

# Narragansett Bay Permitting Requirements

SPECIAL LEGISLATIVE COMMISSION TO STUDY AND PROVIDE  
RECOMMENDATIONS ON THE ISSUES RELATING TO THE REDUCED  
CATCH OF QUAHOGS IN NARRAGANSETT BAY

October 24, 2023



RI Department of Environmental Management  
Office of Water Resources

# Topics of Discussion

- History of the Permitting Program
- What Activities Require a Permit?
- Permit Types
- Basis for Permit Limits and Conditions
- Where are we now?
- Stormwater Pollution Prevention



# History of the Permitting Program



- EPA was Established by Executive Order in 1970
- The Federal Water Pollution Control Act (“The Clean Water Act”) was established in 1972
- Goal was to “Restore and Maintain the Chemical, Physical, and Biological Integrity of the Nation’s Waters”



# History of the Permitting Program...

- Original Goal was to Eliminate the Discharge of Pollutants by 1985
- The Clean Water Act Established the National Pollutant Discharge Elimination System (NPDES) and Pretreatment Programs
- Rhode Island Became a “Authorized State” and Took Over Responsibility of the NPDES and Pretreatment Programs from EPA in 1984 establishing the RIPDES Permitting Program



# What Activities Require a RIPDES Permit?



All “Point Sources”

“Discharging Pollutants”

Into “Waters of the State”



# RIPDES Permit Types





# Individual (Facility Specific) Permits

- Major Permits
  - POTWs with Flow  $\geq 1.0$  MGD
  - Majority Are POTWs
  - Other Facilities with Industrial and/or Process Wastewater Discharges
- Minor Permits
  - Flow  $< 1.0$  MGD
  - Smaller Package Plants
  - Stormwater Permits



# Basis for RIPDES Permit Limits and Conditions





# Permit Limit Types

## ➤ **Technology Based Limits**

- Establish Minimum Levels of Treatment for all Similar Dischargers
- Limits Based on Capability of Current Treatment Technologies

## ➤ **Water Quality Based Limits**

- Required to Meet Desired Water Quality Goal
- Limits Are Based on Water Quality Standards Established in RIDEM WQ Regulations.
- May be Numeric or a Narrative Standard

