



# NRWC Stakeholder Workshop

Updating the 2006 Niantic River Watershed Protection Plan

*October 29, 2019*



# Project Team



- **Watershed Stakeholders**
- **Project Funding**
  - CT DEEP through an EPA Clean Water Act Section 319 Nonpoint Source Grant
  - Eastern Connecticut Community Foundation
  - Kleinschmidt Foundation



# Workshop Agenda

1. Watershed Planning Process
2. Goals for Updating the 2006 Plan
3. Status of 2006 Plan Implementation
4. Summary of Watershed Conditions
5. Break-out Session
6. Discussion: Prioritizing Issues & Actions
7. Next Steps/Closing

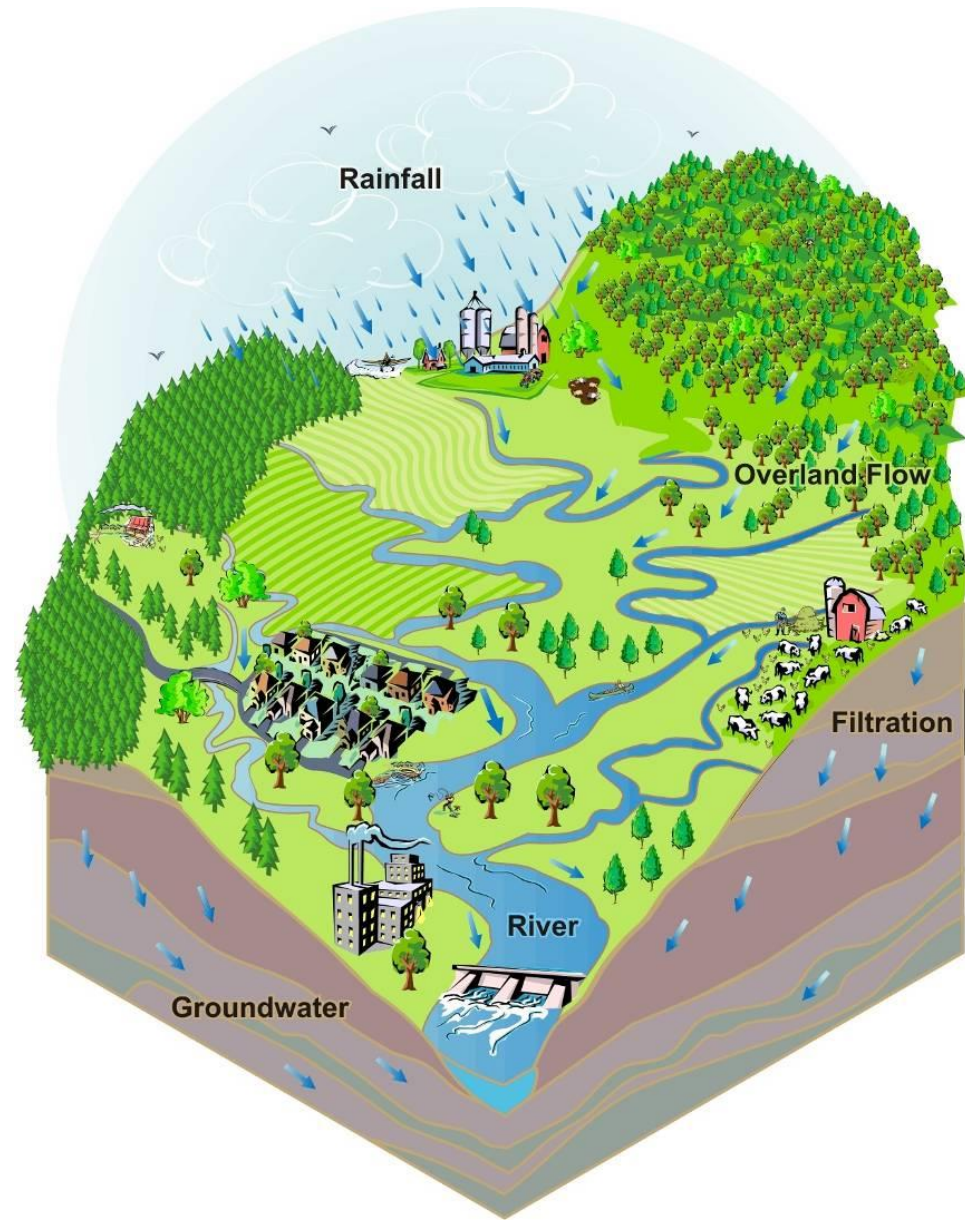
# Purpose of the Workshop Meeting

- Describe the watershed plan update process
- Summarize watershed conditions and issues
- Provide a forum for stakeholder input and discussion
  - Issues of concern
  - Local priorities
  - Project ideas



# Why Watersheds?

- Hydrologically defined
- Cross municipal boundaries
- Logical approach for managing water resources
- Watershed management = land use management
- Every-day activities



# Watershed Management in the Niantic

**2006** – Plan adopted (aka, “NRWPP”)

**2008** – NRW Advisory Group formed  
Watershed Coordinator hired

**2009** – *Guided Summary*

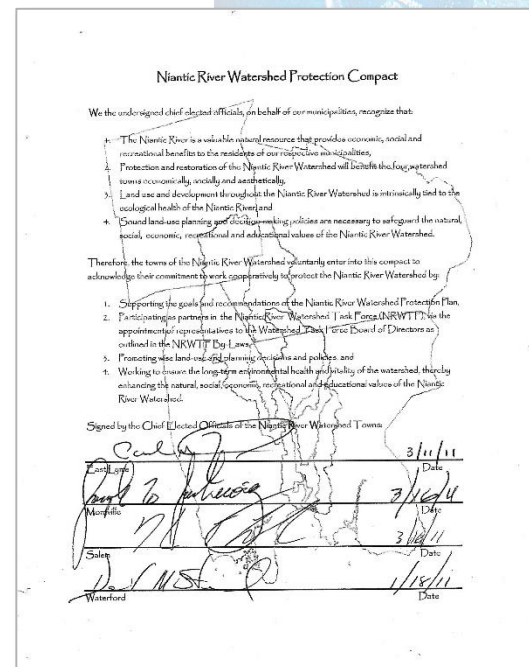
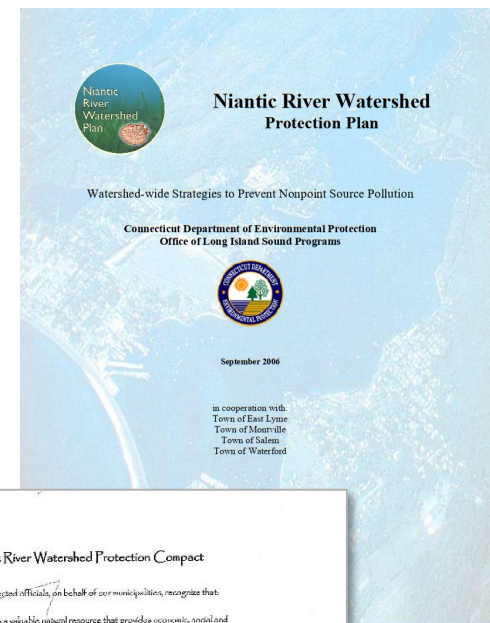
**2011** – Board of Directors  
*Watershed Compact endorsed*

**2015** – Incorporated, 501(c)3 non-profit

**2017** – *2017-2018 Work Plan*

**2019** – RFP to update the 2006 Plan

*2019-2020 Work Plan*



# Other Key Accomplishments

- Installation of water quality improvement practices



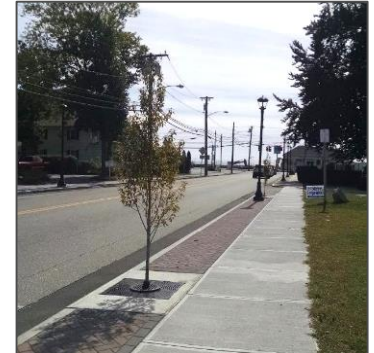
*Colony Road Tree Filters (2012)*



*Clark Pond Riparian Buffer Restoration (2012)*



*Mago Point Riparian Buffer (2014)*



*Pennsylvania Ave Niantic Tree Filters (2015)*



*Pine Grove Riparian Buffer (2017)*



*Grand Street Tree Wells (2017-2018)*



*East Lyme High School Rain Garden (2018)*



*Mago Point Tree Filters (2016)*



*East Lyme High School Infiltration Project (2019)*



*Clark Pond Rain Garden (2018)*

# Other Key Accomplishments

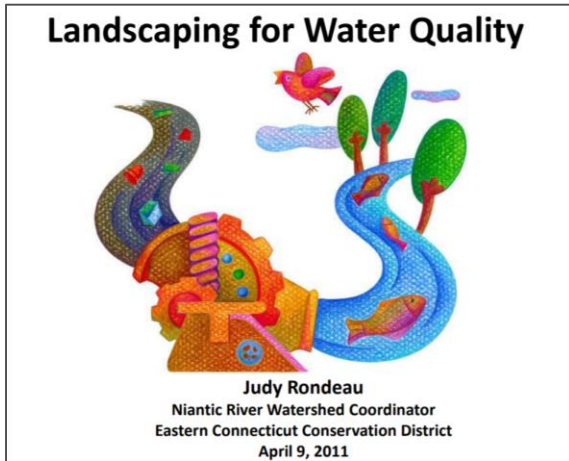
- Establishment of volunteer water quality monitoring program
  - Stream water quality monitoring (2012)
  - Riffle Bioassessments (RBV) (2012)
  - Stream Temperature Monitoring (2013)
  - Stream Corridor Assessments (2014)





# Other Key Accomplishments

- Development of active education & outreach program



Homeowner BMPs (2011)



Teacher Water Quality Kit (2012)



Celebrate East Lyme Day (2012)



Hole in the Wall Outdoor Stormwater Classroom (2014)

**Niantic River Watershed  
Rain Garden Rewards Program**

**Rain Garden Rewards Program Application**

Thank you for applying for the Niantic River Watershed Rain Garden Rewards Program. Please be sure to read the guidelines before beginning the application. Helpful information is provided on the Rain Garden Rewards page of the Niantic River Watershed website ([www.nianticriverwatershed.org](http://www.nianticriverwatershed.org)).

