



Connecticut Department of Energy and Environmental Protection



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

Connecticut's Nitrogen Trading Program

November 8, 2018

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ACWA Nutrients Permitting Workshop



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Connecticut's Nitrogen Trading Program

- The Long Island Sound TMDL
- The General Permit
- Trading



The Long Island Sound TMDL

- Prepared together by New York and Connecticut - 1999
 - Revised 2000
- EPA reviewed and approved - 2001
- In-basin Nitrogen Reduction Goal
 - 58.5%
 - 63.5% in point source reductions in Connecticut
- Enforceable Schedule – final reductions due 2014
- Allows for Trading between POTWs



General Permit for Nitrogen Discharges

- Public Act 01-180, An Act Concerning Nitrogen Reduction In Long Island Sound – GP authority
- First issued January 1, 2002
- Latest renewal effective January 1, 2019
- Lists WLA for all 79 point sources covered
- Authorizes the discharge of Total Nitrogen
- Requires operation of installed processes
- Allows for trading to meet limits



General Permit for Nitrogen Discharges

- Set limits from TMDL stepping down until 2014
- Set frequency of monitoring:
 - Total Nitrogen Concentration
 - POTWs Less Than 10 MGD Design - Weekly
 - POTWs Greater Than 10 MGD Design - Twice per Week
 - Average Flow - Daily
 - Sample Location - Final Effluent
 - Sample Type - Daily Composite



General Permit for Nitrogen Discharges

Nitrogen WLA for Connecticut Point Source Discharges

EQ factor	Facility Name	Baseline End-of-Pipe (lbs/day)	WLA End-of-Pipe (lbs/day)
0.14	Thompson	28	10
0.20	MDC Hartford	6512	2377
0.49	Meriden	1230	449
0.67	Stratford	974	356
0.85	Fairfield	1113	406
1	Norwalk	1967	718



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Trading Fundamentals

	Point Source	Non-Point Source
Common water quality problem	YES	YES
Technically feasible to meet pollutant reduction target	YES	UNCERTAIN
Compelling member benefits, especially economic	YES	PS to NPS/SW
Ability to quantify and track pollutant loads	YES	NO
Credit costs based upon agreed protocols	YES	YES
Diverse market, viable supply and demand	YES	NO
Reduce overall cost	YES	PS to NPS/SW
Transaction costs low relative to price	YES	NO



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Connecticut's Nitrogen Trading Program

- Governed by the General Permit
- Public Act 01-180, An Act Concerning Nitrogen Reduction In Long Island Sound – Establishes NCAB
- Incentive Based – Not Free Market
- Managed by Nitrogen Control Advisory Board (NCAB)
- NCAB Sets Credit Prices Based on Set Formula
 - Annual CWF Project Capital Costs and Annual O&M Costs
- Scheduled Annual Trades
- Transactions through the State “Bank”