## ➤ **Best Professional Judgment (BPJ) Based Limits**

- Any Other Limits Deemed Necessary

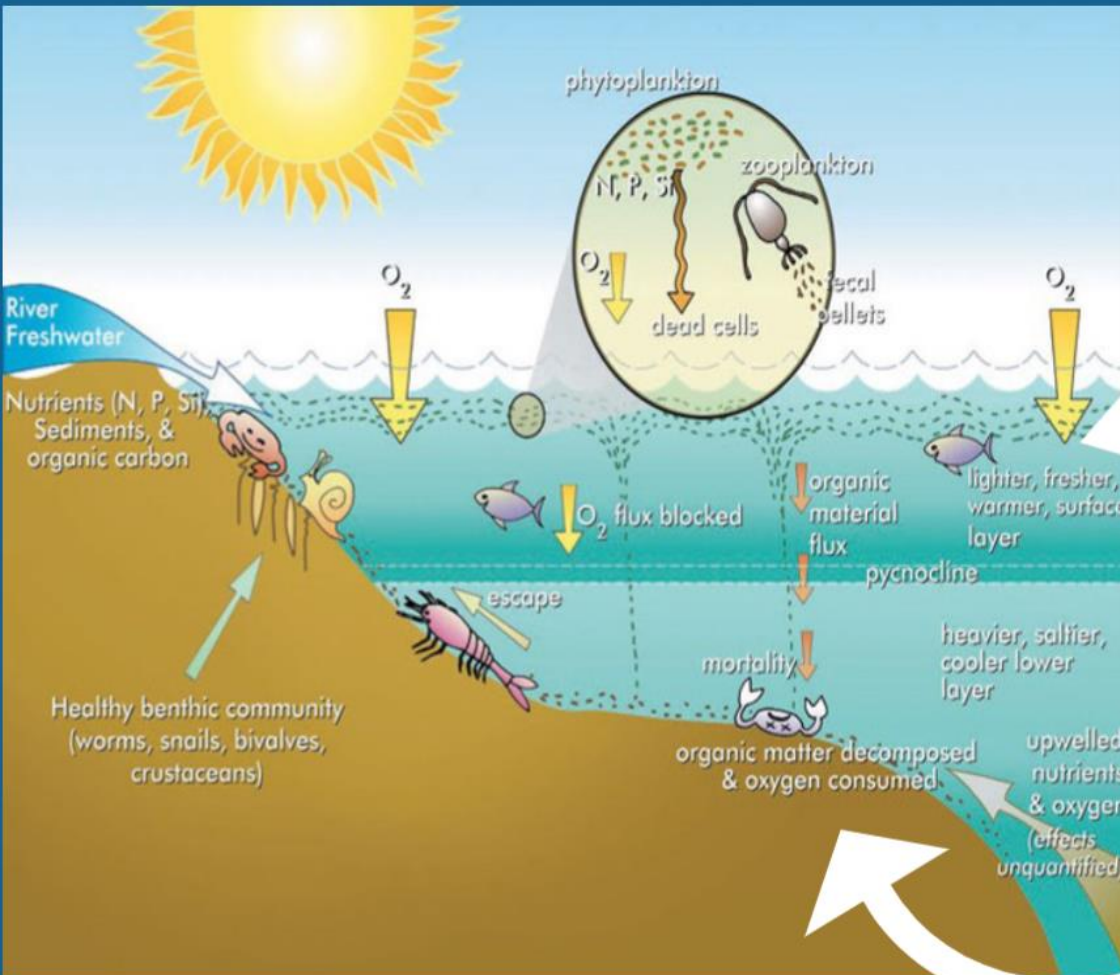


# Why Limit Nitrogen?

- Changes in chemical and physical characteristics of a water body, such as lower dissolved oxygen concentrations and hypoxia (i.e.,  $DO < 2.0 \text{ mg/L}$ )
- Excess algae in the water column resulting in decreased clarity (increased turbidity) blocking sunlight needed by submerged aquatic plants
- Toxicity to aquatic life and wildlife, including from toxic algal blooms
- Impacts on public health, such as impacts from seafood contamination or direct exposure to algal toxins