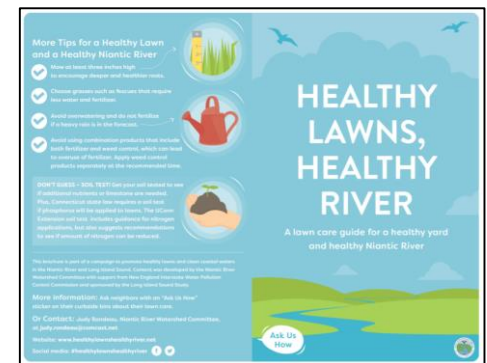
Submit your application to the Niantic River Watershed Committee:  
Niantic River Watershed Committee, Inc.  
c/o Judy Rondeau, Coordinator  
Eastern Connecticut Conservation District  
238 West Town Street  
Norwich, CT 06360  
or submit by email to: [judy.rondeau@comcast.net](mailto:judy.rondeau@comcast.net)

**Basic Information:**  
Applicant's Name: \_\_\_\_\_  
Property Owner's Name (if different): \_\_\_\_\_  
Project Address: \_\_\_\_\_  
Mailing Address (if different): \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_  
Building Type (e.g. single family, multi-family, commercial): \_\_\_\_\_

Rain Garden Initiative (2017)



Rain Barrel Sales (2011 & 2018)



Lawn Fertilizer Reduction Social Marketing Campaign Pilot Project (2018)



# Challenges and Areas for Improvement

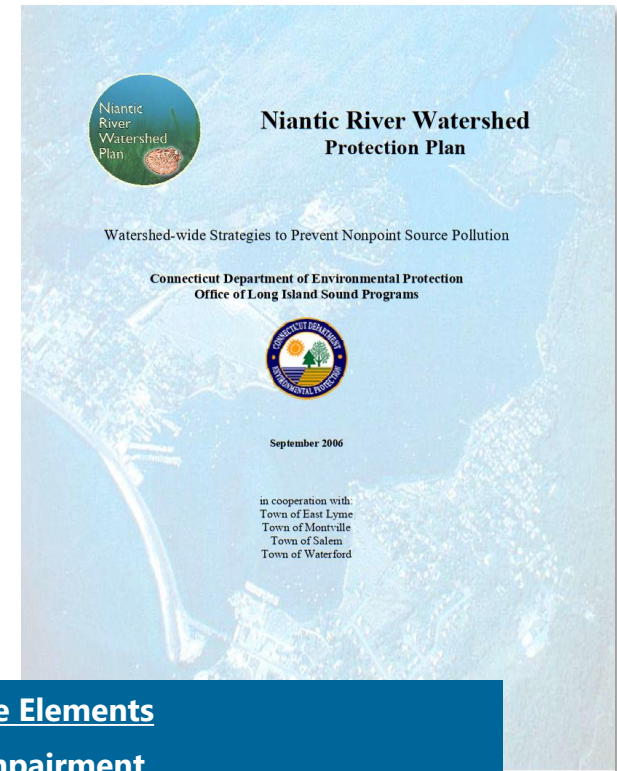
- **Land-use policies**
  - Coordinated regulations and initiatives, MS4 assistance
- **Outreach to businesses and developers**
- **Communication platform for stakeholders**
  - Track projects, share data, seek funding
- **New issues**
  - Climate change, sea level rise, coastal resiliency and adaptation, marsh migration
  - Inland flooding
  - Estuarine habitat restoration – eelgrass, shellfish
  - Hydromodification and in-stream flows, water withdrawals

# Goals for Updating the NRWPP

- Strengthen stakeholder partnerships
- Assess the success of the 2006 Plan – how can it be improved?
  - Better guide local restoration and protection efforts
  - Broader community involvement?
- **Focused Plan Update**
  - Summarize current conditions – causes and sources of water quality issues
  - Update and prioritize recommendations
  - 10-year Planning Timeline

# Watershed Plan Update Process

1. Review 2006 Plan
2. Review and Summarize Existing Watershed Conditions
3. Conduct Stakeholder Workshops
4. Visual Field Assessments
5. Draft Plan Addendum
6. Final Plan Addendum
7. Watershed Summit



## EPA Nine Elements

1. Impairment
2. Load Reduction
3. Management Measures
4. Technical & Financial Assistance
5. Public Information & Education
6. Schedule
7. Milestones
8. Performance Criteria
9. Monitoring

# NRWPP Update Stakeholder Survey

## Niantic River Watershed Protection Plan Update Stakeholder Survey September 2019

***Thank you for participating in the Niantic River Watershed Protection Plan (NRWPP) update. Your input makes a difference! Please take a moment to complete this short survey so that we may understand what you value about the Niantic River, its watershed and the concerns you have about water quality.***

OK

\* 1. How would you rate the water quality of the Niantic River?

