TRWA Water Quality Monitoring 2018

Taunton River Watershed Alliance, Inc.
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savethetaunton.org

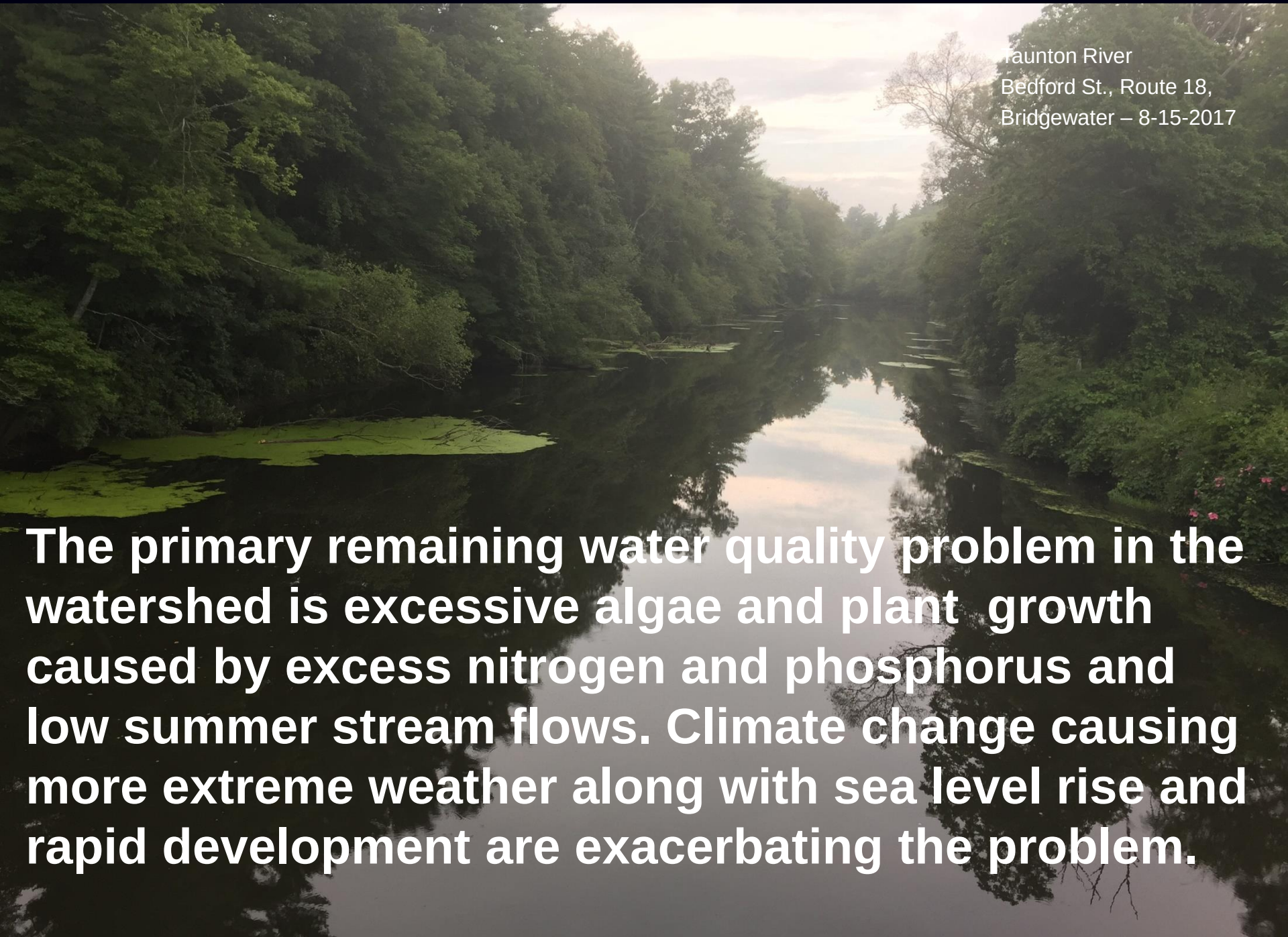

Taunton River Watershed
Massachusetts
Walpole
Stoughton
Avon
Holbrook
Rockland
Hanover
Norfolk
Sharon
Abington
Wrentham
Foxborough
Brockton
Whitman
Hanson
Pembroke
East Bridge-water
Plainville
Wading
Hockomock R.
West Bridge-water
Mattfield R.
Monponsett Ponds
Kingston
Easton
Mansfield
Town River
North Attleborough
Norton Res.
Norton
River
Lake Nippenicket
Bridgewater
Halifax
Winnetuxet River
Plympton
Taunton
Raynham
River
Attleboro
Three Mille River
Mill R.
Forge
Taunton River
Plymouth
Rehoboth
Taunton
Nemasket River
Middleborough
Carver
Borkley
Assawompset Pond
Dighton
Lakeville
0
5 Miles
Long Pond
Swansea
Freetown
Somerset
Warren
Fall River
New Bedford
Bristol
Mount Hope Bay
Map created by Bruce Hooke for the Taunton River Watershed Alliance using data from the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division; and RIGIS.

Progress Cleaning Up the River

- The Taunton River and many of its tributary streams were almost dead in the decades before 1970.

- Although significant challenges remain, thanks to the 1972 Clean Water Act and the work of many partners (EPA, MassDEP, municipalities, NGOs, Regional Planning Agencies, citizen volunteers and industries) water quality and aquatic life diversity is much better now.

- The Narragansett Bay Estuary Program, 2017. State of Narragansett Bay and Its Watershed: Summary Report provides a concise review of the status and challenges facing the Taunton River Watershed, Mount Hope Bay, and greater Narragansett Bay.