# Dissolved Oxygen Impacts

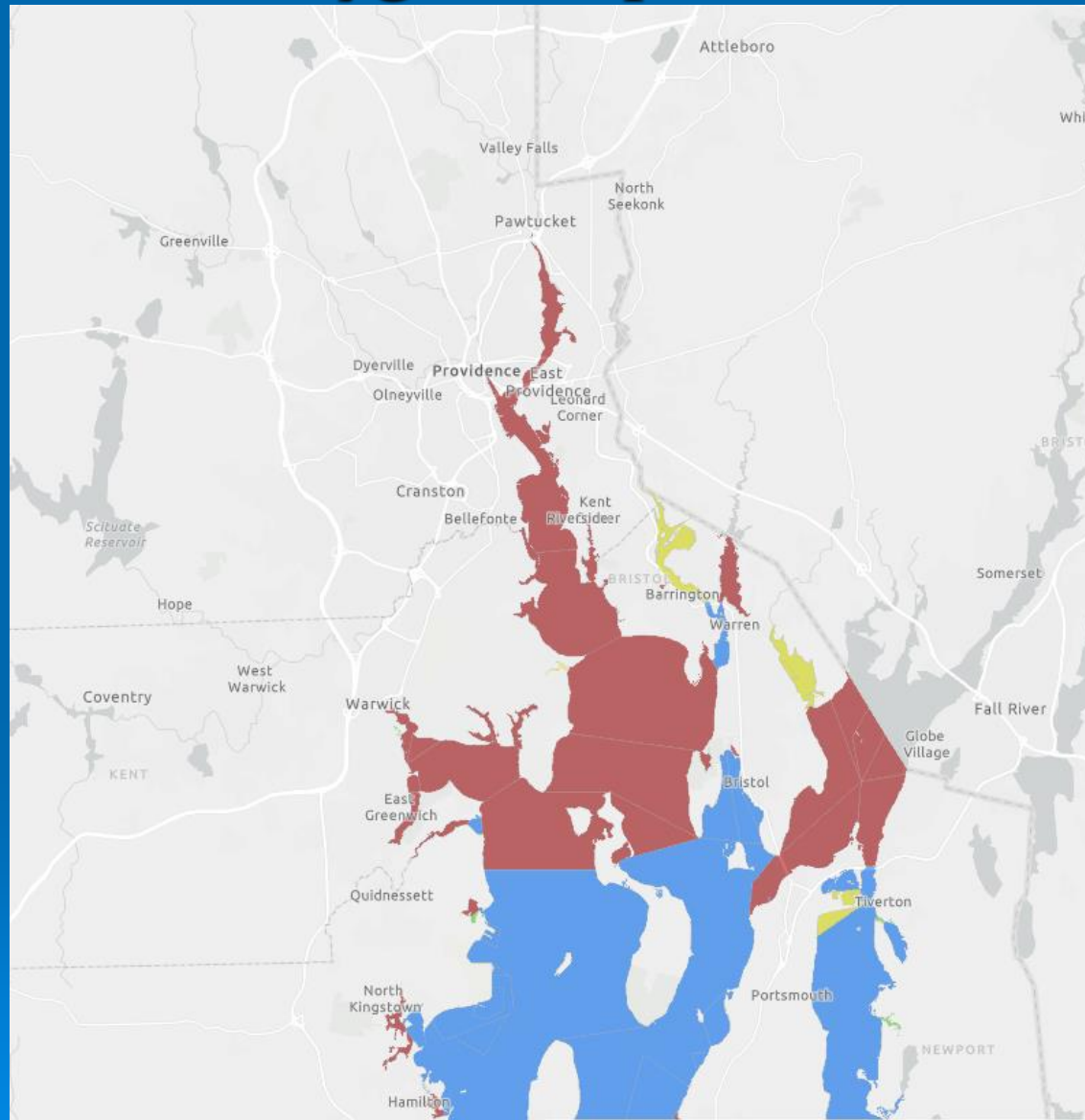


Green lines indicate excess algal growth.

Hypoxia  
Low dissolved oxygen



# Dissolved Oxygen Impacted Waters



# Timeline?

**1980s – URI Marine Ecosystems Research Laboratory (MERL)  
Enrichment Gradient Studies**

**1990s – Modeling of the Providence/Seekonk Rivers**

**Aug. 2003 – The “Greenwich Bay Fish Kill” (> 1,000,000 menhaden)**

**Oct. 2003 – Governor’s Narragansett Bay and Watershed Planning  
Commission Formed**

**Dec. 2004 – *Evaluation of Nitrogen Targets and WWTF Load  
Reductions for the Providence and Seekonk Rivers Report***

**2004 – RIGL 46-12-2(f) signed into law**





## RIGL 46-12-2(f)

The department of environmental management is hereby designated to establish, administer, and enforce standards for nutrients as necessary to protect, maintain and/or improve the ecological functions of the marine and aquatic resources of the state; and to prepare, adopt, and implement plans as necessary and appropriate to accomplish the purposes of managing nutrient loadings and preventing, abating, and/or eliminating the deleterious effects of nutrients, including, but not limited to, eutrophication, harmful algal blooms, hypoxia, anoxia, oxygen-stress-induced population shifts, and/or fish kills. To implement the purposes of this subsection, the department shall implement measures to achieve an overall goal of reducing nitrogen loadings from waste water treatment facilities by fifty percent (50%) by December 31, 2008, which date, in its implementation, may be adjusted to be consistent with compliance with permit modifications, through waste water treatment facility upgrades scheduled to be undertaken by December 31, 2006, and through proposed permit modifications, which shall be issued by the department on or before July 1, 2004.



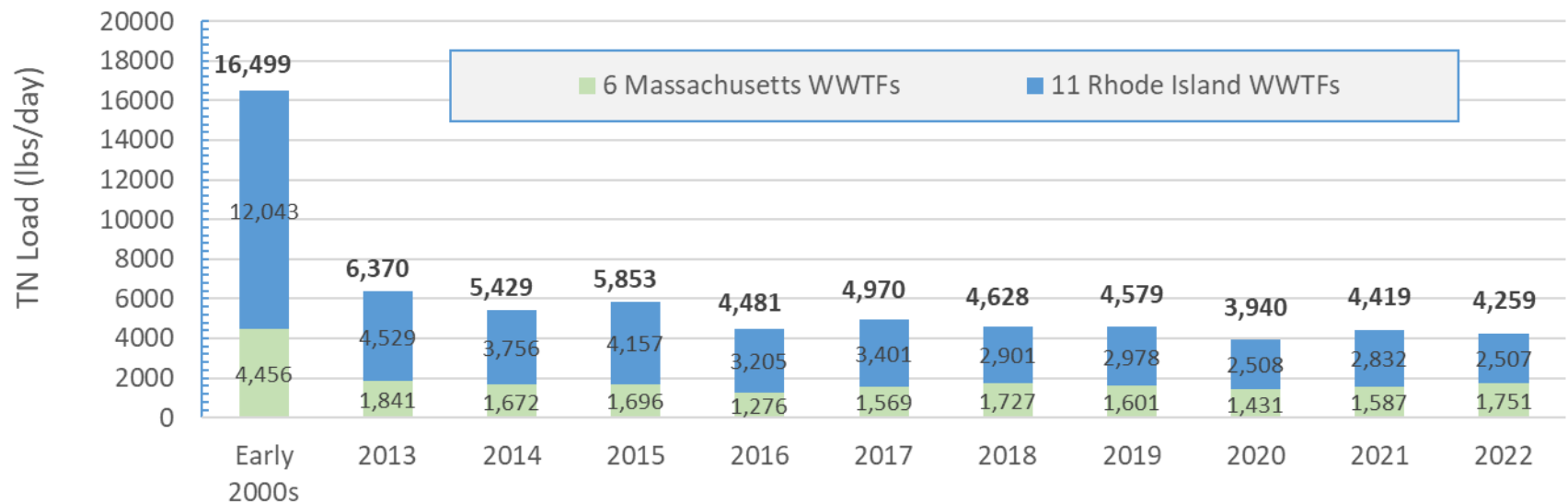
# Where are we now?





