

New York State & Suffolk County Host

LONG ISLAND RESILIENCY & CLEAN WATER INFRASTRUCTURE MEETING

May 28, 2014

Session 1: Noon - 3 p.m.

Session 2: 3:30 – 6:30 p.m.

Health Sports Education Center Auditorium
Suffolk County Community College
Brentwood, NY 11717

Meeting Agenda

Welcome Noon – 12:30 p.m.

- **Steve Bellone**, County Executive, Suffolk County Government
- **Joseph Martens**, Commissioner, NYSDEC
- **Rich Schaffer**, Supervisor, Town of Babylon
- **Ed Romaine**, Supervisor, Town of Brookhaven
- **Jamie Rubin**, Director, Governor's Office of Storm Recovery

Invited Speaker Presentations 12:30 p.m. – 1:30 p.m.

- **Judith A. Enck**, Region 2 Administrator, US Environmental Protection Agency
- **Colonel Paul E. Owen**, Commander and District Engineer, New York District, US Army Corps of Engineers
- **Christopher J. Gobler, Ph.D.**, Professor, Stony Brook University, School of Marine and Atmospheric Sciences
- **R. Lawrence Swanson, Ph.D.**, Associate Dean and Director of Waste Reduction and Management Institute, Stony Brook University, School of Marine and Atmospheric Sciences
- **Vito A. Minei, P.E.**, Executive Director, Cornell Cooperative Extension of Suffolk County
Speaking points for Vito Minei's presentation

Break 1:30 p.m. – 1:45 p.m.

Invited Speaker Presentations 1:45 p.m. – 3 p.m.

- **Sarah Landsale**, Director of Planning and Environment, Suffolk County Government
(Presenting for Steve Bellone)
- **Sean Mahar**, Director of Government Relations and Communications, Audubon New York
- **James F. Gaughran**, Chairman, Suffolk County Water Authority Board
- **Mitchell Pally**, CEO, Long Island Builders Institute
- **Richard Amper**, Executive Director, Long Island Pine Barrens Society
- **Robert S. DeLuca**, President, Group for the East End

Judith Enck, Region 2 EPA Administrator, USEPA
Long Island Sound Ground Water Meeting
May 28, 2014

- Acknowledge Commissioner Martens and County Executive Bellone
- Thank you for asking me to speak on an issue that is critical to protecting water quality on Long Island and making it less vulnerable to storms
- Long Island's water resources are facing some big challenges
 - Polluted ground water – ground water is the only source of drinking water on Long Island
 - Pollution in streams and in coastal waters
- Long Island's ground water faces multiple threats
 - 28 federal Superfund sites
 - 182 state Superfund sites
 - Dozens of brownfields sites and sites being cleaned up under the Resource Conservation and Recovery Act
 - Over a thousand recent spills according to New York State Department of Environmental Conservation
 - It is quite striking when all of these sources are plotted on a map (hold up map)
- In addition to all these sources of pollutants, a major threat to coastal waters is nitrogen pollution

- Nitrogen comes from many sources – sewage treatment plants, septic systems and cesspools, agricultural and residential fertilizer use and atmospheric deposition
- Excess nitrogen can cause a variety of environmental issues
 - Trigger harmful algal blooms
 - Destabilize salt marshes – which help absorb the impact of storms and storm surges
 - Impact seagrass beds
- High nitrogen levels are the primary cause of low dissolved oxygen in the water – a condition called hypoxia
- Without enough oxygen, most marine life will suffocate, or, if they can, leave the area
 - Areas that would normally teem with life become biological deserts
 - 5,800 square mile hypoxic dead zone in the Gulf of Mexico – the size of the Connecticut
- Scientists estimate that half of the Long Island Sound experiences hypoxia in the summer
 - Caused when nitrogen fuels algae growth – algae die, settle on the bottom and decay; that decomposition uses up oxygen in the water

- Often develops and persists in the summer because warmer water “floats” on top of cool water
 - Layers prevent mixing so oxygen can’t travel from the top layer to the bottom layer
- The EPA’s work on Long Island Sound has already helped us come a long way in reducing nitrogen
 - In 1998, EPA, NY and Connecticut agreed to reduce human sources of nitrogen pollution to the Sound by 59%
 - By 2012, only 14 years later, 86% of the final reduction goal had been achieved
 - Reductions achieved by:
 - Upgrading sewage treatment plants with nitrogen removal technologies
 - Reducing runoff through stormwater best management practices to reduce runoff and smart grown policies
 - In 2013, monitoring showed the smallest area of low dissolved oxygen in 27 years
- But there is more work to do:

- In Suffolk County – septic systems and cesspools are a big source of nitrogen
 - an estimated 3 out of 4 households in Suffolk County rely on septic systems or cesspools for sewage disposal
 - Many of these systems are old and failing – putting human waste and nitrogen into ground water
 - But this is not as simple as fixing failing septic systems - even systems that are working well put large amounts of nitrogen into the ground water
 - This is a serious problem that needs attention
- In Nassau County, the primary source of nitrogen are sewage treatment plants and residential lawn fertilizer
- Much of this nitrogen comes from the Bay Park Sewage Treatment Plant in East Rockaway – which discharges 48 million gallons a day of treated sewage into the Reynolds channel
 - Bay Park serves 550,000 people – about 40% of the population of Nassau County
 - Responsible for approximately 70% of the nitrogen loading going into the Western Bays
- Bay Park suffered significant damage during Hurricane Sandy

- EPA is working with county, state and federal partners to implement the President's Hurricane Sandy Rebuilding Strategy to increase resilience at Bay Park
 - These are expensive projects but to not undertake them and to not strive to control nitrogen would be a major problem
- We need to work together to strengthen Long Island's coastal resiliency and improve water quality
- In both Nassau and Suffolk Counties, nitrogen fertilizers that are not taken up by lawns are carried by rain or excess irrigation and become a pollutant
 - There is a low cost solution to nitrogen runoff, though – persuade homeowners and property managers to use less fertilizer on their lawns
- Achieving water quality goals and reducing nitrogen pollution in Long Island will come from a combination of approaches which could include
 - Sewering – more homes connected to sewers mean fewer septic systems putting nitrogen into the ground
 - Installing nitrogen reduction technologies on individual systems or clusters of systems

- Nitrogen removal systems at Bay Park and other large plants can significantly reduce the amount of nitrogen discharged into coastal waters
- Public education and outreach about the sources and impacts of nitrogen
- We are poised for more meaningful reductions in nitrogen and strengthening our coastal resiliency and will continue work with our partners to ensure the waters of Long Island are alive and thriving
- I want to wrap up today by talking about one of the greatest environmental challenges of our time – climate change
- Many people don't immediately think of climate change as a water issue – but it is.
 - Many climate change impacts – like sea level rise or super storms that overwhelm sewer systems or historic drought like we are seeing out West – related to water
- Climate change is one of EPA's highest priorities
- The science is clear – climate change isn't coming. It's here.
 - United Nation's Intergovernmental Panel on Climate Change has issued reports confirming that:
 - Caused by burning fossil fuels in power plants, cars and trucks, and deforestation

- Effects are already here – melting glaciers, sea level rise, lower crop yield, dying out species
- Greenhouse gases have increased twice as fast in the last 10 years then they did in the last few decades of the 20th century
- Beyond storms like Sandy, we're feeling other effects
 - 12 hottest years in recorded history have been in the last 15 years
 - 2012 was the hottest year on record in the US
 - Sea surface temperatures are the highest they've been since measurement began in the 1800s
 - The sea level in New York Harbor is a foot higher than it was a century ago
- Can't say that climate change caused Hurricane Sandy – but we do know that storms get more intense the warmer the water – and the water is warming
- Sandy inflicted billions of dollars of damage on residential and commercial facilities, as well as terrible human suffering and fatalities

- When people say we can't afford to address climate change, I say we can't afford NOT to take action.
 - 1 storm. 2 states. \$60 billion dollars to rebuild after Sandy
- Climate change is an environmental and economic issue
- And Long Island is particularly vulnerable
 - 15% of people on Long Island live in an area identified as at risk by FEMA
 - As DEC's recent study shows, excessive nitrogen pollution damages coastal marshlands that are a critical line of defense against severe storms and flooding
- Critical for Long Island to invest heavily in strategies like green infrastructure and to preserve coastal wetlands
 - Green infrastructure is a stormwater management strategy that focuses on groundwater absorption of stormwater, keeping it out of sewers – which helps keep sewage out of local waters
 - Green roofs
 - Porous pavement and sidewalks that water can filter through
 - Rain gardens
 - Green spaces

- Coastal wetlands help absorb excessive rainfall and mitigate flooding
- Green infrastructure is a way to help build a sustainable future that is more resilient to climate change
- First and foremost, we must find ways to reduce nitrogen pollution in Suffolk County and across the Island
 - Connect people to sewage systems without contributing to sprawl
 - Reduce use of fertilizers that wash nitrogen into our waterways
 - Reduce nitrogen from sewage treatment plants
 - Use green infrastructure to reduce the amount of stormwater run-off into waterways
- Thank you for having me. EPA is looking forward to working with our partners toward reducing nitrogen pollution in Long Island, creating communities that are resilient to the impacts of climate change, and protecting its most precious resource – its water.

US Army Corps of Engineers New York District

Sandy Recovery Efforts

Long Island Coastal Resiliency and
Clean Water Infrastructure Stakeholder Meetings

COL Paul E. Owen
District Engineer
U.S. Army Corps of Engineers
New York District

28 May 2014



History of the US Army Corps of Engineers and the United States

- GEN George Washington appointed Colonel Richard Gridley as the Army's first chief engineer **June 16, 1775**.
- In **1779** Congress created a "Corps of Engineers," which included many French officers, to provide engineering support during the Revolutionary War.
- On **March 16, 1802**, the Army re-established USACE permanently. First task: Found and operate USMA, which, until the mid 1800s, was the country's only engineering school, with only engineers as academy superintendents until 1866.
- In the **early 1800s**, Congress tasked USACE to contribute works "of a civil nature," starting with a coastal fortification in Norfolk, lighthouses, jetties, and maps of the navigation channels. USACE also constructed monuments in Washington, D.C.
- USACE explored and mapped the Western frontier, built roads over the Appalachians, eliminated navigational hazards, and constructed canals, locks, and levees to support the military, commerce and public mail.
- Since then, USACE has responded to changing defense requirements and played an integral part in the development of the country.



What We Do



- **Civil Works**
 - Flood Damage Risk Reduction
 - Navigation
- **Military Construction / Support for Others**
 - 8 Military Posts
 - New York City/EPA/VA
- **Regulatory Program**
 - Navigable Waterways
 - Wetlands
- **Environmental remediation and restoration**
- **Respond to emergencies and contingency operations**
 - FEMA Emergency Support Function #3

Hurricane Sandy Overview



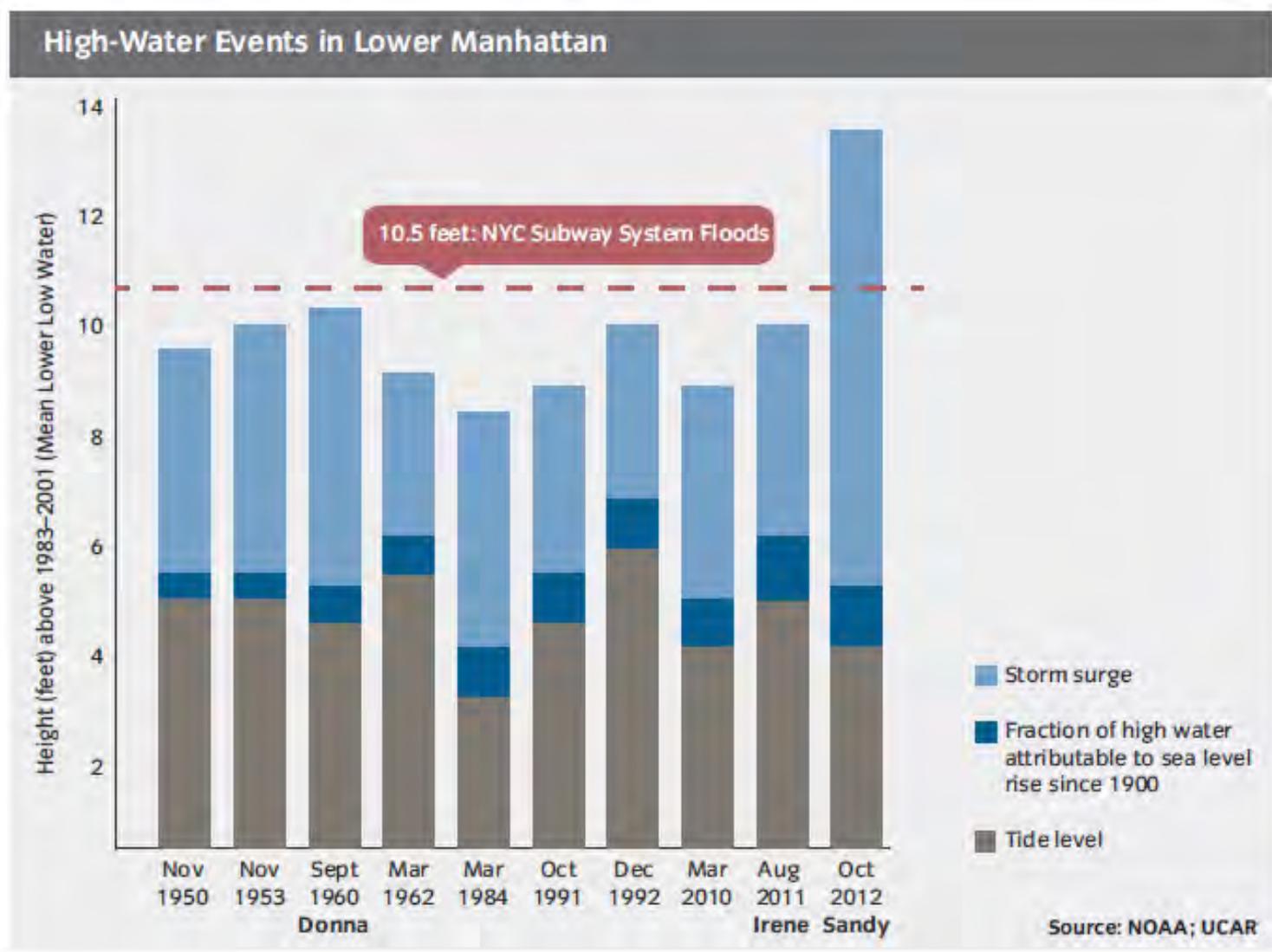
- Lower Manhattan Flooding
- Coastal Surge/Wave Impact
- Coastal Flooding
- Coastal Breaches
- Power Outages
- Extensive Urban Debris



- In New York City:**
- 43 deaths
 - 6,500 patients evacuated from hospitals and nursing homes
 - 90,000 buildings in the inundation zone
 - 2 million people without power
 - 11 million travelers affected daily
 - \$19 billion in damage



Sandy vs. Previous Storms



Storm Risk Reduction Measures

Bulkheads



Groins



Deployable Floodwalls



Armor Stone (Revetments)



Tide Gates/Drainage Devices



Levees



Sand Placement



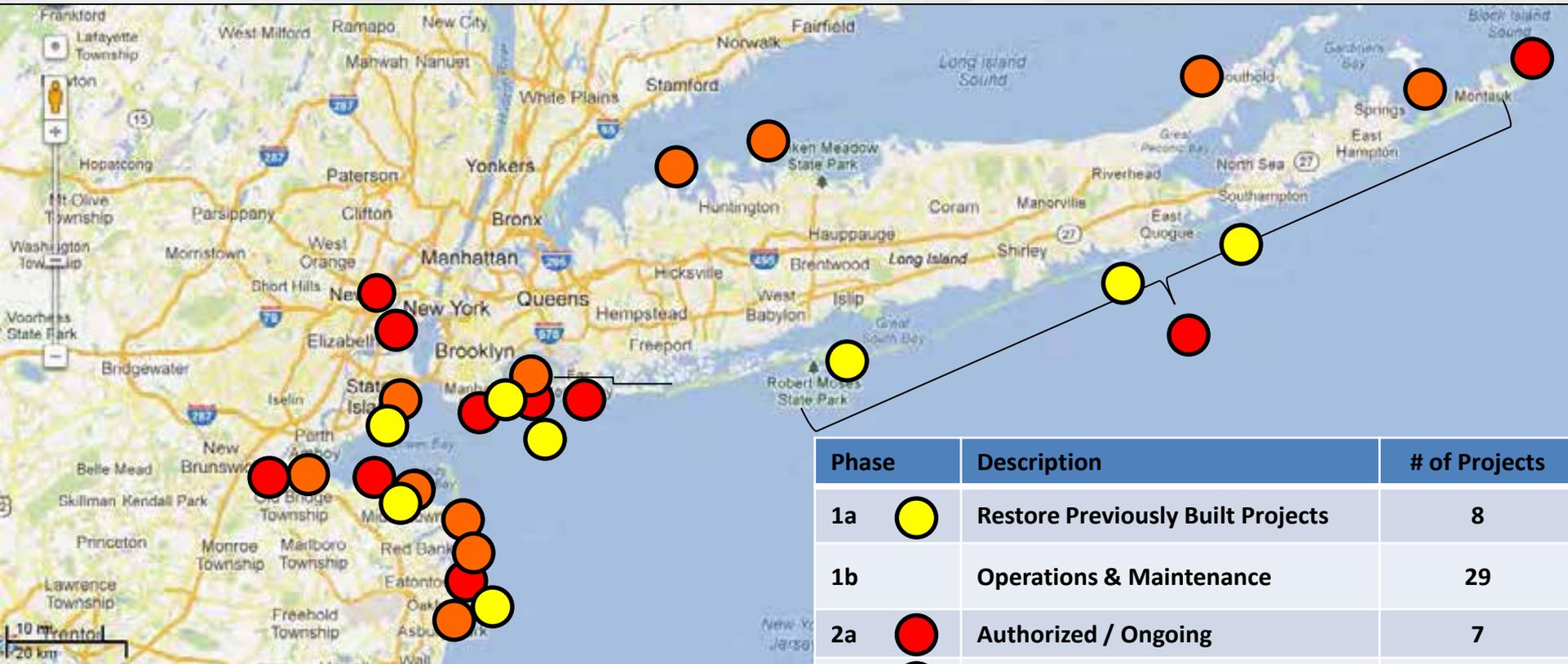
Sandy Program Phases

Phase	Description	# of Projects	Initial Estimate	Current Estimate
1a	FCCE Repair/Restore	8	\$336 m	\$298 m
1b	O&M	29	\$489 m	\$203 m
2a	Authorized / Ongoing	7	\$1.29 b	\$1.29 b
2b	Authorized / Unconstructed	4	\$553 m	\$553 m
2c	Ongoing Studies / New Projects	11	\$17 m (study costs only)	\$17 m
			\$850 m (est. construction cost)	\$850 m
2d	Continuing Authorities Program	3	\$3 m	\$10 m

Total Current Program Estimate (62 projects): ~\$3.25 B



New York District-Sandy Recovery



Program Estimate: \$3.25 B
62 Projects

Phase	Description	# of Projects
1a	Restore Previously Built Projects	8
1b	Operations & Maintenance	29
2a	Authorized / Ongoing	7
2b	Authorized / Unconstructed	4
2c	Ongoing Studies / New Projects	11
2d	Continuing Authorities Program	3

Focus Projects

- Coney Island
- Rockaways and Jamaica Bay
- Fire Island to Montauk Point
- South Shore of Staten Island

Coney Island – Project Performance



Source: FEMA MOTF 11/6 Hindcast surge extent

Coney Island – Authorized Project



- Noteworthy
 - Sea Gate T-Groins Purpose is to protect the authorized project (beach fill)
 - Sea Gate Real Estate – Accumulated Sand in Graveshead Bay

Coney Island – Sea Gate T-Groins Conceptual Drawing



Coney Island - Potential Future Project



Rockaways and Jamaica Bay



Jamaica Bay Ecosystem Restoration Sites

Storm Damage Reduction Studies

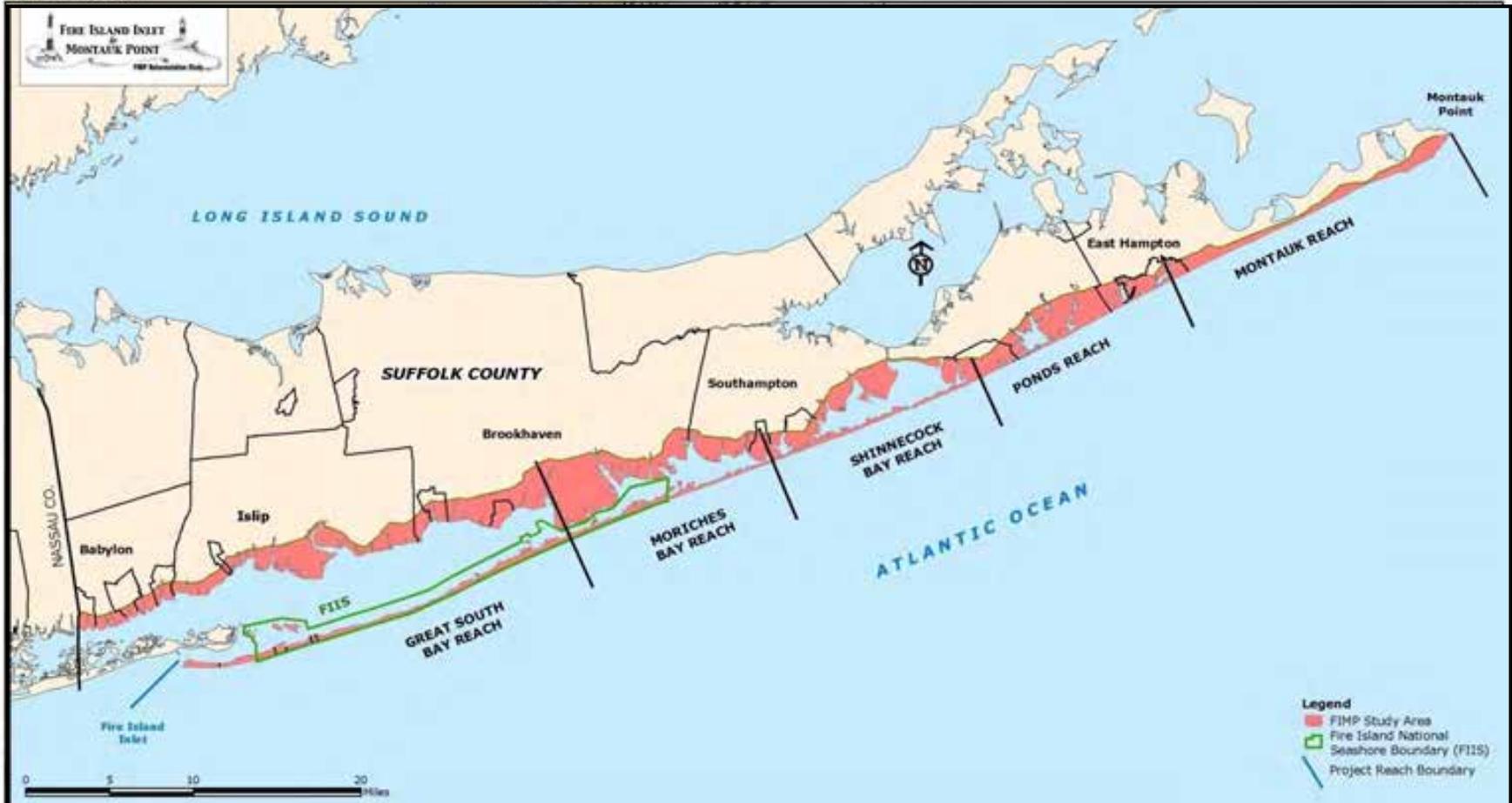
Navigation Projects

Continuing Authorities Program (CAP) Restoration Projects (1135)

Marsh Island Restoration Sites

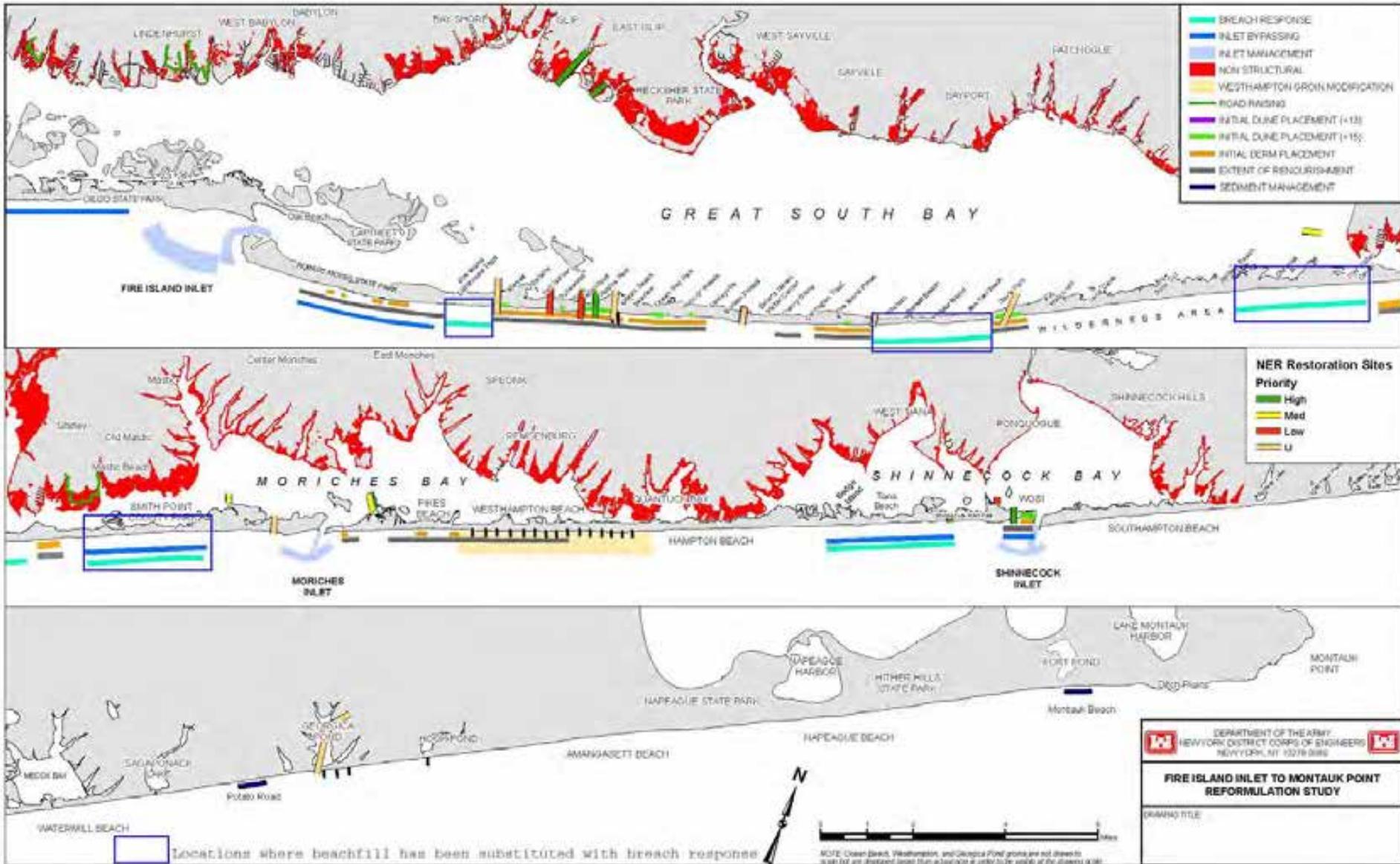
Fire Island Inlet to Montauk Point, New York Reformulation Study

New York



Purpose: identify a long-term solution to reduce the risk of coastal storm damages in the study area in a manner which considers the risks to human life and property, while maintaining, enhancing, and restoring ecosystem integrity and coastal biodiversity.