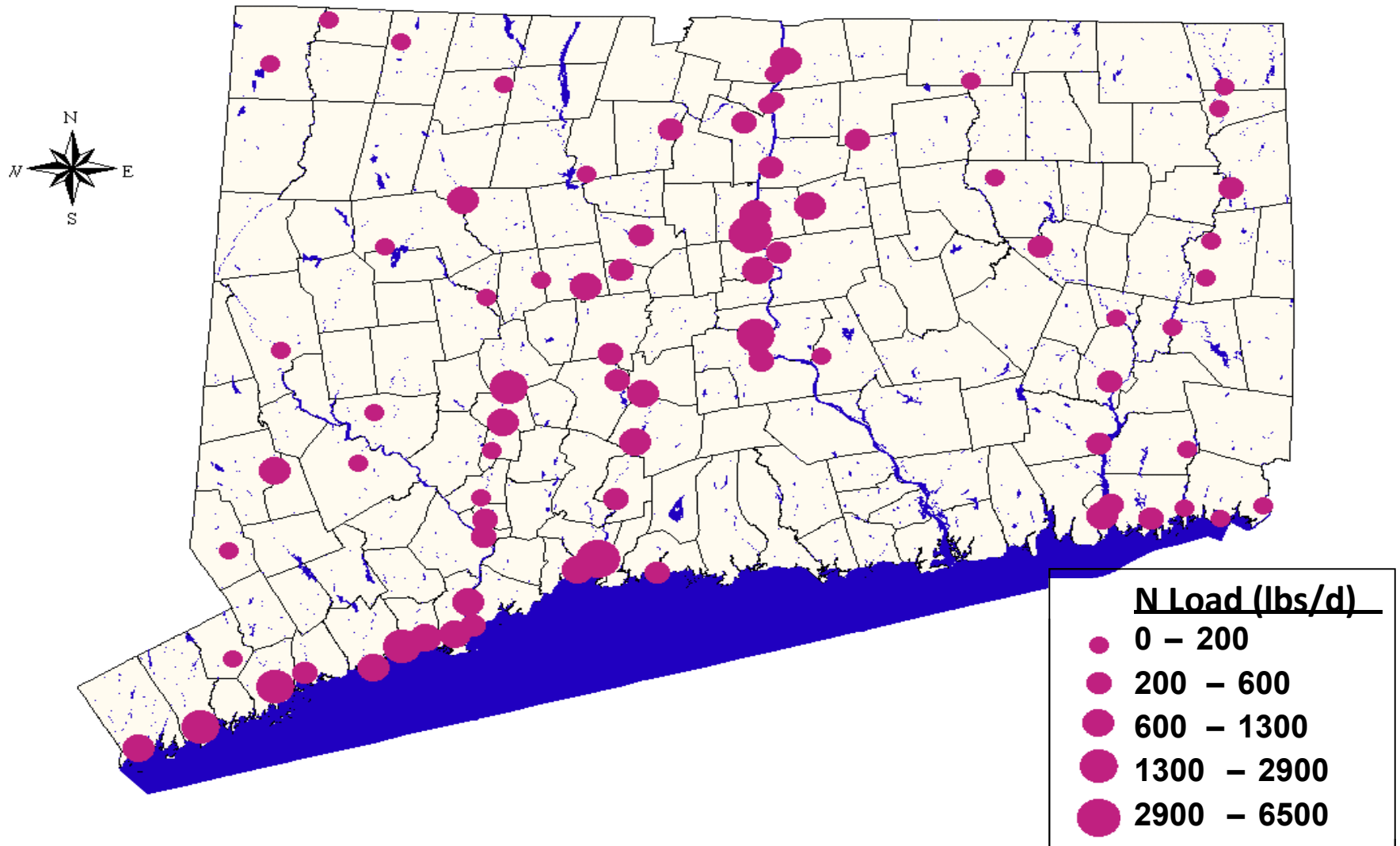
Goals of the Trading Program in 2002

Meet the TMDL by 2014 cost-effectively by

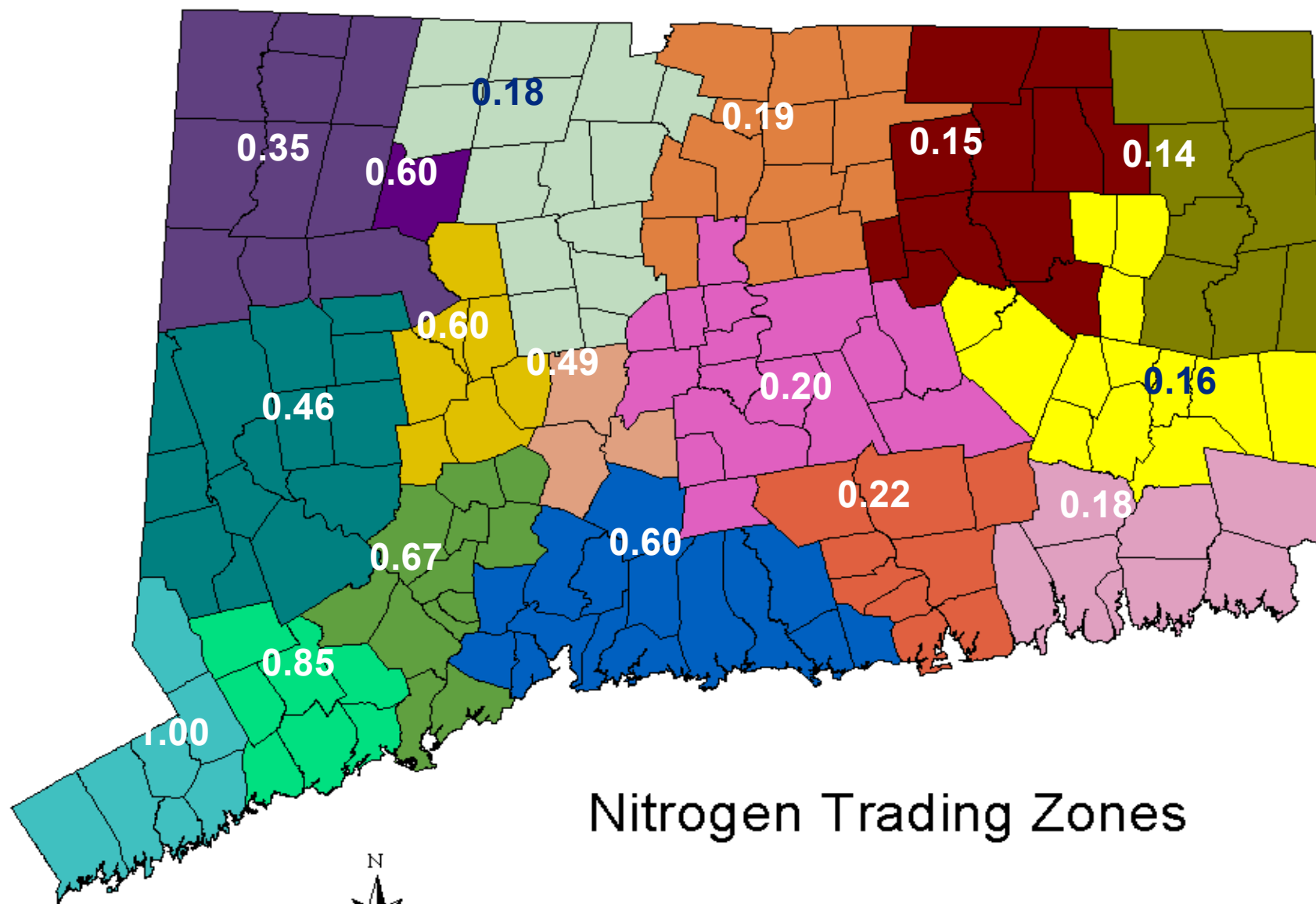
- Encouraging denitrification at STPs - grants
- Spreading out upgrades over thirteen years
 - Western and larger facilities expected first
- Efficiently using funding and resources



STP Nitrogen Baseline Loads



**Distribution of 79 Connecticut STPs participating in nitrogen trading.
Dots are proportional to baseline, end of pipe nitrogen loads (lbs/day).**



Nitrogen Trading Zones

Connecticut's Nitrogen Trading Program

Town WPCF	EQ Factor	EOP Limit	Actual Effluent TN/day	\$/lb of TN	Total Annual Value
Meriden	0.49	449	98	\$2.59	\$162,547
Vernon	0.19	184	529	\$6.61	\$158,149