# WWTF Nitrogen Loads

## Summer WWTF Nitrogen Loads

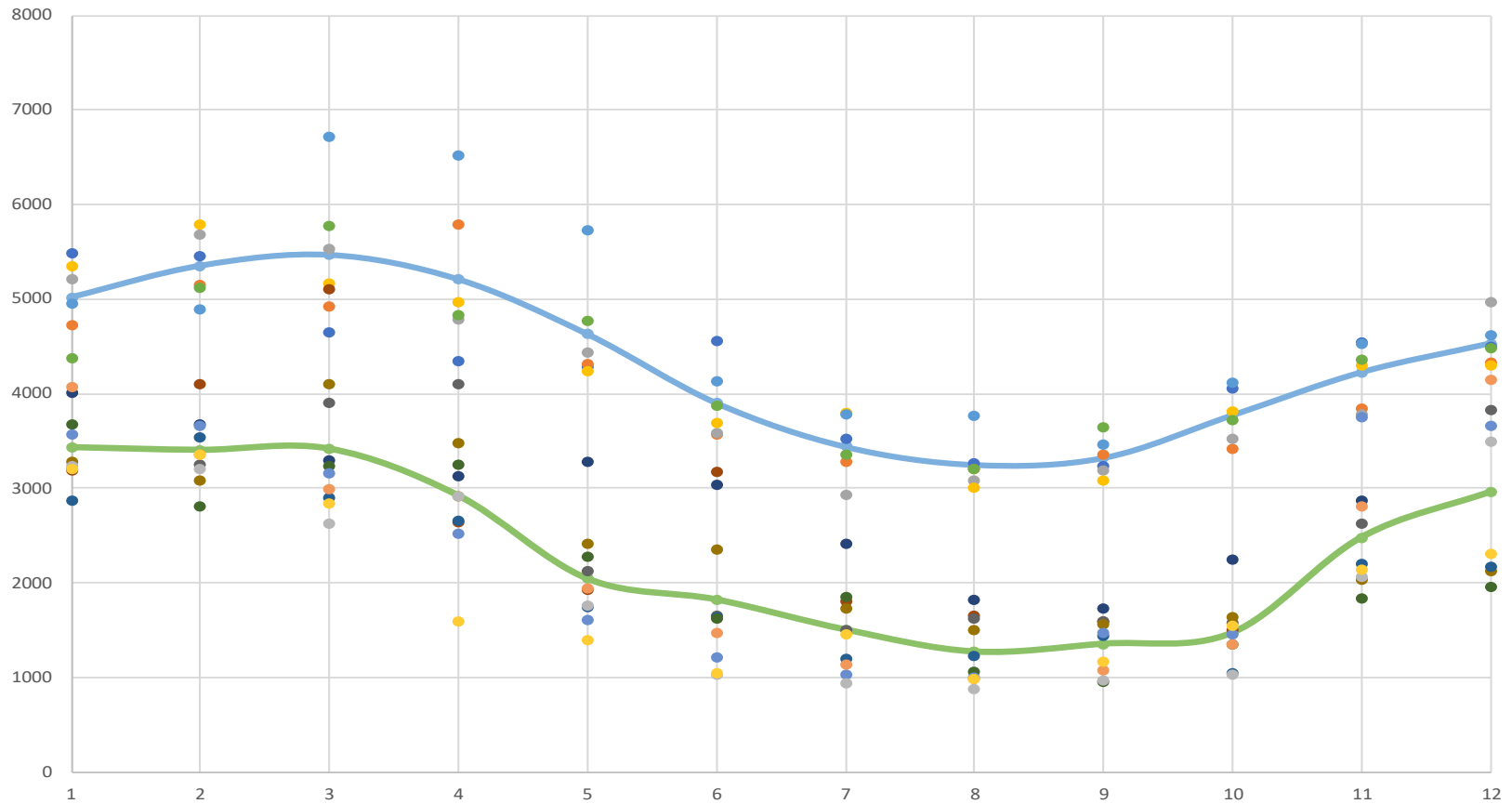


**RI WWTFs:** Burrillville, East Greenwich, East Providence, NBC Bucklin Point, NBC Fields Point, Smithfield, Cranston, Warren, Warwick, West Warwick, Woonsocket; **MA WWTFs:** Attleboro, Graton, North Attleborough, Northbridge, UBWPAD, Uxbridge