Fire Island to Montauk Point



South Shore of Staten Island, NY

Ongoing Study



Phase 1: Line of Protection – Current Proposed Improvement Plans (DRAFT) design under final eng analyses/refinement/optimization

Reach No.	Location	Type of Structure	Length (ft)	Crest Elev (ft, NGVD)
A-1	Fort Wadsworth	Buried Seawall	400	20
A-2	Ocean Breeze Park	Single Sheet Pile Wall	7,560	20
A-3	Midland Beach	Buried Seawall	5,190	20
A-4	Miller Field	Buried Seawall	2,030	20
A-5	New Dorp Lane	Double Sheet Pile Wall	195	28.5
A-6	New Dorp Beach	Rock Revetment	1,600	25.5
A-7	Cedar Grove Beach	Buried Seawall	3,035	21.5
A-8	Oakwood Beach	Rock Revetment	3,165	26
A-9	Oakwood Beach Treatment Plant	Earthen Levee	1,415	23
A-10	Oakwood Beach Treatment Plant	Single Sheet Pile Wall	670	17

Where are the Gaps?

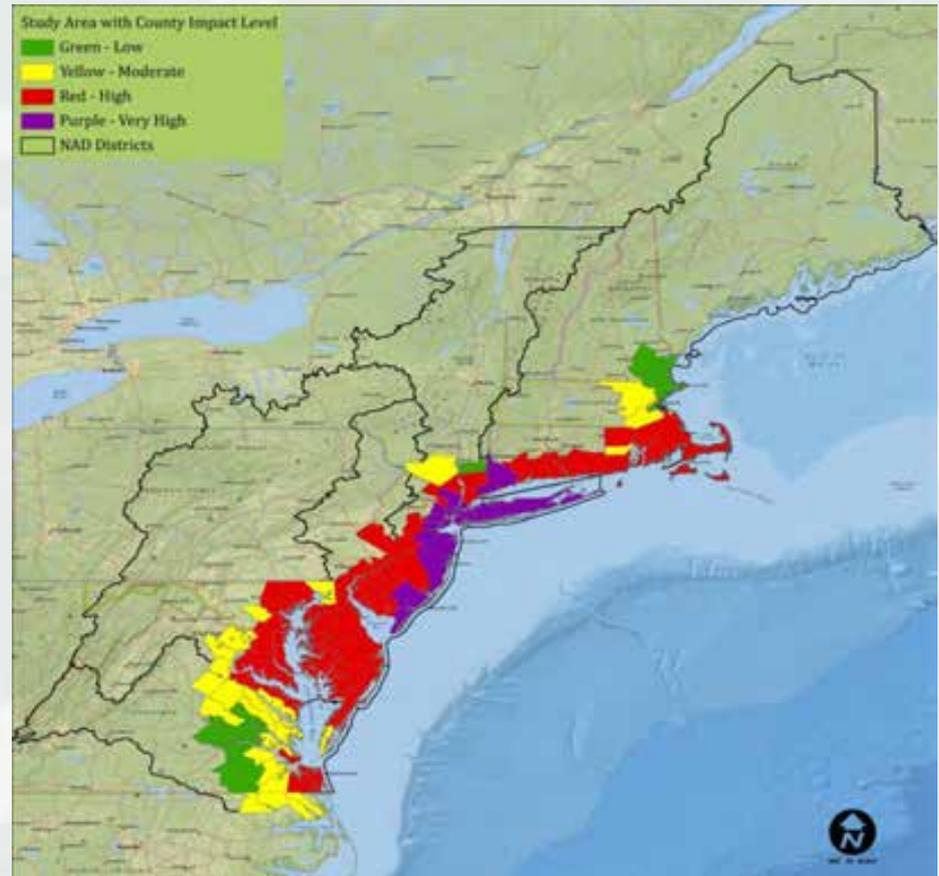


North Atlantic Coast Comprehensive Study

Regional study, led by our higher Divisional office, going on concurrently with recovery efforts

Goals:

- Provide Risk Reduction Framework
- Reduce risk to which vulnerable coastal populations are subject
- Promote Coastal Resilient Communities
- Ensure a sustainable and robust coastal landscape system, considering future sea level rise and climate change scenarios, to reduce risk to vulnerable populations, property, ecosystems, and infrastructure
- Complete in January 2015



Study Area



Way Ahead



- **Repair & Restore** previously completed coastal flood risk projects
- **Accelerate completion** of authorized but unconstructed authorized projects
- **Complete ongoing feasibility studies** and construct recommended projects



Questions



How does excessive nitrogen loading effect the health and resiliency of Long Island's coastal ecosystems?

Christopher J. Gobler



Stony Brook University
*School of Marine and
Atmospheric Sciences*

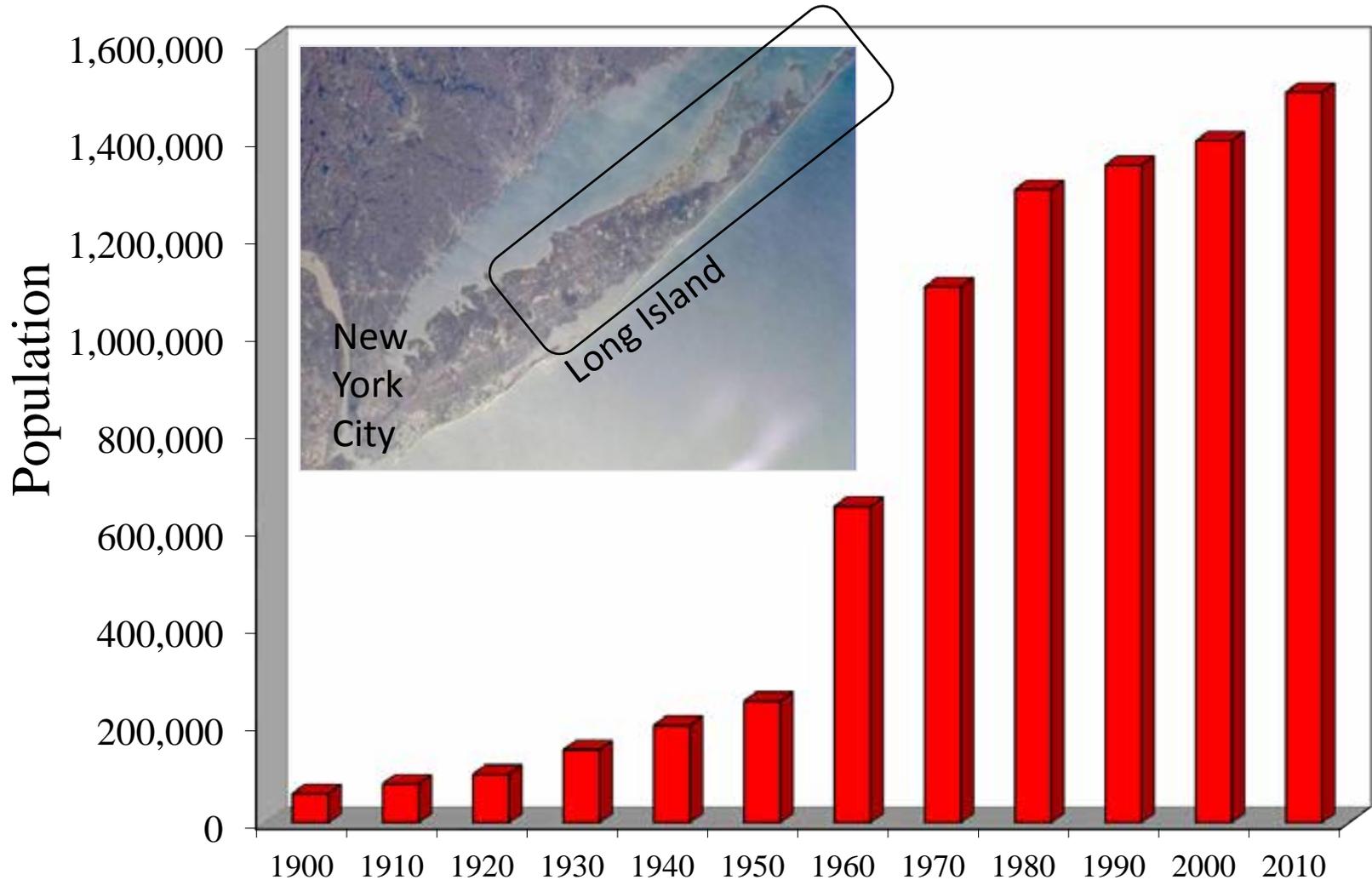
“Nitrogen is the critical limiting factor to primary producers in Long Island coastal marine waters”

– Dr. John Ryther, Woods Hole Oceanographic Institute, Science Magazine, 1971

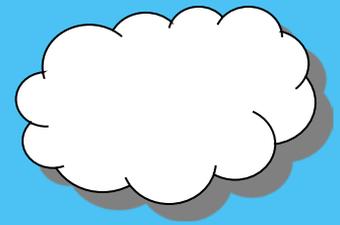


Population, Suffolk County, NY, USA

>25,000,000 lbs of nitrogen per year from human waste



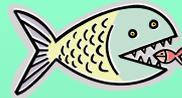
Loading of wastewater nitrogen to coastal waters



Septic tank

Nitrogen

Water table
/ aquifer



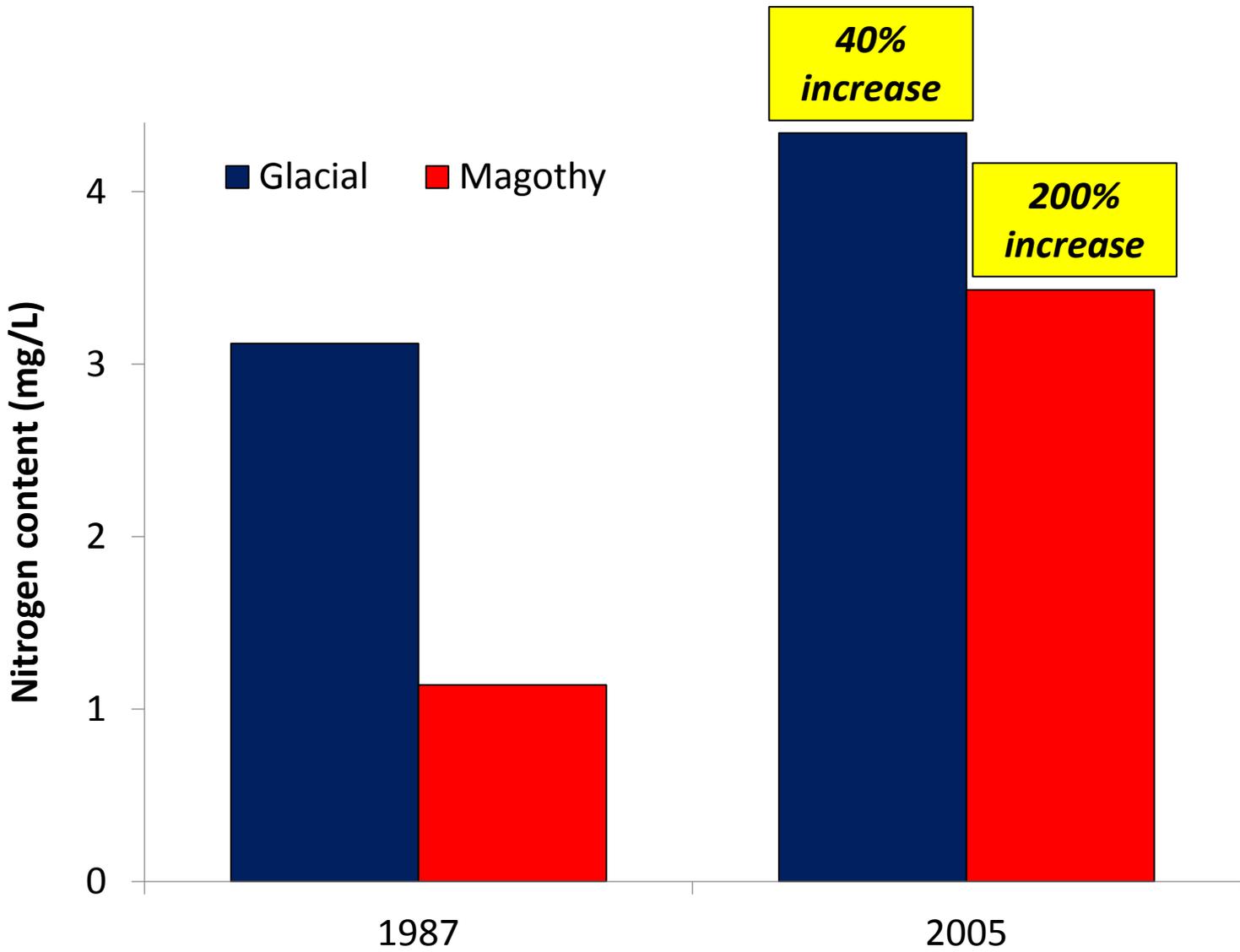
In Suffolk County:

- 70% of homes have septic tanks or cesspools.
- ~70% of N loads come from septic tanks and cesspools.

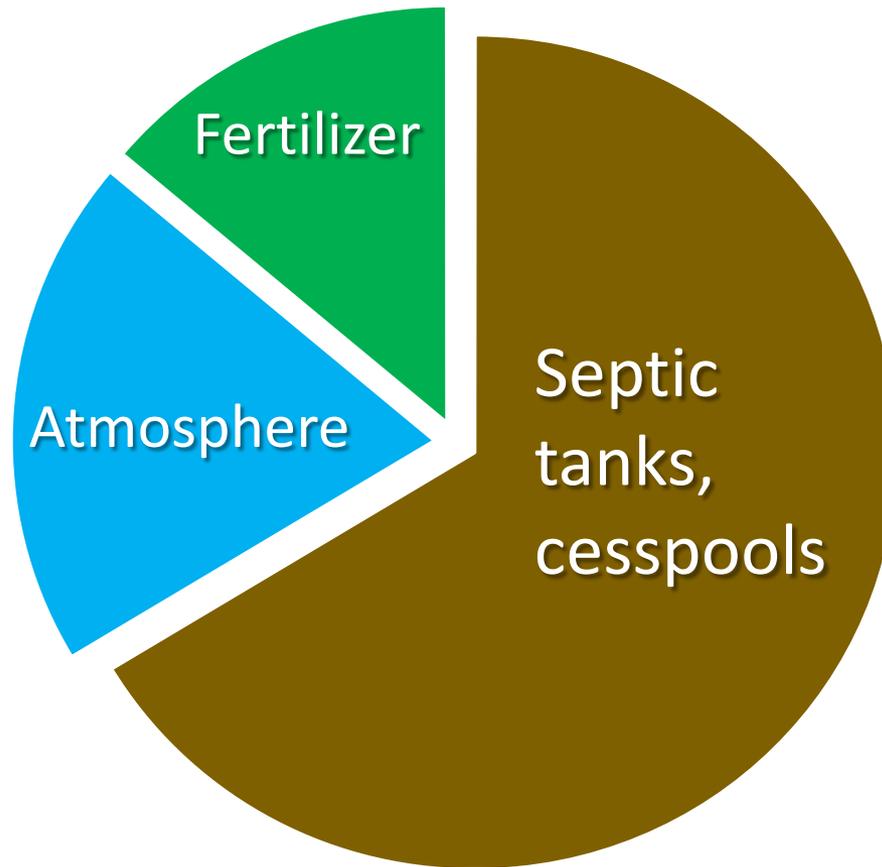
Groundwater
flow

Nitrogen

Changes in groundwater nitrogen levels in Suffolk County



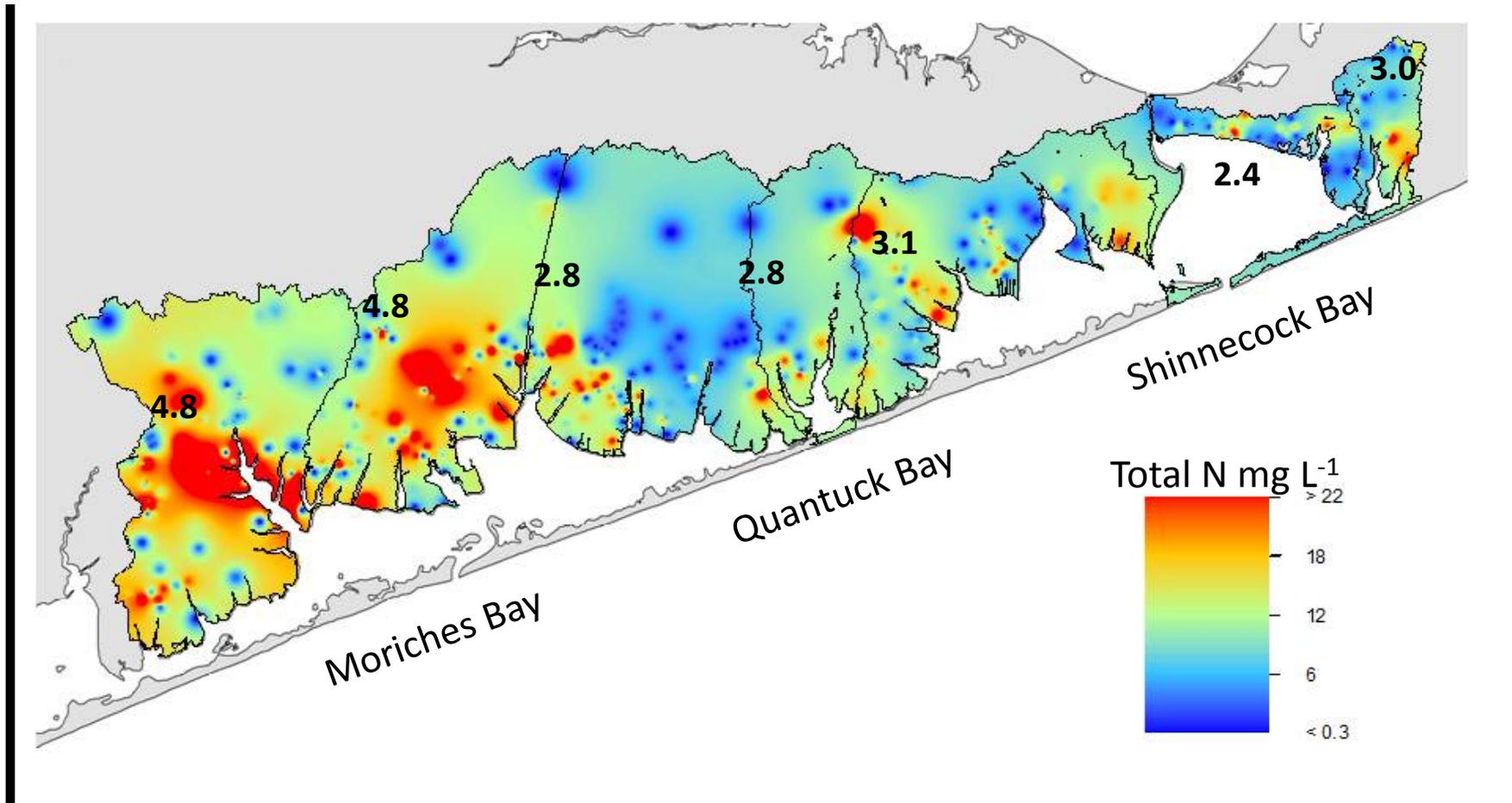
N loads to Great South Bay from watershed



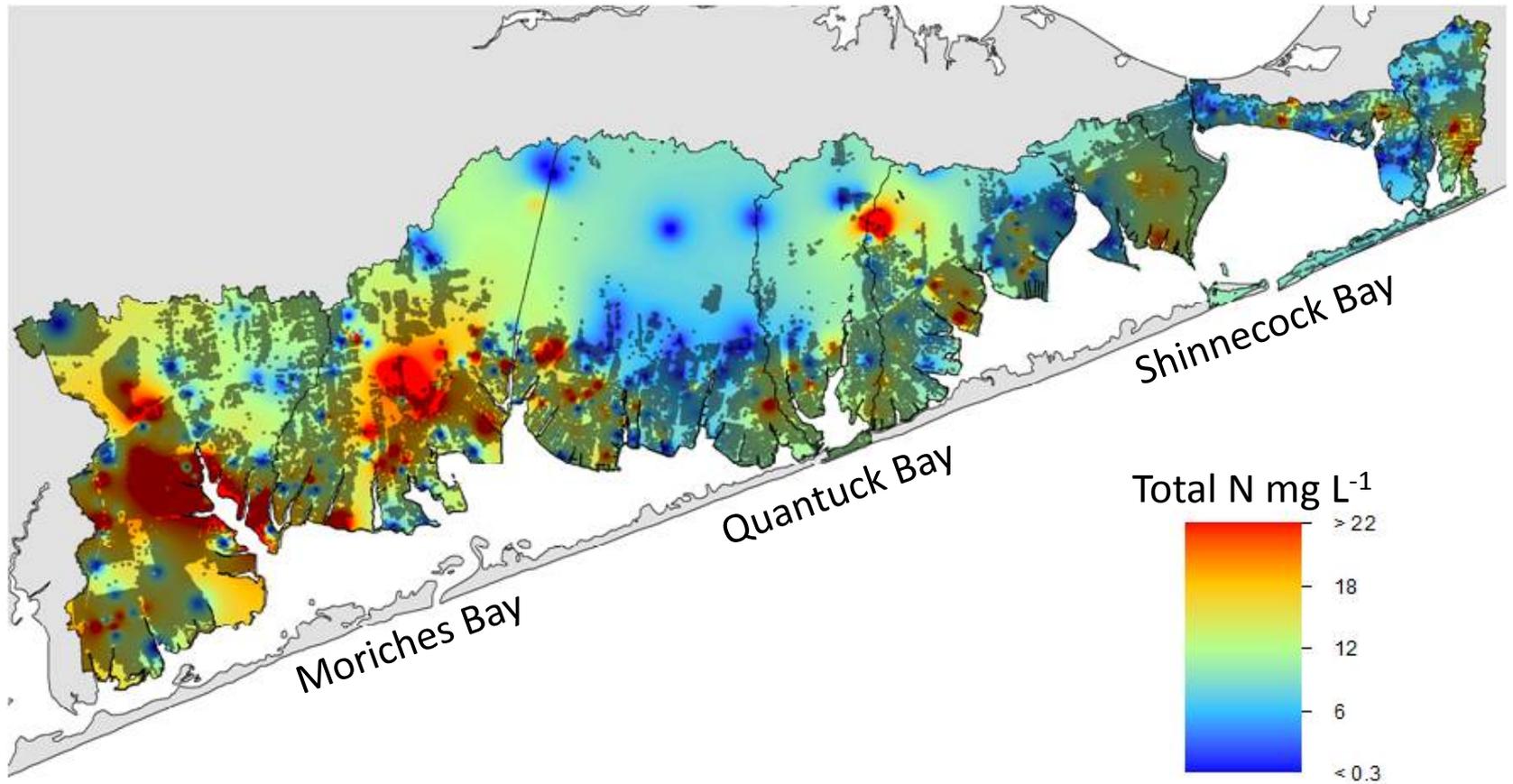
Kinney and Valiela, 2011

•~70% of N entering Moriches and Shinnecock Bay is from wastewater (Gobler et al, in progress for NYSDOS).