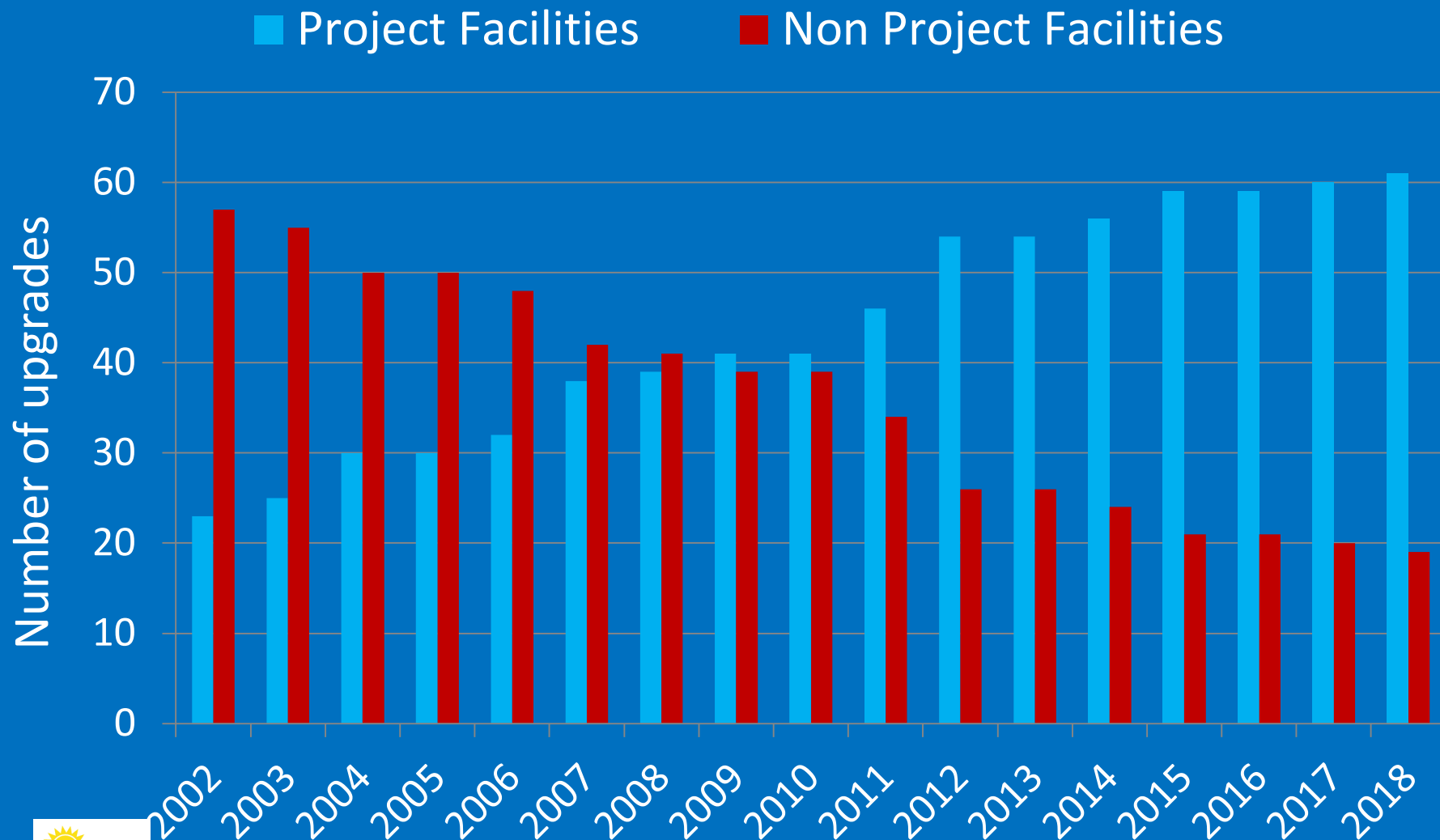


Trading Program Accomplishments

- Cost-effective implementation of the TMDL
 - (cost savings of \$400 – 500 million)
- 61 facility upgrades
 - \$450 million invested in CWF project facilities to remove TN
- Compliance with the TMDL in 2013



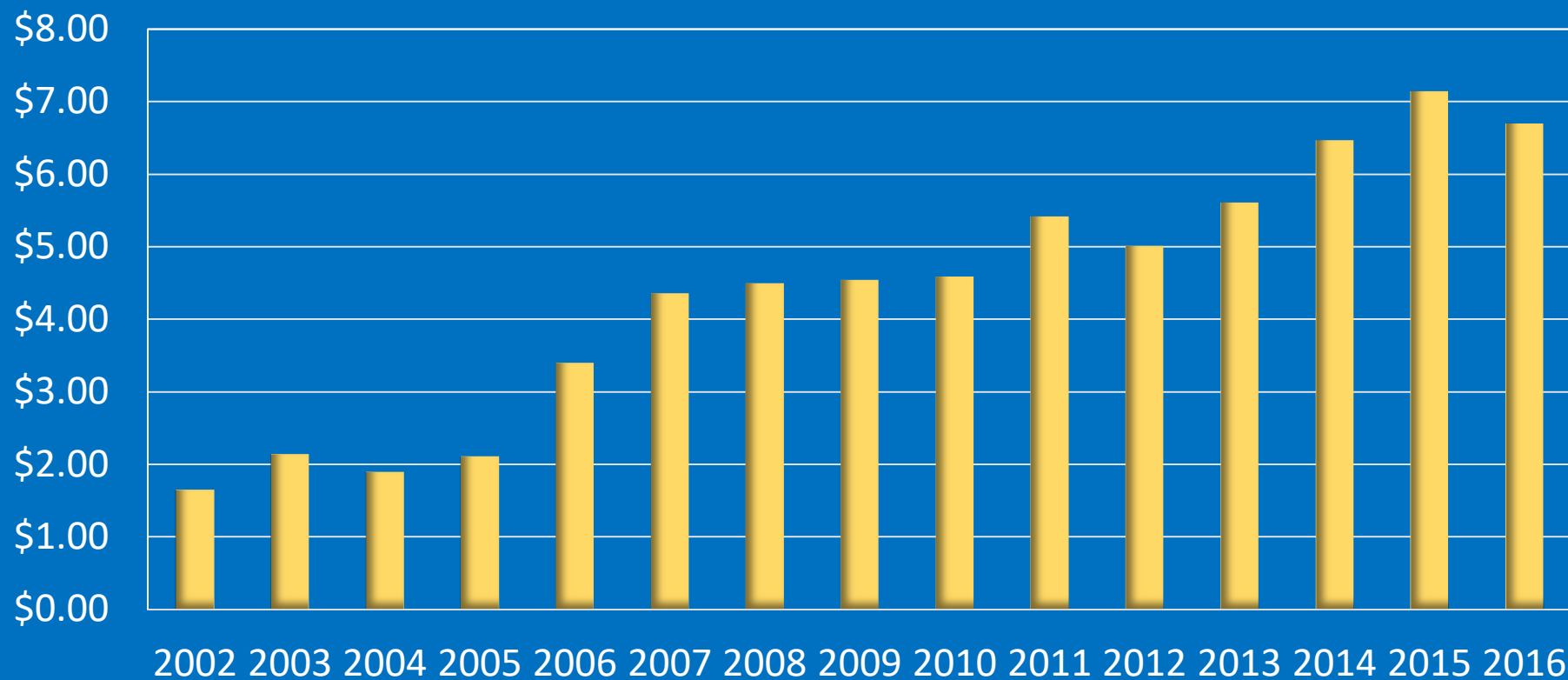
Trading Program Accomplishments



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Trading Program Accomplishments

