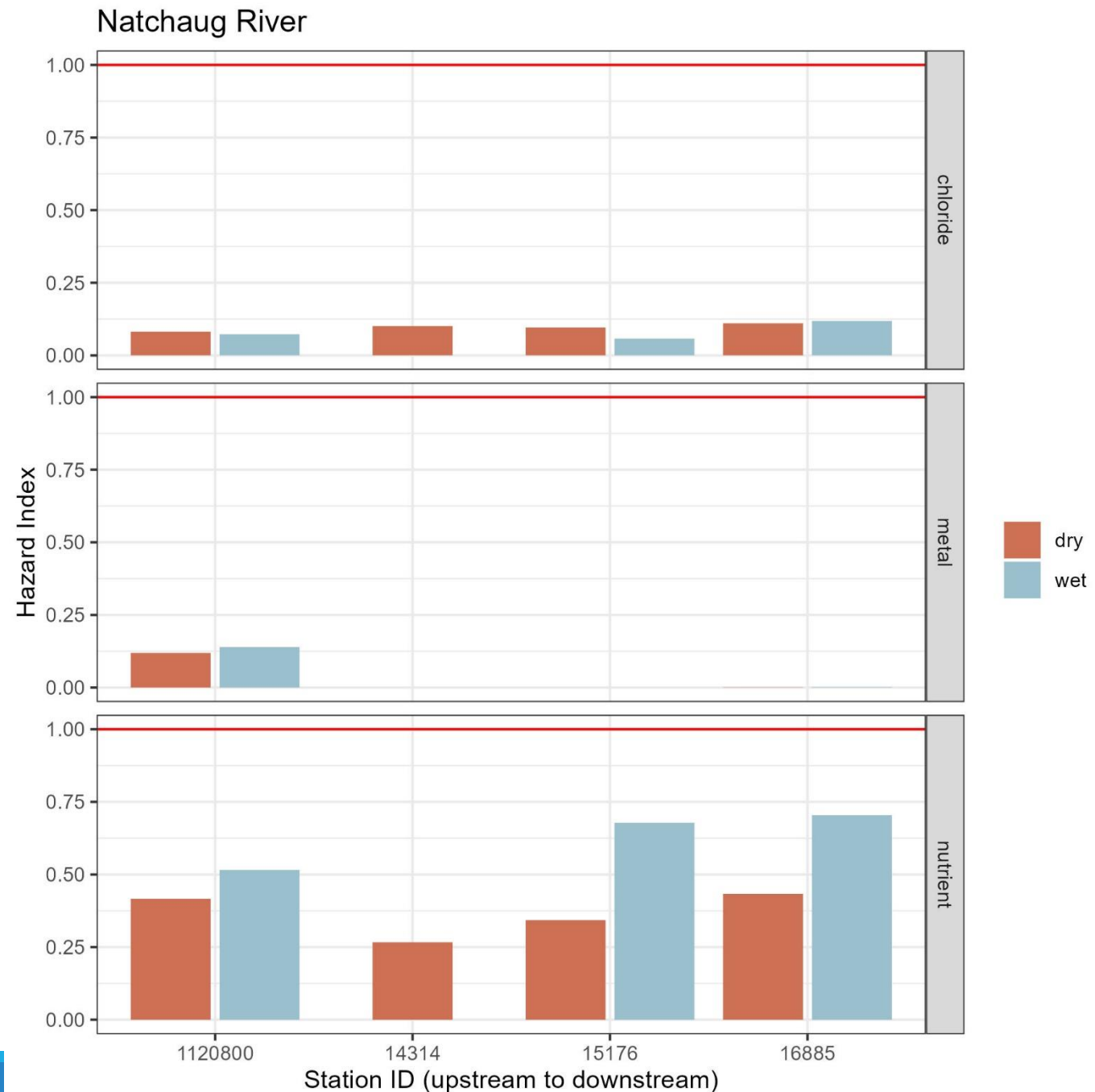
Using Hazard Indices to Evaluate Data

Calculation

- Hazard Index (HI) =

$$\frac{\text{Avg concentration in water}}{\text{Water Quality Benchmark}}$$

- HI were calculated for chloride, individual metals and individual nutrients
- HI were then averaged for related chemicals (total metals or total nutrients)
- Average HI for each group provides opportunity to evaluate risks associated with exposures to multiple chemicals
- Interpreting the Results: Values ≤ 1 represents concentrations below environmental benchmarks




Outcome:

Conservation District partner develop an implementation plan to protect water quality. Supported by EPA Healthy Watershed Grant.

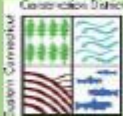

15-03 Task 1e
Upper Natchaug Healthy Watershed Implementation Plan

2020

Natchaug Healthy Watershed Protection Plan



Naturally Natchaug
Working Together to Keep our Rivers Healthy



Eastern Connecticut Conservation District
9/30/2020

This project was funded through and in partnership with CT DEEP with a US EPA Clean Water Act § 319 NPS Grant.

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