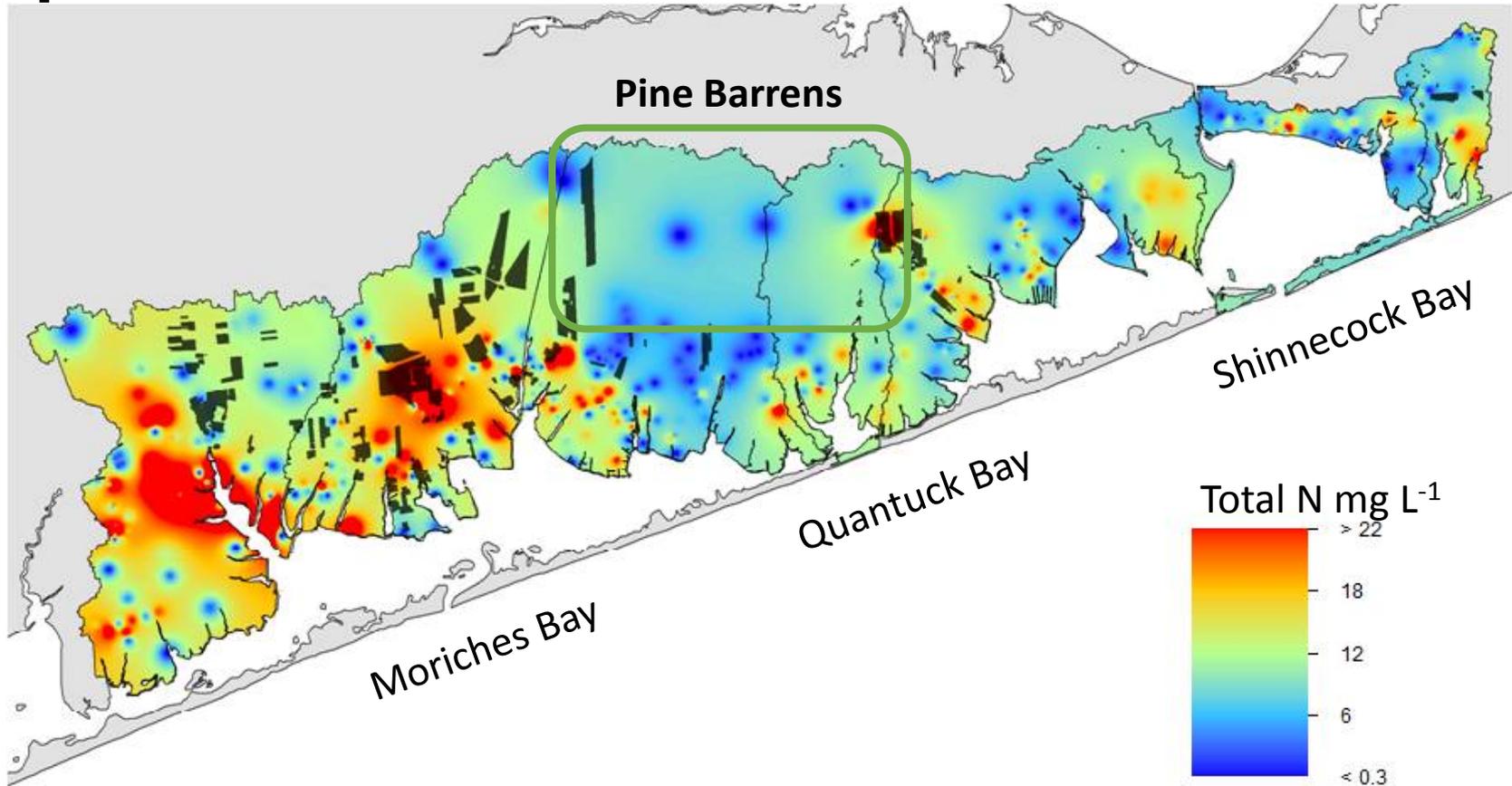
Groundwater nitrogen concentrations, Eastern Bays



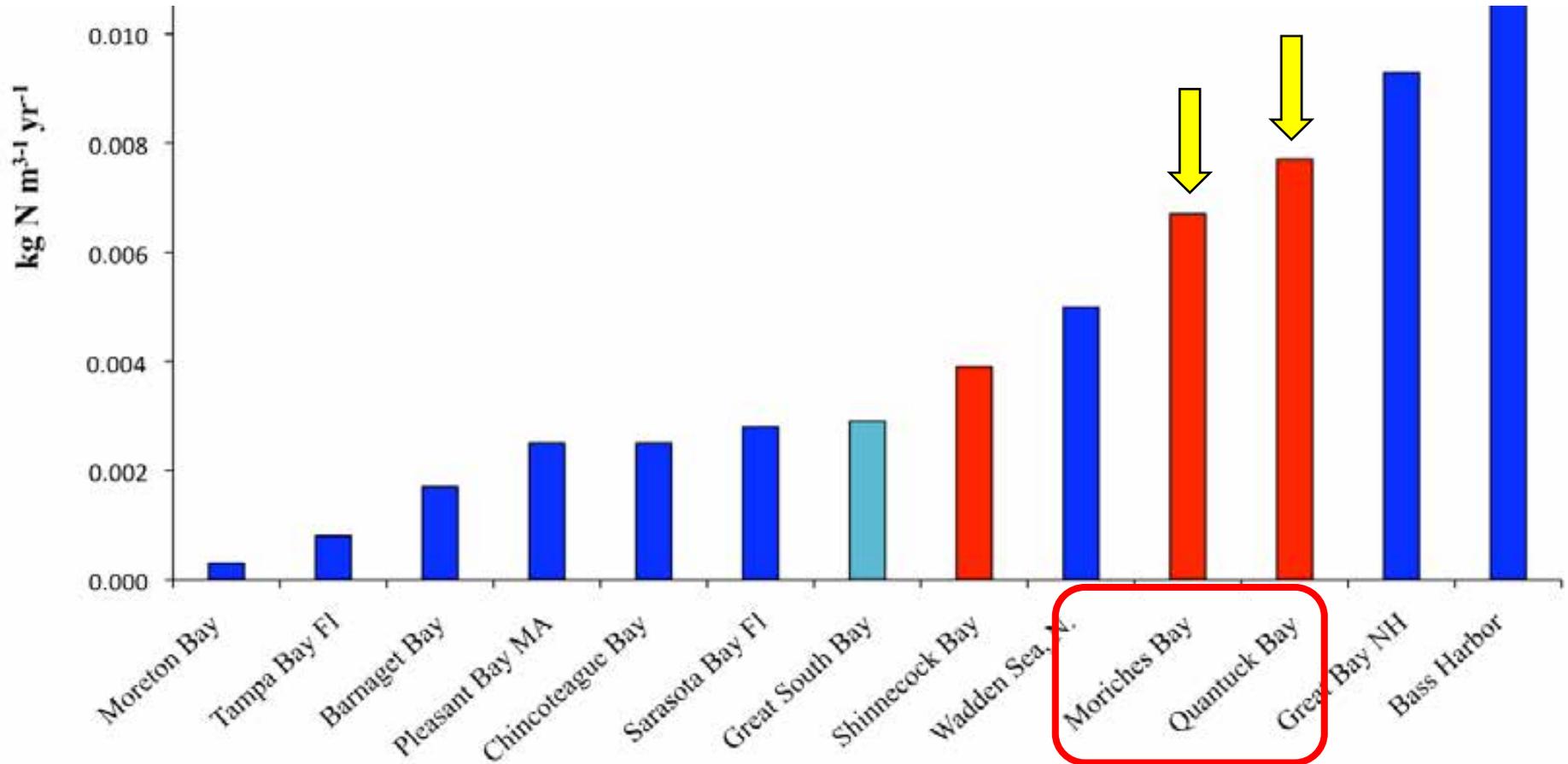
Groundwater N and buildings



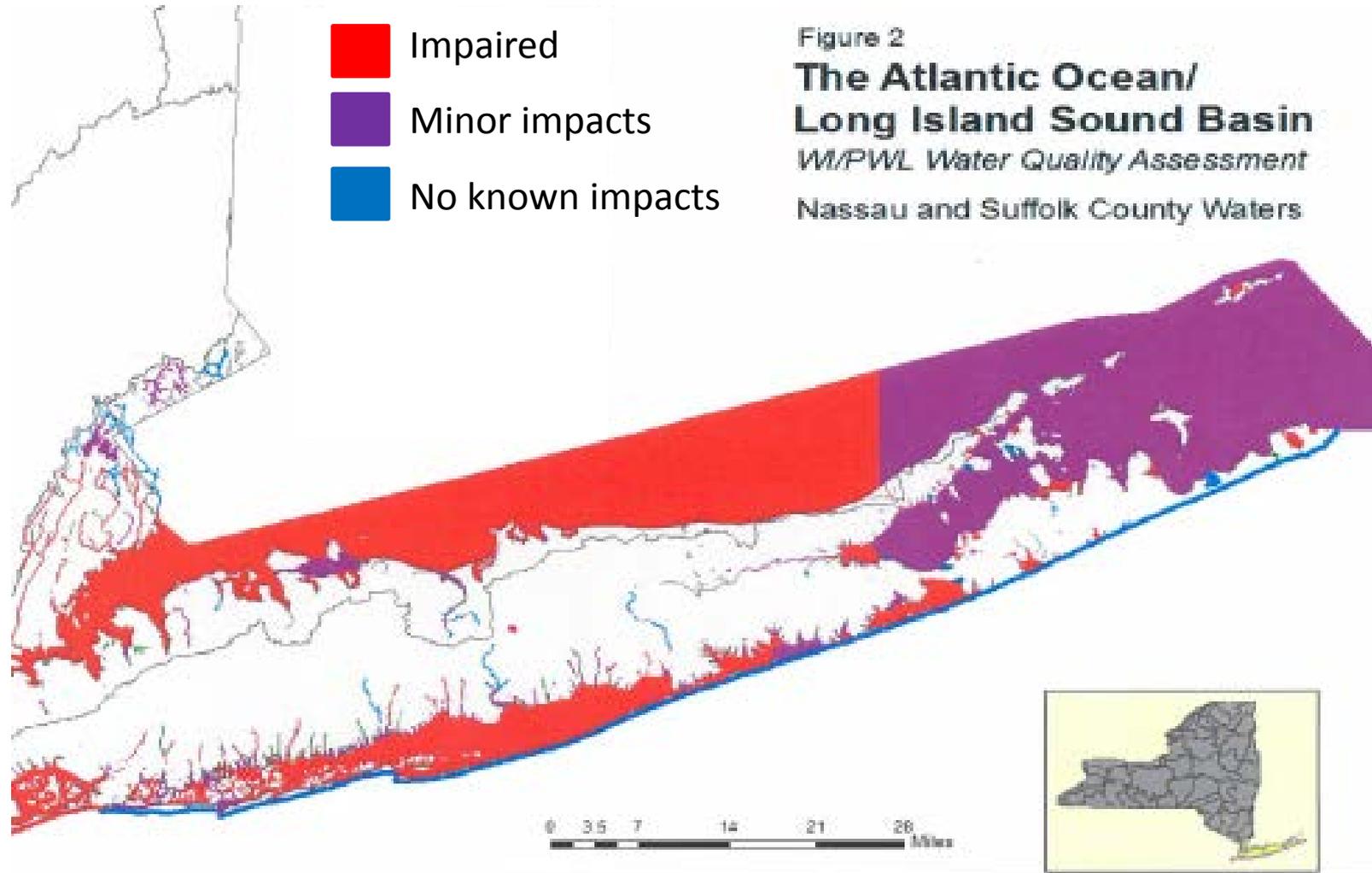
Groundwater N and agriculture



South shore bay nitrogen loads compared to other water bodies



NYSDEC assessment of Long Island coastal waters



What impairments are brought about by excessive nitrogen loading?

- **Loss of critical habitats:** Eelgrass, salt marshes
- **Low dissolved oxygen levels, hypoxia**
- **Acidification, low pH**
- **Macroalgal blooms:** Sea lettuce, *Ulva*
- **Toxic algal blooms:** Red, rust, brown tides
- **Loss or depletion of shellfisheries and finfisheries**

The vital role of salt marshes in coastal ecosystems and communities



Salt marsh ecosystems

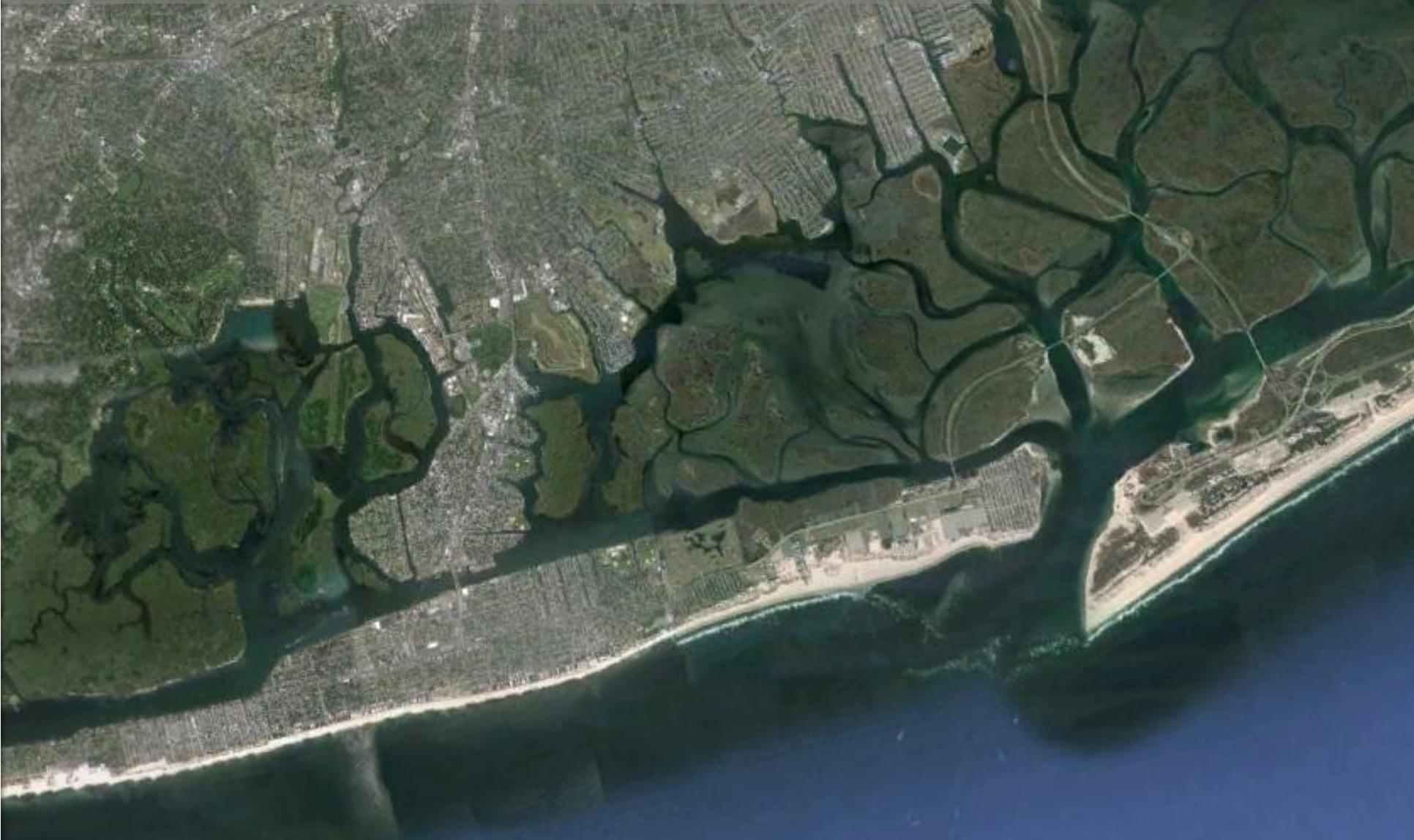


Salt marshes protect coastlines



Chris Bason, Delaware Center for the Inland Bays

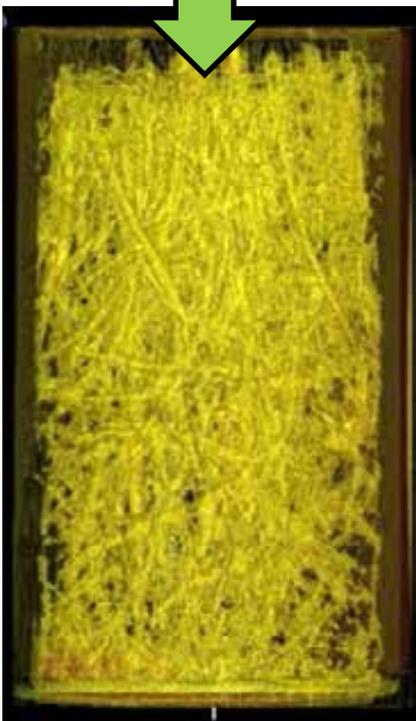
Salt marshes protect coastlines



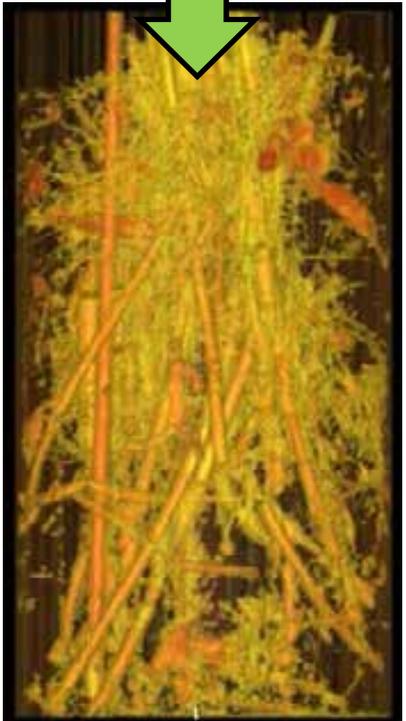
“Coastal eutrophication as a driver of salt marsh loss”, Deegan et al 2012, Nature



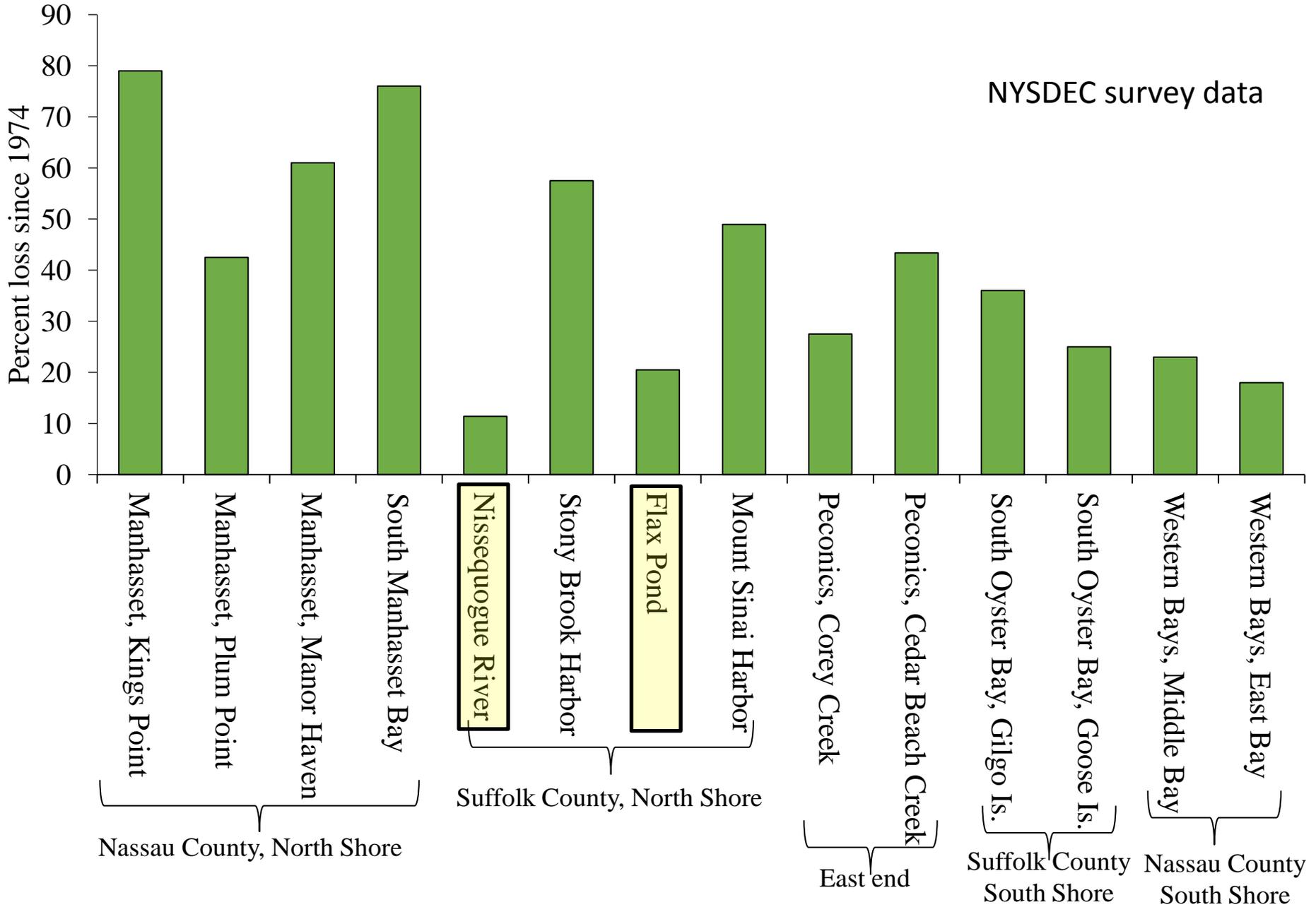
**Dense,
strong
roots**



**Nutrient
weakened,
roots**



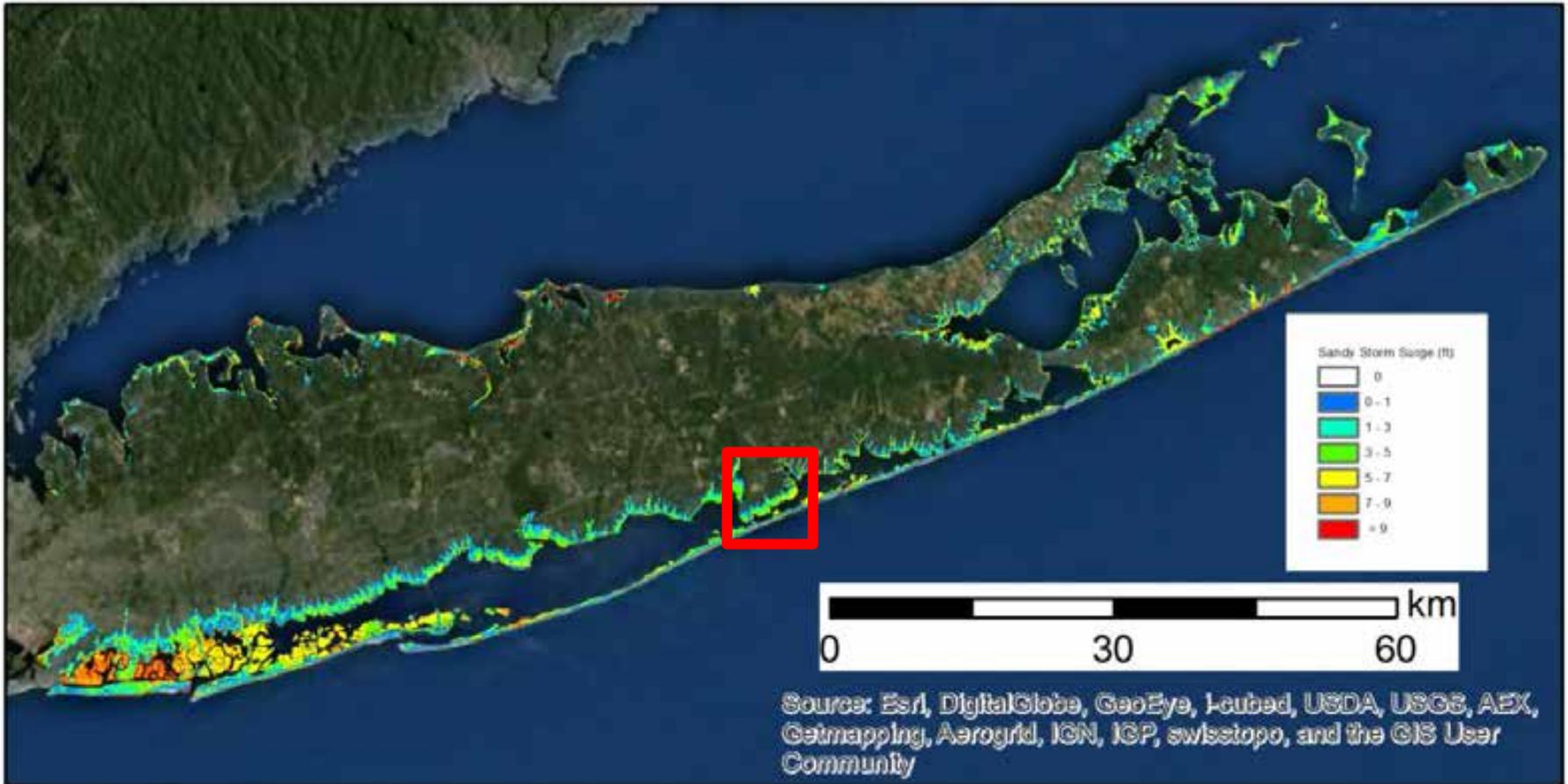
Loss of wetlands on Long Island, since 1974



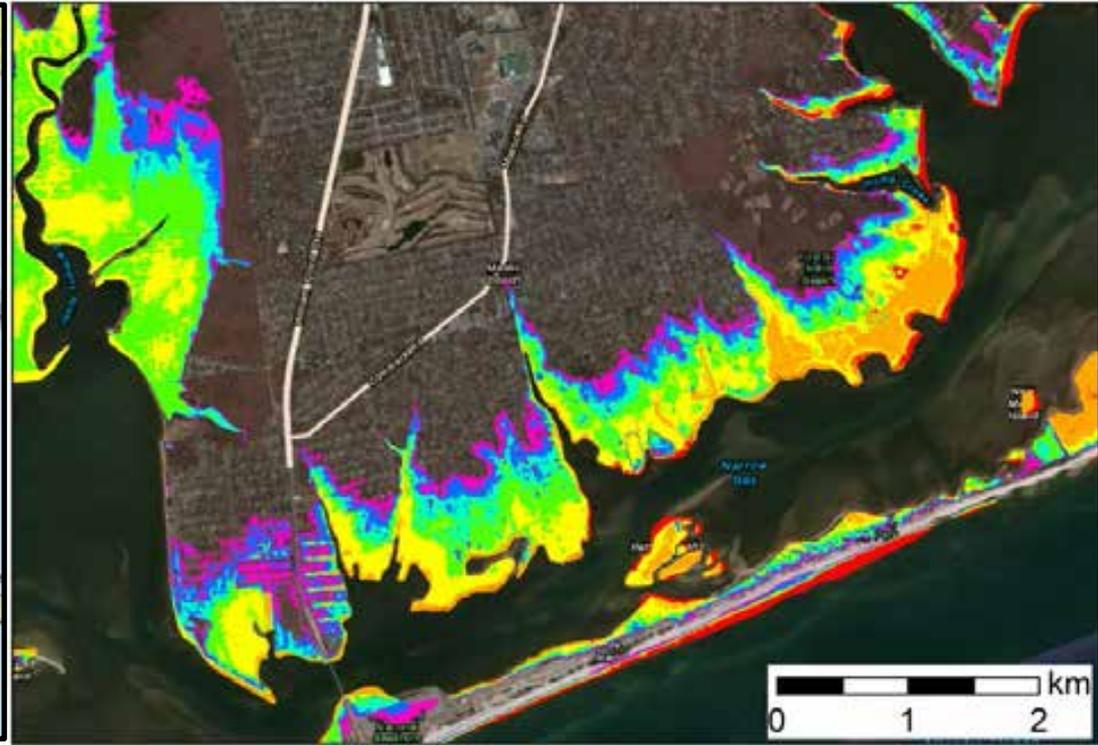
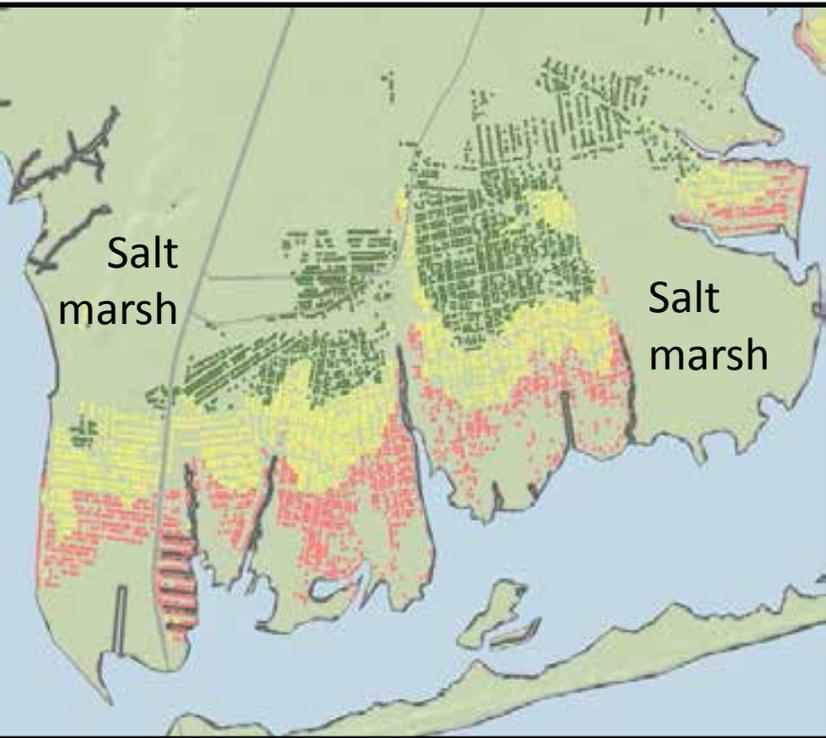
Salt marsh loss, Jamaica Bay