Price of Nitrogen Credits

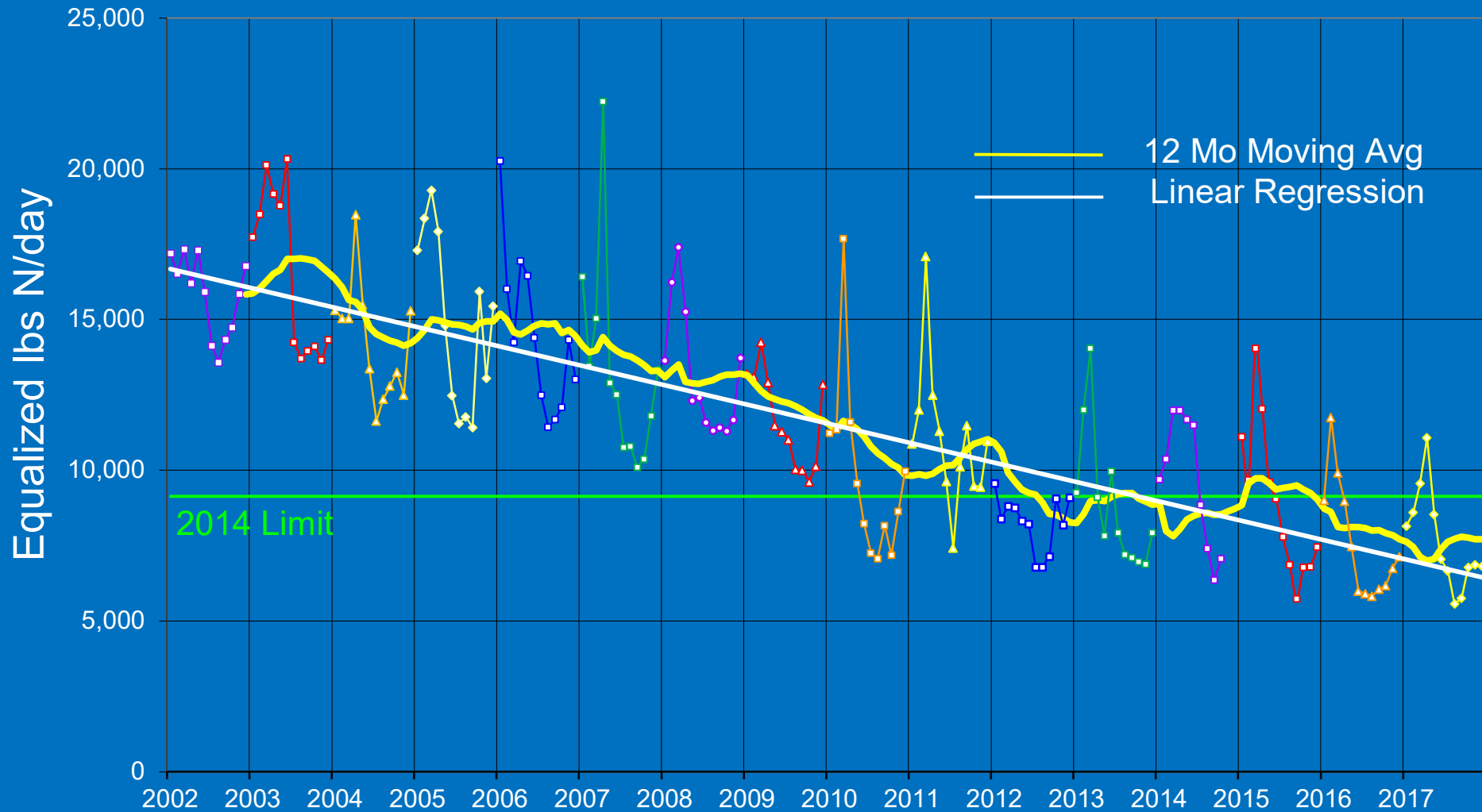


* In 2016 – the price of a credit for sellers is \$2.66



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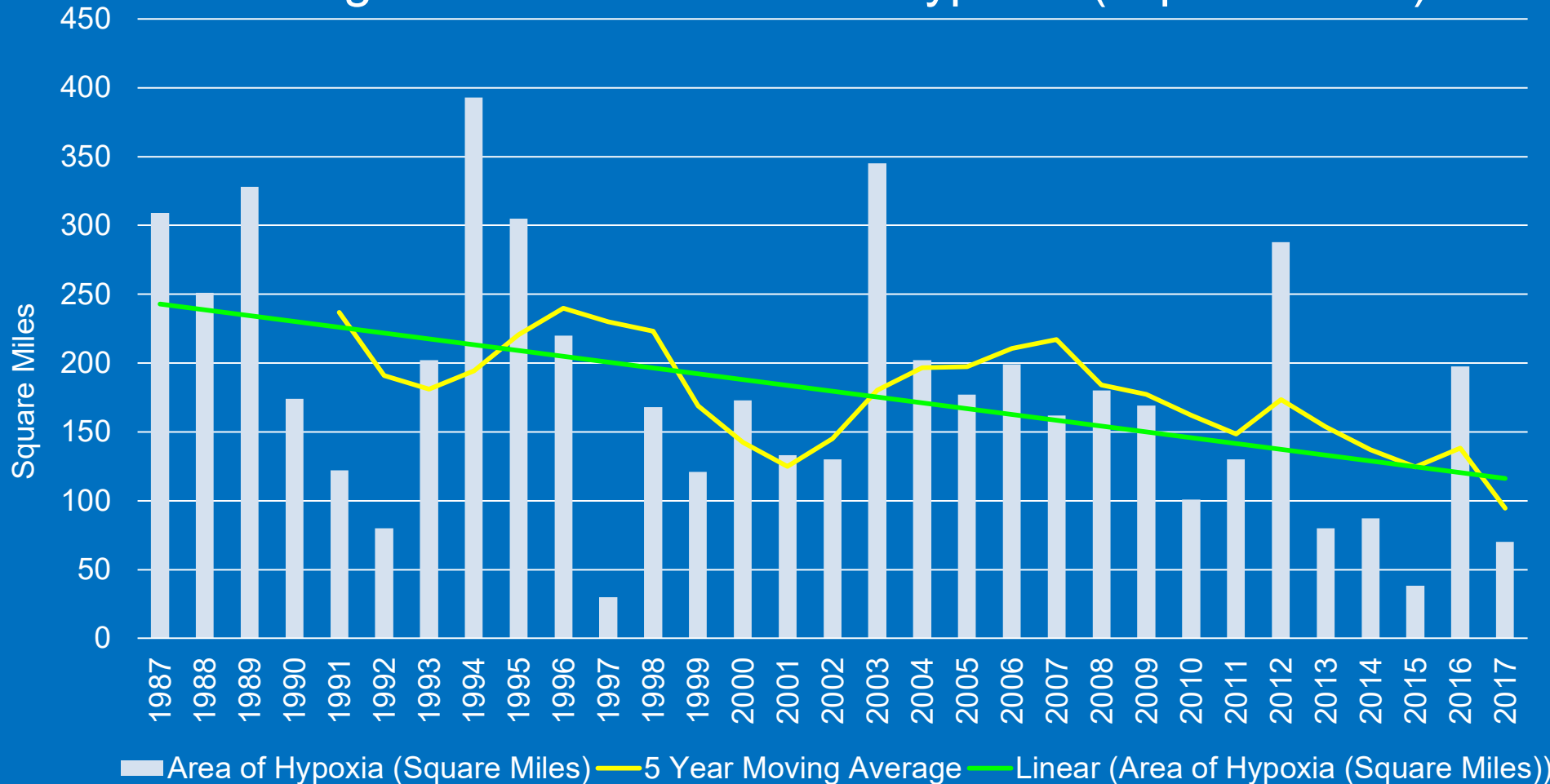
Trading Program Accomplishments



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Trading Program Accomplishments