The primary remaining water quality problem in the watershed is excessive algae and plant growth caused by excess nitrogen and phosphorus and low summer stream flows. Climate change causing more extreme weather along with sea level rise and rapid development are exacerbating the problem.

Sampling Volunteers (a.k.a. Guardians of the River)

STREET/BRIDGE LOCATION	RIVER	VOLUNTEERS
CENTER ST., BERKLEY BRIDGE *	TAUNTON RIVER	Barbara and Bob Hunt, Bill Ferry, Bryan Bagdasian
PLAIN ST., TAUNTON	TAUNTON RIVER	Barbara and Bob Hunt, Bill Ferry, Bryan
BEDFORD ST., RT. 18, BRIDGEWATER	TAUNTON RIVER	Robert Sullivan, and Sandra Kelley, Janice McGonagle
CHERRY ST., BRIDGEWATER	TAUNTON RIVER	Robert Sullivan, Sandra Kelley, Janice
ROUTE 79, ASSONET R., BRIDGE	ASSONET RIVER	Anne and Jeff Morse, and Tracy Brett
SEGREGANSETT RIVER BRIDGE, BROOK ST., DIGHTON *	SEGREGANSETT RIVER	Jen O'Keefe and Shelby Ferry
CHICKAMUCKETSETT BROOK BRIDGE, BERKLEY ST., BERKLEY *	CHICKAMUCKSETT BROOK	Alex Houtzager
SOMERSET AVE., ROUTE 138 TAUNTON	THREE MILE	Barbara and Bob Hunt, Bill Ferry, Bryan
COHANNET ST., ROUTE 44 TAUNTON	THREE MILE	Cheryl Graham
CRANE ST., NORTON	THREE MILE	Cheryl Graham
INGELL ST., TAUNTON	MILL RIVER	Brad Gonyer, Craig Johnson, Brendan K
WASHINGTON ST., TAUNTON	MILL RIVER	Brad, and Craig, Brendan Kincaid
WHITTENDON ST., TAUNTON	MILL RIVER	Brad, Craig, and Brendan
ROUTE 44, RAYNHAM	FORGE RIVER	Steve Silva, and Craig Heffernan
MIDDLEBOROUGH AVE., TAUNTON	COTLEY RIVER	Steve, and Craig
RIVER ST., E. TAUNTON *	FURNACE BROOK	Kit and Bill VanMeter
HIGHSTONE ST., E. TAUNTON	THOMPSON BROOK	Kit and Bill VanMeter
HAYWARD ST., BRIDGEWATER	TOWN RIVER	Rachel Thibeault, Natalie Johnson, Tara Hulme
HIGH ST., BRIDGEWATER	MATFIELD RIVER	Rachel, Natalie, Tara
MURDOCK ST. MIDDLEBORO	NEMASKET RIVER	Anne-Marie Burke and Edward Hathaway