Flooding during Hurricane Sandy



Flooding in Mastic – Shirley during Hurricane Sandy

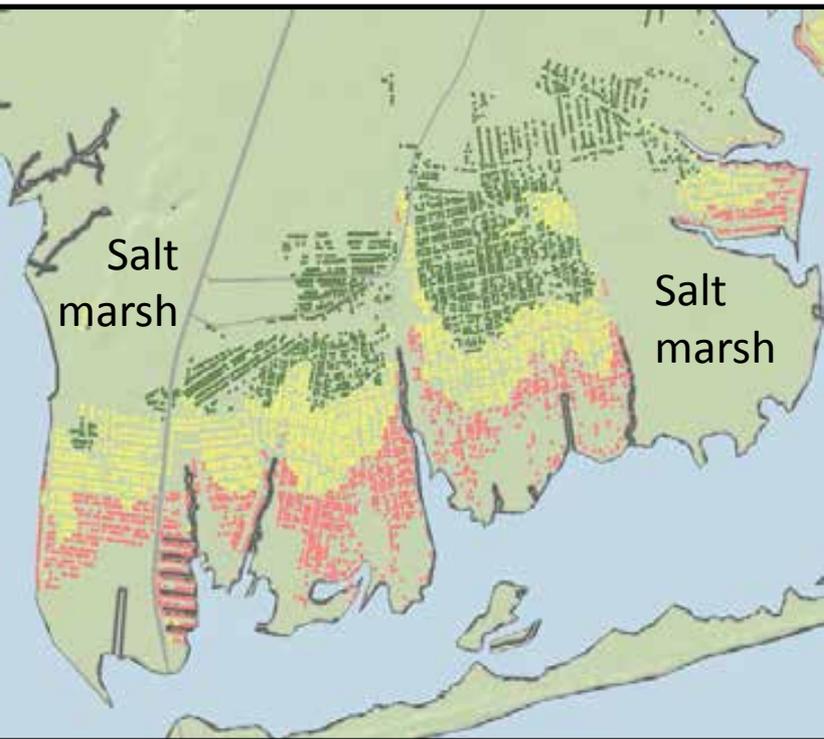


Each point is a home.

Sandy Storm Surge (ft)



Flooding in Mastic – Shirley, sea level rise



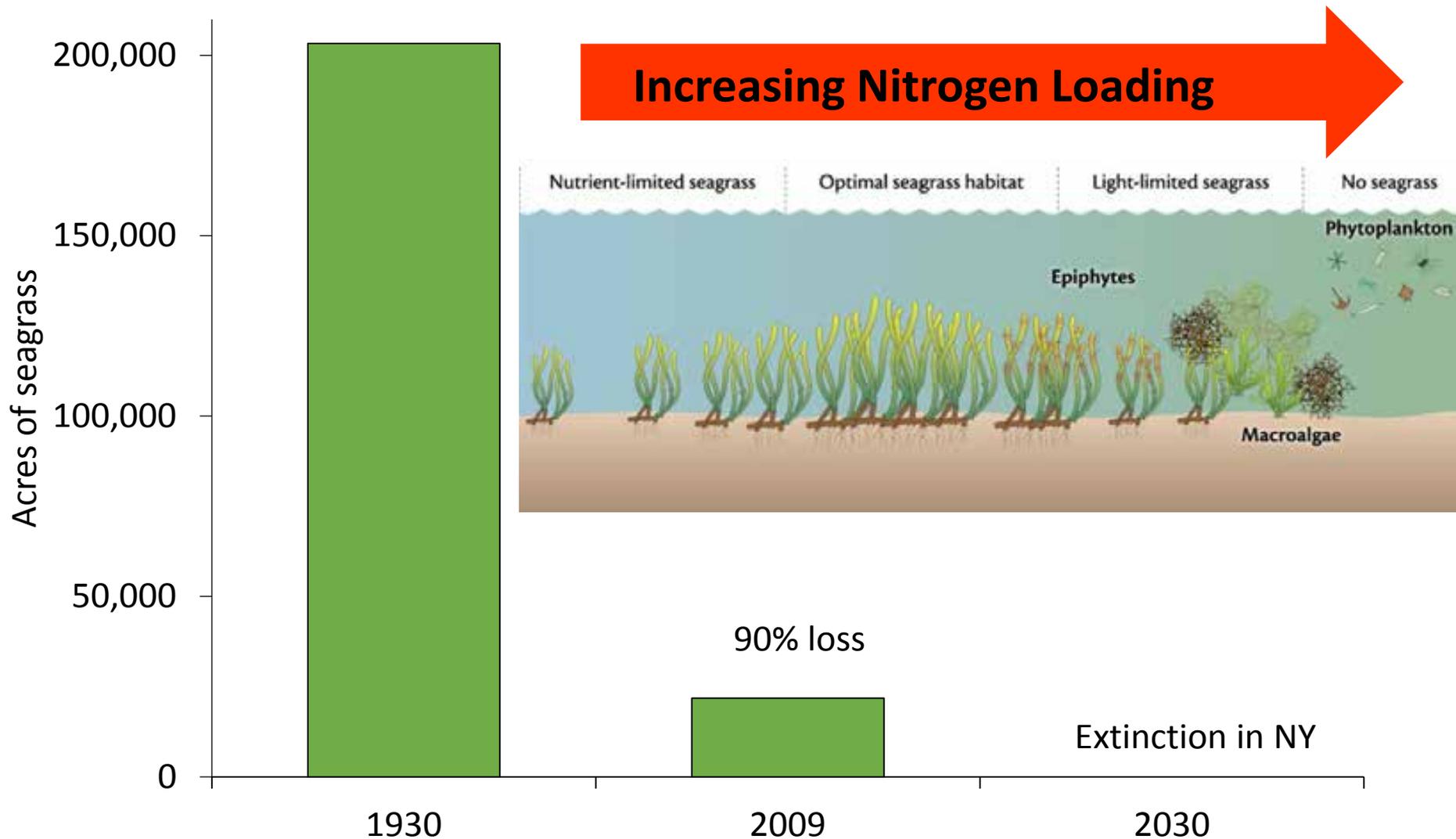
Each point is a home.

Flooding scenarios will worsen significantly with weakened or destroyed salt marshes.

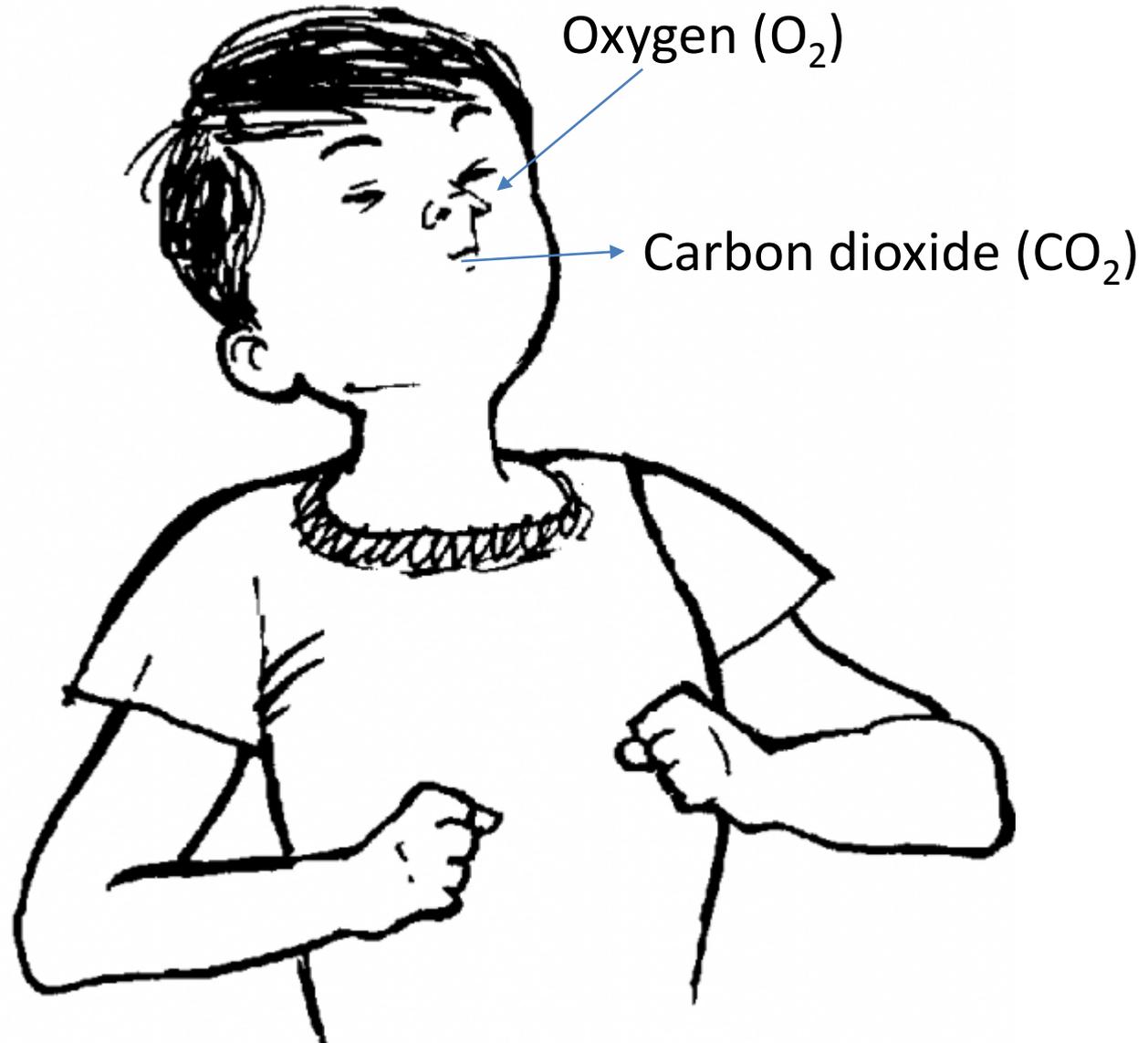
Eelgrass:
Critical benthic
habitat



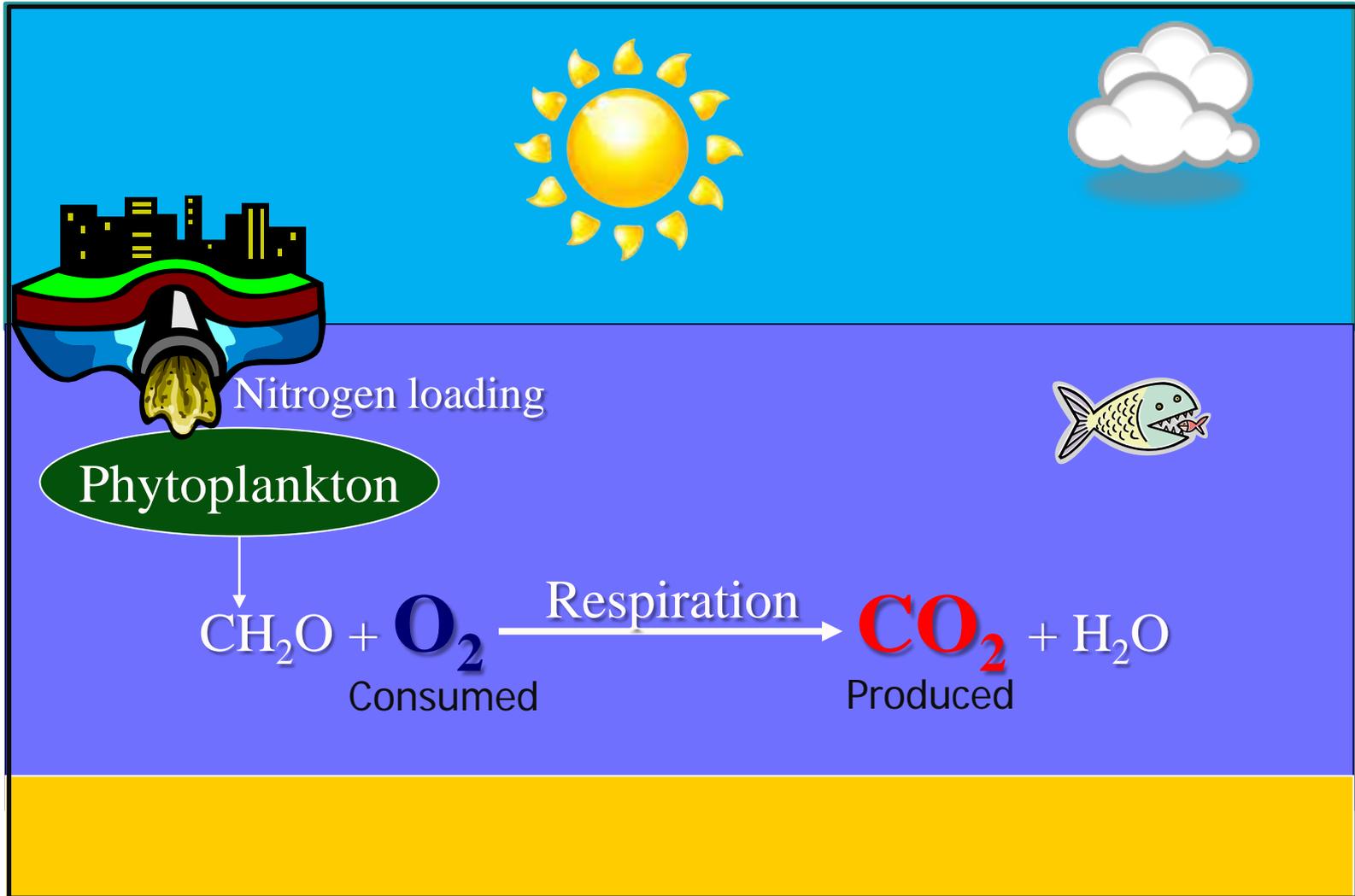
NYS seagrass, 1930 - 2030



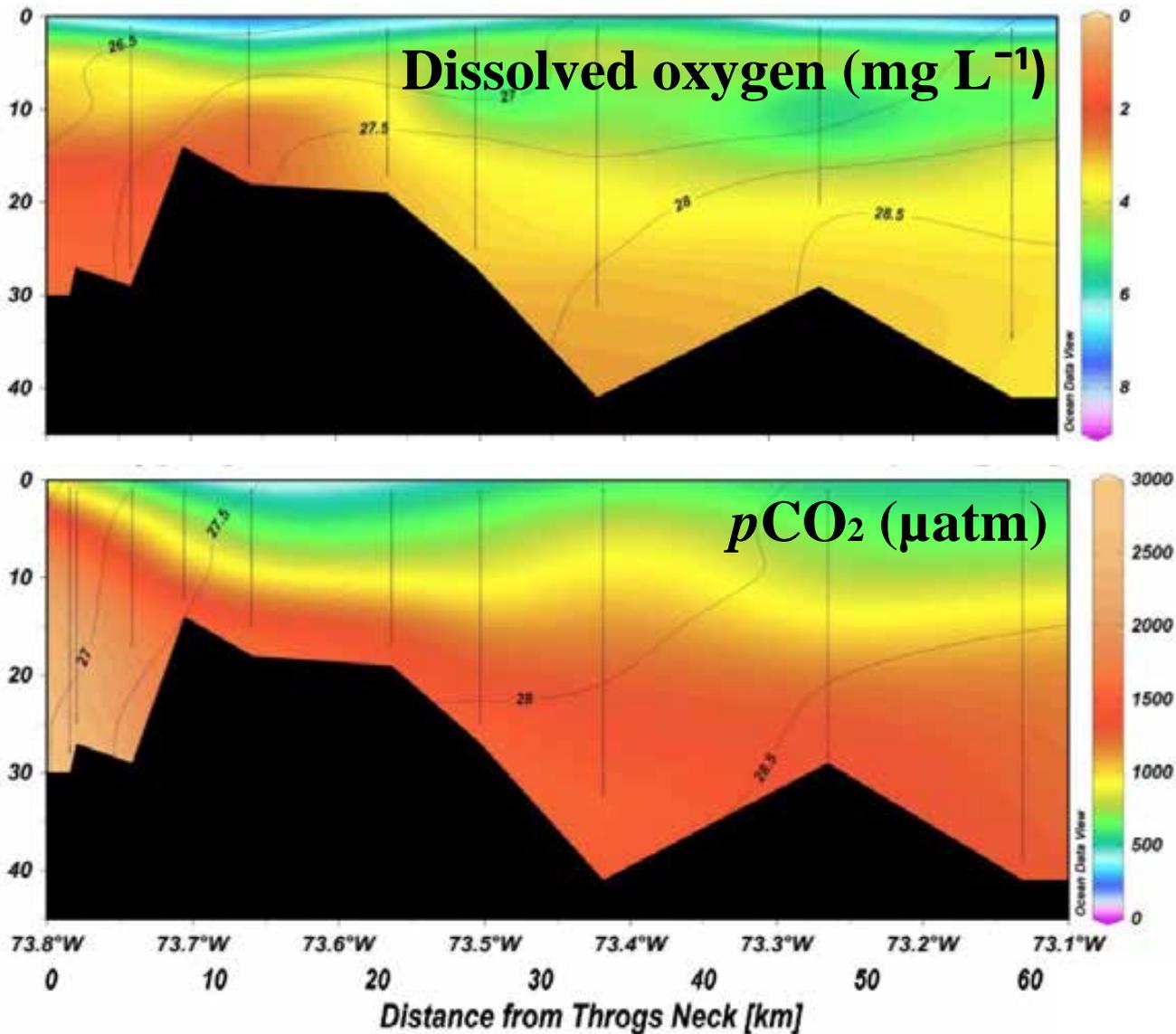
Take a deep breath...



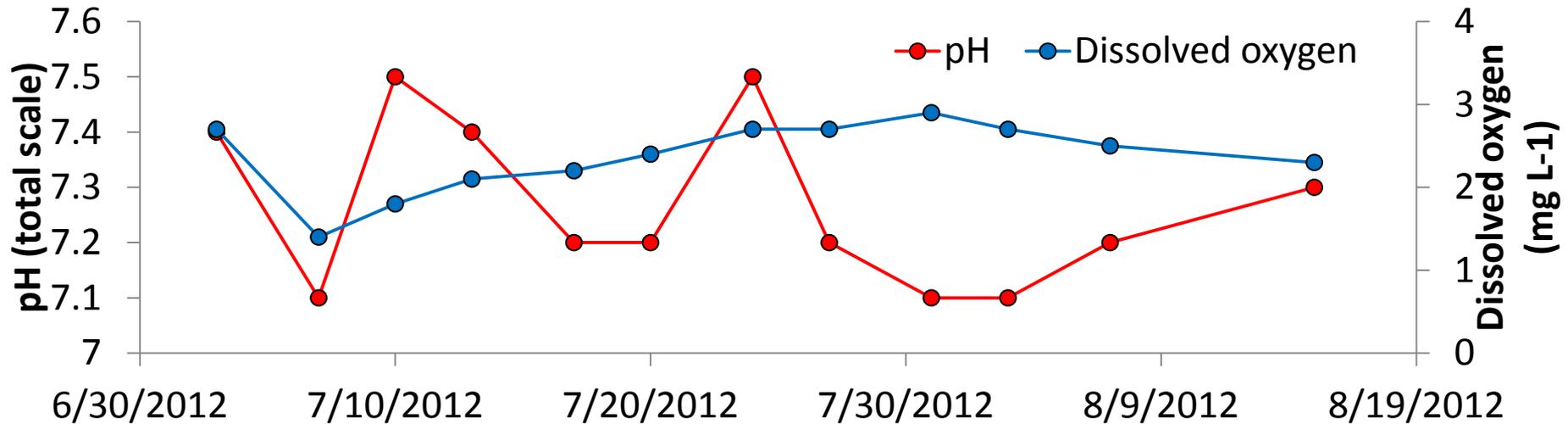
Nitrogen loading leads to low oxygen and high CO₂



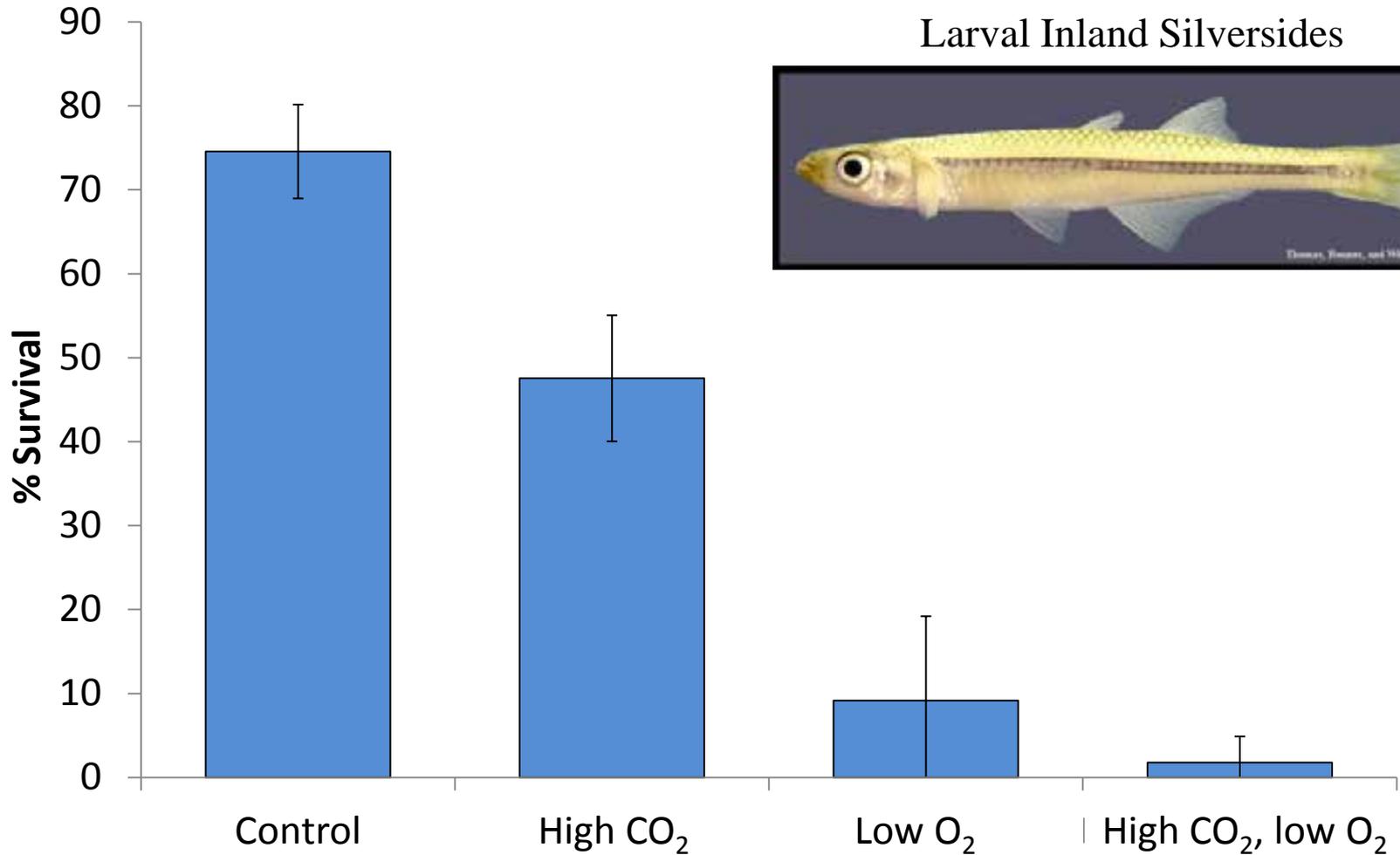
Long Island Sound, August 2013



The Forge River, NY, USA



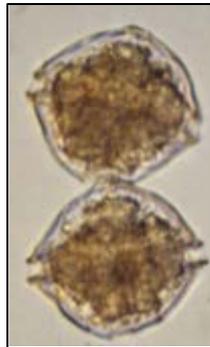
Effects of high CO₂ and low O₂ on fish survival