Very poor

Poor

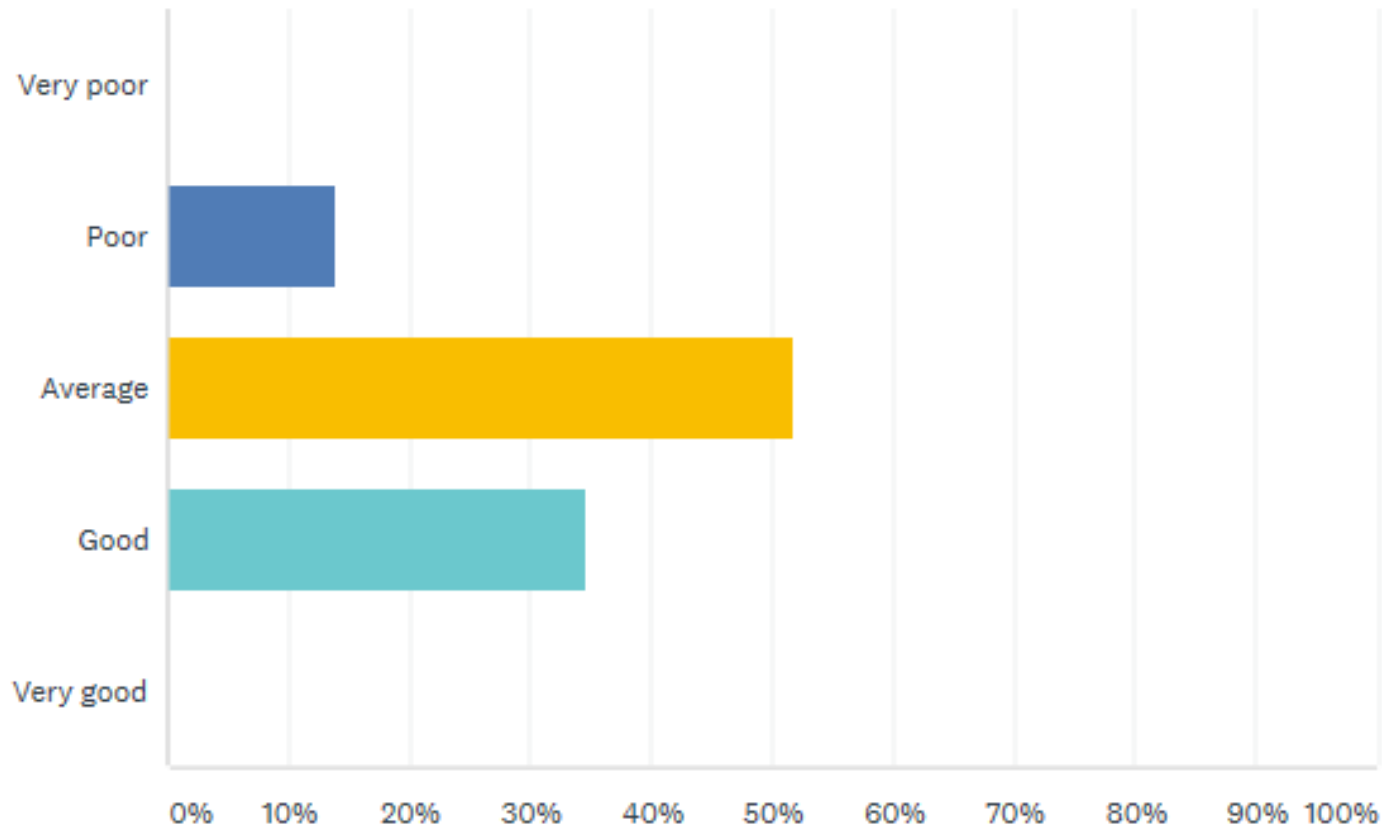
Average

Good

Very good

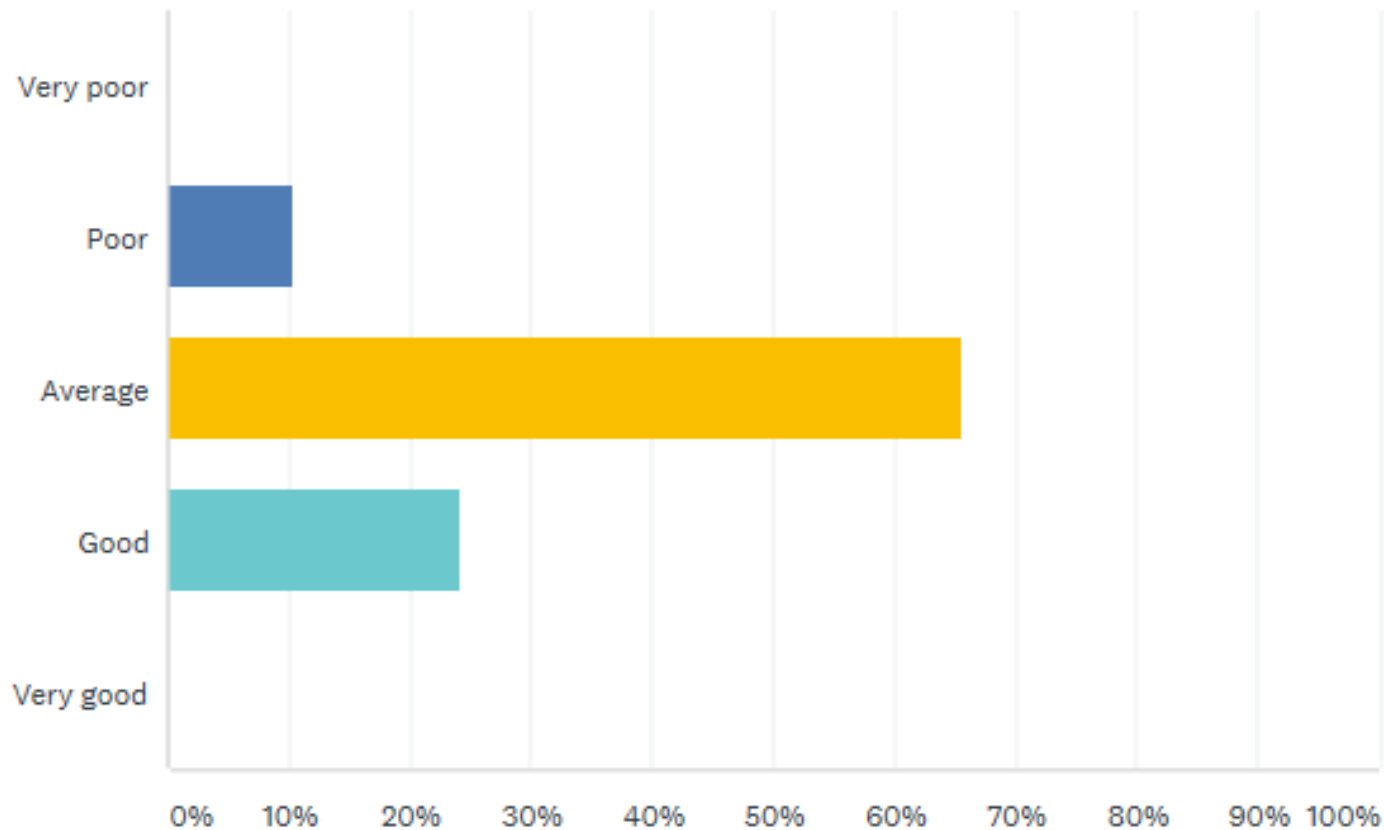
# What we heard from you ...

*How would you rate the quality of the Niantic River?*



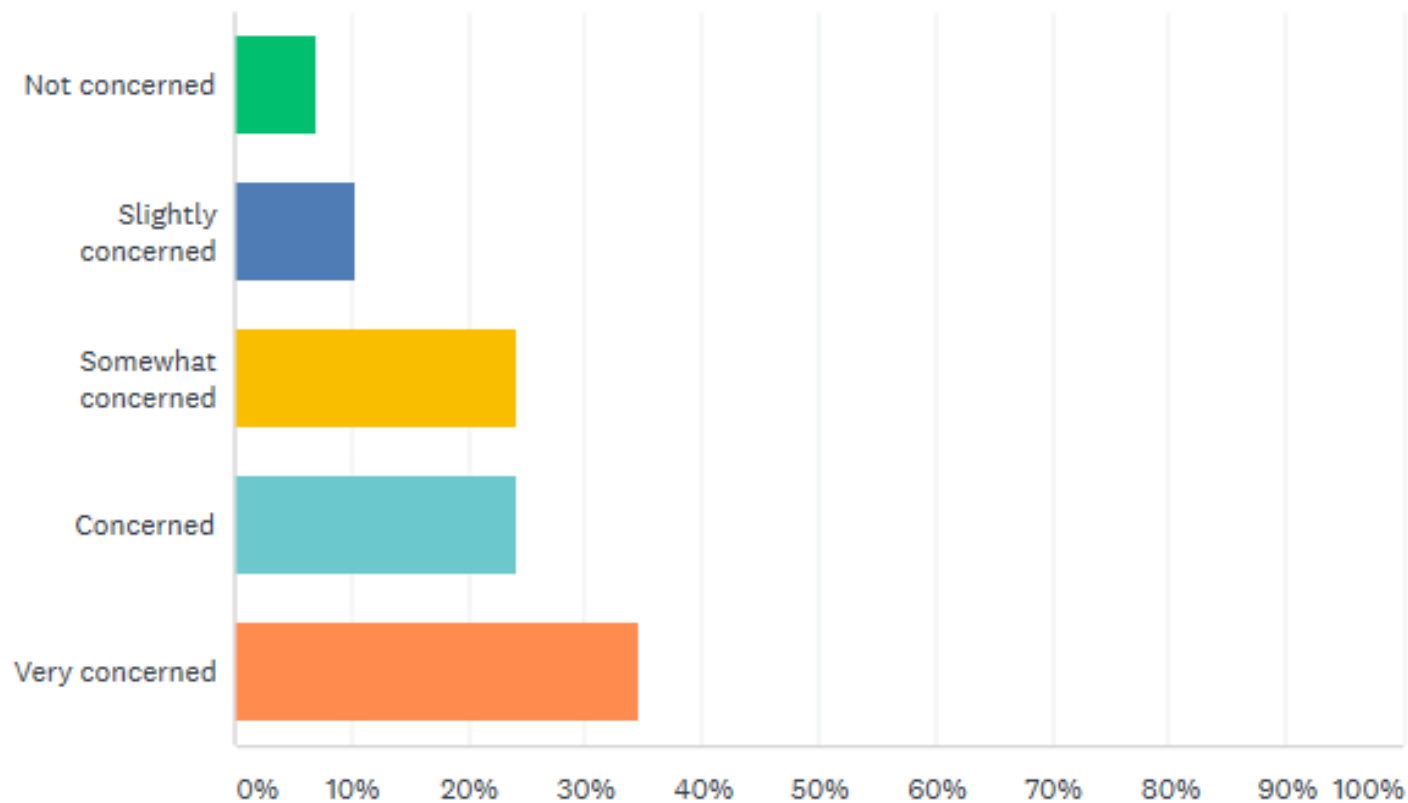
# What we heard from you ...

*How would you rate the quality of other waterbodies in the Niantic River Watershed?*



# What we heard from you ...

*How concerned are you about the effects of climate change and sea level rise on your local community?*





# What we heard from you ...

## *What are your top five concerns in the watershed?*

<i>Most Frequent Response</i>	<i>2<sup>nd</sup> Most Frequent Response</i>	<i>3<sup>rd</sup> Most Frequent Response</i>
1. NPS pollution ("runoff")	Development/conservation	Shellfishing/fisheries
2. Development/conservation	Loss of natural systems (eelgrass, forest, wetland)	Shellfishing
3. Development/conservation	NPS pollution	Planning/zoning coordination
4. Development/conservation	More projects & programs needed	NPS pollution, Climate change
5. Development/conservation	Watershed planning: BMPs, regulation	Expand outreach

### Themes

- Top concern is existing sources of NPS (nutrients, bacteria, warm water) harming the watershed, and the increase in sources from new development (i.e., loss of buffer systems)
- Desire to coordinate planning & regulation throughout watershed
- More outreach to residents, contractors/developers, Town officials