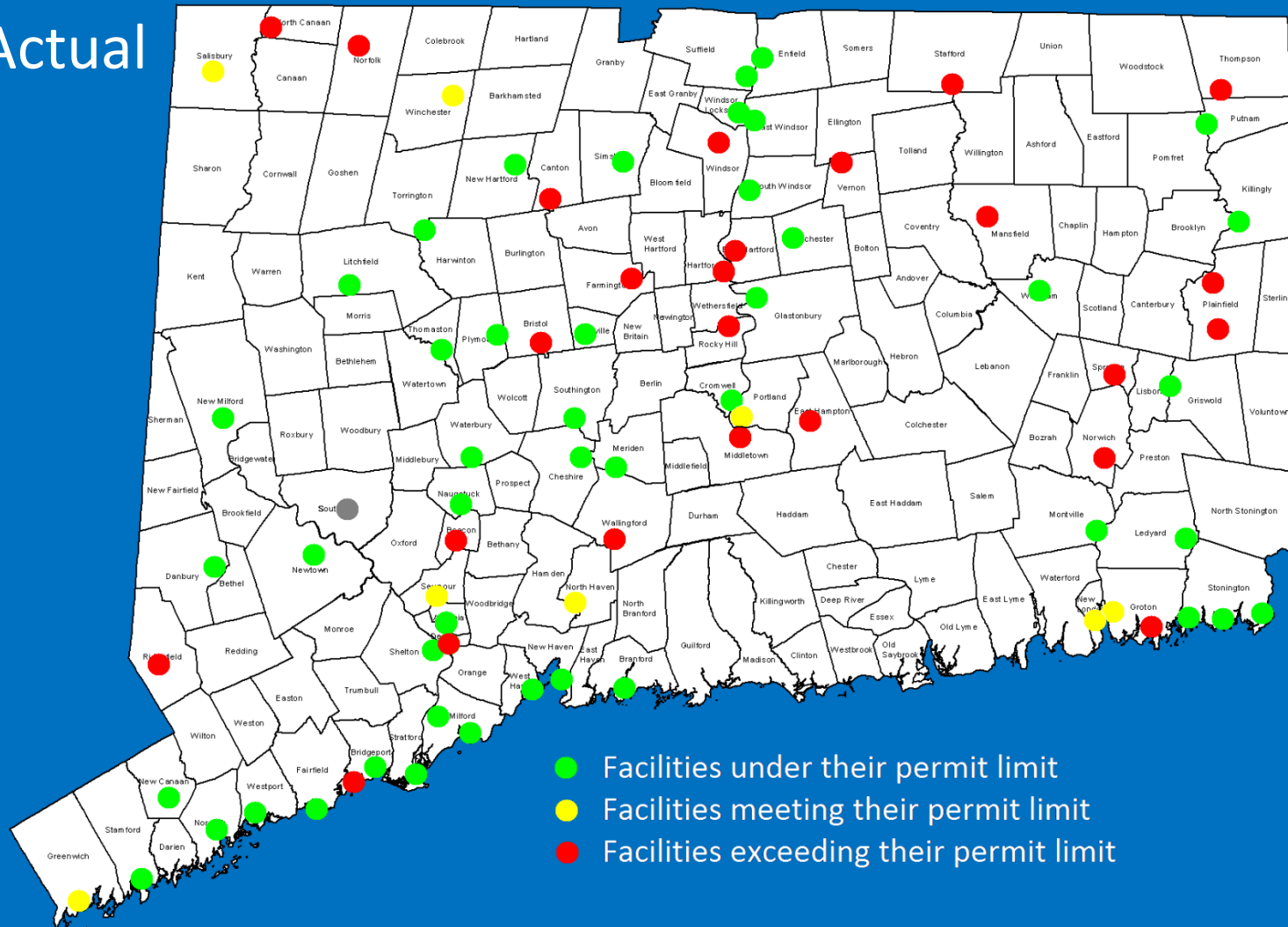
Long Island Sound Area of Hypoxia (Square Miles)



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Trading Program Accomplishments

2017 Actual



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Trading Program Accomplishments

2018 – 2022 Nitrogen Upgrades:

- Under Construction
 - Farmington
 - Middletown Abandonment
 - Torrington
 - Killingly
- In Planning
 - Wallingford
 - Fairfield
 - Norwich
 - Plainfield
 - Sprague
- Under Design
 - Ridgefield
 - Vernon



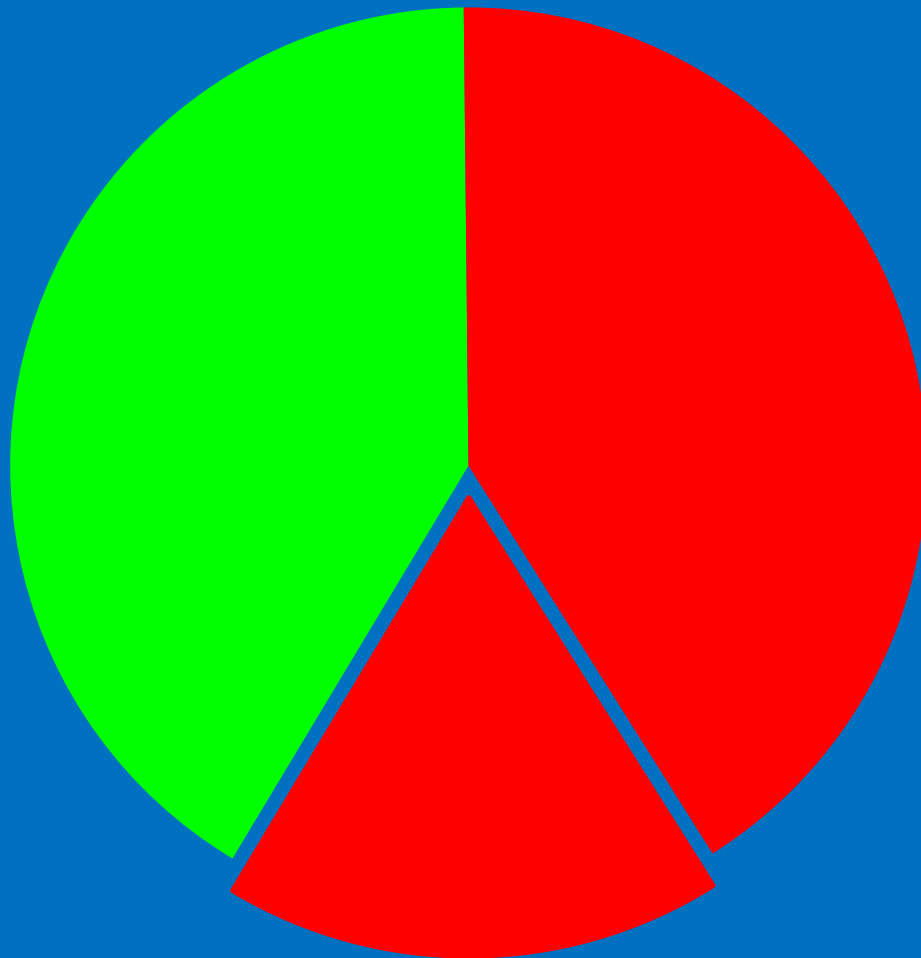
Changes to the Trading Program

- Continue to maintain compliance with TMDL
 - Encourage optimized denitrification at WWTPs
 - Continue efficient use of resources & funding
 - Continue support of data collection
- Continue utilization of General Permit
 - Renewal effective January 1, 2019
- Maintain Options for future TMDL compliance
 - Continue to incentivize upgrades
- Moving the trading program to self-sufficiency