Harmful algal blooms across Long Island



Cochlodinium



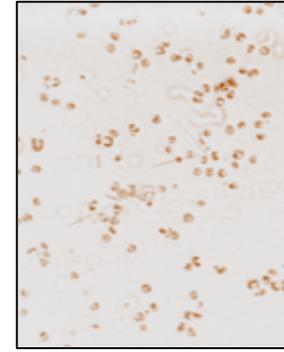
PSP, red tide



Toxic blue green algae



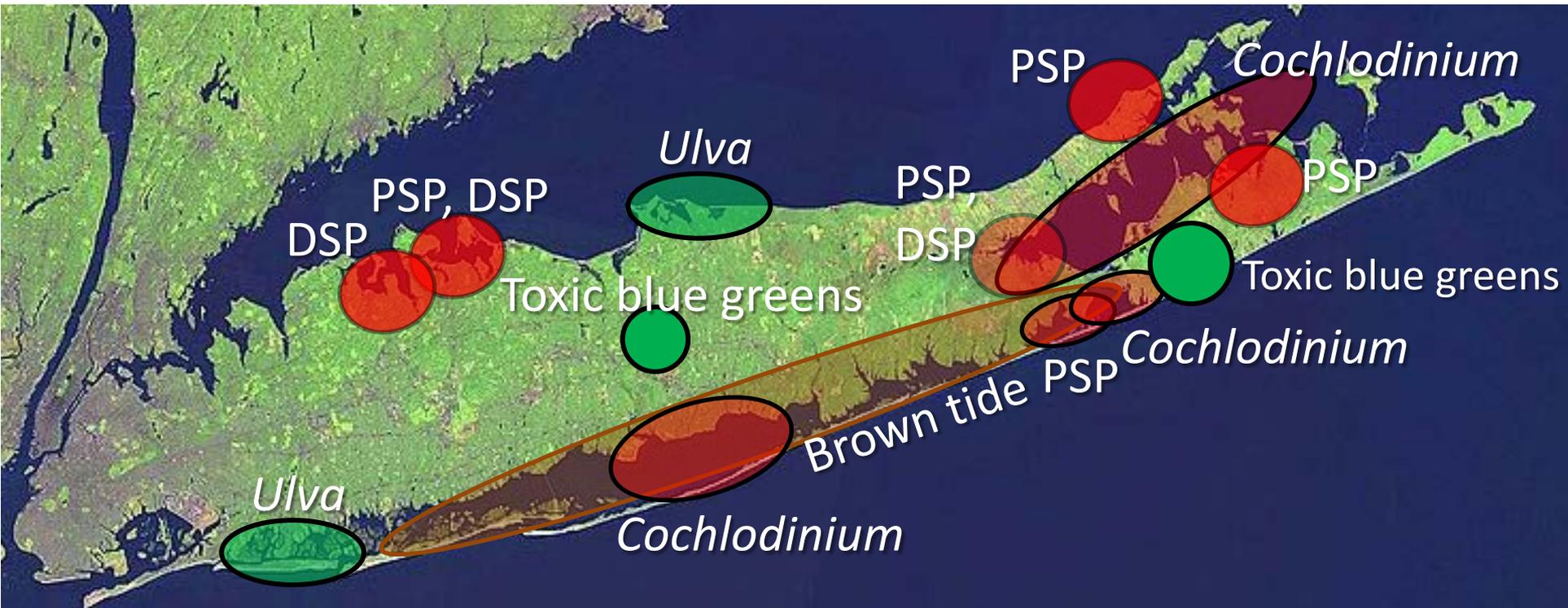
DSP, red tide



Brown tide



Ulva



Enhanced nutrient loading → more intense &/or toxic HABs

Gobler et al
2012



Harke and
Gobler, 2013



Hattenrath
et al 2010



Hattenrath-
Lehmann 2014



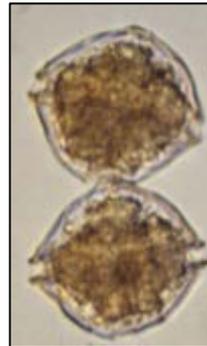
Gobler et al
2011;
Gobler and
Sunda 2012



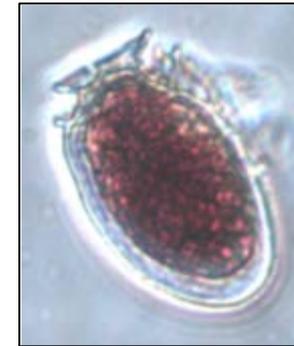
Cochlodinium
'Rust tide'



Microcystis
'Blue green algae'



Alexandrium
'Red tide – PSP'

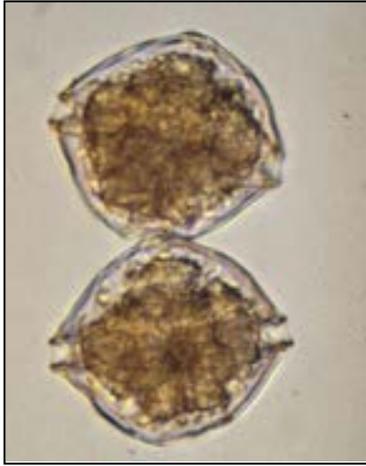


Dinophysis
'Red tide – DSP'

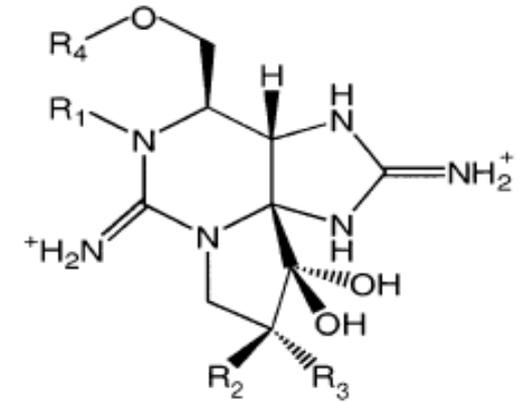


Aureococcus
'Brown tide'

Alexandrium red tides and paralytic shellfish poisoning (PSP)



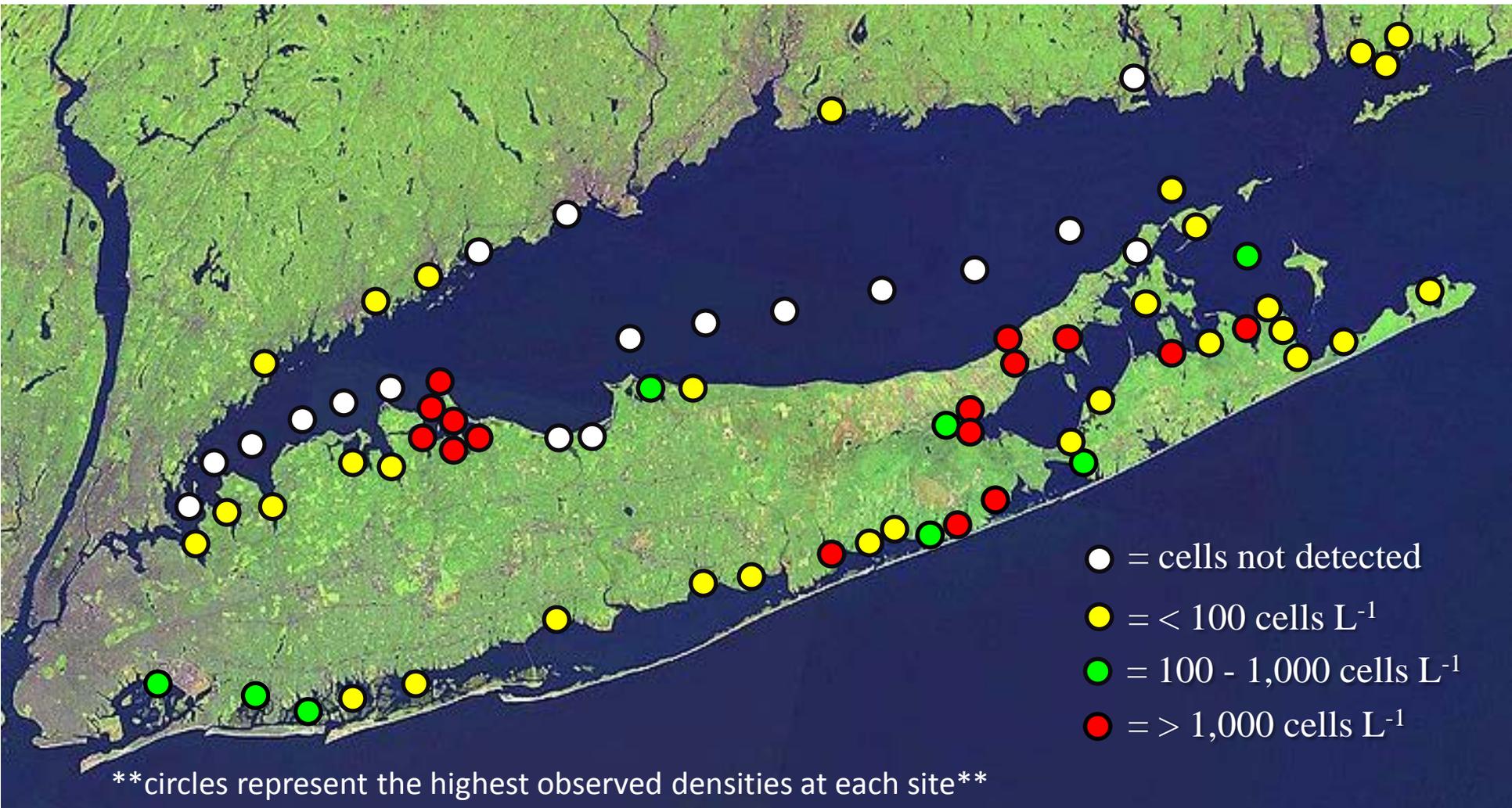
Alexandrium



Saxitoxin



Presence of PSP-producing *Alexandrium* in NY: 2007-2013



- *Alexandrium* found at 47 of 63 sites samples (75%)



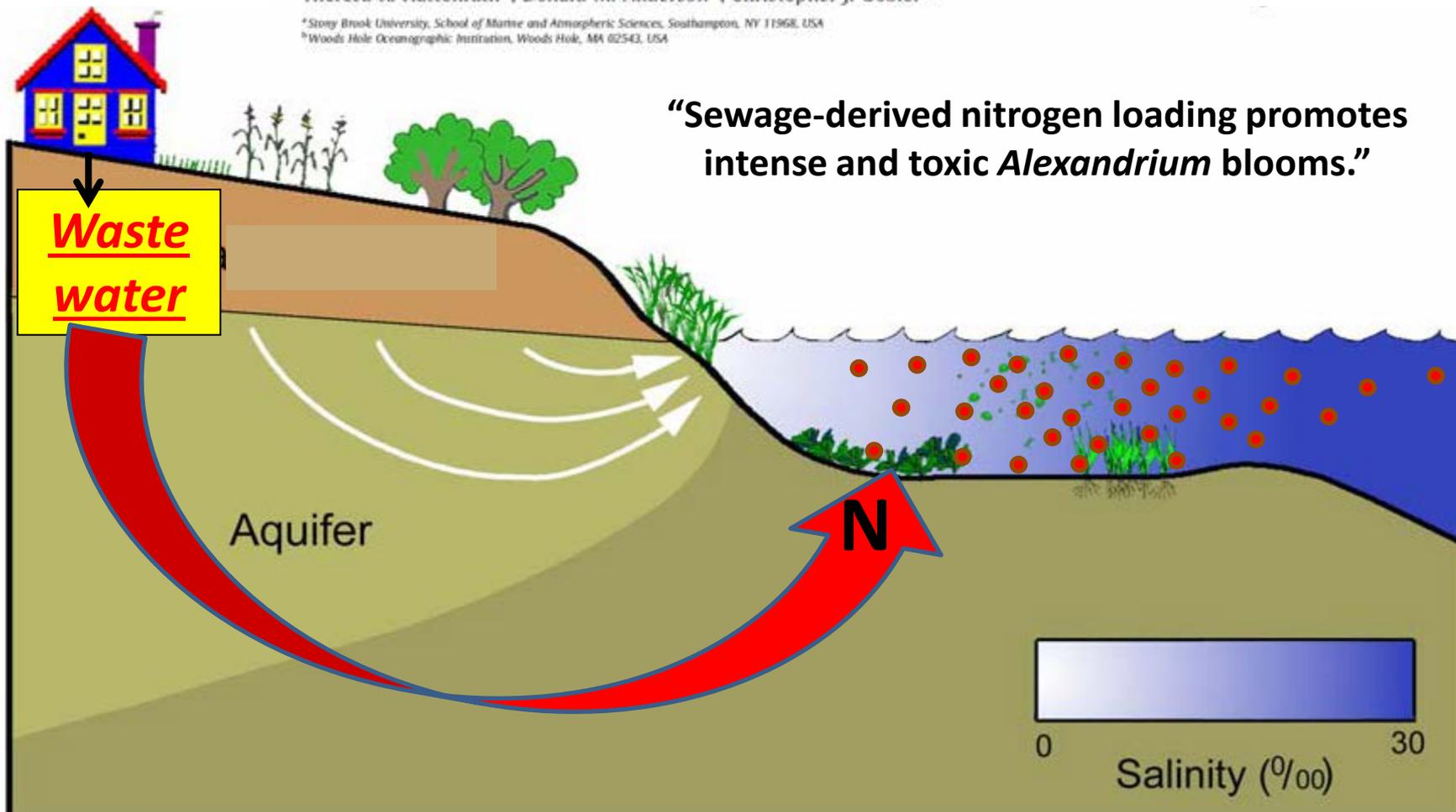
The influence of anthropogenic nitrogen loading and meteorological conditions on the dynamics and toxicity of *Alexandrium fundyense* blooms in a New York (USA) estuary

Theresa K. Hattenrath^a, Donald M. Anderson^b, Christopher J. Gobler^{a,*}

^aStony Brook University, School of Marine and Atmospheric Sciences, Southampton, NY 11968, USA

^bWoods Hole Oceanographic Institution, Woods Hole, MA 02543, USA

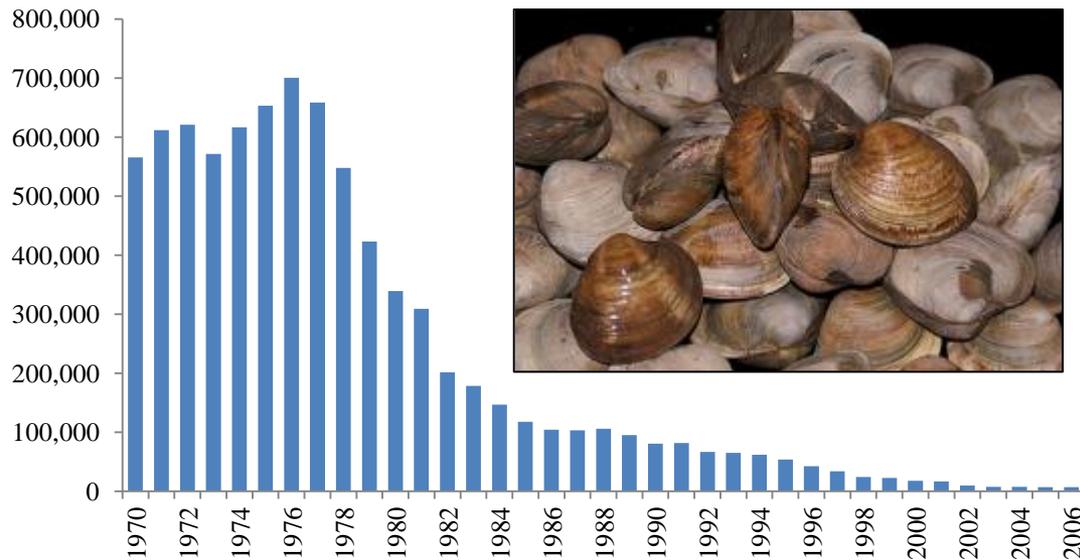
“Sewage-derived nitrogen loading promotes intense and toxic *Alexandrium* blooms.”



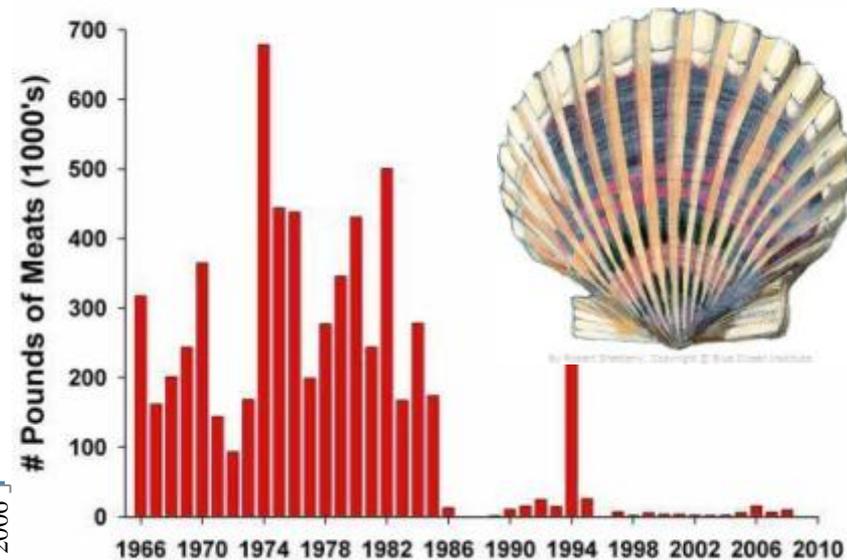
Nitrogen impacts on shellfish

- Landings of clams and scallops have declined 99% since 1980.
- Linkages to nitrogen driven HABs, habitat loss, and water quality degradation.

Hard clam landings (bushels) in Great South Bay



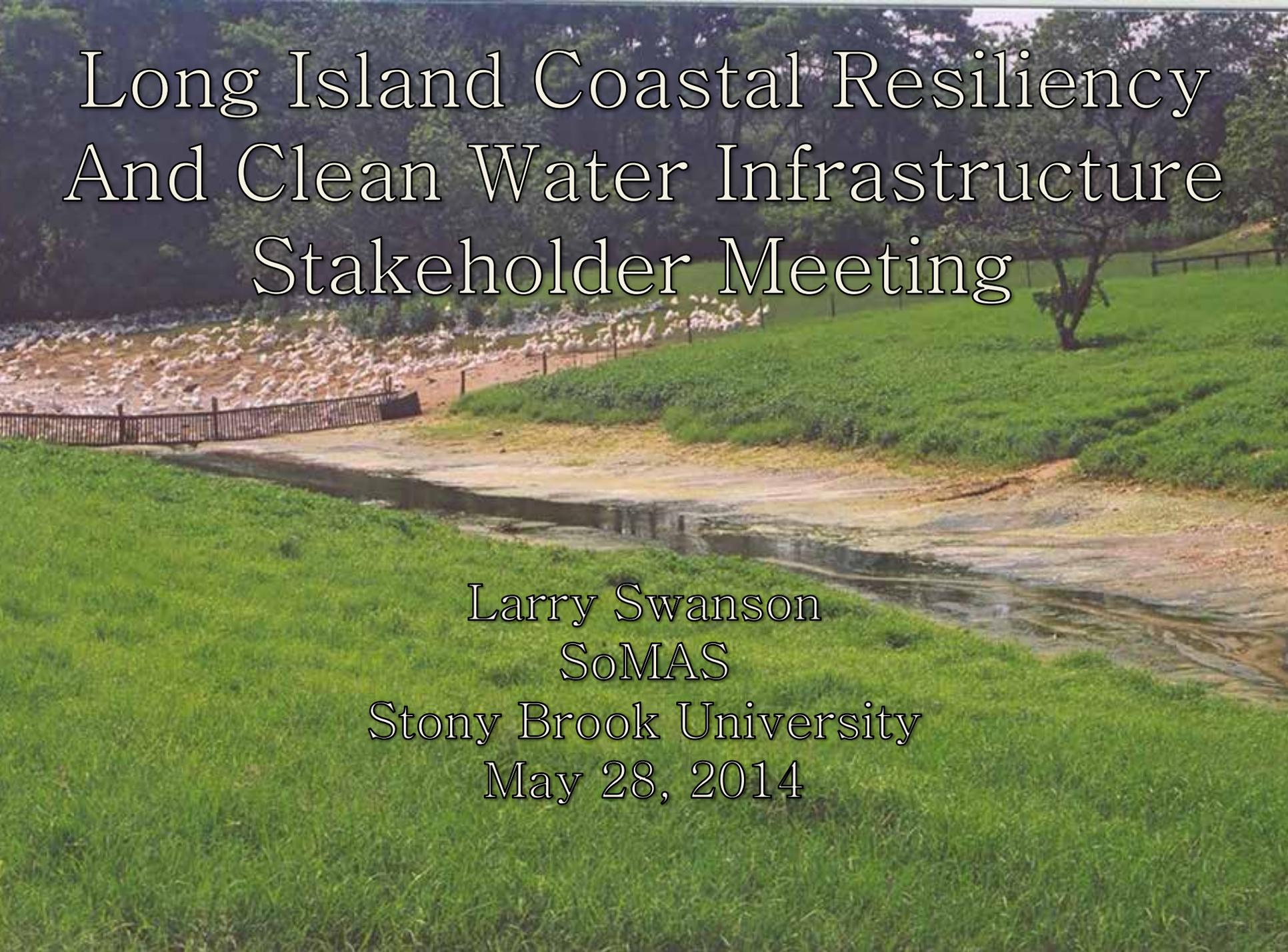
New York Bay Scallop Landings - Commercial -



Conclusion:

Excessive nitrogen loading leads to...

- **Loss of critical habitats:** Salt marshes, eelgrass
- **Low dissolved oxygen levels, hypoxia**
- **Acidification, low pH**
- **Macroalgal blooms:** Sea lettuce, *Ulva*
- **Toxic algal blooms:** Red, rust, brown tides
- **Loss or depletion of shellfisheries and finfisheries**

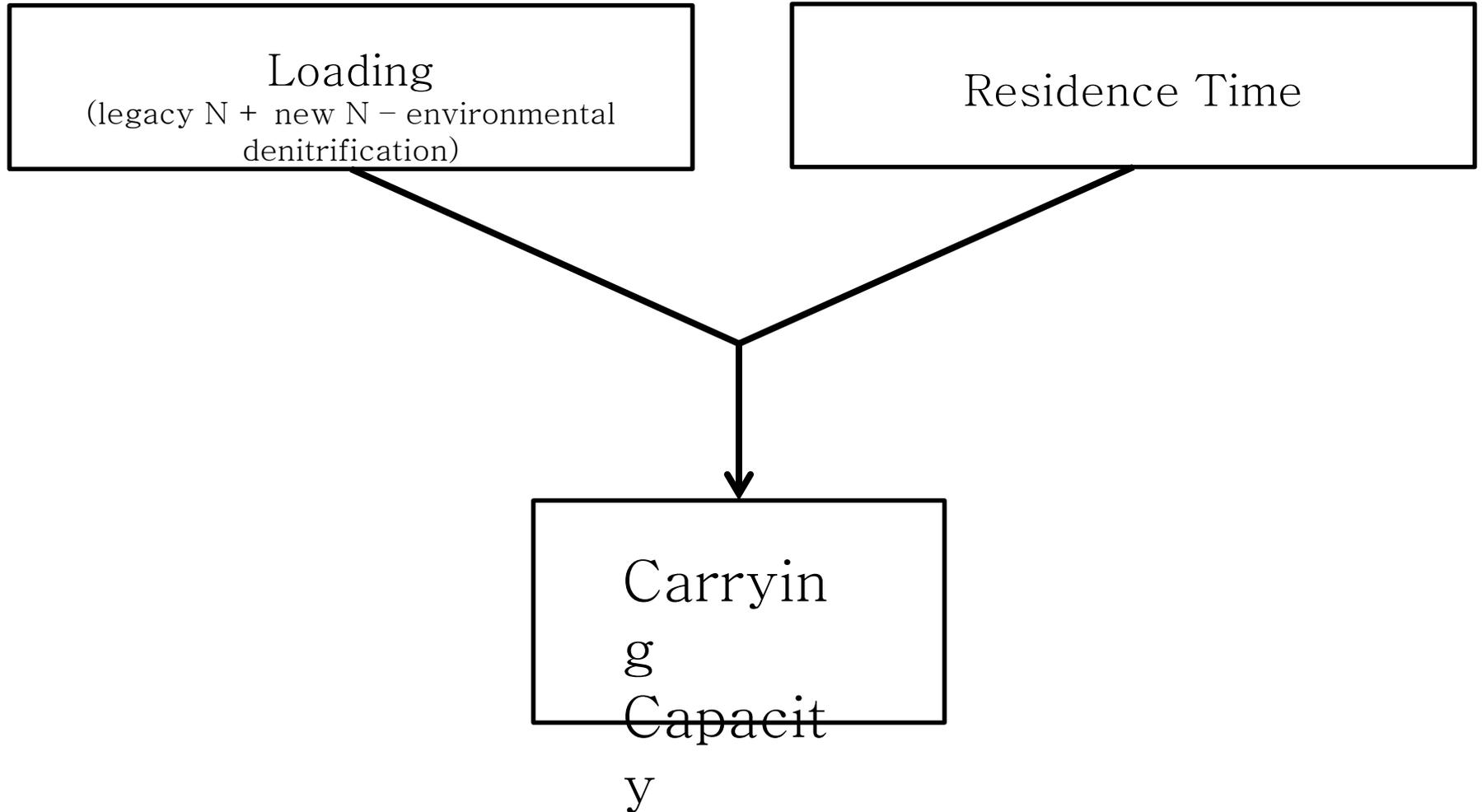


Long Island Coastal Resiliency And Clean Water Infrastructure Stakeholder Meeting

Larry Swanson
SoMAS

Stony Brook University
May 28, 2014

Water Quality or Carrying Capacity



Carrying Capacity –
the maximum number of
individuals that an area of
land or water can support
without detrimental
effects.