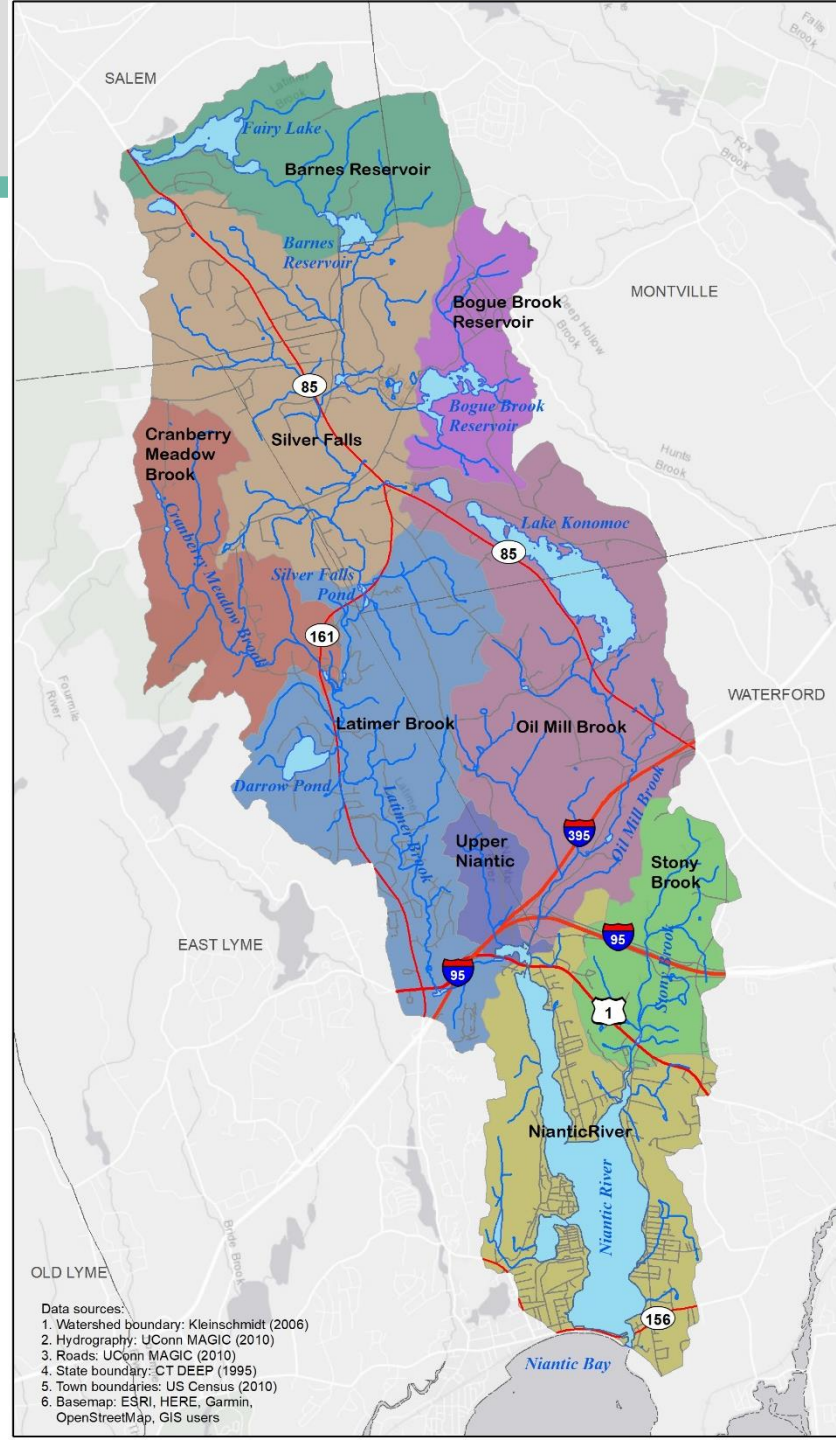
# What we heard from you ...

## *What are outcomes you would most like to see in the Update to the 2006 Plan?*

- **“Watershed-wide” land use policy & planning**
  - Planning/Zoning coordination
  - Dedicated process to track/share data and projects’ status
  - Reduce and disconnect impervious surfaces
- **Buffer systems**
  - Protect via “focused land conservation initiatives”
  - Green Infrastructure and living shorelines (benefits climate resiliency)
- **On the Ground**
  - Continue & “enhance WQ monitoring and assessment”
  - Specific “high-impact projects”
- **Shellfish/Fisheries**
  - More support
  - Specific recommendations for the Niantic River (eelgrass restoration)
- **Outreach**
  - Report Card, BMPs (fertilizer, geese, upper↔lower watershed)

# Watershed Overview

- 31.3 square miles, or about 20,000 acres
- Nine subwatersheds
  - Latimer Brook
  - Cranberry Meadow Brook
  - Oil Mill Brook
  - Stony Brook
  - Niantic River
- Major Transportation Corridors
- Niantic River Estuary



## WATERSHED OVERVIEW

Niantic River Watershed Protection Plan



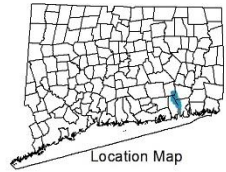
### Legend

— River/Stream

— Lake/Pond/Reservoir

### Subwatersheds

- Barnes Reservoir
- Bogue Brook Reservoir
- Cranberry Meadow Brook
- Latimer Brook
- Niantic River
- Oil Mill Brook
- Silver Falls
- Stony Brook
- Upper Niantic



Location Map



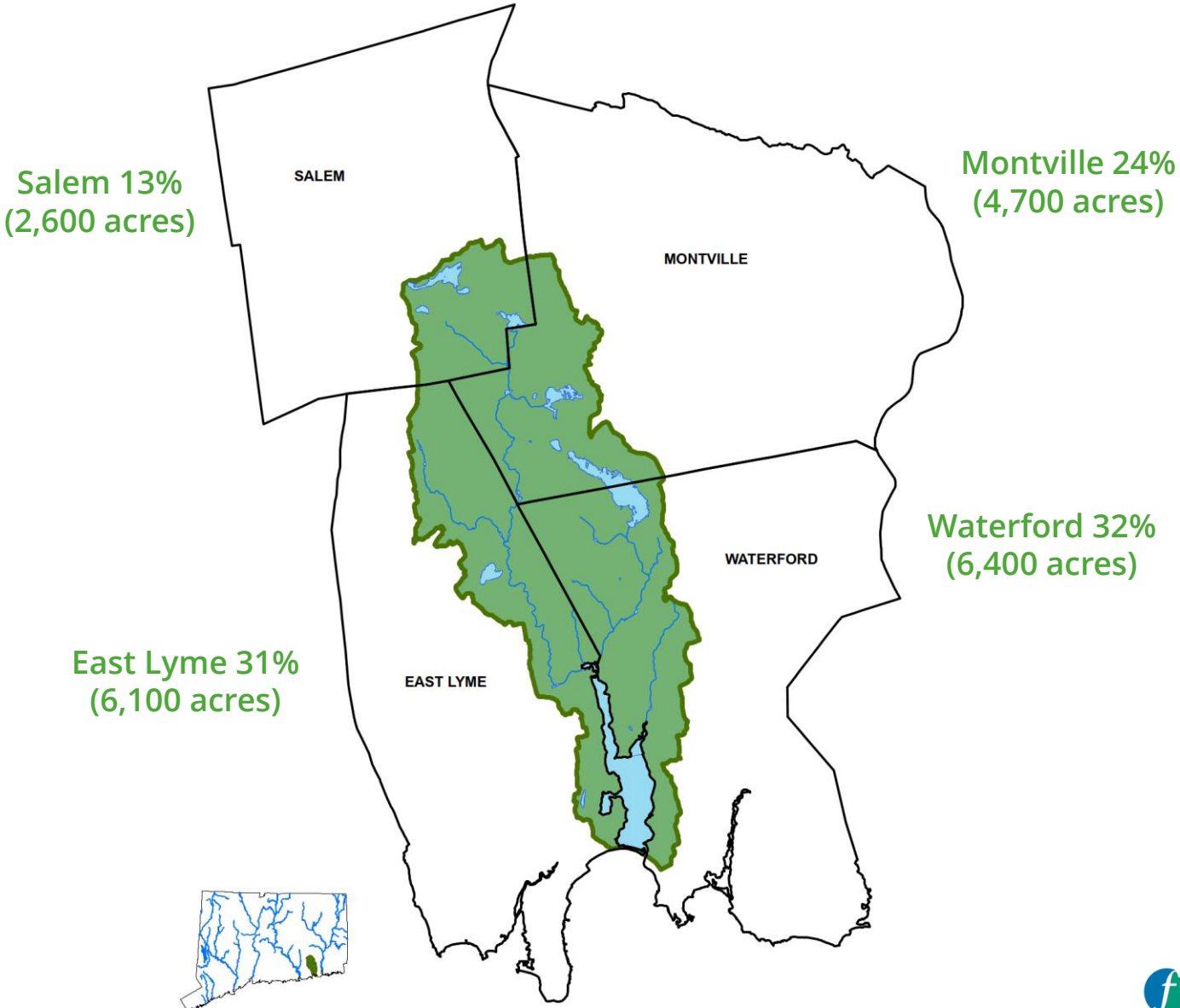
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Revised: 10/28/2019

Data sources:  
1. Watershed boundary: Kleinschmidt (2006)  
2. Hydrography: UConn MAGIC (2010)  
3. Roads: UConn MAGIC (2010)  
4. State boundaries: CT DEEP (1995)  
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6. Basemap: ESRI, HERE, Garmin, OpenStreetMap, GIS users



# Watershed Overview



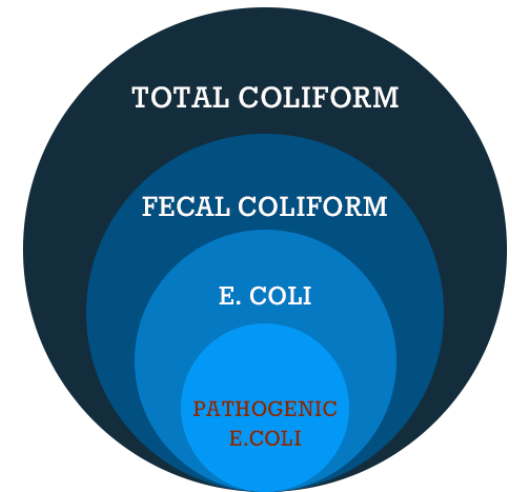
# Water Quality

- Water quality in the Niantic River Estuary and its watershed is impacted by two primary pollutants: **Fecal Indicator Bacteria** and **Nitrogen**



# Fecal Indicator Bacteria

- Coliform bacteria present in feces of warm-blooded animals and humans
- Does not typically cause illness but its presence in water indicates that disease-causing organisms (pathogens) could potentially be in the water
- *E. coli* and *Enterococci* subgroups
- Contamination by sewage or animal waste
- Swimming area and shellfish bed closures
- Sources: runoff, septic, illicit discharges

