



Rhode Island's Integrated Reporting Process and Draft 2022 303(d) List



Woonasquatucket River at the Mowry Conservation Area

RIDEM

Office of Water Resources

January 25, 2022 at 3 PM



Overview of Presentation

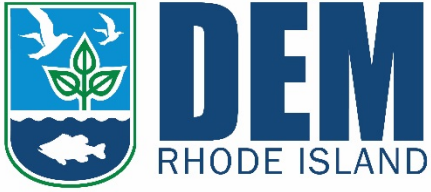
- Background Federal Clean Water Act Requirements
- Overview of Assessment Process
- Results of Assessment → 2022 303(d) List
- Water Quality Restoration Activities
 - Investments leading to improved water quality
 - Ongoing and planned water quality restoration studies



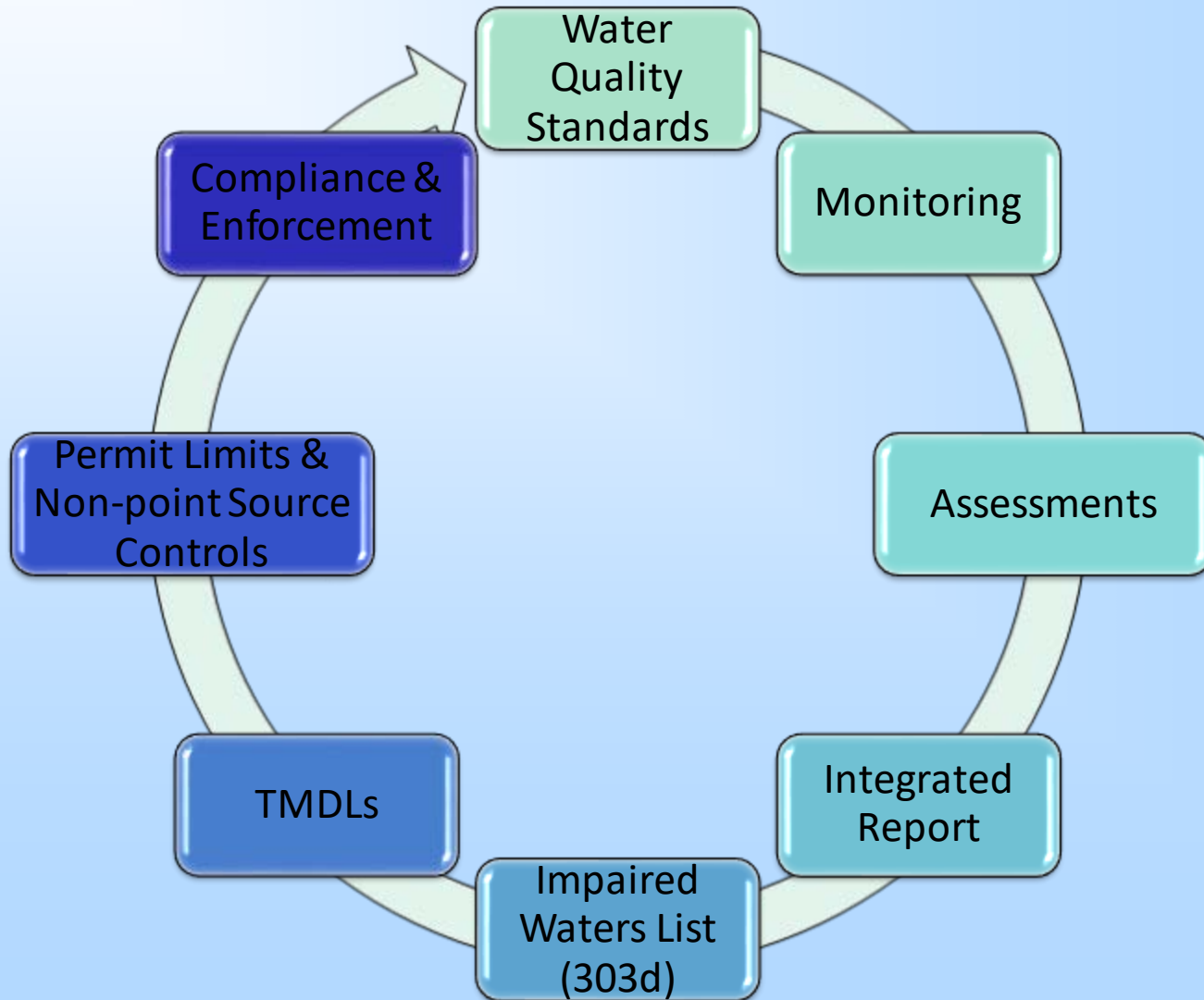
Federal Clean Water Act

Restore and maintain the chemical, physical, and biological integrity of the nation's waters.