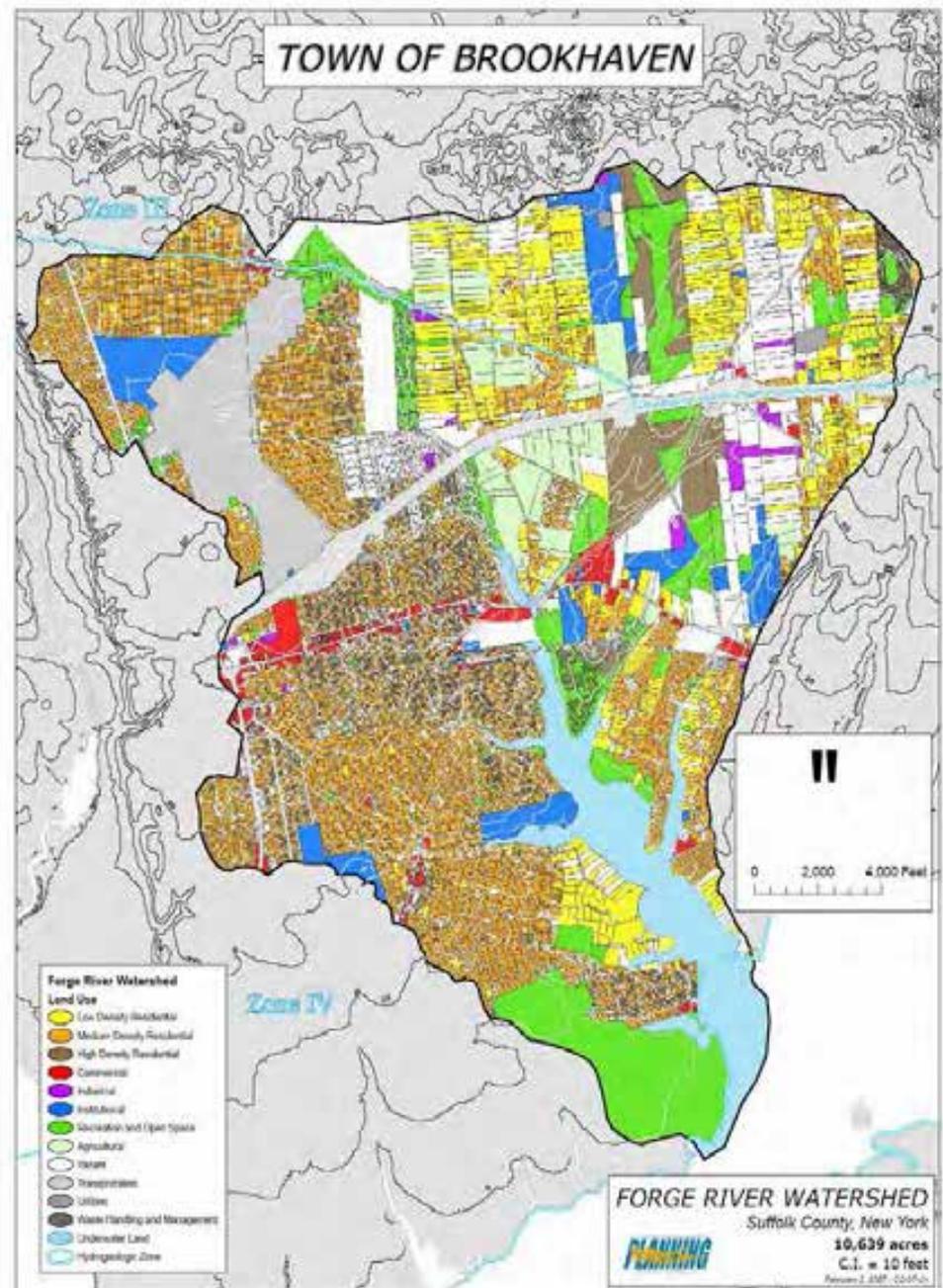
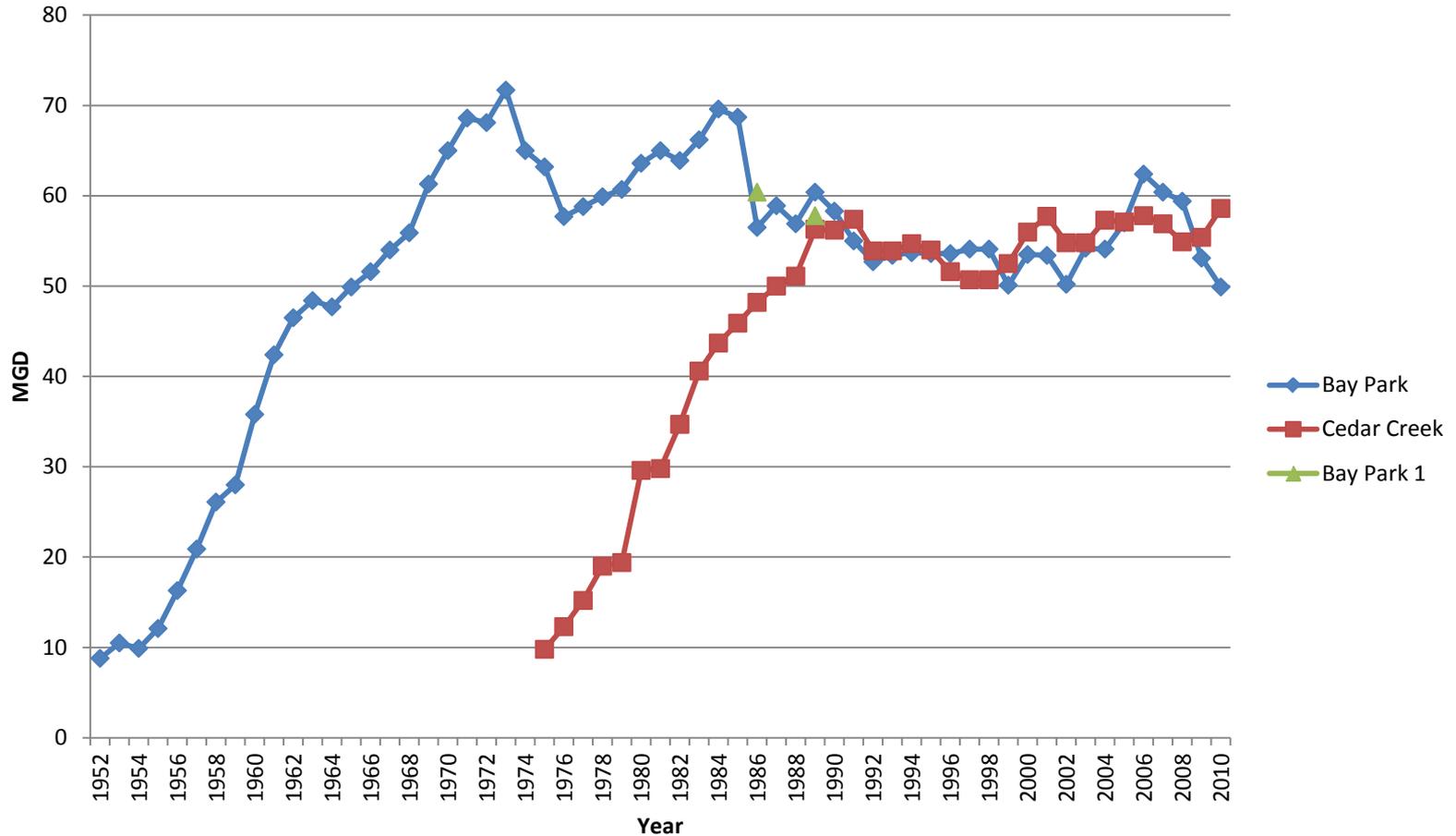


Figure 3. Forge River Drainage Basin and Zoning Map

Annual Mass Loadings: Bay Park STP

	1952	2010
Population Served	73,500	551,000
TN per year (metric tons)	~400	2,247

Annual Daily Averaged Discharge at Bay Park and Cedar Creek WPCP 1952-2010



Annual daily averaged discharge at Bay Park and Cedar Creek WPCP 1952–2010.

Figure 9. Annual mass discharge of nitrogen from human waste and duck waste to Forge River drainage basin

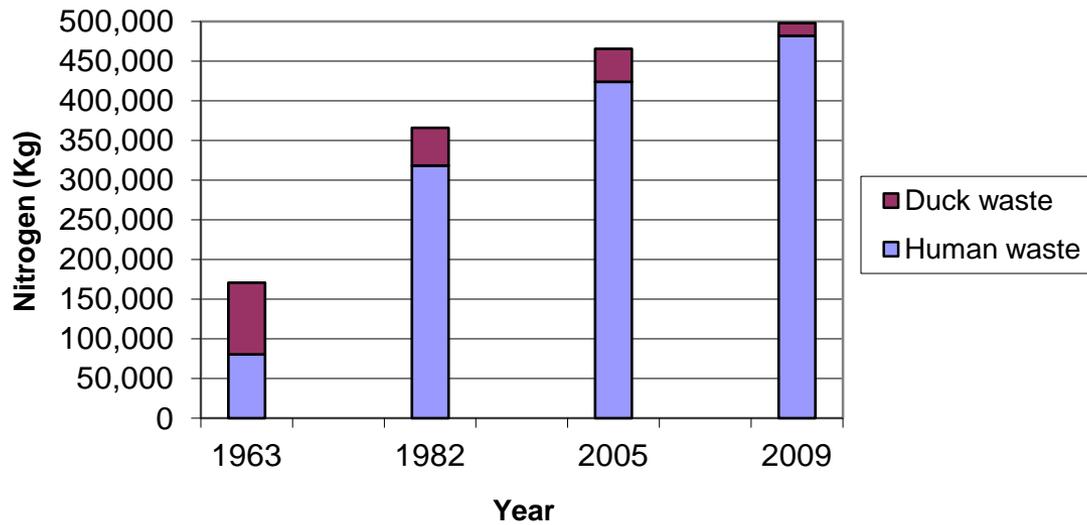
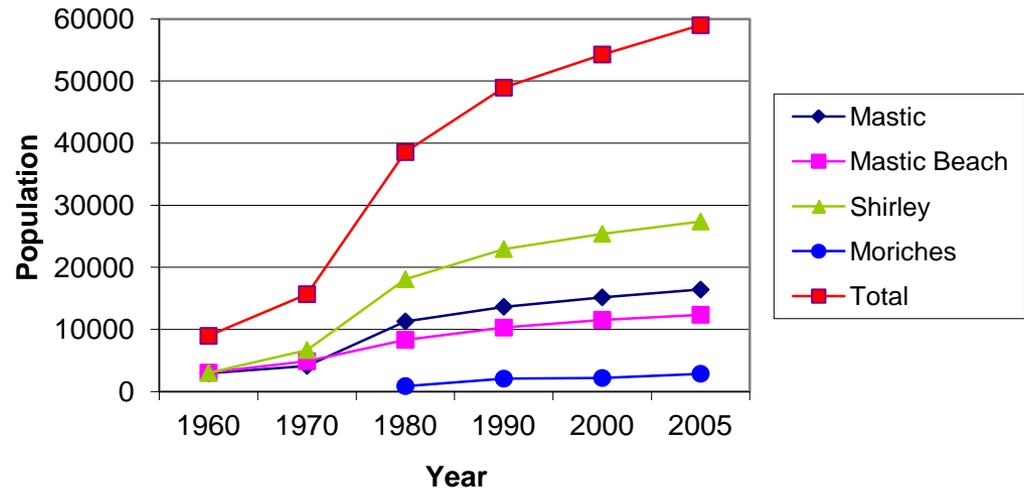
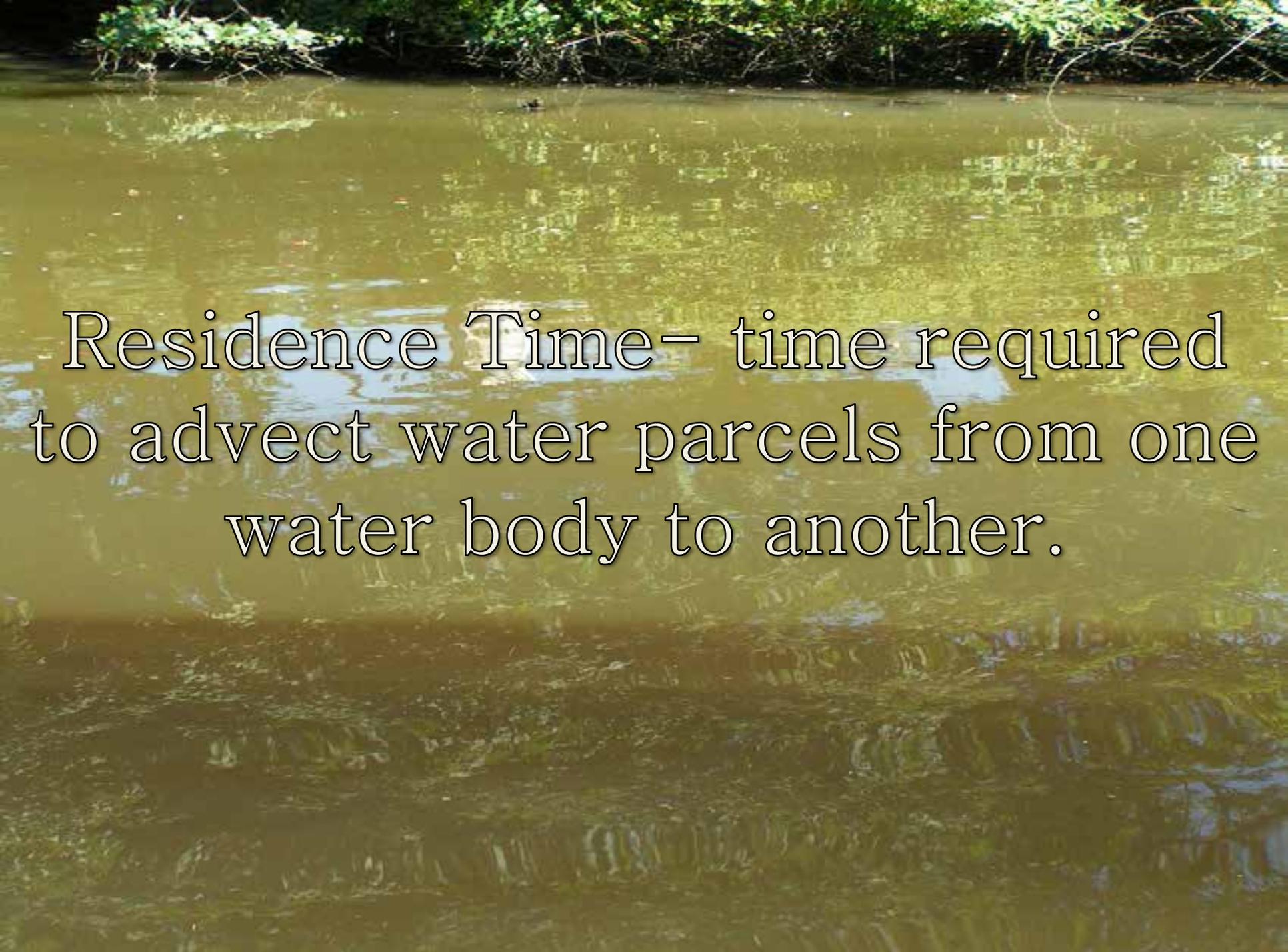


Figure 4. Population growth by hamlet in the Forge River drainage basin, 1960-2005





Residence Time- time required to advect water parcels from one water body to another.

Residence Times for

- Groundwater → relatively short
- Coastal Waters → generally long

Residence Time for Selected Water Bodies

West Bay

10 days

Forge River (Summer)

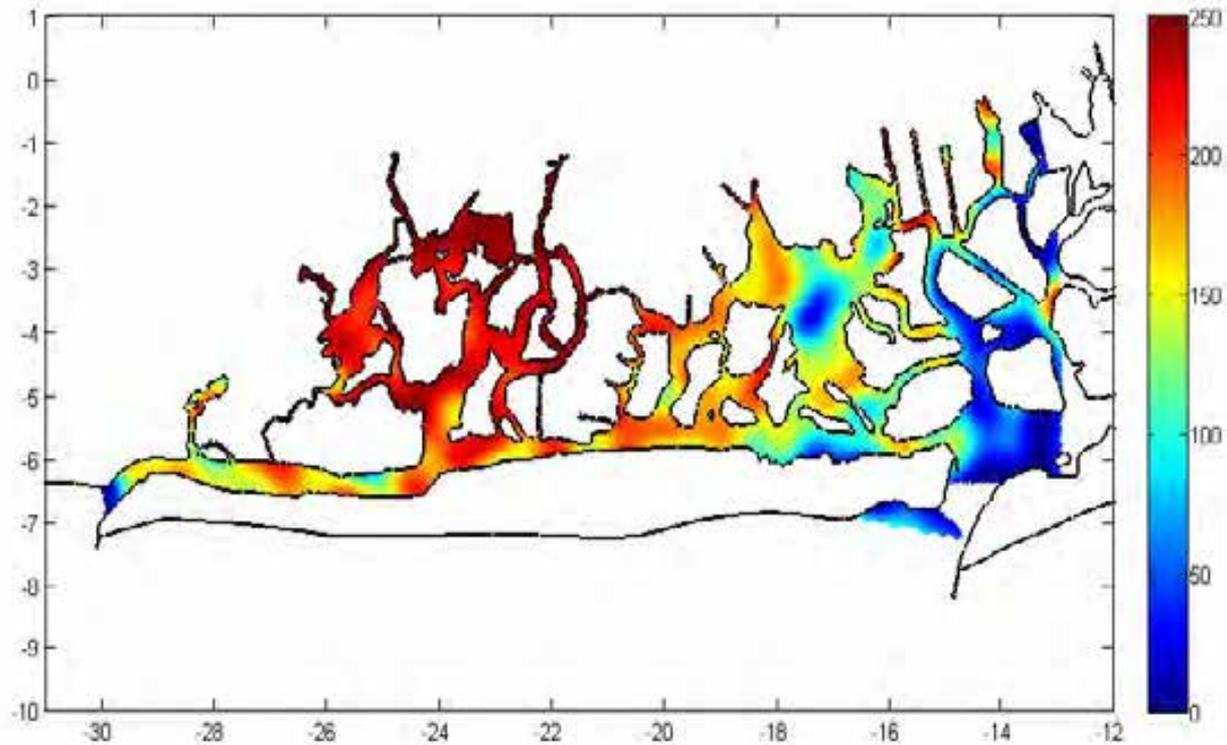
Week to month

Smithtown Bay

2-3 days

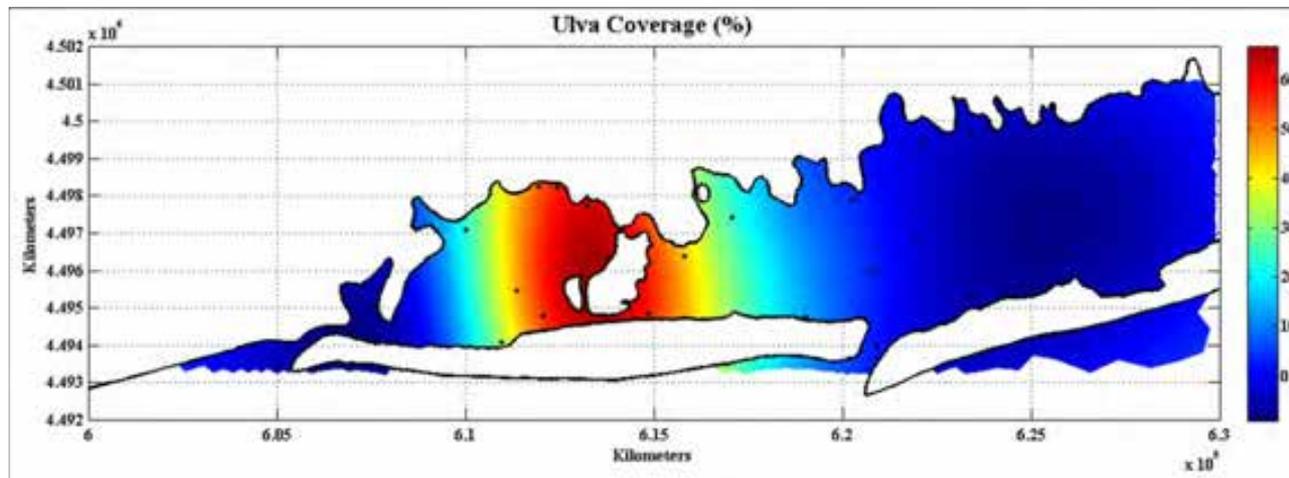
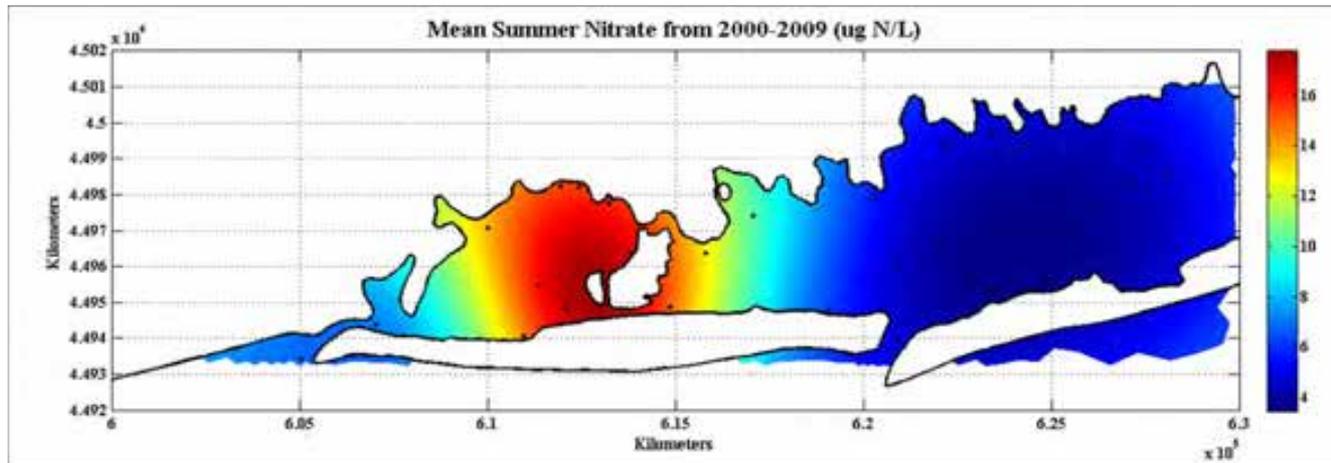
Great South Bay
(after Sandy)

Weeks to months



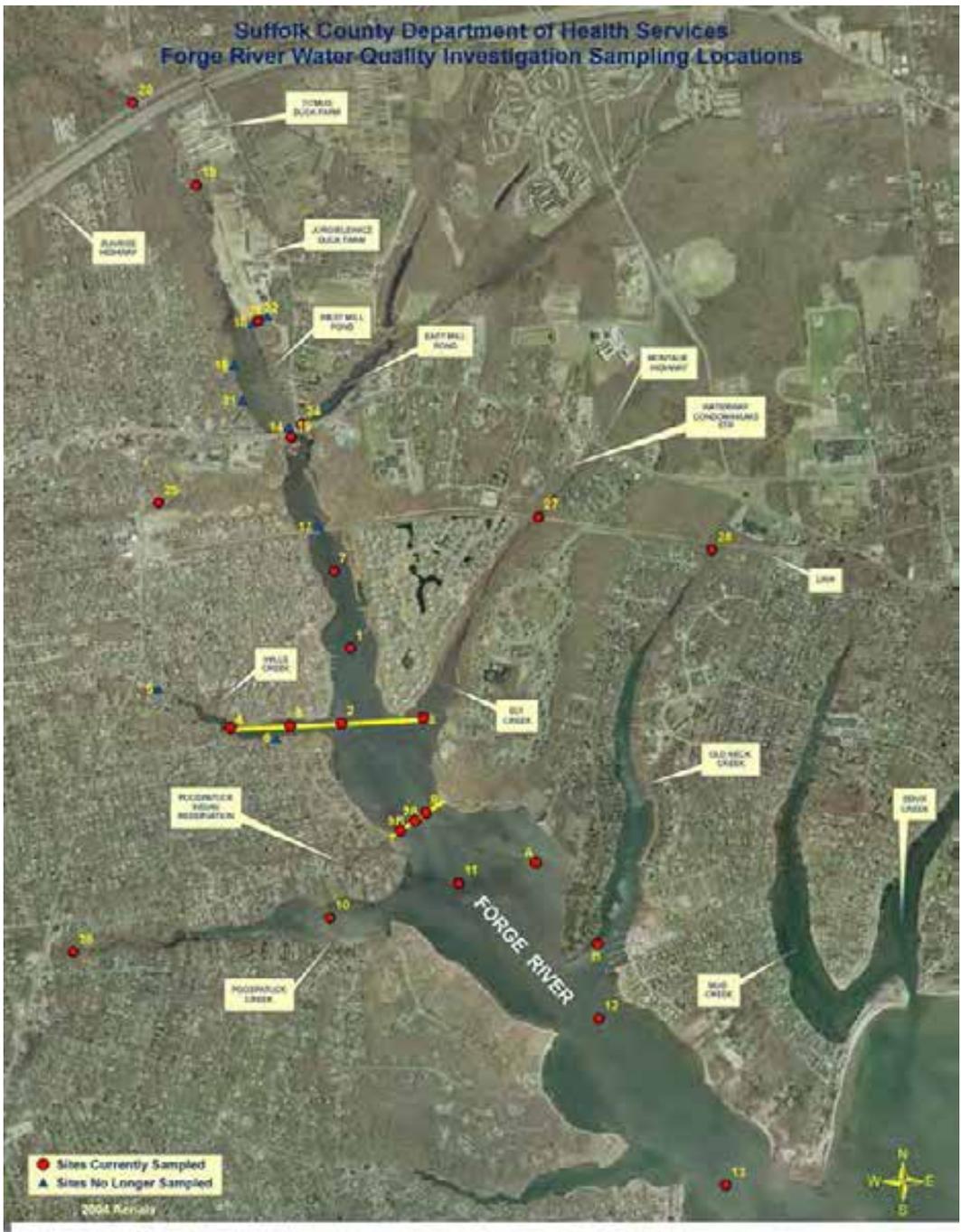
Residence times of particles in West and Middle Bays. Color bar is time in hours.