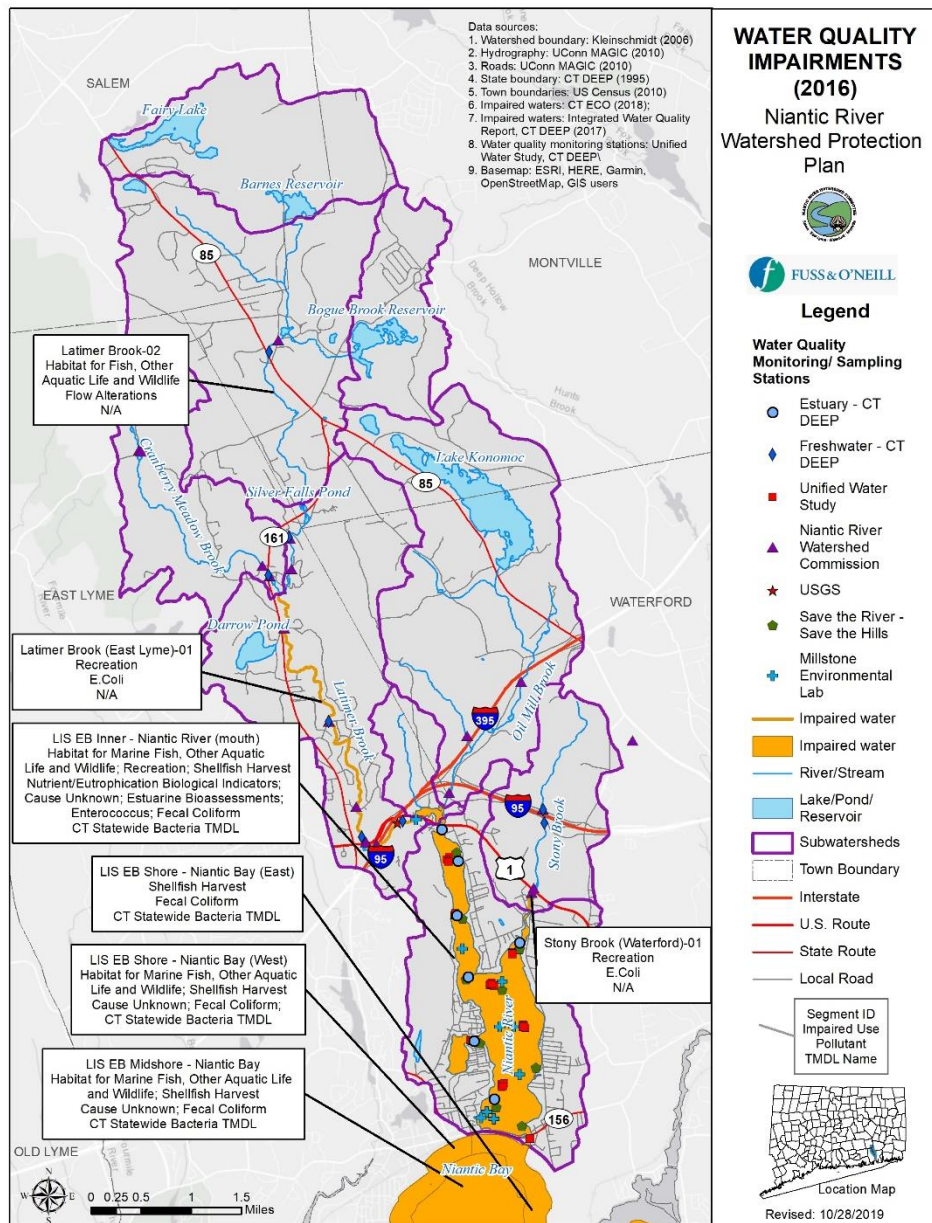


# Nitrogen

- Nitrogen is essential for cell growth in all living things
- Excess nitrogen can fuel blooms of algae, seaweed, and phytoplankton
  - Nuisance aquatic plant growth
  - Rapid consumption of oxygen and dead zones
  - Can contribute to a reduction in eelgrass and estuarine species such as bay scallops and winter flounder
- **Sources: septic systems, fertilizer, atmospheric deposition, runoff**



# Water Quality Impairments



- **Niantic River**
  - Aquatic Habitat, Recreation, Shellfish Harvest
  - Nitrogen & Bacteria
- **Latimer Brook**
  - Aquatic Habitat & Recreation
  - Flow Alteration & Bacteria
- **Stony Brook**
  - Recreation
  - Bacteria
- **Niantic Bay**
  - Shellfish & Aquatic Habitat
  - Bacteria

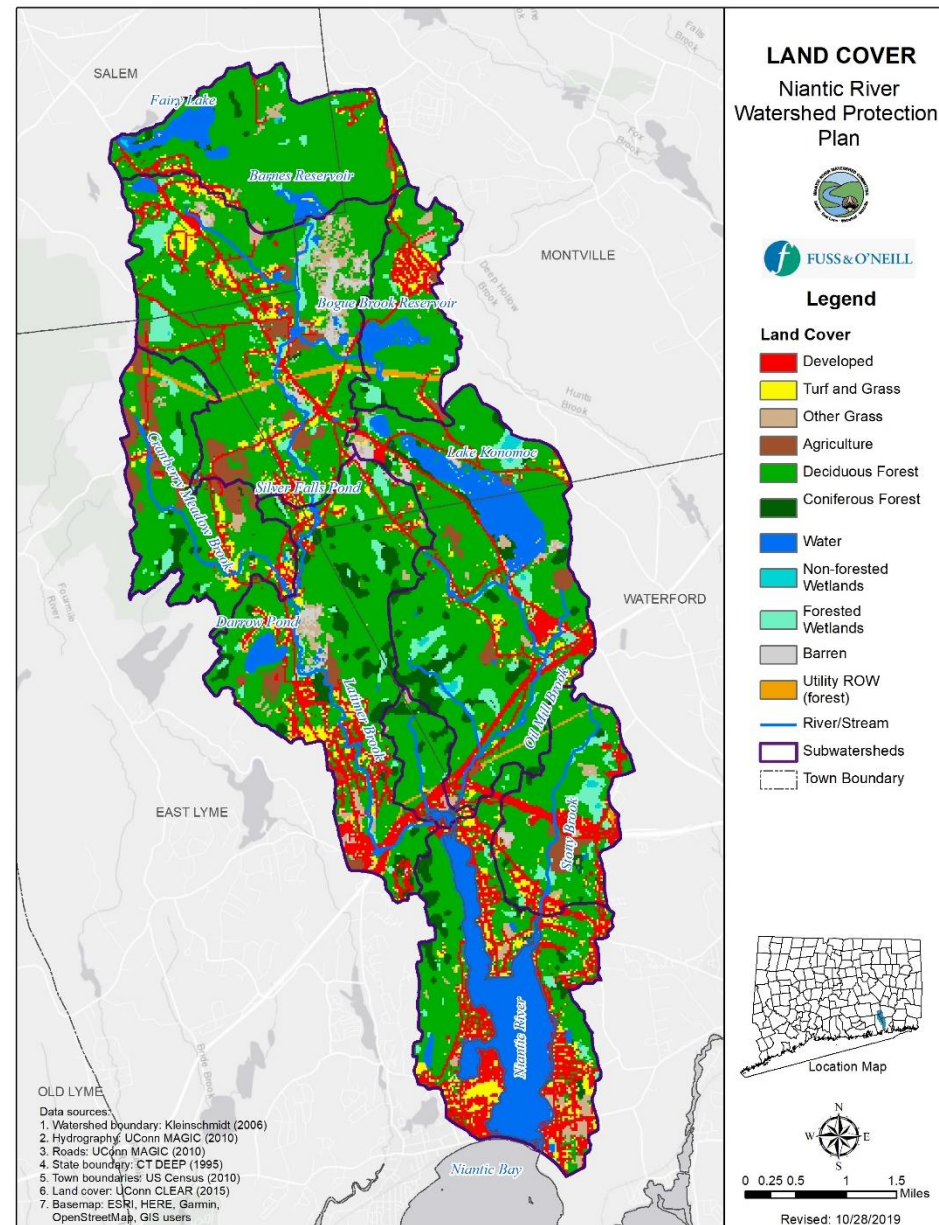


# Water Quality Monitoring

- NRWC Volunteer Monitoring Program
- CTDEEP Ambient Water Quality Monitoring
- USGS Water Quality Monitoring
- Dominion Millstone Environmental Lab
- UConn Department of Marine Sciences (Dr. Vaudrey)
- CFE/Save the Sound Unified Water Study
- Save the River - Save the Hills

# Land Use/Cover (UConn CLEAR)

- 60% Forested
- 25% Developed, Turf & Grass
- 12% Wetlands/Water
- Highest development in Niantic River, Stony Brook, and Latimer Brook subwatersheds



# Land Use/Cover – Change Since 2006

- Modest changes in land cover between 2006 and 2015
  - Developed (+50 to 60 acres)
  - Grass (+20 acres)
  - Forest (+12 acres)
  - Barren (-83 acres)