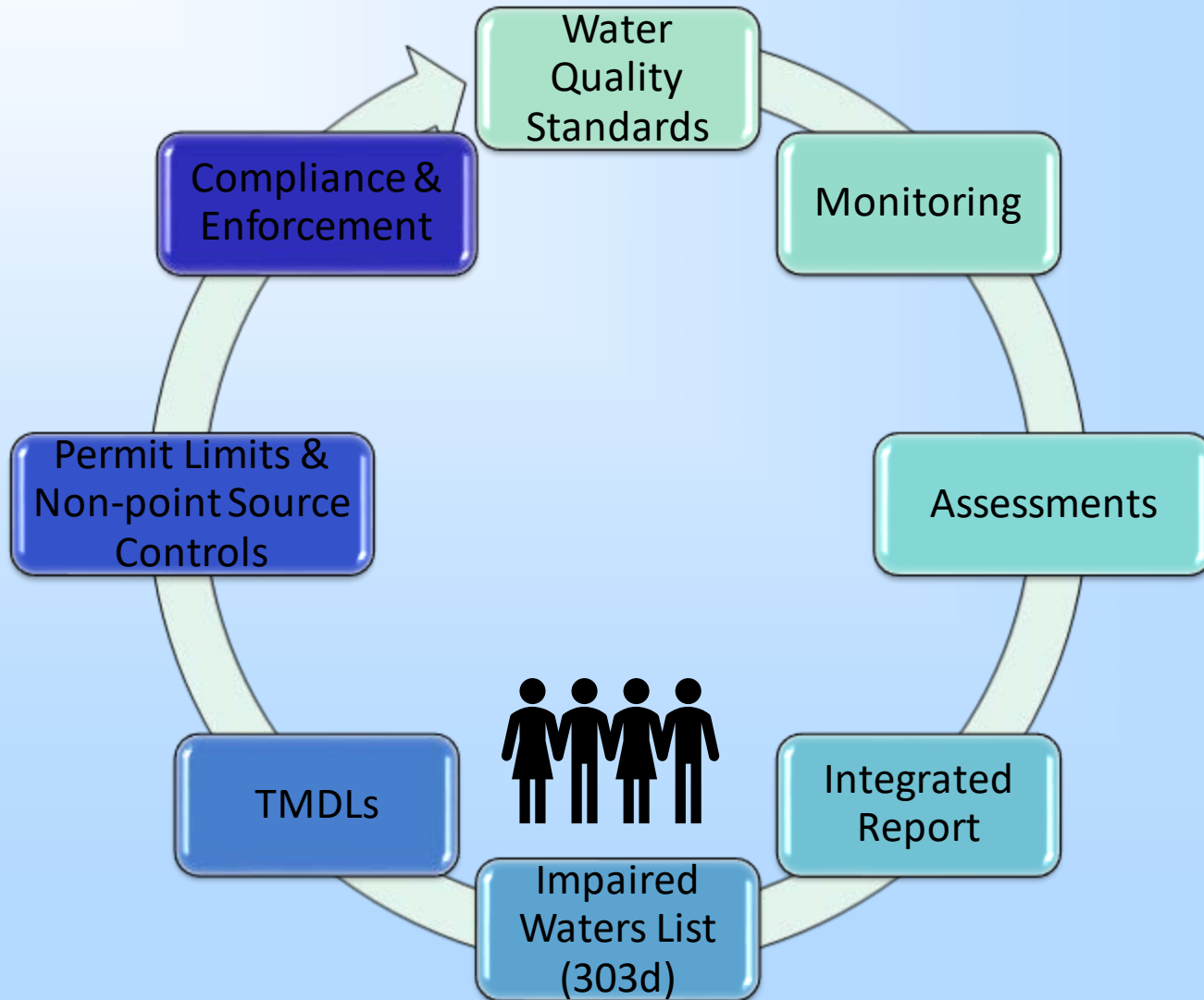




WATER QUALITY MANAGEMENT FRAMEWORK



WATER QUALITY MANAGEMENT FRAMEWORK





Clean Water Act Requirements

- **Water Quality Standards for the state's waters**
 - Water Quality Classification and Designated Uses
 - Water Quality Criteria
- **Monitor, Assess, and Report**
 - Water Quality Conditions of the State's Waters
 - Integrated Lists
- **List Impaired Waters**
 - Waters where *traditional technology-based* pollution controls are not adequate to meet *water quality standards*
 - Prioritize and Schedule TMDL Development for all waters on 303(d) Impaired Waters List



Water Quality Standards

Designated Uses

Goal Uses of the waterbody

Fish consumption 

Swimming 

Aquatic life 

Drinking water, etc. 



Water Classifications

Class is defined by a set of Designated Uses

AA, A, B, SA, SB, etc.

Water Quality Criteria

Pollutant thresholds to protect Designated Uses








Numeric

5.0 mg/L dissolved oxygen

Narrative

“None in concentrations or combinations that could be harmful to humans or fish and wildlife for the most sensitive and governing water class use...”

RI WATER QUALITY CLASSIFICATIONS

Designated Use	Applicable Classifications	Designated Use Definitions
 <p>Drinking Water Supply</p>	AA	Supply safe drinking water with conventional treatment.
 <p>Primary Contact Recreation/Swimming</p>	All surface waters	Swimming, water skiing, surfing or other recreational activities with prolonged and intimate contact by the human body with water.
 <p>Secondary Contact Recreation/Boating</p>	All surface waters	Boating, canoeing, fishing, kayaking or other recreational activities with minimal contact by the human body with the water and the probability of ingestion of the water is minimal.
 <p>Aquatic Life Support/ Fish, other Aquatic Life and Wildlife</p>	All surface waters	Waters suitable for the protection, maintenance, and propagation of a viable community of aquatic life and wildlife.
 <p>Shellfishing/ Shellfish Consumption</p>	SA, SA{b}	Supports a population of shellfish and is free from pathogens that could pose a human health risk to consumers.
 <p>Shellfish Controlled Relay and Depuration</p>	SB	Suitable for the transplant of shellfish to Class SA waters for ambient depuration and controlled harvest.
 <p>Fish Consumption</p>	All surface waters	Supports fish free from contamination that could pose a human health risk to consumers.



DEM
RHODE ISLAND

MONITOR, ASSESS, AND REPORT

ASSIGN WATER QUALITY
CLASSIFICATION



DEFINE WATERBODY ID



MONITOR, ASSESS, AND REPORT

ASSIGN WATER QUALITY CLASSIFICATION

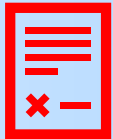


DEFINE WATERBODY ID

MONITORING DATA



ASSESSMENTS

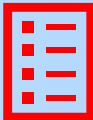


MEETS WQ STANDARDS

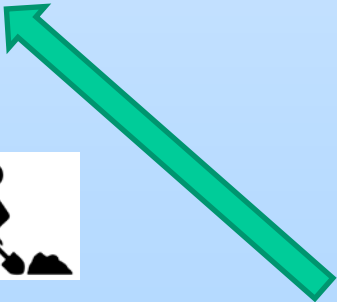
DOES NOT MEET WQ STANDARDS



IMPAIRED WATERS LIST



TMDL/WQ RESTORATION





Consolidated Assessment and Listing Methodology (CALM)