20 locations
26 volunteers

Back-up and New Samplers are Welcome

Training for New Volunteers is the last Saturday in February. If interested in helping call the TRWA office or come to our February training. We will send an email in early February confirming the training.

2018 Nitrate and TP Highlights

- Levels of Nitrate and Total Phosphorus were high despite rain events before our July, Aug., Sept., and Oct. sampling events
- Like the last detailed MassDEP study (2004 to 2006): TRWA 2018 sampling documents a nitrogen overloaded river + estuary system.
- TRWA sampling results from 2003 to 2018 document a nitrogen overloaded river and upper estuary.
- Total Phosphorus sometimes exceeded the 0.100 mg/l monthly sample target and frequently exceeded our 0.05 mg/l average target (Often TP is utilized by algae/plants so quickly photos are needed to identify nutrient caused problems in freshwaters – TRWA considers seasonal average values ≥ 0.05 a concern.

Nitrate 2018, 2017 and 2016

Nitrate Level to WQ Target Ratios (May to Oct.)

Average / Maximum x Water Quality Target

	2018	2017	2016
Lower River / Upper Estuary			
Taunton R. Berkley Br	1.4 / **3.3**	3.4 / **6.3**	2.5 / **4.3**
Three Mile R. N. Dighton	1.8 / **2.4**	4.6 / **13**	5.5 / **11.8**
Source Waters Upper River			
Town R. Bridgewater	4.1 / **8.3**	6.8 / **15**	11.6 / **33**
Matfield R. Bridgewater	3.7 / **5.6**	3.8 / **6**	4 / **5**

Why We Sample

- Give the watershed a monthly check-up the second Tuesday each month (March to November)
- Support upgrading WWTPs as needed (esp. TN + TP limitations and up + downstream river monitoring)
- Support better stormwater management especially for new and redevelopment projects
- Locate non-WWTP caused problem areas where there is a need to look for sources of pollution
- Provide our volunteers a chance to appreciate the River in the peaceful early morning and be part of an important effort

Importance of Long Term Monitoring

- TRWA has monitored the watershed for over 25 years and has digital records for 15 years back to 2003. Summaries of 2016, 2017 and 2018 data are on our website. Our 15 years of data despite annual variability documents a nitrogen enriched watershed every year.

- The State of Narragansett Bay Summary Report describes factors including: precipitation, winds and temperature that cause seasonal and annual variations in water quality. Therefore any monitoring to assess water quality criteria, the impacts of climate change, or nutrient loading must be long term to be useful.

Challenges Facing the Watershed

- The State of Narragansett Bay Summary Report Identifies some Challenges
  - The Taunton River Basin is developing faster than surrounding areas resulting in less forested lands to absorb rainwater / filter pollution, higher treated wastewater flows, and more polluted runoff.
  - Since 1960 air temperature is up 2.7 F and water temp. up 3.0 F.
  - We're seeing drought conditions Summer and Fall and increased precipitation and flooding in Winter and Spring from more intense storms.
  - Sea level has risen 9 inches as measured in Newport, RI in the last 85 years, todays storm is projected to be tomorrows high tide.
  - Since the 1980s warmer water species such as scup and black sea bass have displaced resident species such as winter flounder and red hake causing the estuary to resemble a mid-Atlantic estuary (a trend toward increased pollution and nutrient sensitivity).