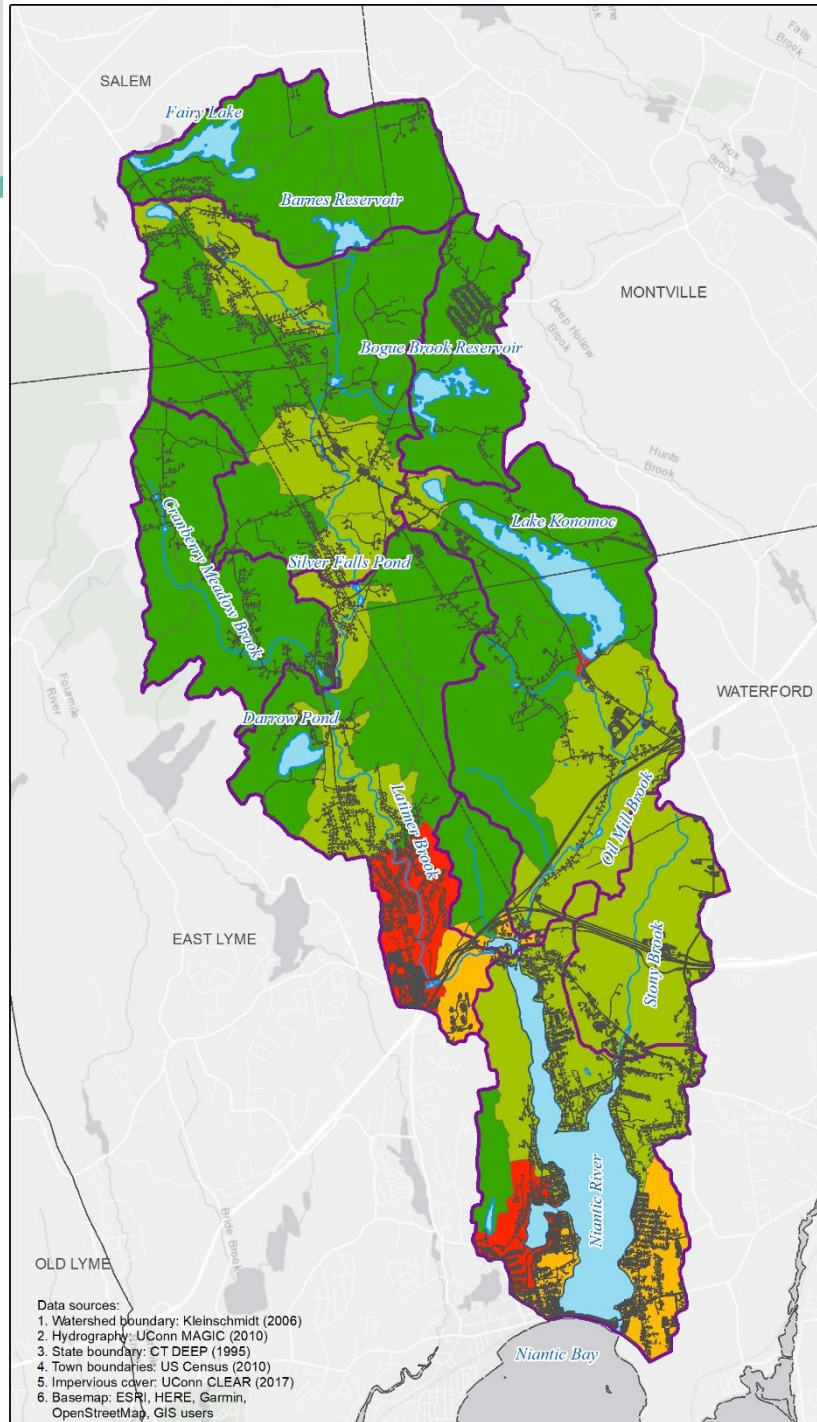
Land Cover	2015 % Cover	2015 Area (sq mi)	2006 Area (sq mi)	Change (sq mi)
Developed	13.56	4.19	4.10	0.09
Turf and Grass	4.62	1.43	1.44	-0.01
Other Grass	2.67	0.82	0.78	0.04
Agriculture	3.31	1.02	1.02	0.0
Deciduous Forest	57.34	17.70	17.67	0.03
Coniferous Forest	4.32	1.33	1.34	-0.01
Water	7.34	2.27	2.27	0.0
Non-Forested Wetlands	0.33	0.10	0.10	0.0
Forested Wetlands	4.47	1.38	1.38	0.0
Barren	1.42	0.44	0.57	-0.13
Utility ROW (forest)	0.62	0.19	0.19	0.0
<b>Total</b>	<b>100.00</b>	<b>30.87</b>	<b>30.87</b>	

# Impervious Cover

- 1-foot resolution data
- CTDEEP Local Basins

Subwatershed	Impervious Cover (%)
Silver Falls	4.38
Upper Niantic	3.30
Bogue Brook Reservoir	3.81
Cranberry Meadow Brook	2.91
Stony Brook	7.44
Niantic River	10.11
Latimer Brook	6.83
Oil Mill	3.85
Barnes Reservoir	1.62
<b>Watershed</b>	<b>5.3</b>

- Local basins >10-15%
- Niantic River subwatershed >10%



## IMPERVIOUS COVER

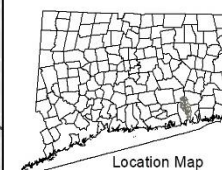
### Niantic River Watershed Protection Plan



#### Legend

#### Impervious Cover Percent

- 0-5
- 5-10
- 10-15
- >15
- Impervious Surface
- River/Stream
- Lake/Pond/Reservoir
- Subwatersheds
- Town Boundary



Location Map



0 0.25 0.5 1 1.5 Miles

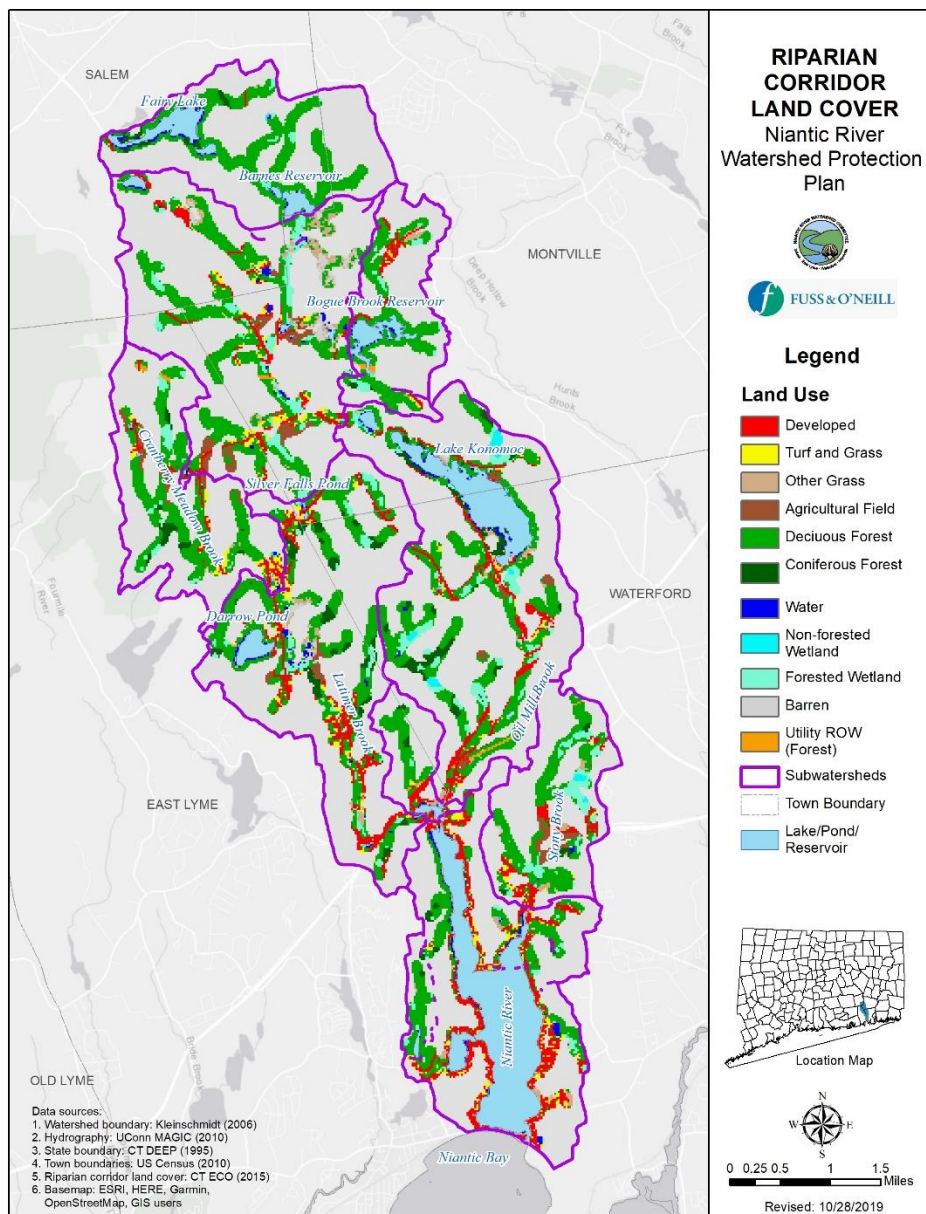
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 5. Impervious cover: UConn CLEAR (2017)  
 6. Basemap: ESRI, HERE, Garmin, OpenStreetMap, GIS users



# Riparian Corridor Land Cover

- UConn CLEAR, 2015 Land Cover Statewide Analysis
- 300-foot buffer on either side of a stream centerline or waterbody shoreline
- Mapped perennial and intermittent streams