- Framework of **decision-making process** for assessments
- Defines data **quality** and **quantity**
- **Category 1-5** Integrated Report Lists
 - Each waterbody is assigned a category
 - Category is based on **meeting water quality goals**



Comprehensive Assessment of Water Quality Conditions

- Use Readily Available Data
 - Data sources include federal and state agencies, universities, and volunteers.
- Review data
 - Evaluate for compliance with water quality standards, i.e. designated uses and criteria
- Integrated Report
 - Published Biennially
 - Combines the Section 305(b) State of the State's Waters Report and the Section 303(d) Impaired Waters List



Sources of 2022 Integrated Report Monitoring Data



Ambient River Monitoring (RIDEM)	Fixed Site Monitoring in Narragansett Bay
Large River Monitoring (USGS)	Narragansett Bay Commission
TMDL Studies (RIDEM)	Providence Water Supply Board
Fish Consumption, Beach Closure, & Drinking Water (RIDOH)	URI Watershed Watch
Shellfishing Program (RIDEM)	Pawtucket Water Supply Board
Hg Fish Tissue Surveys (USEPA NARS and ACESD)	City of Newport





DESIGNATED USES & ASSESSMENT INDICATORS



Designated Use	Indicator
Drinking Water	<ul style="list-style-type: none"> Safe Drinking Water Act Standards (MCLs) Finished drinking water restrictions Treatment requirements more than conventional treatment Fecal coliform bacteria (terminal reservoir)
Swimming/Primary & Secondary Recreation	<ul style="list-style-type: none"> Enterococci bacteria Fecal coliform bacteria Beach closure information for designated beach waters Water quality general criteria and aesthetics
Aquatic Life (fish, etc.) and Wildlife	<ul style="list-style-type: none"> Biological (macroinvertebrate) data with physical habitat Conventional parameters Toxic parameters in water column Toxicity data Water quality general criteria and aesthetics
Shellfish Consumption/Depuration	<ul style="list-style-type: none"> Fecal coliform bacteria RI Shellfish Growing Area Monitoring Program classifications Water quality general criteria and aesthetics
Fish Consumption	<ul style="list-style-type: none"> Fish consumption advisories

* Core indicators are represented in BOLD lettering.



INTEGRATED REPORT LISTING CATEGORIES

Category	Description	Meaning
Category 1	<ul style="list-style-type: none">• Attaining all designated uses• No use threatened	<ul style="list-style-type: none">• Considered “fully supporting” all designated uses



INTEGRATED REPORT LISTING CATEGORIES

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Draft 2022 Integrated Report Category Summary

Category	Waterbody Type					Totals (Waterbody IDs)			
	Estuary	Rivers	Lakes	Ocean	Ocean / Near Coastal	2022	2018-20	2016	2014
1	0	0	0	0	0	0	0	0	16
2	70	109	21	4	4	208	215	216	190
3	14	219	94	0	0	327	327	326	390
4A	18	70	39	0	0	127	118	119	125
4B	0	0	0	0	0	0	0	0	0
4C	0	3	33	0	0	36	32	31	39
5	36	110	46	0	0	192	198	190	121
Totals	138	511	233	4	4	890	890	882	881



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3	14	219	94	0	0	↔ 327	327
4A	18	70	39	0	0	↑ 127	118
4B	0	0	0	0	0	0	0
4C	0	3	33	0	0	↑ 36	32
5	36	110	46	0	0	↓ 192	198
Totals	138	511	233	4	4	890	882





Draft 2022 Integrated Report Summary Statistics

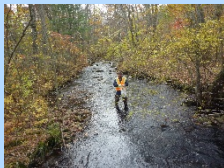
RIVERS

1376 Miles in RI

 **1087 miles (79%) are assessed**

 **751 assessed miles (69%) are impaired**

 **455 assessed miles (42%) are impaired and scheduled for a TMDL.**




LAKES AND PONDS

18,693 Acres in RI

 **15,603 acres (84%) are assessed**


 **11,324 assessed acres (73%) are impaired**


 **5,176 assessed acres (33%) are impaired and scheduled for a TMDL.**




ESTUARIES

159 Sq. Miles in RI

 **157 sq. miles (98%) are assessed**







 **57 assessed sq. miles (36%) are impaired**

 **51 assessed sq. miles (33%) are impaired and scheduled for a TMDL.**





Draft 2022 Integrated Report Category Summary

	Category	Primary Driver of Category Change
	1	
	2	
	3	
	4A	
	4B	
	4C	
	5	









Draft 2022 Integrated Report Category Summary

	Category	Primary Driver of Category Change
	1	Narragansett Bay fish tissue data not yet reviewed
	2	
	3	
	4A	
	4B	
	4C	
	5	









Draft 2022 Integrated Report Category Summary

Category	Primary Driver of Category Change
 1	Narragansett Bay fish tissue data not yet reviewed
 2	Waters switching between assessed and not assessed.
 3	
 4A	
4B	
 4C	
 5	









Draft 2022 Integrated Report Category Summary

Category	Primary Driver of Category Change
 1	Narragansett Bay fish tissue data not yet reviewed
 2	Waters switching between assessed and not assessed.
 3	Waters switching between assessed and not assessed including lakes not previously assessed found to have aquatic invasive species.
 4A	
4B	
 4C	
 5	









Draft 2022 Integrated Report Category Summary

Category	Primary Driver of Category Change
 1	Narragansett Bay fish tissue data not yet reviewed
 2	Waters switching between assessed and not assessed.
 3	Waters switching between assessed and not assessed including lakes not previously assessed found to have aquatic invasive species.
 4A	Several TMDLs approved. Two waters moved to Category 5 (impairment needing a TMDL).
4B	
 4C	
 5	









Draft 2022 Integrated Report Category Summary

Category	Primary Driver of Category Change
 1	Narragansett Bay fish tissue data not yet reviewed
 2	Waters switching between assessed and not assessed.
 3	Waters switching between assessed and not assessed including lakes not previously assessed found to have aquatic invasive species.
 4A	Several TMDLs approved. Two waters moved to Category 5 (impairment needing a TMDL).
4B	
 4C	Lakes found to have aquatic invasive species. Three waters moved to Category 5 (impairment needing a TMDL).
 5	



Draft 2022 Integrated Report Category Summary

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 1	Narragansett Bay fish tissue data not yet reviewed
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 4A	Several TMDLs approved. Two waters moved to Category 5 (impairment needing a TMDL).
4B	
 4C	Lakes found to have aquatic invasive species. Three waters moved to Category 5 (impairment needing a TMDL).
 5	Fish consumption impairments and TMDL approval.