Comparison between *Ulva* growth and surface nitrate concentrations

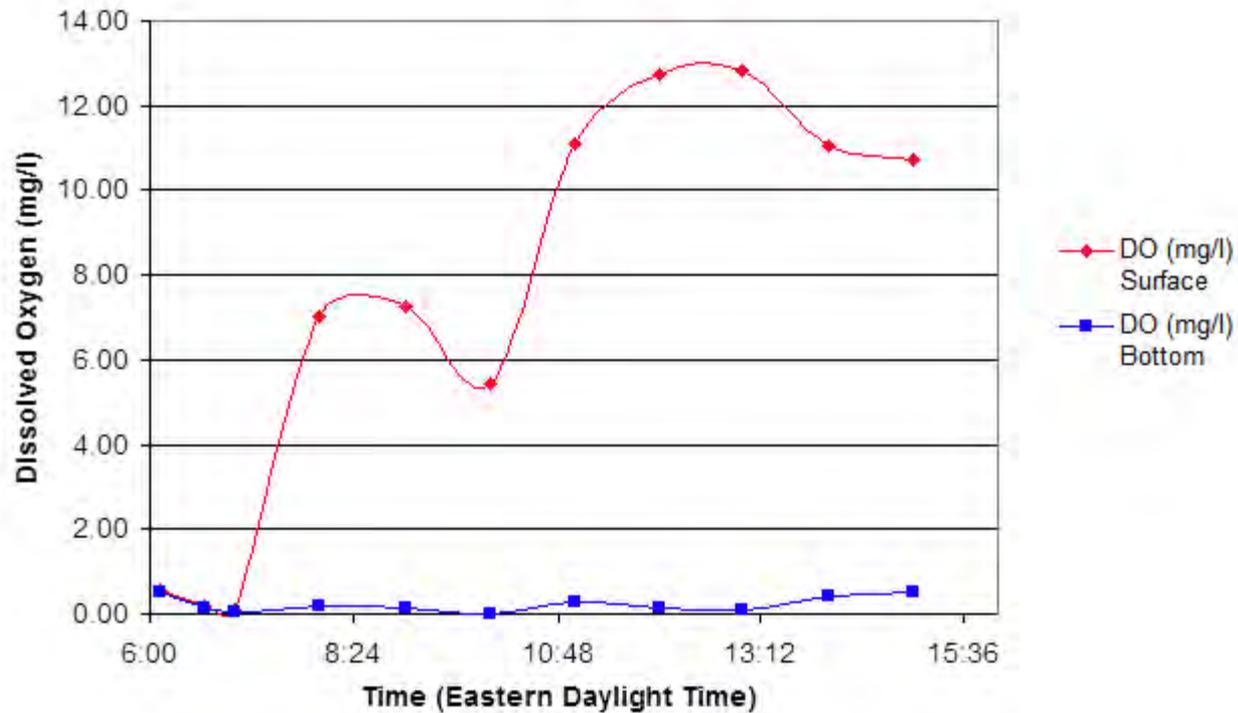


Comparison between *Ulva* growth and surface nitrate concentrations.

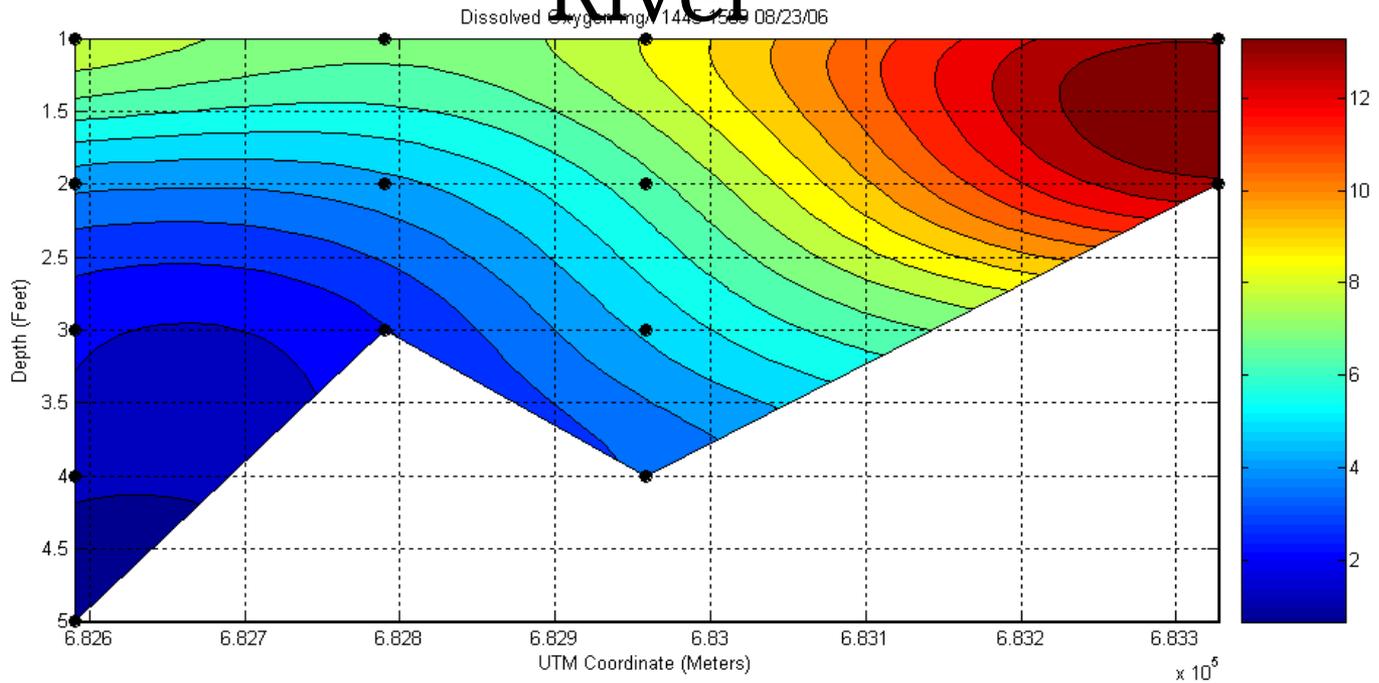
Suffolk County Department of Health Services
Forge River Water Quality Investigation Sampling Locations



Forge River DO (mgO₂/L) vs. Time
Brookhaven Town Pier, Station 2
August 8, 2006

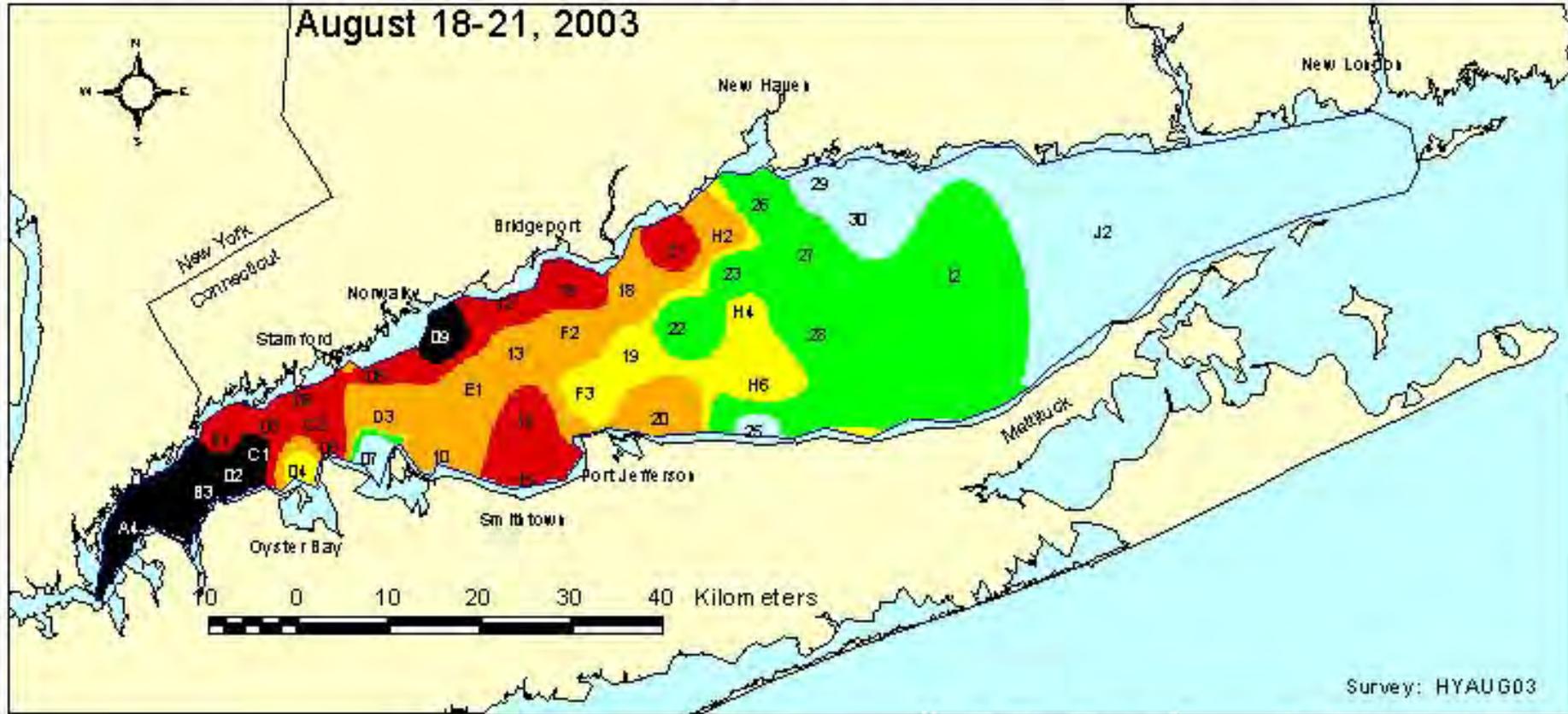


Cross Section of DO Concentrations Along Wills Creek and Across Forge River



Dissolved Oxygen in Long Island Sound Bottom Waters

August 18-21, 2003

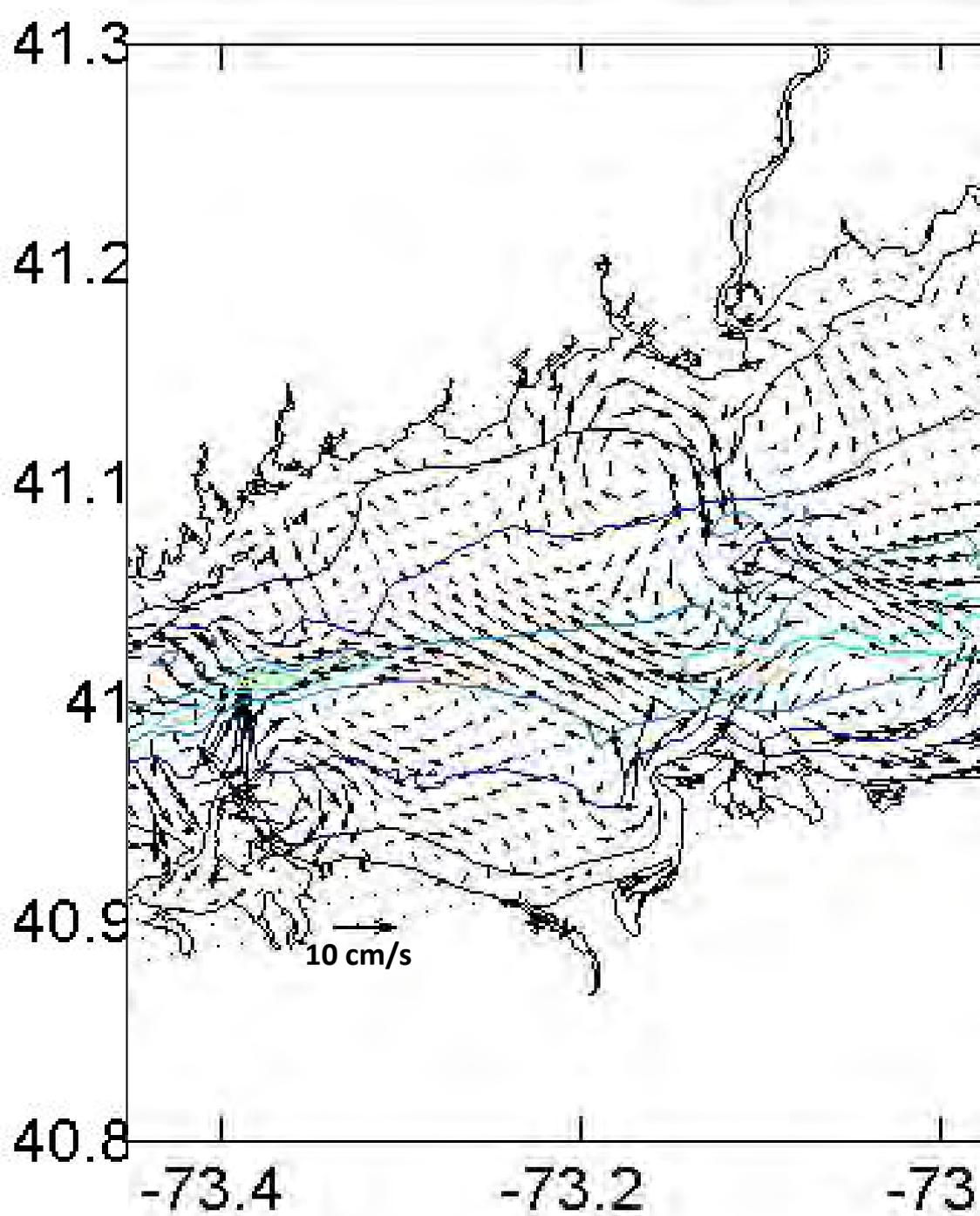


Survey: HYAUG03

Dissolved Oxygen	Severity of impact
0.0 - 0.99 mg/L	Severe
1.0 - 1.99 mg/L	Moderately severe
2.0 - 2.99 mg/L	Moderate
3.0 - 3.49 mg/L	Marginal
3.5 - 4.79 mg/L	Interim management goal
4.8 + mg/L	Excellent - Supportive of marine life

Source: CT DEP

Summertime
Residual
Currents in
Central Long
Island Sound
Level 6



Develop and Embrace
New Technologies and
Systems

New sewage treatment capacity and technology can significantly reduce impacts of nitrogen pollution

- *not* eliminate it

Controlling Mass Loadings
(not just concentrations)
and Planning for Residence
Times are Essential

Long Island's carrying
capacity dictates that there
are
“limits to growth”

Agriculture

in

Suffolk County

Balancing Economic Viability & Environmental Protection

Vito A. Minei, P.E., Executive Director
Cornell Cooperative Extension of Suffolk County

**Long Island Coastal Resiliency and Clean Water Infrastructure
Stakeholder Meeting**

May 28, 2014
Hauppauge, NY

Suffolk Conducive to Agriculture



- Mild climate
- Long growing season
- Productive soils
- Water available for irrigation

50% of Flowers in NYS



About 50% of Nursery Crops in NYS



About 3,000 acres of sod grown in Suffolk County



Premium quality vinifera wines from
2,500 acres and 55 wine producers







Animal Production

- Ducks
- Poultry
- Goat and Cow Dairies
- Beef and Hog





Super Storm Sandy Damage









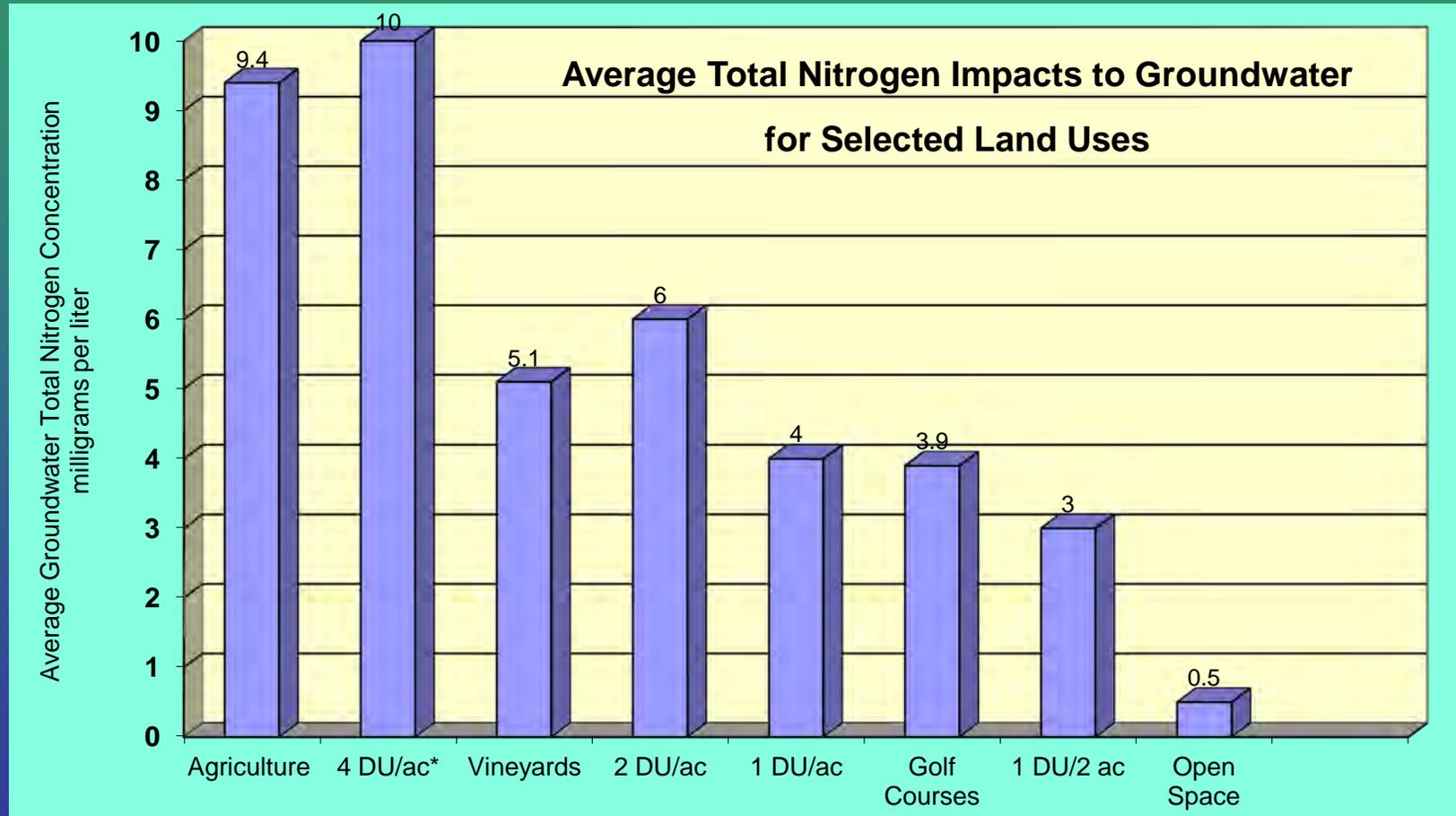
Cost of Super Storm Sandy

- Crop damage
- Long term salt damage to soil?
- Produce storage losses?
- Markets/sales?

Why Focus on Nitrogen Not Pesticides

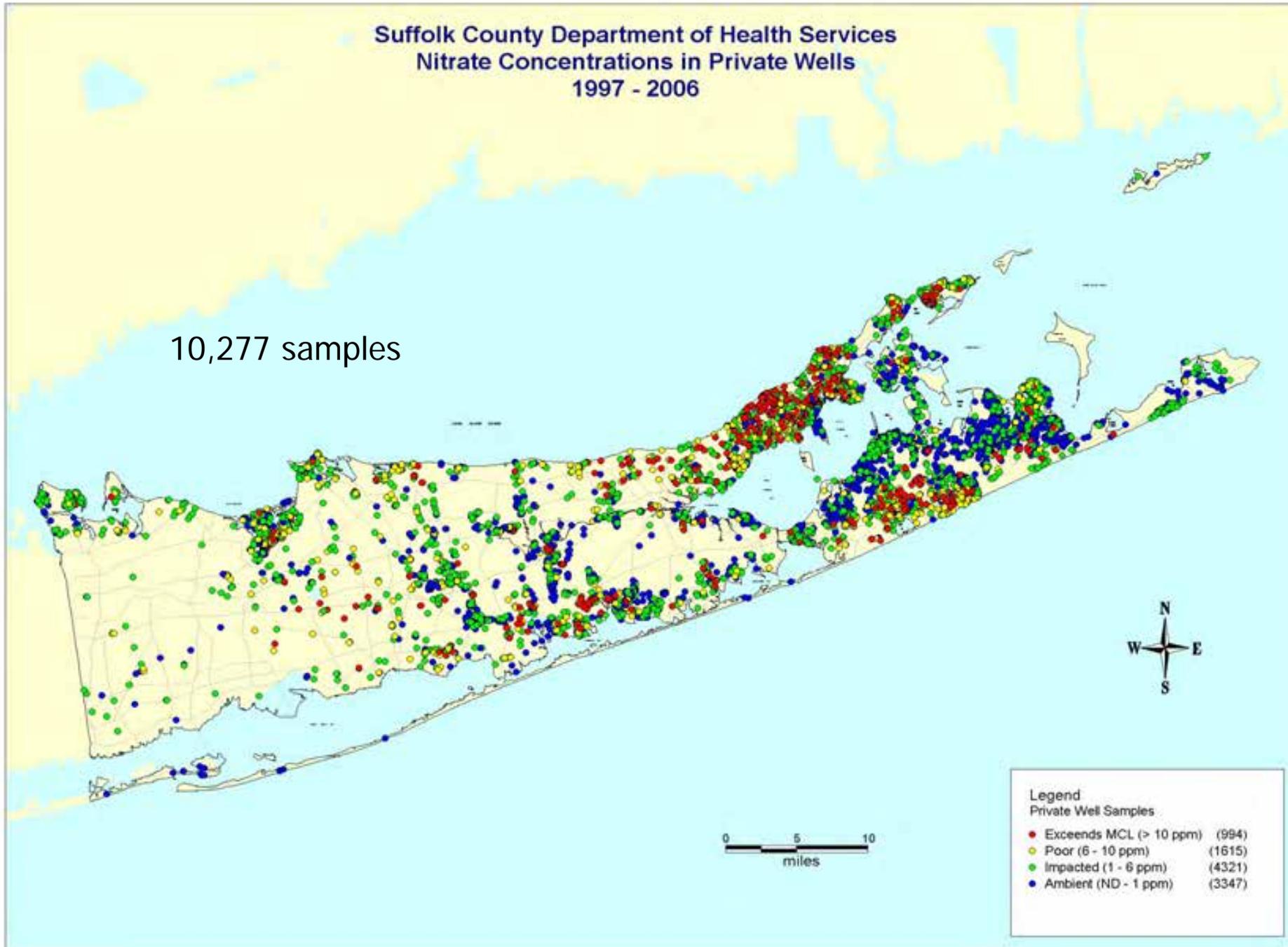
1. While pesticide BMPs are important
2. There is no replacement for Nitrogen
3. Concerns about N in groundwater
(many wells above MCL)
4. Concerns about N in our surface water

Comparative Nitrogen Inputs to Groundwater



Suffolk County Department of Health Services
Nitrate Concentrations in Private Wells
1997 - 2006

10,277 samples



Estimated Nitrogen Loading to the Peconic Estuary

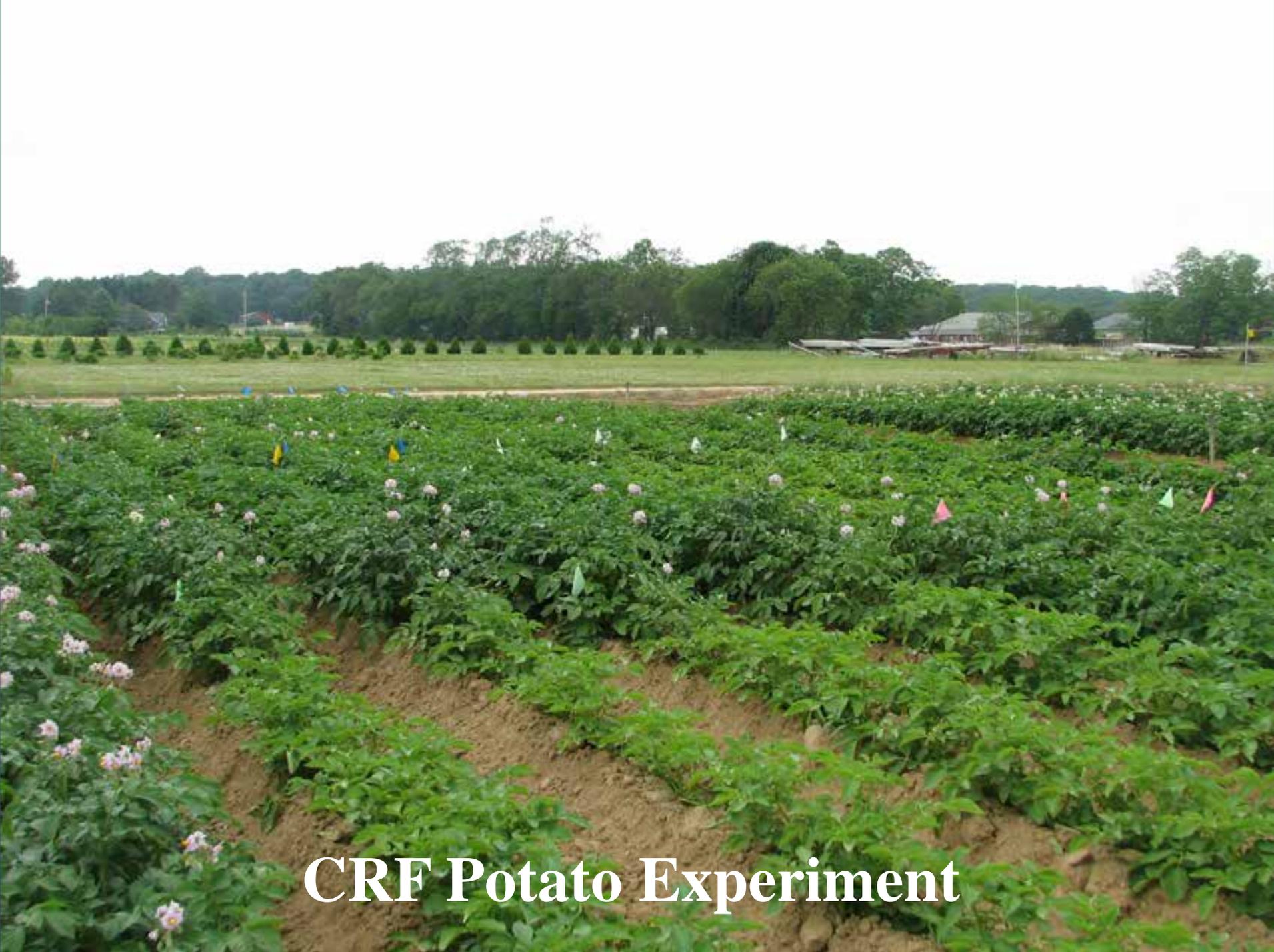
- 36% Wastewater septic cesspool
- 27% Atmospheric deposition
- 19% Agriculture
- 7% Wastewater treatment facilities
- 6% Fertilizer Lawns
- 5% Golf Courses

Components of a Nitrogen Management

- 4Rs
 - ✓ Right Source
 - ✓ Right Rate
 - ✓ Right Time
 - ✓ Right Place
- Water & Soil Management

Evaluating Controlled Release Nitrogen





CRF Potato Experiment



Amending soils with compost, leaves
& grass clippings



Hairy Vetch
N source and mulch



Reduced Tillage Machine



**Long Island
Sustainable Wine Growing Program**



Vito Minei

Executive Director, Cornell Cooperative Extension of Suffolk County

Presentation-

Agriculture in Suffolk County

Balancing Economic Viability with Environmental Protection

**Long Island Coastal Resiliency and Clean Water Infrastructure
Stakeholder Meeting**

Hauppauge, NY

May 28, 2014

Overview – Suffolk Agriculture

Despite significant challenges, Suffolk remains a leading county in New York in terms of wholesale value of agricultural products. There remain approximately 500 farms in Suffolk distributed over 30,000 acres of cropland. Our generally mild climate, long growing season, productive soils and the ready availability of water for irrigation (Slide 2) render our area conducive to agriculture. Another major reason for this prominent economic position is that agriculture in Suffolk County is highly diversified and continues to evolve to meet changing conditions and demands. (Slide 3,4,5,6,7,8,9-Animal Production)

Vulnerability to Major Storms

Most of the agricultural land is in eastern Suffolk County and is bordered in large part by surface waters. Unfortunately, because of the location and configuration of Long Island, the entire island is vulnerable to major storms. As a result, like so many homes and establishments, agricultural businesses in close proximity to the shore and inland were not spared the wrath of Super Storm Sandy. In our association with Cornell University and the nationwide Extension Disaster Education Network (EDEN), our Cooperative Extension Agriculture Program Director was called upon to examine and report on the extent of agricultural damage caused by this frightening storm. (Slide 10,11,12,13,14,15- Sandy Cost)

Addressing the Concern for Nitrogen Inputs to Ground Water and Surface Waters

Because their family homes typically are co-located on their farms, growers fully comprehend the essential need for protecting drinking water and other natural resources that are the foundation of the quality of life we enjoy here in Suffolk. However, in the efforts to protect water, we must not forget the need to preserve and enhance agricultural resources.