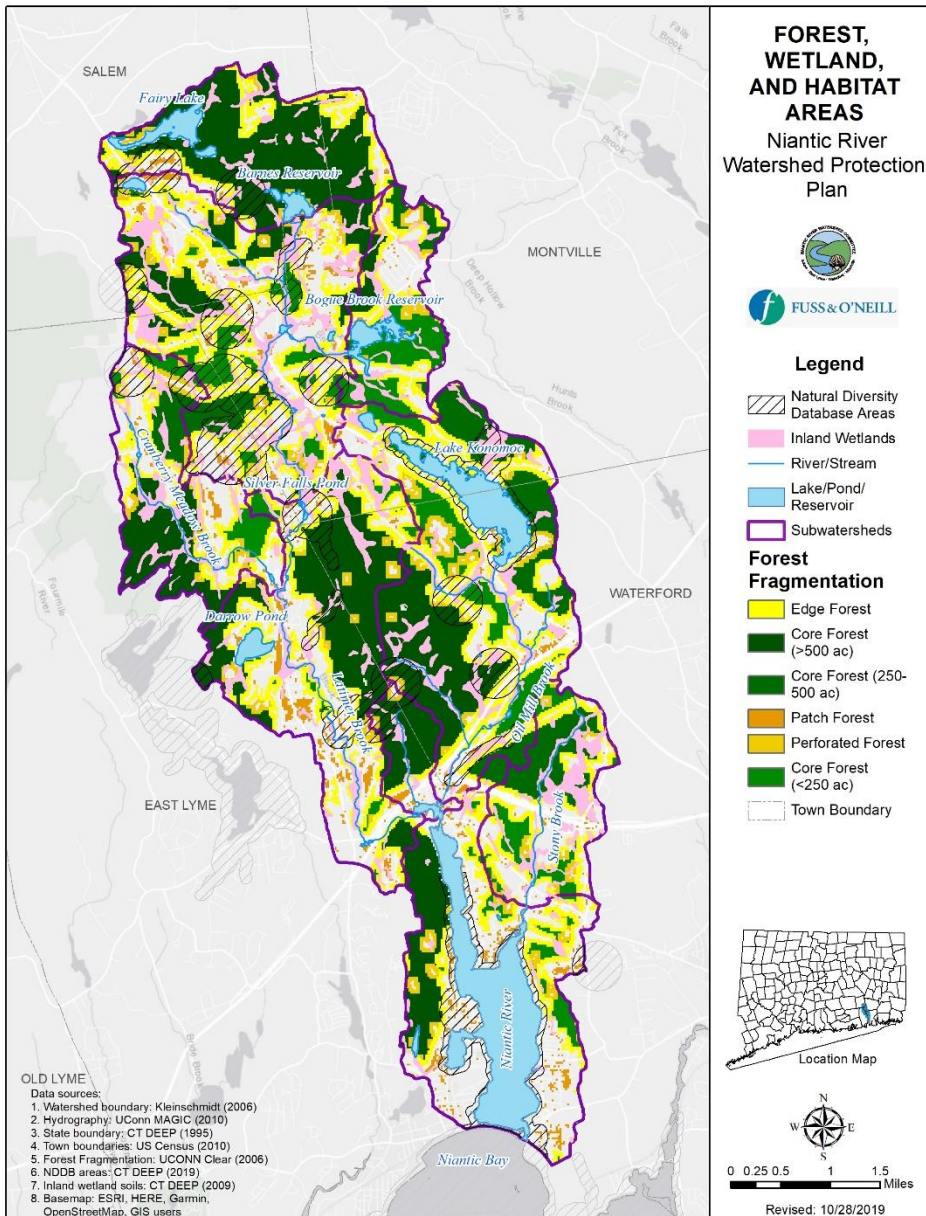


# Riparian Corridor Land Cover

Land Cover (%)	Silver Falls	Upper Niantic	Bogue Brook Reservoir	Cranberry Meadow Brook	Stony Brook	Niantic River	Latimer Brook	Oil Mill	Barnes Reservoir
Developed	9.80	19.54	10.24	8.67	12.94	35.62	17.48	14.10	1.27
Turf and Grass	5.20	2.99	2.14	6.62	2.84	9.88	5.49	2.29	0.27
Other Grass	6.12	2.29	2.98	0.51	2.71	2.46	2.21	1.98	0.50
Agriculture	7.56	0.00	0.13	6.07	8.21	0.00	1.86	2.30	0.00
Deciduous Forest	53.13	64.61	72.97	63.51	50.27	39.57	51.38	52.61	85.49
Coniferous Forest	0.11	4.58	0.97	5.71	2.12	2.75	9.31	8.44	5.26
Water	1.77	1.58	1.69	0.39	0.36	4.99	1.94	1.92	3.81
Non-Forested Wetlands	0.13	0.00	0.00	0.12	1.40	0.06	0.06	2.59	0.32
Forested Wetlands	11.15	2.46	7.52	7.25	18.44	3.16	8.19	12.19	3.08
Barren	4.78	0.18	0.00	0.00	0.50	1.51	2.03	0.74	0.00
Utility ROW (forest)	0.27	1.76	1.36	1.14	0.23	0.00	0.04	0.84	0.00
	100	100	100	100	100	100	100	100	100

- **Deciduous Forest – predominant riparian land cover in most subwatersheds (40-85%)**
- **Subwatersheds with most developed riparian corridor**
  - Niantic River (45%), Upper Niantic (22%), and Latimer Brook (23%)
- **Subwatershed with least developed riparian corridor**
  - Barnes Reservoir (1.5%) (and highest percentage of forest)
- **Agriculture – Silver Falls, Cranberry Meadow Brook, and Stony Brook**

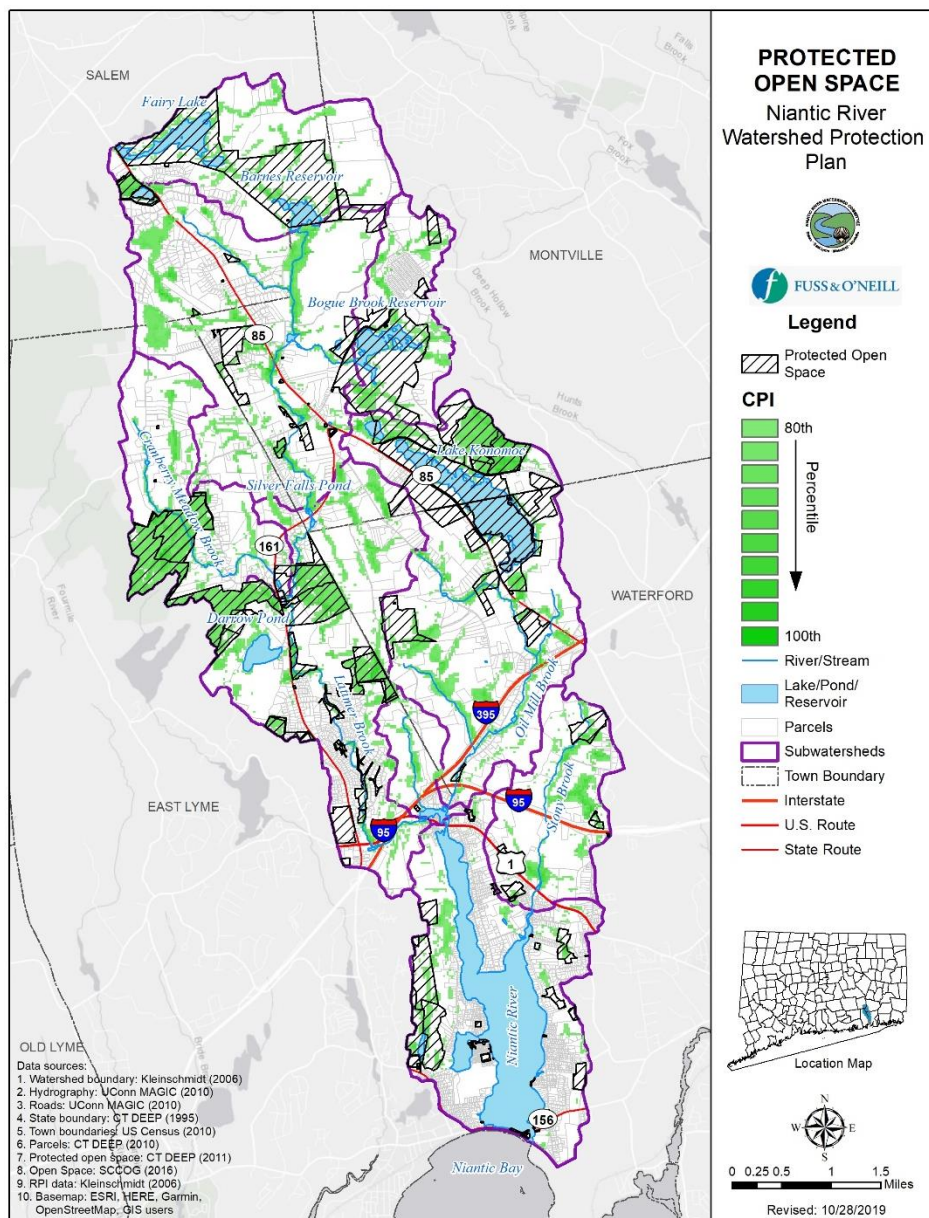
# Forests, Wetlands, Critical Habitat



Subwatershed	Wetland Soils %	Core Forest %	NDDB Area %
Silver Falls	18.66	28.75	30.58
Upper Niantic	7.91	65.63	18.73
Bogue Brook Reservoir	11.44	46.75	1.11
Cranberry Meadow Brook	16.22	46.06	10.75
Stony Brook	20.28	37.88	0.00
Niantic River	2.24	17.45	37.70
Latimer Brook	11.36	37.86	12.61
Oil Mill	11.94	43.66	25.92
Barnes Reservoir	7.73	65.38	11.19
Watershed	12.00	38.49	20.63

- **18-67% Core Forest**
  - Upper Niantic highest
  - Niantic River lowest
- **Oswegatchie Hills**
- **Nehantic State Forest**
- **Public Drinking Water Watersheds**

# Protected Open Space



- Protected open space data from SCCOG and CT DEEP
- Mix of municipal, state, and federal land and privately protected open space
- Variety of protection mechanisms
- Most large, undeveloped tracts are already protected