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New 4C Impairments on 2022 303(d) List

Cause	Waterbodies
Non-Native Aquatic Plants	<ul style="list-style-type: none">• Asa Pond• Beach Pond• Boone Lake• Carls Pond• Coventry Reservoir (Stump Pond)• Hawkins Pond• Lower Sprague Reservoir• Omega Pond• Peace Dale Reservoir• Print Works Pond• Shippee Saw Mill Pond• Sucker Pond• Ten Mile River & Tribs• Upper Dam Pond

4C Impairments do not require TMDL plans because the impairment is not caused by a pollutant.



INTEGRATED REPORT LISTING CATEGORIES

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Category 5	<ul style="list-style-type: none">Impaired or threatened for one or more designated use and requires a TMDL	<ul style="list-style-type: none">Development of a water quality restoration plan needed (TMDL)Impaired Waters List (303d)



Impaired Waters List

RI 2022 303(d) List

Category 5 Waters

- **Impaired or threatened** for one or more designated use and requires a TMDL
- **Establishes scheduled time frame** for development of TMDLs
- Helps **prioritize** the State's water quality monitoring and restoration activities



Comparing the 2018-2020 and 2022 303(d) Lists

- Decreased number of named waterbodies on list
 - 11 Waterbodies Moved to Category 4A (TMDLs Complete for all impairments)
 - 5 Waterbodies Added
- Decreased number of waterbodies with impairments requiring a TMDL (Category 5 Waters)
 - 192 (2022) to 198 (2018-2020)
- De-listing of impairments where Water Quality Standards attained or original listing inaccurate
 - 6 impairments removed
- Schedule shifts for TMDL development



Newport Drinking Water Supply Project



New Impairments on 2022 303(d) List

Cause	Waterbodies
Enterococci	<ul style="list-style-type: none">• Ten Mile River & Tribs
Lead	<ul style="list-style-type: none">• Pawtuxet River Main Stem
Total Phosphorus	<ul style="list-style-type: none">• J.L. Curran Reservoir (Fiskeville Reservoir)
Mercury in Fish Tissue	<ul style="list-style-type: none">• Chapman Pond• Tarbox Pond• Tarkiln Pond• Spring Lake (Herring Pond)



Impairments Removed from 303d List

Cause	Waterbodies
Lead, Dissolved	<ul style="list-style-type: none">• Blackstone River (-01A, -01B)• Maidford River (-02A)
Total Phosphorus	<ul style="list-style-type: none">• Pawtuxet River Main Stem (-03)
Zinc, Dissolved	<ul style="list-style-type: none">• Buckeye Brook (-01)• Woonasquatucket River (-10A)



WATER QUALITY RESTORATION EFFORTS



<http://www.dem.ri.gov/programs/benviron/water/pdfs/cvswarwick.pdf>





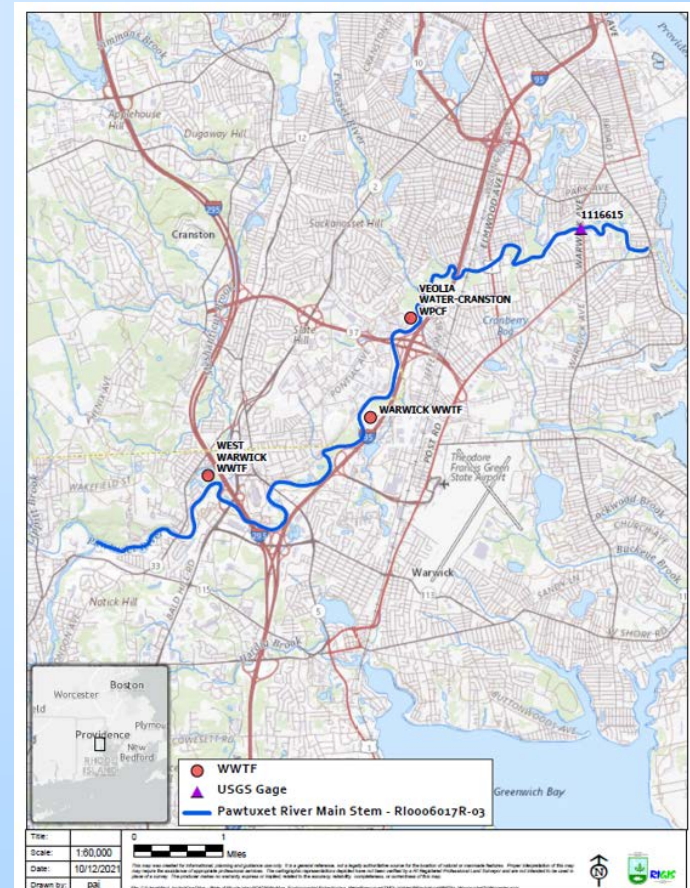
Water Quality Restoration De-Listings Linked to Pollution Abatement Investments

Pawtuxet River Main Stem

- Aquatic Life Use – Total Phosphorus
- Phosphorus Reductions at 3 Wastewater Treatment Facilities.