Changes to the Trading Program

2015



■ Buyer's credits needed

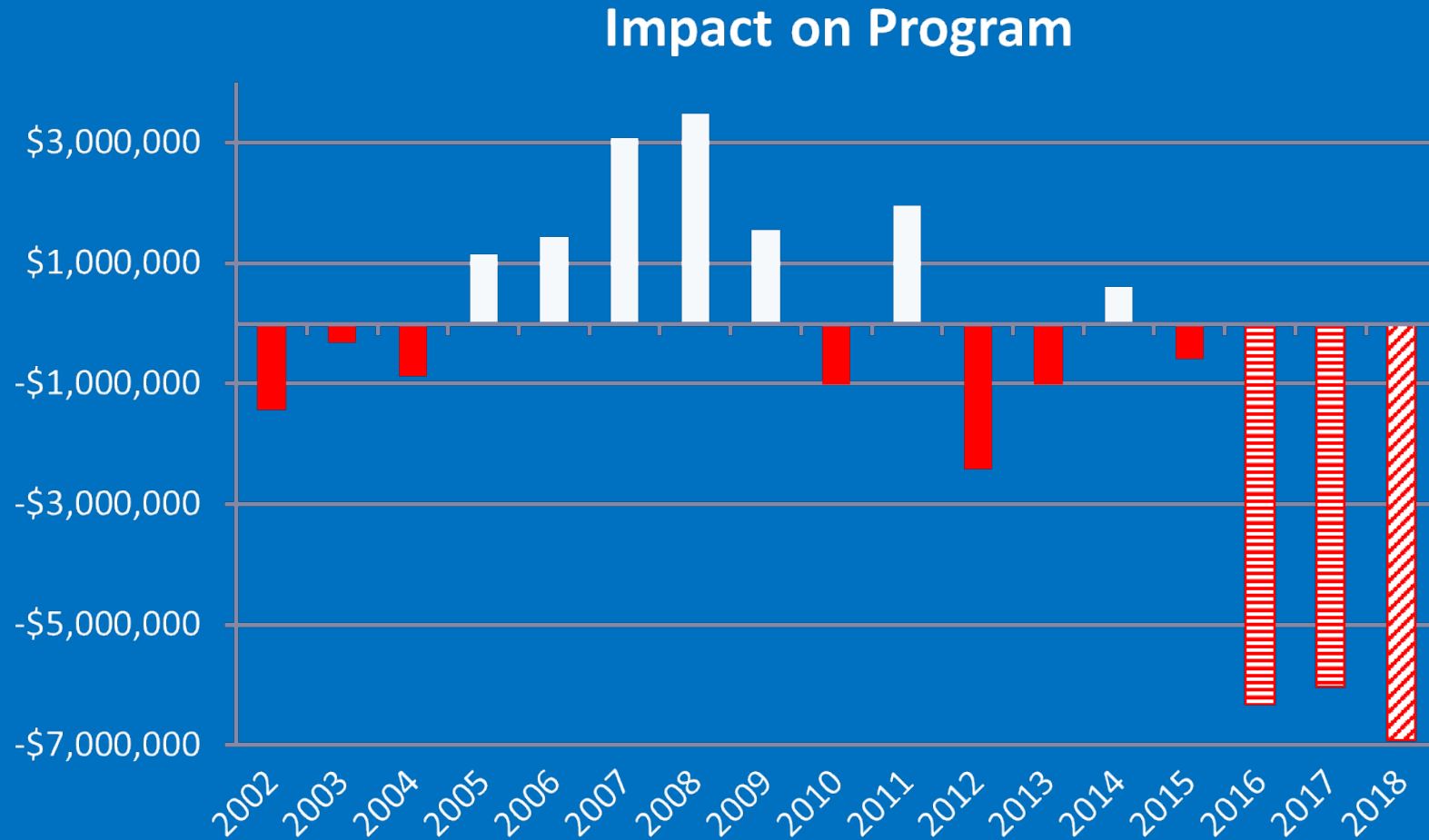
■ Sellers's credits available

■ Trading account subsidy



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Changes to the Trading Program



Changes to the Trading Program

Self-sufficient scenarios evaluated

- Discontinue the trading program
- Drop low producing sellers
- Drop inefficient sellers
- Buyers buy all of the credits produced
- Buyers buy the credits they need to meet their General Permit limit and those payments are shared by the sellers