# Wastewater and Permitted Discharges

- No municipal WWTF discharges to Niantic River or tributaries
- Sewers serve most of East Lyme and Waterford in the watershed (pumped to New London)
- Areas generally north of I-395 rely on on-site wastewater disposal
- Other permitted stormwater & groundwater discharges

## REGULATED WASTEWATER AND WATER DISCHARGES

Niantic River Watershed Protection Plan



FUSS & O'NEILL

### Legend

- Storm water-Construction
- Ground water Discharge
- Storm water-Industrial
- Subsurface Sewage Disposal
- Swimming Pool Wastewater
- Vehicle Maintenance
- Sewer Service Area
- River/Stream
- Lake/Pond/Reservoir
- Major Basin
- Town Boundary
- Interstate
- U.S. Route
- State Route
- Local Road

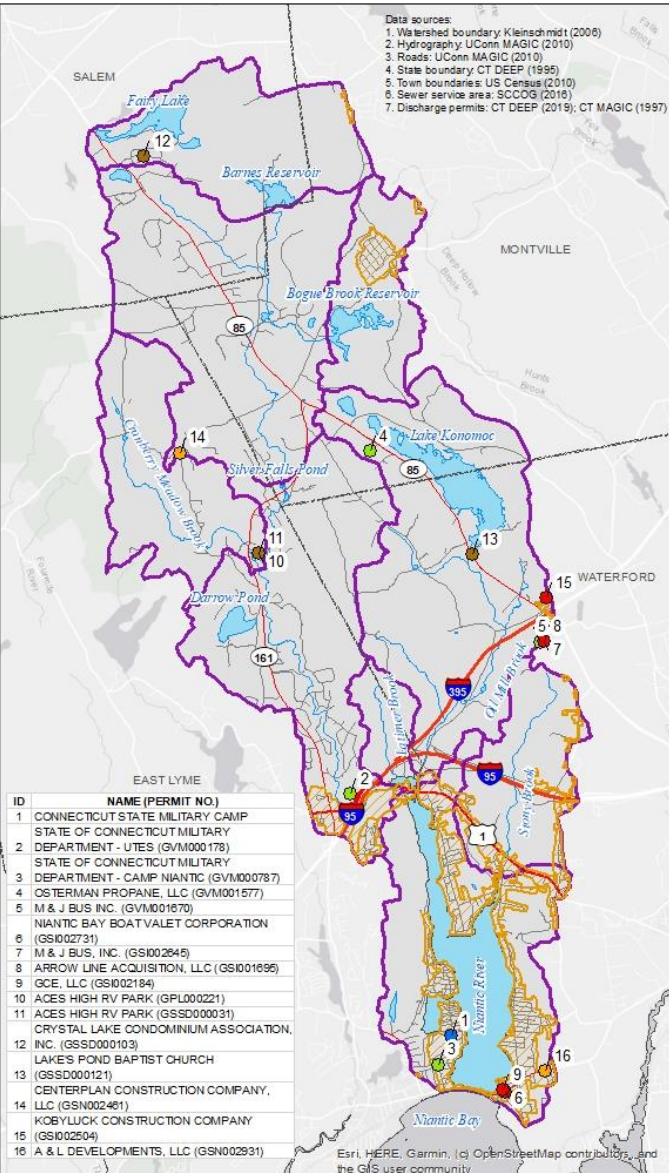
The following towns are registered under the CT MS4 General Permit:  
 Waterford: GSM000023  
 Montville: GSM000067  
 East Lyme: GSM000014



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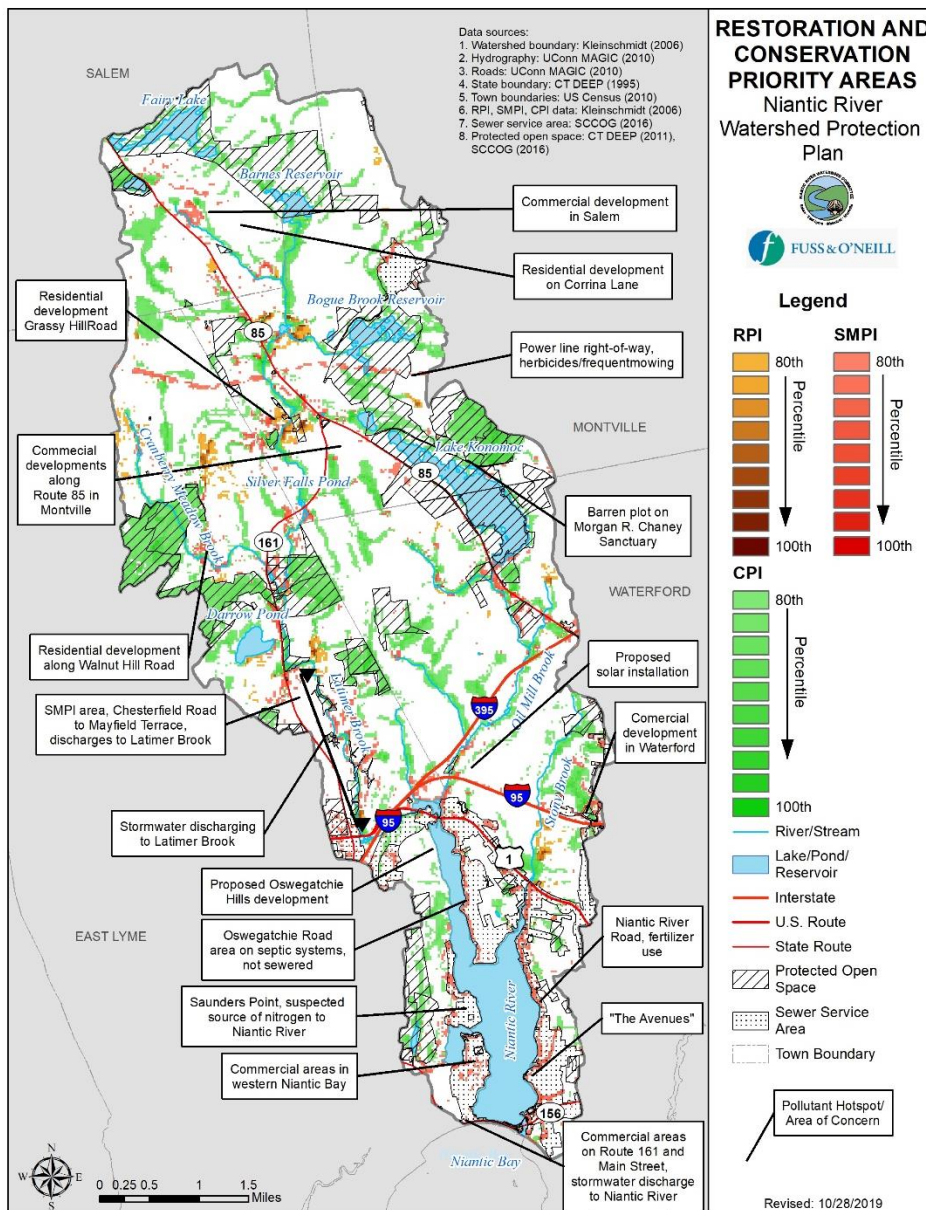
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 2. Hydrography: UConn MAGIC (2010)  
 3. Roads: UConn MAGIC (2010)  
 4. State boundary: CT DEEP (1995)  
 5. Town boundaries: US Census (2010)  
 6. Sewer service area: SCCC (2016)  
 7. Discharge permits: CT DEEP (2019); CT MAGIC (1997)



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

# Watershed Management Priority Areas



## Watershed Vulnerability Indices (2006 NRWPP)

- Restoration Priority Index (RPI)
- Stormwater Management Priority Index (SMPI)
- Conservation Priority Index (CPI)

## Priority conservation along stream corridors

## Priority stormwater management in developed areas

## Other pollution hotspots & areas of concern

# Breakout Session

## Prioritizing Issues & Actions

# Breakout Session – Instructions

- **Organize into groups of 4 to 6 people based on your pre-assigned group number**
  - Group 1: Stormwater Management & Water Quality
  - Group 2: Coastal/Estuarine Issues
  - Group 3: Land Use Policy & Planning
  - Group 4: Open Space & Conservation
- **Designate a note-taker and spokesperson for your group. The spokesperson for each group will report back to the rest of the workshop participants when we reconvene.**

# Breakout Session – Instructions

- Respond to two questions as they relate to your assigned topic. As a group, discuss possible responses to the questions and select the top 5 responses to both questions to share with the other workshop participants when we reconvene.
- Write your top 5 responses on the large sheets provided.
- Also use the maps provided to mark the locations of site-specific issues of concern or recommended actions, as applicable.

# Breakout Session – Questions (50 minutes)

**Question 1.** What are the **top 5 issues of concern** for the Niantic River watershed relative to your assigned topic?

**Question 2.** What are **5 recommended actions** that should be taken to address the issues of concern that you identified in Question 1? Actions can be short- or long-term, site-specific or watershed-wide.

# Reconvene and Group Discussion (25 minutes)

- Present your group's responses to each question (spokesperson)
- Hand in your sheets with your group's top 5 responses to both questions (not ranked in any order), which will be posted for voting by the workshop participants
- Each person will vote for their top 4 responses to Question 1 and top 4 responses to Question 2 using dot stickers
- Group discussion

# Next Steps

- Report of Workshop Outcomes November 2019
- Visual Field Assessments December 2019
- Draft Watershed Plan Addendum February 2020
- Final Watershed Plan Addendum April/May 2020
- Watershed Summit June 2020



# Additional Comments or Questions:

Judy Rondeau  
Niantic River Watershed Coordinator  
860-774-9600 x13  
[judy.rondeau@comcast.net](mailto:judy.rondeau@comcast.net)

Thank you for your time and input!