Pawtuxet River
2008 Dissolved Oxygen Monitoring

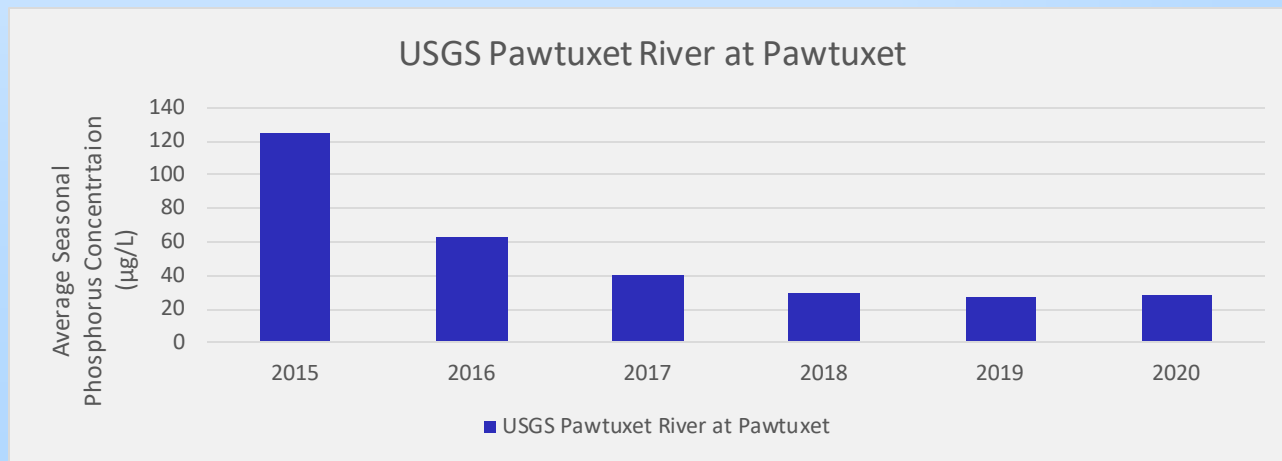
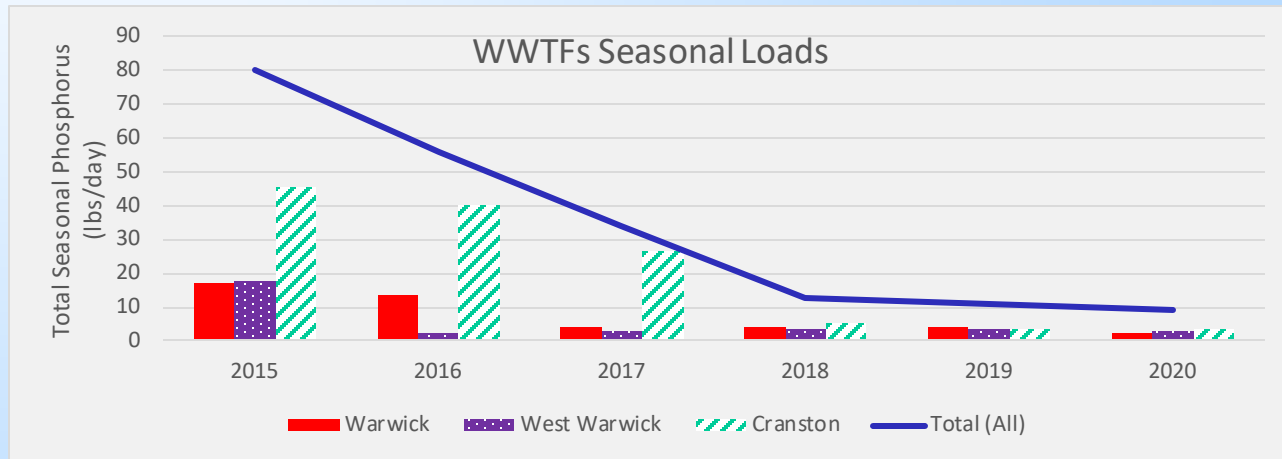


Pawtuxet River Waterbody Segment with WWTFs and Monitoring Station



Water Quality Restoration De-Listings Linked to Pollution Abatement Investments

Pawtuxet River Main Stem



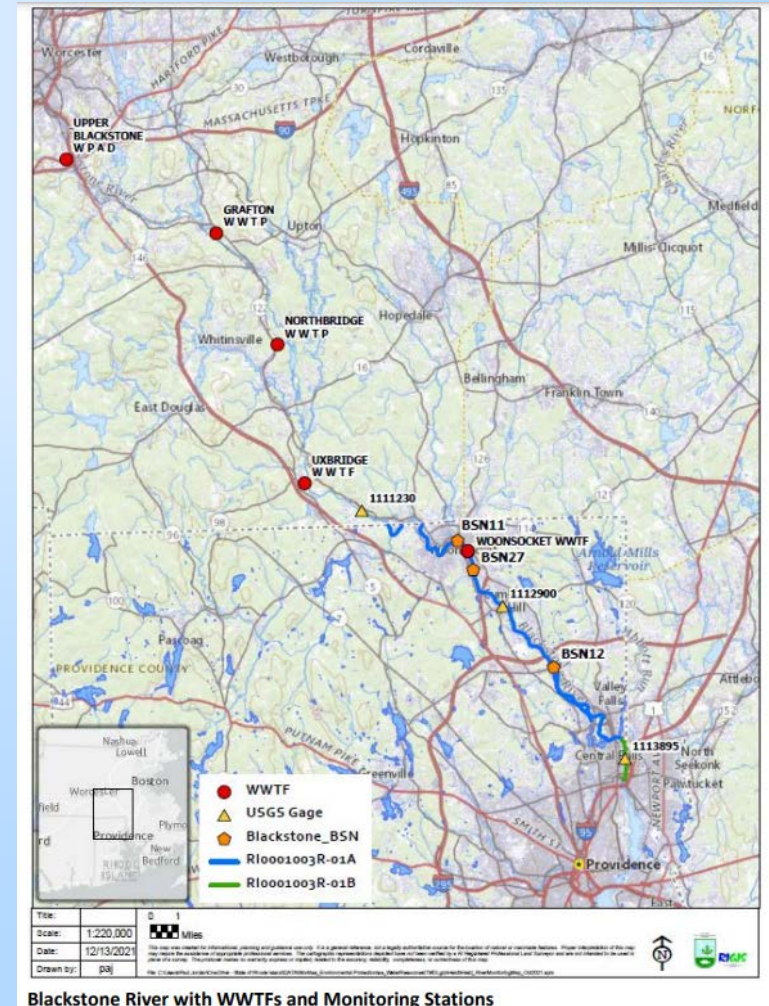
Water Quality Restoration De-Listings Linked to New Data

Blackstone River

- Aquatic Life Use – Dissolved Lead
- Data collected between 2015 and 2021 met the acute and chronic criteria at the RI stations with one violation in the chronic criteria upstream in MA.