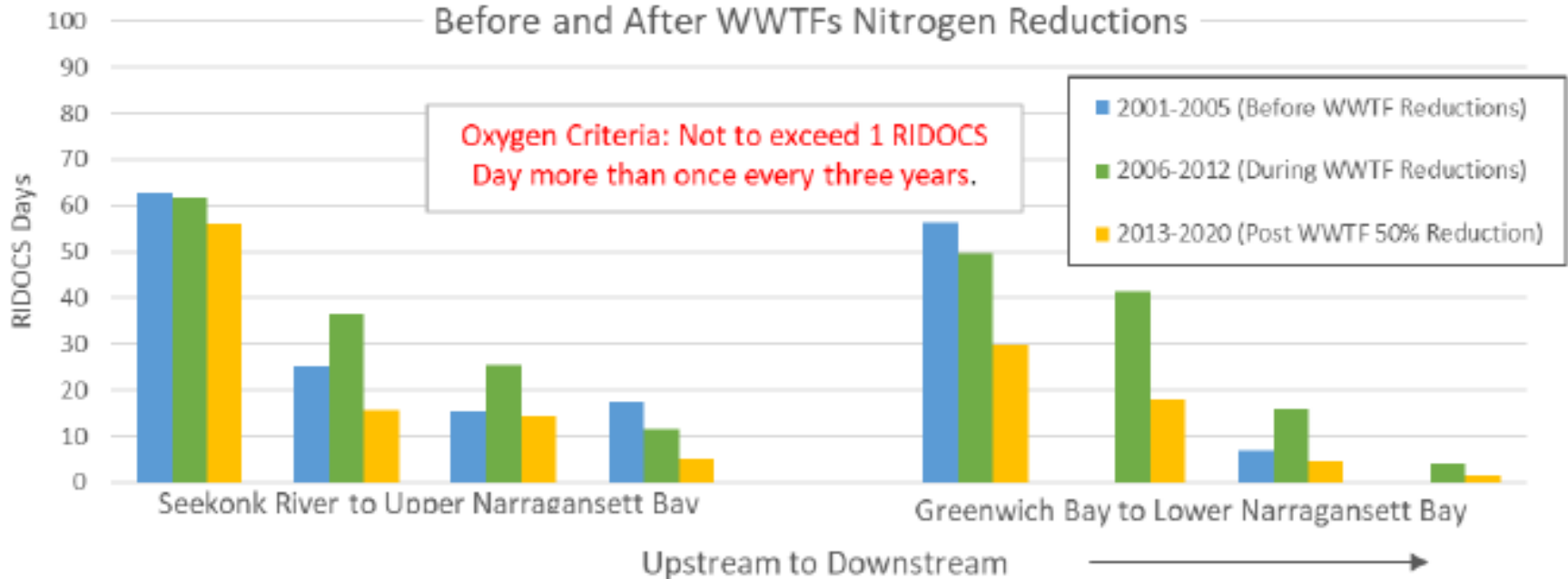
# WWTF Nitrogen Loads

Monthly TN Load/Month (pre- and post-2012)  
Kg/d vs. Month



# Dissolved Oxygen

Average Oxygen Criteria Exceedence  
Before and After WWTFs Nitrogen Reductions



# My Contact Information

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# Useful Resources

- August 2003 Greenwich Bay Fish Kill Report:  
<https://static1.squarespace.com/static/5eea260cea82833324dba1c/t/64419c18004fa66c14d2fa6d/1682021400267/NBEP-2003-04.pdf>
- EPA Training on Nutrient Pollution in NPDES Permits:  
<https://www.epa.gov/npdes/npdes-permit-writers-specialty-training-addressing-nutrient-pollution-npdes-permits>
- Plan for Managing Nutrient Loadings to Rhode Island Waters:  
<https://dem.ri.gov/sites/g/files/xkgbur861/files/programs/benviron/water/quality/pdf/nutrient.pdf>
- RIDEM Water Quality Regulations (Secretary of State Website):  
<https://rules.sos.ri.gov/regulations/part/250-150-05-1>