Next Actions to Watch for Water Quality Improvement

- Completion of Municipal WWTP Upgrades to Remove TN by the Summer of 2022
  - Middleboro — **completed** (1 year early + under budget)
  - Mansfield/Norton/Foxboro — 12/01/2019
  - Taunton (phase I) — 07/01/2021
  - Brockton — 04/01/2022
  - Bridgewater (TN) — 05/01/2022
  - Somerset — **not reissued (10 years overdue)**
  - Fall River — **not reissued (12 + yrs. overdue)**

- Widespread Implementation of Stormwater Best Management Practices (BMPs) to "Soak Up the Rain" (removes pollution and restores stream flow).

Questions ?

Visit www.savethetaunton.org

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Additional Data Slides
2018 to 2016

2018 Nitrate and TP Highlights

- Levels of Nitrate and Total Phosphorus were high despite rain events before our July, Aug., Sept., and Oct. sampling
- Like the last detailed study (2004 to 2006): TRWA sampling documents a nitrogen overloaded river + estuary system
- Nitrate level range (June to Sept.) and (x 0.4 mg/l target):
  - Taunton R. Berkley Br. 0.6 – 1.3 mg/l (2 to **3 x** target)
  - Three Mile R. Rt 138 Dighton 0.8 – 1 mg/l (2 to **2 x** target)
  - Town R. Bridgewater 0.8 – 3.3 mg/l (2 to **8 x** target)
  - Matfield R. Bridgewater 1.6 – 2.2 mg/l (4 to **6 x** target)
  - Nemasket R. Middleboro 0.2 – 1.2 mg/l (0.4 to **3 x** target)
- Total Phosphorus sometimes exceeded the 0.100 mg/l monthly target and frequently exceeded the average target of 0.05 mg/l (often TP is utilized by algae/plants so quickly photos are needed to identify nutrient caused problems in freshwaters).

2017 Nitrate and TP Highlights

- Levels of Nitrate (NO3) and Total Phosphorus (TP) increased throughout the sampling season
- Like the last detailed study (2004 to 2006): TRWA sampling documents a nitrogen overloaded river + estuary system
- Nitrate level range (July to Oct.) and (x 0.4 mg/l target):
  - Taunton R. Berkley Br. 1.3 – 2.5 mg/l (3 to **6 x** target)
  - Three Mile R. Rt 138 Dighton 0.8 – 5.2mg/l (2 to **13 x** target)
  - Town R. Bridgewater 1.1 – 6 mg/l (3 to **15 x** target)
  - Matfield R. Bridgewater 1.2 – 2.4 mg/l (3 to **6 x** target)
  - Nemasket R. Middleboro 1.1 – 2.9 mg/l (3 to **7 x** target)
- Total Phosphorus approached or exceeded the 0.100 mg/l target in August and September at five locations (often TP is utilized by algae/plants so quickly photos are helpful to identify nutrient caused problems in freshwaters).

2016 Nitrate and TP Highlights

- Levels of Nitrate (NO3) and Total Phosphorus (TP) increased throughout the sampling season
- Like the last detailed study (2004 to 2006): TRWA sampling documents a nitrogen overloaded river + estuary system
- Nitrate level range (June to Oct.) and (x 0.4 mg/l target):
  - Taunton R. Berkley Br. 0.8 – 1.7 mg/l (2 to **4 x** target)
  - Three Mile R. Rt 138 Dighton 1.3 – 4.7 mg/l (3 to **12 x** target)
  - Town R. Bridgewater 0.8 – 13 mg/l (2 to **33 x** target)
  - Matfield R. Bridgewater 1.1 – 2.0 mg/l (3 to **5 x** target)
- Total Phosphorus approached or exceeded the 0.100 mg/l target in August and September at six locations often TP is utilized by algae/plants so quickly photos are helpful to identify nutrient caused problems in freshwaters.