Blackstone River at USGS
Woonsocket Gage (BSN11)





Water Quality Restoration De-Listings Linked to New Data

Maidford River

- Aquatic Life Use – Dissolved Lead

Maidford River (RI0007035R-02A) Dissolved Lead						
Sample Date	Detection Limit (µg/L)	Quantitation Limit (µg/L)	Concentration (µg/L)	Hardness ¹ (mg/L)	Lead Criteria (µg/L)	
					Acute	Chronic
7/2/2014	0.037	1.0	0.069	60.30	37.080	1.445
8/20/2014	0.037	1.0	<0.037	72.30	42.289	1.765
10/7/2014	0.037	1.0	<0.037	65.10	40.350	1.572
6/18/2018	0.106	0.106	<0.106	72.7	45.564	1.776
7/9/2018	0.106	0.106	<0.106	79.9	50.541	1.969
7/24/2018	0.106	0.106	<0.106	69.2	43.158	1.682
8/16/2018	0.106	0.106	<0.106	78.5	49.571	1.932
9/17/2018	0.106	0.106	<0.106	83.6	53.11	2.07
6/29/2021	0.227	0.227	1.03	63.8	39.463	1.538
8/17/2021	0.227	0.227	<0.227	71.0	44.395	1.730
9/21/2021	0.227	0.227	<0.227	63.2	39.054	1.522



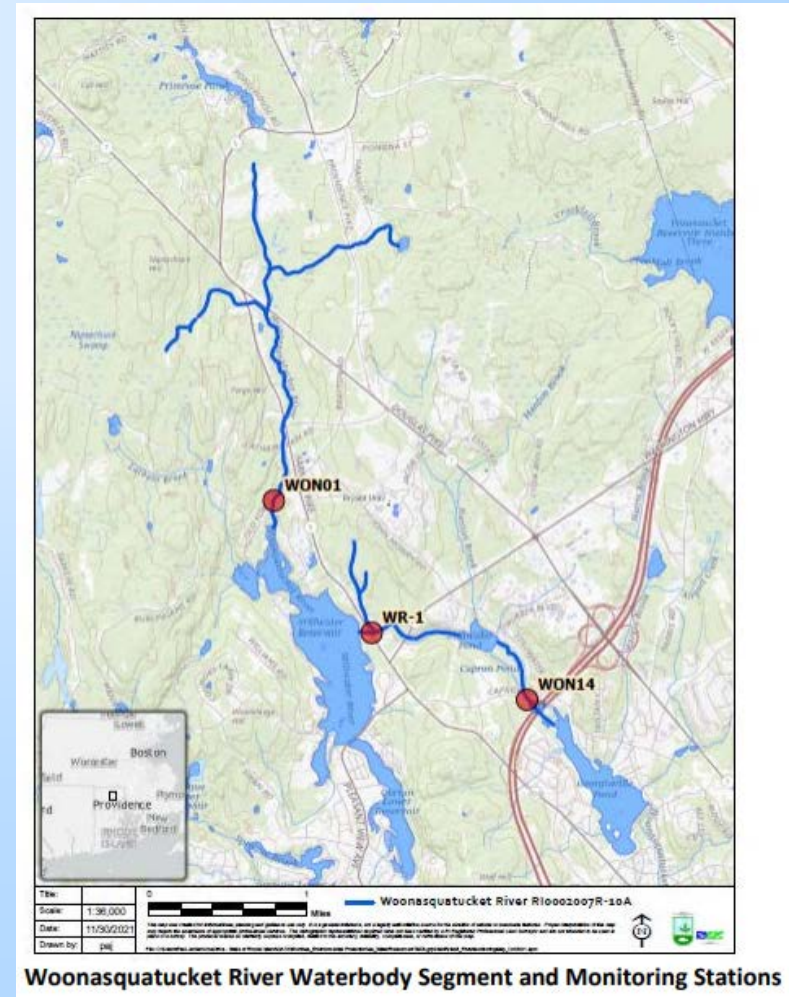
Water Quality Restoration De-Listings Linked to New Data

Woonasquatucket River (RI0002007R-10A)

- Aquatic Life Use – Dissolved Zinc
- 2019-2021 Data Collected by RIDEM (dry weather) and RIDOT (wet weather)



Woonasquatucket River
Downstream Farnum Pike (WR1)

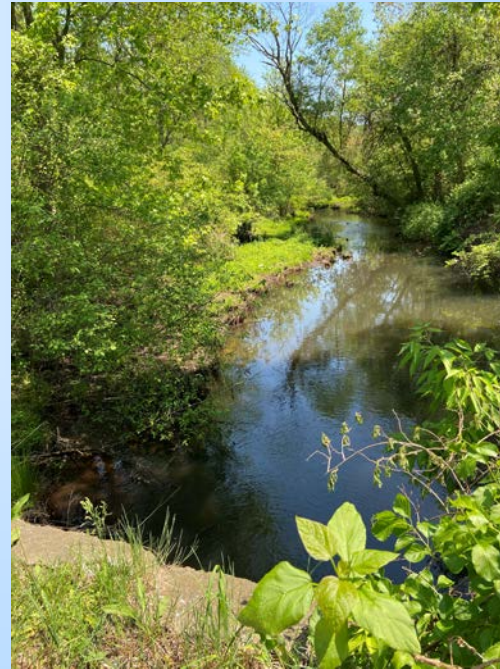




Water Quality Restoration De-Listings Linked due to Reanalysis of the Original Listing

Buckeye Brook

- Aquatic Life Use – Dissolved Zinc
- In 2021, the data used to list dissolved zinc was reviewed and determined to have failed to meet the quality control requirements of the Buckeye Brook Biodiversity Quality Assurance Project Plan.
- RIDEM ARM Monitoring Program has established a station on Buckeye Brook.