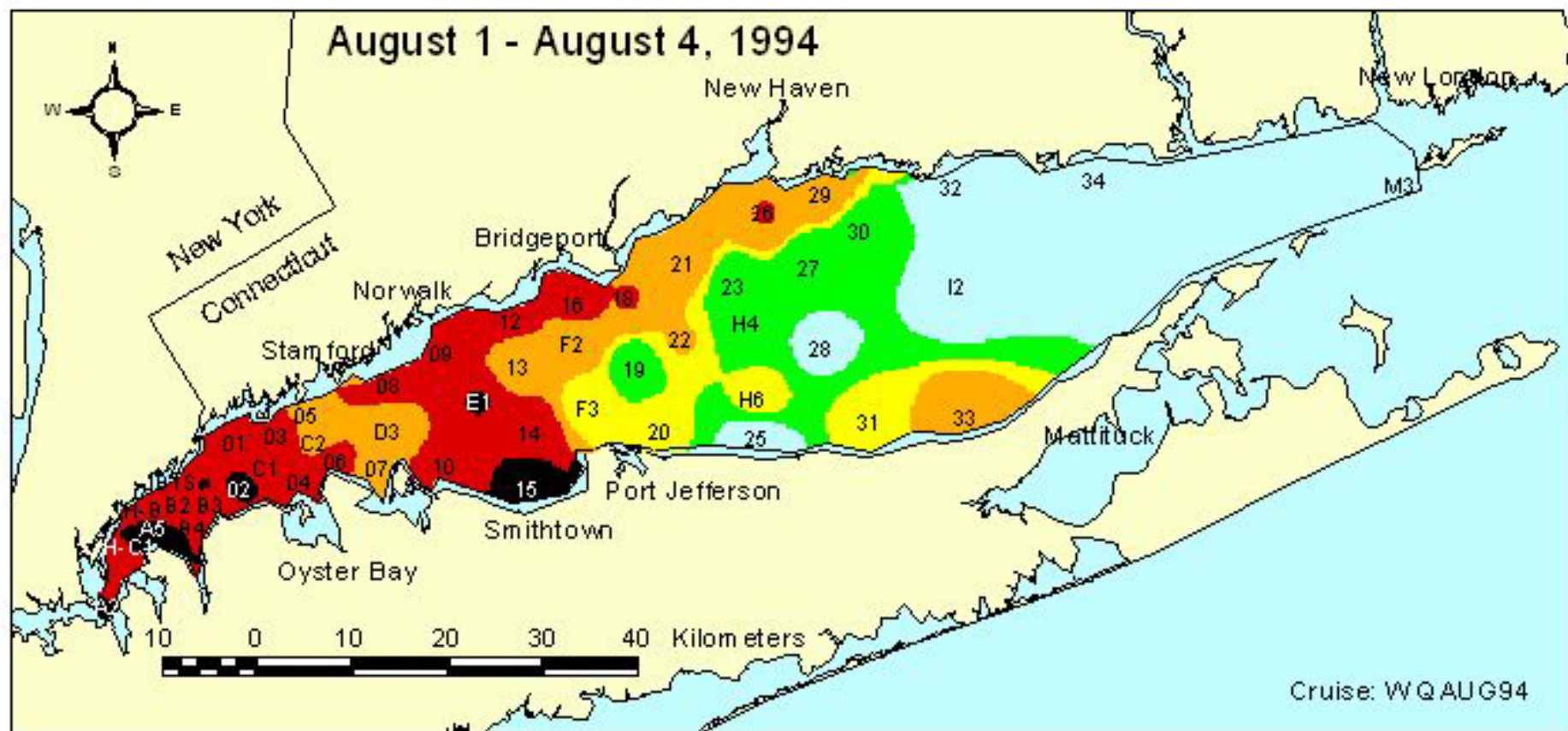
Changes to the Trading Program

Public Act 15-38

- Implemented the following scenario:
 - Buyers buy the credits they need to meet their General Permit limit and those payments are shared by the sellers



Trading Program Accomplishments

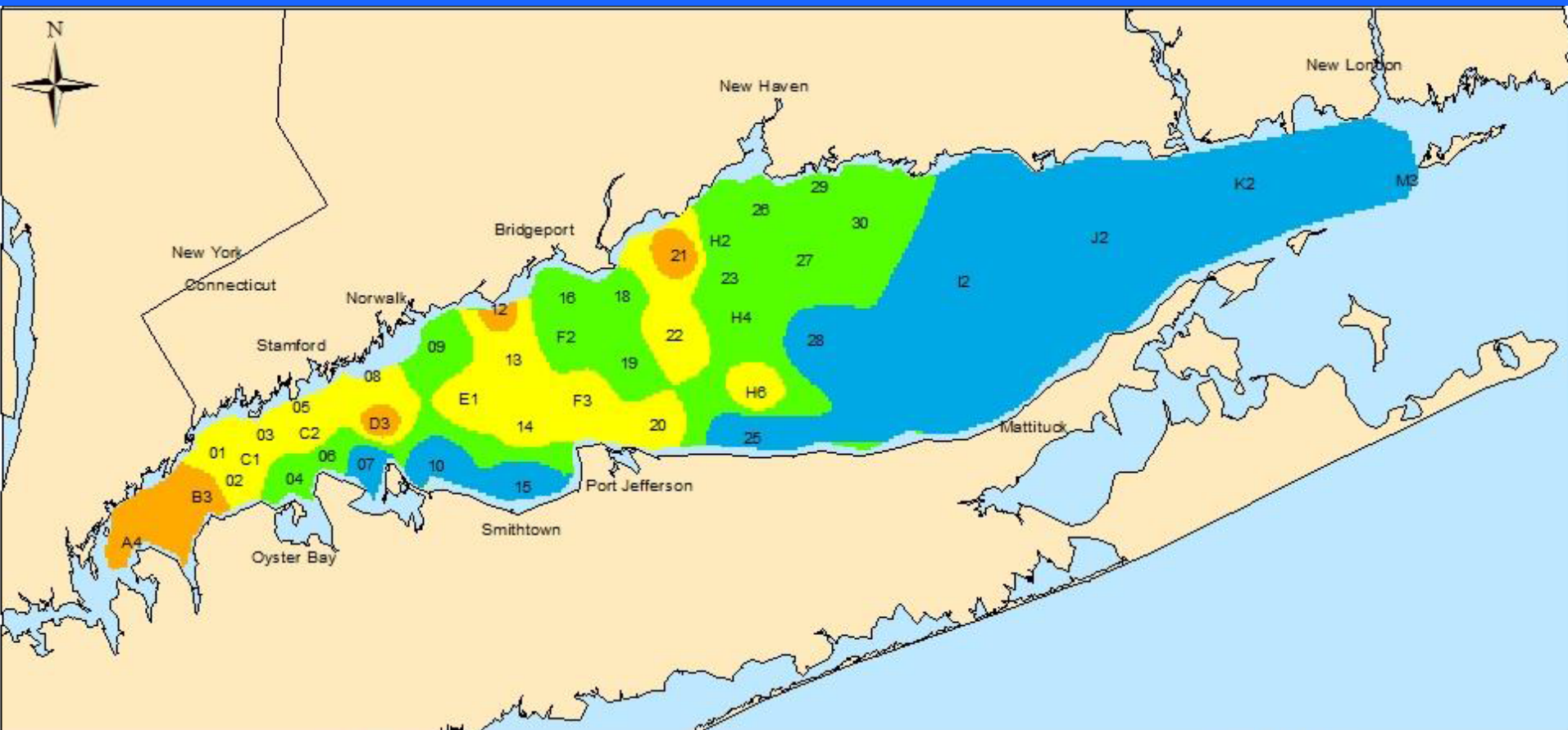


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Trading Program Accomplishments