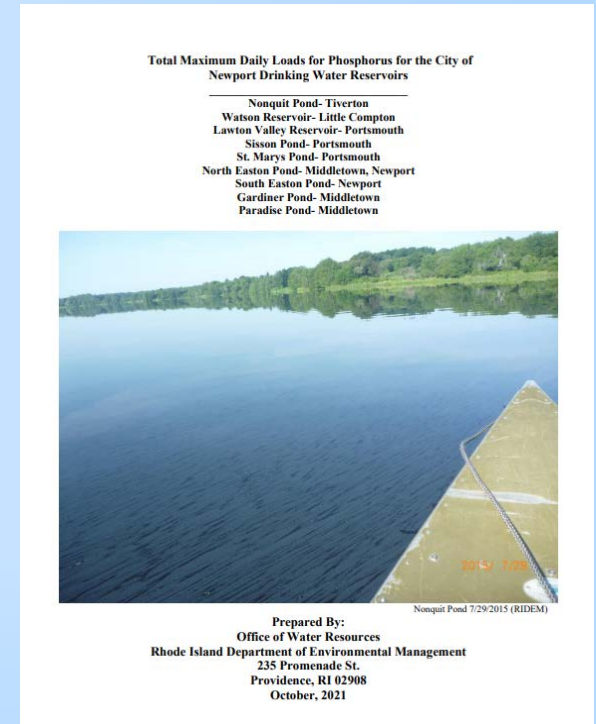
Buckeye Brook



TMDL – Water Quality Restoration Studies

What is a Total Maximum Daily Load?

- Federally mandated Water Quality Restoration Study
- Determines amount of a pollutant that can be discharged into a water body and still maintain water quality standards
- TMDL equals the sum of pollutant allocations for:
 - Point sources (non-stormwater & stormwater)
 - Non-point sources
 - Plus a margin of safety



Cover Page – Newport Drinking Water Supply Reservoirs TMDL



TMDL – Water Quality Restoration Studies

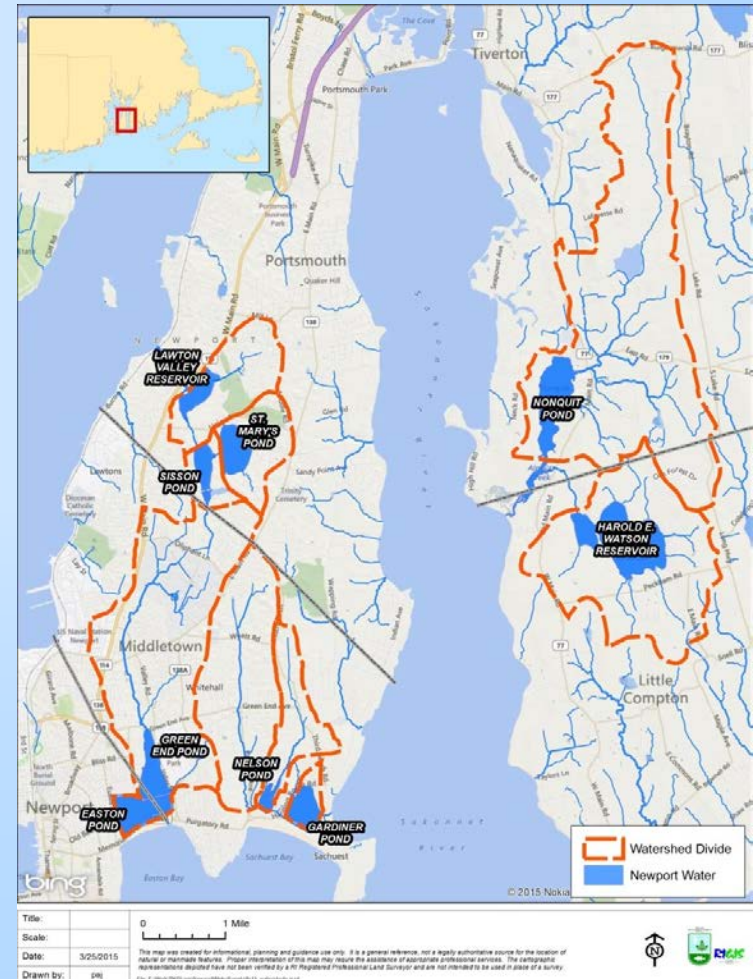
To date, DEM has completed, and EPA has approved TMDLs addressing a total of 248 related current impairments on 178 assessment units (WBIDs) accounting for 148 distinctly named waterbodies



TMDL – Water Quality Restoration Studies

TMDL approved by EPA in 2021

- **Newport Water Supply Reservoirs**
 - Drinking water and aquatic life use impairments caused by total organic carbon and total phosphorus
 - 9 Surface Water Reservoirs
 - Gardiner Pond
 - Nelson Paradise Pond
 - South Easton's Pond
 - North Easton's Pond
 - St Mary's Pond
 - Sisson Pond
 - Lawton Valley Reservoir
 - Watson Reservoir
 - Nonquit Pond



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TMDL – Water Quality Restoration Studies

TMDL approved by EPA in 2021

- **Buckeye Brook**

- Aquatic life use impairments

- Benthic macroinvertebrates
- Metals (cadmium, copper, iron, lead)
- Dissolved oxygen

- **Tributaries to Warwick Pond**

- Aquatic life use impairments

- Benthic macroinvertebrates
- Metals (cadmium, iron)

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Buckeye Brook at Old Warwick Ave



<https://www.macroinvertebrates.org/taxa-characters/diptera-larva/chironomidae/tanytarsus/lateral>

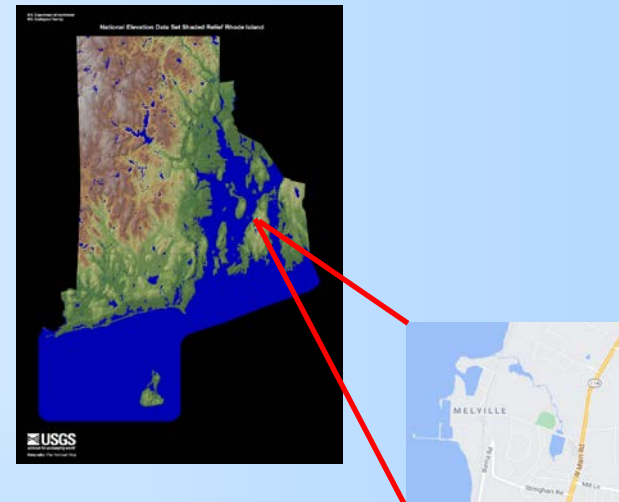


TMDL – Water Quality Restoration Studies Proposed Near Term

- **Melville Ponds**

- Total phosphorus (2008)
- Experiences frequent cyanobacteria blooms
- Long term volunteer dataset
- RIDEM collected supplemental data 2021
- TMDL process initiating 2022

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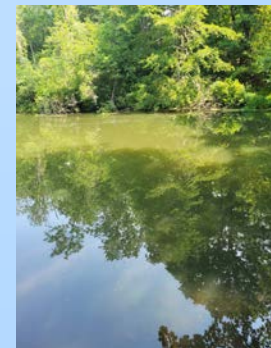


Upper Melville



July 20, 2021

Lower Melville



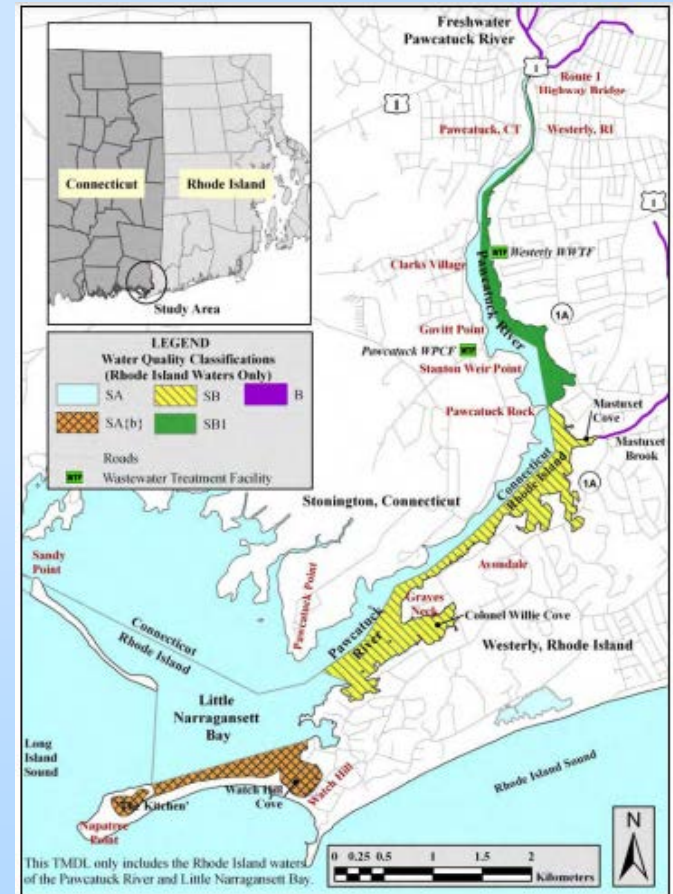
July 6, 2021



TMDL – Water Quality Restoration Studies Proposed Near Term

- Tidal Pawcatuck River and Little Narragansett Bay
 - Aquatic life use impairments associated with nutrient enrichment and dissolved oxygen*
 - RIDEM deployment of sondes
 - CT awarded SNEP grant to develop a model for FW Pawcatuck
 - EPA ACESD completing model development for estuarine areas

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*Note that RI is evaluating whether to include lower segments as impaired



“Take-Aways” From 2022 Assessment and Impaired Waters Report

- Small overall change between 18/20 and 22
 - 7 new 303(d) impairments
- Targeted water quality monitoring has documented improvements resulting from permitting and infrastructure investments.
 - Pawtuxet River Main Stem
- Water quality monitoring documented improvements
 - Blackstone River, Maidford River, and Woonasquatucket River
- Two TMDLs completed addressing 27 impairments on 11 waterbodies
 - Newport Water Supply Reservoirs
 - Tributaries to Warwick Pond and Buckeye Brook



DEM ACCEPTING Comments on Draft 2022 303(d) list

Send Comments to:

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235 Promenade Street, Providence, RI 02908
heidi.travers@dem.ri.gov

View or download the Draft 2022 303(d)list:

<http://www.dem.ri.gov/programs/benviron/water/quality/pdf/303d22.pdf>

View or download the Draft Delisting Document:

<http://www.dem.ri.gov/programs/benviron/water/quality/pdf/iwlr22.pdf>

Comments accepted through February 18, 2022







Water Quality Monitoring and Assessment Reporting Webpage

<http://www.dem.ri.gov/programs/water/quality/surface-water/integrated-water-quality-monitoring.php>

2022 Assessment Cycle Documents

Interested parties are invited to submit written comments on the Draft 2022 Delisting Document and Draft 2022 303(d) List by Friday, February 18th to Heidi Travers at

✉ heidi.travers@dem.ri.gov or via mail to Heidi Travers, DEM, Office of Water Resources, 235 Promenade Street, Providence, RI 02908.

-  [Draft 2022 Delisting Document](#)
-  [Draft 2022 303\(d\) List](#)
-  [Draft 2022 Integrated Report Lists](#)
-  [Final 2022 Consolidated Assessment and Listing Methodology](#)

2018-2020 Assessment Cycle Documents

-  [Final 2018-2020 Integrated Water Quality Monitoring and Assessment Report](#)
-  [Final 2018-2020 Integrated Report Lists](#)
-  [Final 2018-2020 Impaired Waters Report with 303d List](#)
-  [Final 2020 Consolidated Assessment and Listing Methodology](#)
-  [Final 2018-2020 Delisting Document](#)
-  [Final 2018-2020 Response to Comments on 303d List](#)
-  [Presentation: Rhode Island's Integrated Reporting Process and Draft 2018-2020 303d List](#)

PRIMARY RESOURCES