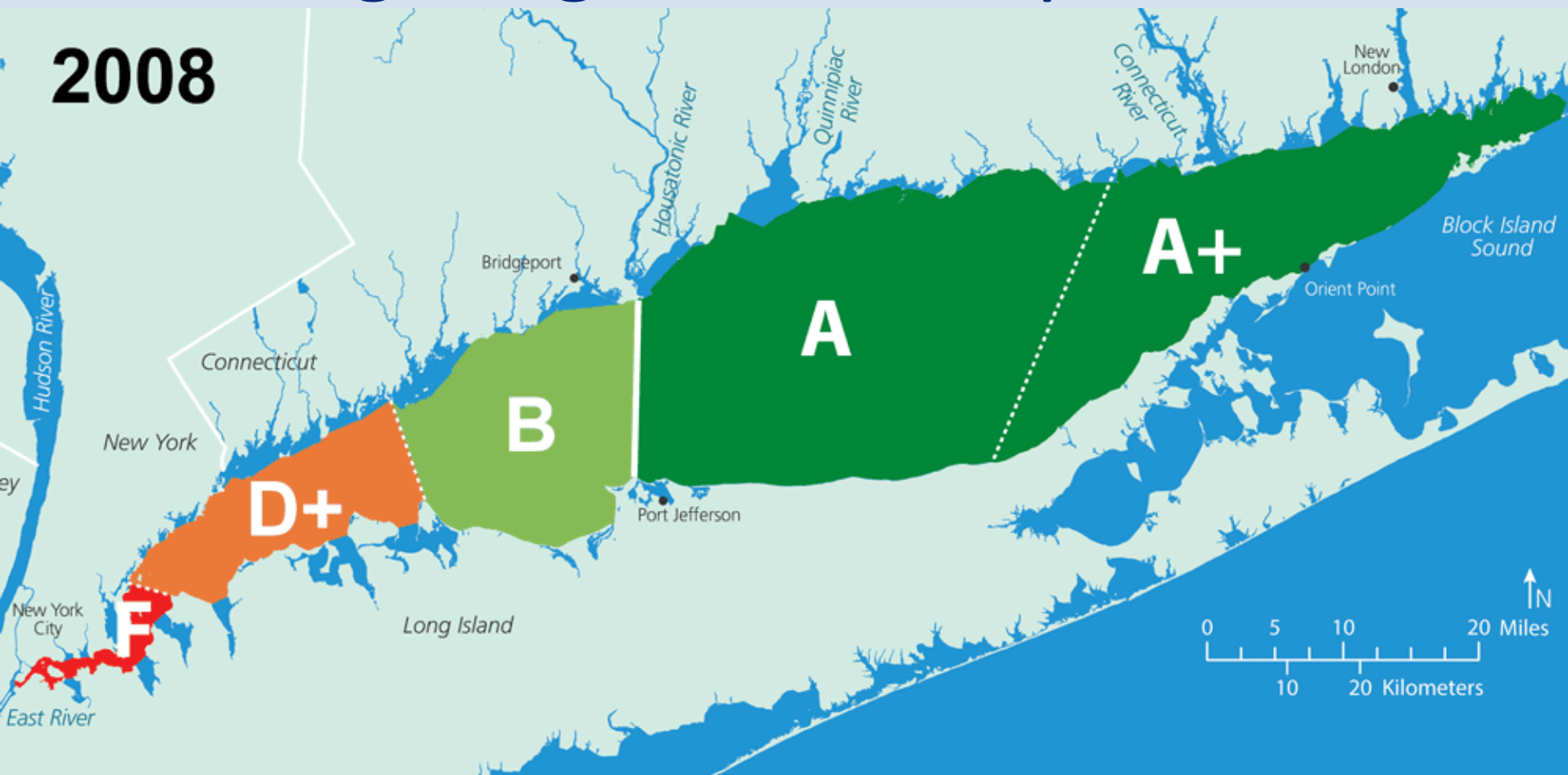
Dissolved Oxygen in Long Island Sound Bottom Waters

27 August – 29 August 2018



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Trading Program Accomplishments



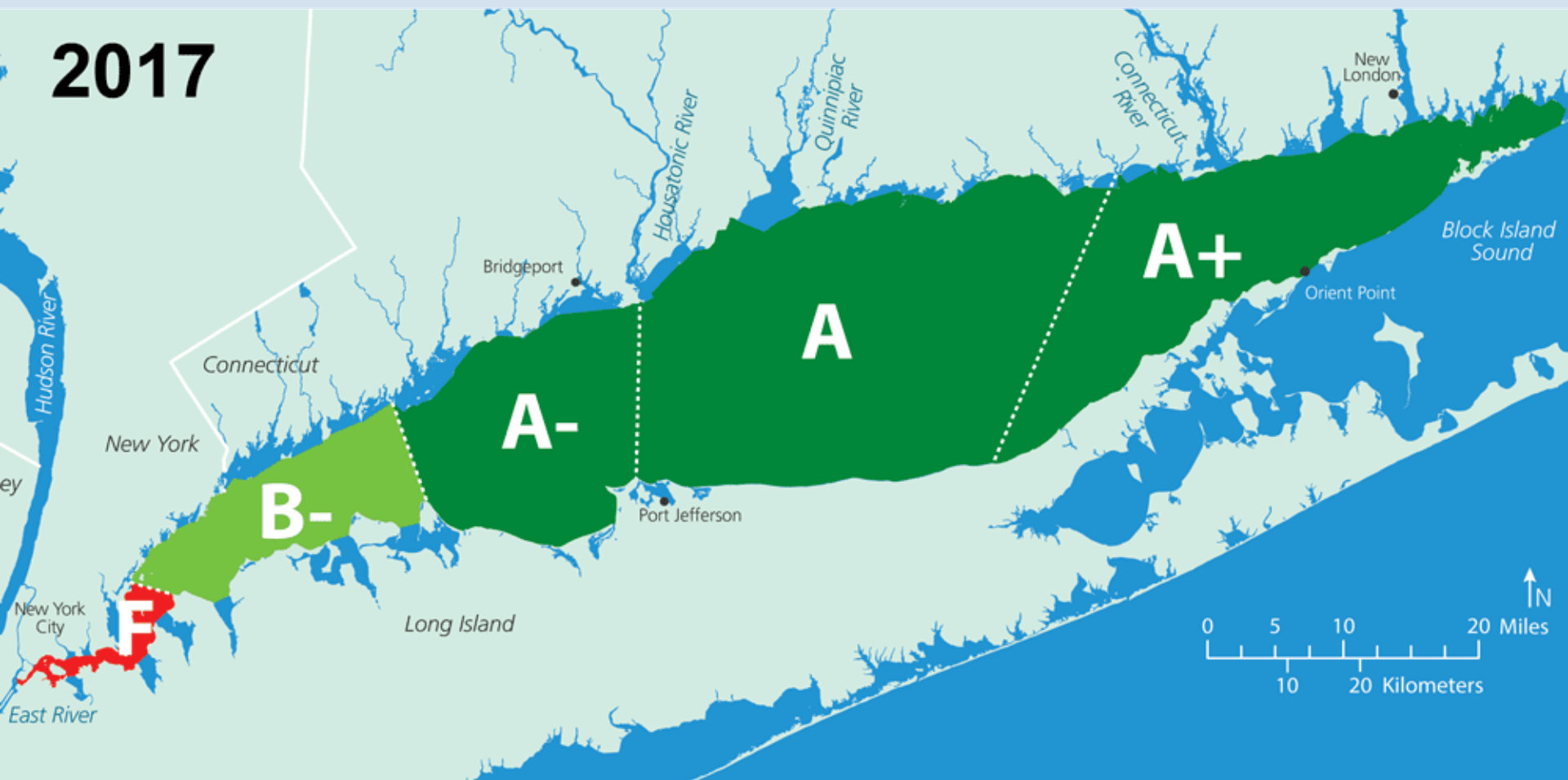
Connecticut Fund
for the Environment

Save the Sound®



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Trading Program Accomplishments



Connecticut Fund
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Next steps

- Changes to the TMDL
- Public participation



Questions?

www.ct.gov/deep/municipalwastewater

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