The farm community knows well that sustainable agriculture relies on the necessity to preserve natural resources. Many of the programs the Cornell Cooperative Extension of Suffolk County Agriculture Program educators/researchers conduct with the local growers are specifically directed at ground and surface water protection.

Even though our Cooperative Extension researchers/educators do extensive, innovative work on reducing agricultural inputs of pesticides, I will concentrate on the subject of nitrogen control. (Slide 16-Why N?)

Agriculture – A Component of Nitrogen Inputs

For decades, the Suffolk County Department of Health Services (SCDHS) and the United States Geological Service (USGS) have monitored groundwater and surface streams quality throughout Suffolk County, including in agricultural areas. The SCDHS has also maintained an extensive marine surface water monitoring program.

These monitoring programs have provided evidence of elevated groundwater nitrogen concentrations in the vicinity of farm fields. (Slides 17,18 – N Monitoring). Although Ag. is shown as one of the top contributors of N, changes in fertilizer rates and type of crops grown should result in less impact to groundwater. More definitive documentation is anticipated with the forthcoming intensive monitoring of several farm fields covering the major commodities. Also, despite many private wells with elevated N, the North Fork actually has areas of clean water. For the Peconic Estuary, as well as the remainder of the county, estimates of regional nitrogen loads demonstrate that agriculture is one of the lesser inputs (Slide 19 – PEP N). Nevertheless, for certain subwatersheds, agriculture is a large component of N load.

Efforts to Control Agricultural Nitrogen Loads

Cooperative Extension, together with our many cooperating organizations and agencies have long worked with farmers, nursery operators and landscapers to address the concern for limiting nitrogen inputs to ground and surface waters.

In order to control nitrogen release to groundwater from fertilizer application, we advocate the “4 R Nutrient Stewardship” from the International Plant Nutrient Institute - **4Rs- Right Source at the Right Rate; Right Time and Right Place.** (Slide 20 -4 Rs)

A great example of this nutrient stewardship is the long-standing research and on-farm demonstrations Cooperative Extension has done with several partner farmers on the use of Controlled Release Nitrogen Fertilizer for both long and short growing season crops. This work is overseen by our Vegetable /Potato Specialist and our Agricultural Stewardship Program conducted with the financial support from Suffolk County. (Slide 21, 22-CRF Potatoes)

The need for manufactured, chemical fertilizer can be reduced through several means including: the addition of compost as a soil amendment; use of crops like hairy vetch as a natural source of nitrogen, and reduced tillage to limit soil disturbance and better manage fertilizer residue.(Slide 23,24,25-Red. Tillage)

Finally, the recent advent of “Long Island Sustainable Wine Growing”, a consortium of several local wineries, is an exciting prototype for the entire agricultural industry that illustrates the need to strike a balance between environmental preservation and agricultural profitability. The mission of this tremendous initiative is to employ best management practices that are environmentally sound, economically feasible and socially equitable. A critical component of this sustainability effort is the third party certification that verifies the practices are being carried out in an appropriate manner to meet the multi-faceted goal. We are proud that the staff of the Cooperative Extension Viticulture Program has been a key partner since the inception of this new venture and instrumental to the development of the overall concept of sustainable wine grape growing several years ago. (Slide 26)

Conclusion

For agriculture to remain viable, a source of nitrogen as an essential plant nutrient must be assured. Past practices of fertilizer application have resulted in nitrogen leaching into groundwater and passing into surface waters. Cornell Cooperative Extension with our many partners, have worked with growers to address the dual need of enhancing environmental protection and maintaining economic profitability. Together, we can guarantee the preservation of our renowned surface and groundwater resources and sustain and improve our equally admired agricultural and horticultural industries.

Background Information

Vito Minei:

For the past four years, I have had the honor and privilege to serve as the Executive Director of Cornell Cooperative Extension of Suffolk County. Prior to coming to Cooperative Extension, I had a very fulfilling 38 year career with the Suffolk County Department of Health Services-Division of Environmental Quality. The most enjoyable portion of my county governmental tenure was the last 10 years when I was Director of the Division of Environmental Quality. In that capacity, I oversaw comprehensive groundwater and surface water monitoring and environmental management programs. These two careers have provided me with considerable background in the administration of the scientific research and education programs at Cooperative Extension and many years of experience with Suffolk County government in natural resources preservation, ground and surface water protection and water pollution control throughout the County.

The Agricultural Program of Cornell Cooperative Extension of Suffolk County:

Dale Moyer, Director of the Agriculture Program at Cornell Cooperative Extension of Suffolk County and his extraordinarily competent staff of scientists, researchers and educators are involved with a wide array of agriculture related issues. Our Agriculture staff devotes their efforts to such important topics as general agricultural issues (including farmland preservation, labor, wildlife management, energy and environmental concerns, educational needs of agriculture and governmental agencies, etc.). In addition, we have specialists in weed science, pest management, agricultural stewardship, floriculture and greenhouse industries, nurseries and landscape businesses, vegetables and potatoes, commercial viticulture, and our popular community and environmental horticulture program.

The dual purpose of our scientific and educational efforts in agriculture is to continue to assist farmers make a living from improvements in more productive agricultural practices and to maintain and enhance the progress in natural resources preservation, especially ground and surface water protection. Over many years, much of the work of CCE –Suffolk has been aimed at reducing the amount of chemicals used in agricultural practices.

A source of pride is that to address issues as they arise during growing seasons, Cooperative Extension has continued to enhance the means to deliver information to growers in a timely fashion to make sure the guidance provided is the most relevant and beneficial.

SUFFOLK COUNTY WATER QUALITY AND COASTAL RESILIENCY ACTION PLAN

SUFFOLK COUNTY EXECUTIVE STEVE BELLONE

(Presented by Sarah Landsale)

MAY 27, 2014



SUFFOLK COUNTY'S WATER QUALITY CRISIS



Suffolk County Comprehensive Water Resources Management Plan Findings:

- Dramatic Decline in Health of Ground and Surface Waters
- Negative Trends in Quality of Drinking Water
- Pollution has caused harmful Algal Blooms, Brown Tide
- Impacts include nitrification, impaired water bodies, impaired rivers, closed beaches and devastation of shellfish industry

In aftermath of Superstorm Sandy, it is clear that this significant decline in water quality is a major threat to our region.



GOVERNOR CUOMO'S NYS 2100 COMMISSION REPORT

- Governor Cuomo's recently released New York State 2100 Commission report defines the challenges facing Suffolk County and New York State:
 1. Protect coastal communities;
 2. Reduce inland vulnerability to extreme weather events;
 3. Strengthen wastewater infrastructure.

“tidal wetlands can protect coastal communities from storm damage by reducing wave energy and amplitude, slowing water velocity, and stabilizing the shoreline through sediment deposition. More than half of normal wave energy is dissipated within the first three meters of marsh vegetation such as cord grass. In addition, given sufficient sediment deposition, wetlands are able to build elevation in response to sea-level rise, providing a buffer against climate change and coastal submergence.”

~ Governor Cuomo's 2100 Commission Report

- Researchers support the report and have concluded that coastal vegetation (wetlands, marshlands and the sea grass that surrounds it) serves as a natural defense system against storm surges and waves along coastal regions, reducing wave height by 80% over short distances. Waves lose energy as they travel through vegetation.



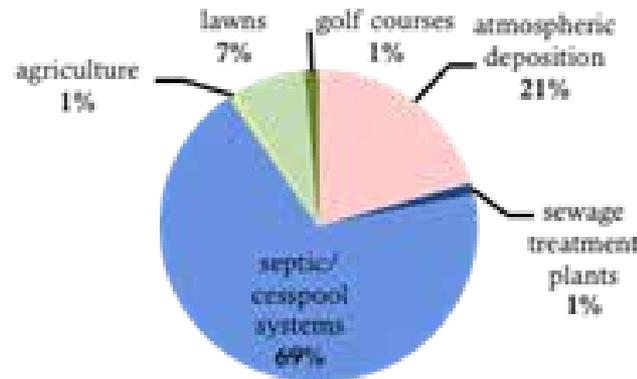
COASTAL VEGETATION LOSS IN GREAT SOUTH BAY

- In Suffolk County, losses of healthy salt marsh have accelerated in recent decades. The NYS DEC estimates that there was an 18-36% loss in tidal wetlands in the Great South Bay between 1974 and 2001. As the only South Shore bay with major riverine input, Great South Bay's living resources have been significantly affected by diminished tributary water quality.
- This loss comes on top of a 1973 summary of wetland loss by the Regional Marine Resources Council of the Nassau-Suffolk Regional Planning Board which found that by 1971, Suffolk County had already lost 38% of the wetlands which were present in the County as of 1954.



NITROGEN UNDERMINING OUR NATURAL DEFENSES

- In 2008 the NYSDEC declared Long Island's entire South Shore Estuary Reserve system, stretching more than 60 miles, an "impaired water body". NYSDEC identifies nitrogen from wastewater as a reason for this unfortunate designation and states that cesspools, septic systems, and sewage treatment plants cause eutrophication, resulting in lower water oxygen levels and persistent algal blooms.
- According to researchers Kinney and Valiela, **69% of the total nitrogen load for the Great South Bay is from septic systems and cesspools**



- Linda Deegan, researcher at the Marine Biological Laboratory at Woods Hole released a study that demonstrated that nutrient enrichment is a driver of salt-marsh loss, writing, "Now we understand that nutrient enrichment also causes a very important loss of salt-marsh habitat for fish and shellfish. This is one more reason why we need better treatment of household waste in our towns and cities."



PROTECTING COASTAL COMMUNITIES BY RESTORING COASTAL WETLANDS

- In the wake of Sandy, Suffolk County has applied for a National Fish and Wildlife Foundation grant under the proposal “Enhancing Coastal Resiliency through Integrated Salt Marsh Management along the South Shore of Long Island New York.”
- The Department of the Interior has written a strong letter of support for the project which aims “to enhance resiliency of coastal ecosystems, maintain and improve fish and wildlife habitat and ***reduce inland communities vulnerability against risks related to storm surges, flooding, wave energy, erosion and long-term sea level rise.***”
- The support letter also notes that the “work proposed here dovetails perfectly with federally funded Hurricane Sandy resiliency projects on US Fish and Wildlife’s LI National Wildlife Refuge Complex.”
- However, if we are going to restore our coastal defenses then we must remediate the pollution that has been systematically undermining them. Spending federal money in an effort to strengthen and reclaim degraded coastal wetlands without also addressing the cause of the degradation would be a waste of money.

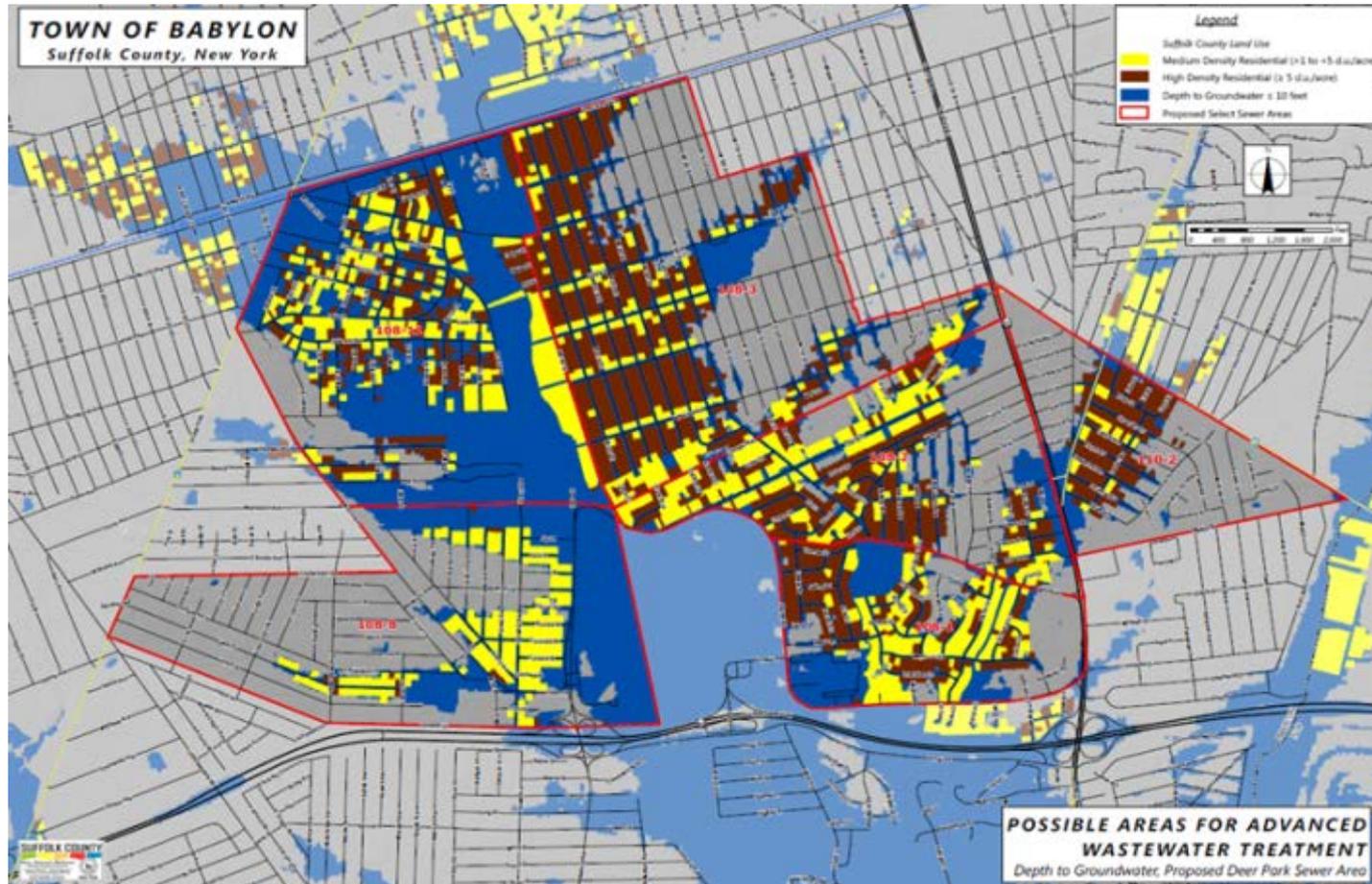


FUNDING PRIORITIES

- Suffolk County has identified three funding priorities for addressing the decline in water quality and the restoration of our coastal wetlands:
 1. Fortify our existing wastewater infrastructure:
 - ✓ Suffolk County's largest sewage treatment plant, Bergen Point, was close to being comprised during Superstore Sandy. Serving 80,000 households, it is a critical facility.
 - ✓ Suffolk County has requested \$242 million to replace the plant's ocean outfall pipe that runs beneath the Great South Bay. Request currently before FEMA.
 2. Sewer targeted areas:
 - ✓ Removing 1,390 pounds of nitrogen discharged each day into major tributaries which flow directly into the Great South Bay, will prevent further decline of critical coastal vegetation and provide the foundation to restore estuary and bay marshlands.
 - ✓ Suffolk County has identified three priority sub-regions to target:
 - Carlls River
 - Forge River
 - Connetquot River
 3. Pilot alternative/innovative on-site wastewater treatment systems:
 - ✓ Initiate projects for the installation of community-scale innovative/alternative wastewater treatment systems for clusters of 50-100 homes.
 - ✓ Initiate project to assist homeowners with improved on-site systems.



CARLLS RIVER: NORTH BABYLON-DEER PARK AREA



-Headwaters of the Carlls River

-High Groundwater Area

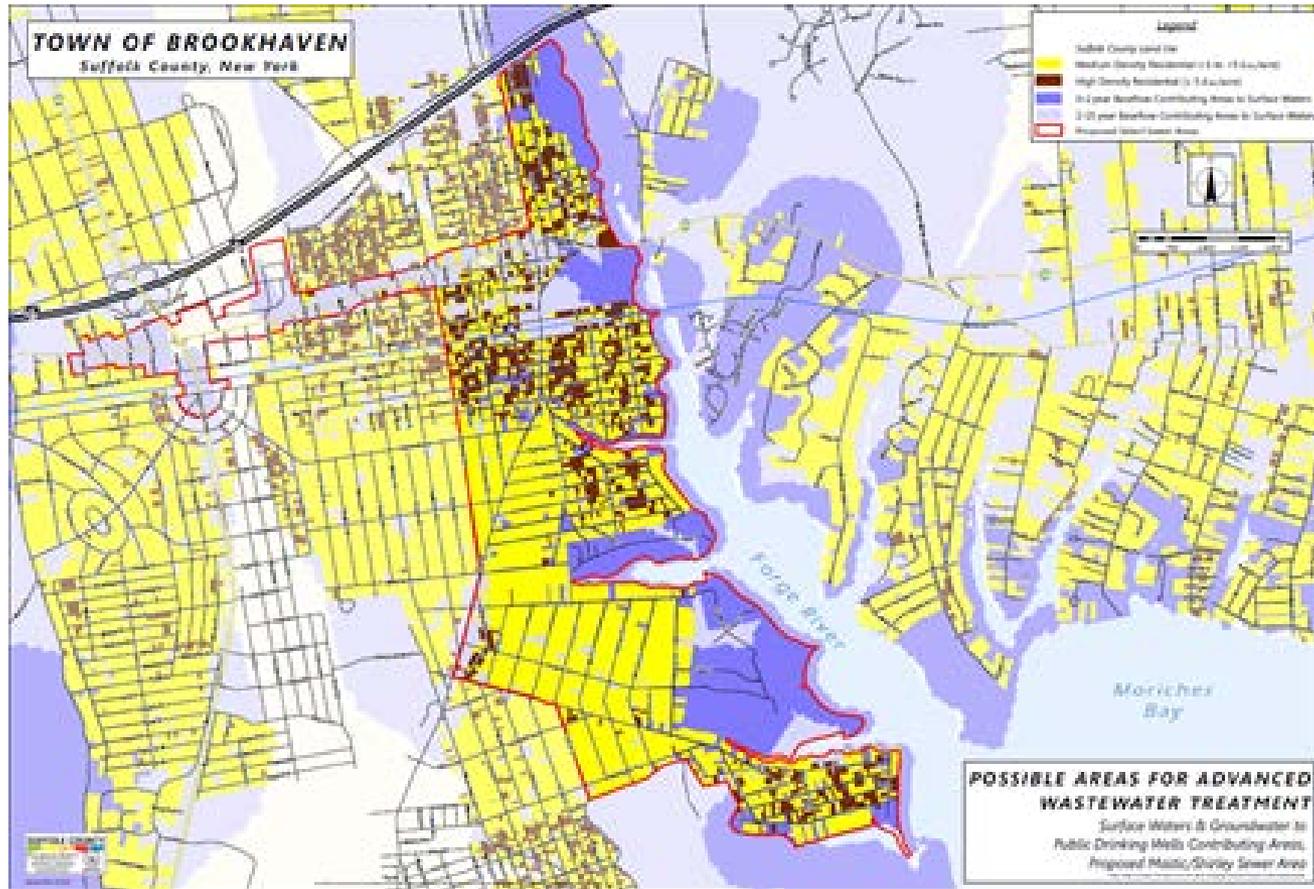
-Highest Density

-Adjacent to Southwest Sewer District

-Contributes most Nitrogen Reduction



FORGE RIVER: MASTIC-SHIRLEY AREA



- Forge River is most heavily impacted major surface water in Suffolk County

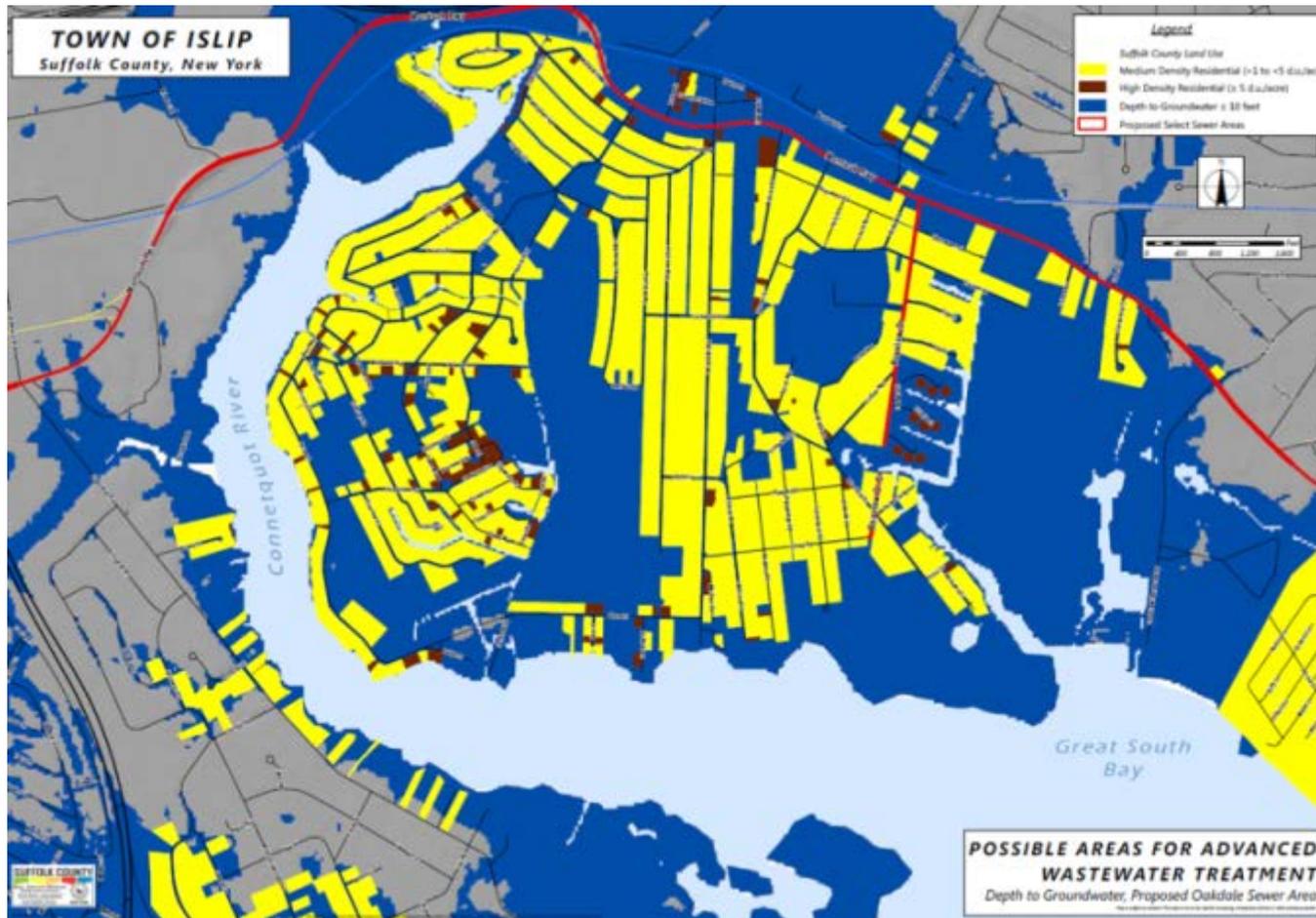
- Groundwater exceeds NYS standard

- Most of area in 0-2 surface water contributing area

- Chronic, sustained anoxia



CONNETQUOT RIVER: OAKDALE AREA



-According to FEMA, hardest hit area in Suffolk County

- Connetquot River has experienced 400% increase in nitrogen pollution and is now most polluted of Suffolk's four major rivers

- Entire area has depth to groundwater of less than 10 feet

-Adjacent to Southwest Sewer District

SUFFOLK COUNTY WATER QUALITY AND COASTAL RESILIENCY ACTION PLAN

SUFFOLK COUNTY EXECUTIVE STEVE BELLONE

MAY 28, 2014



Presented by Sean Mahar

**AUDUBON NEW YORK TALKING POINTS FOR
LONG ISLAND COASTAL RESILIENCY AND CLEAN WATER INFRASTRUCTURE
STAKEHOLDER MEETING**

May 28, 2014

BOARD OF DIRECTORS

Virginia K. Stowe
Chair

Sarah Jeffords
Vice Chair

Lee Gunn Falchi
Vice Chair

Robert Dryfoos
Treasurer

James Melius
Secretary

Marsilia Boyle
Polly Bruckmann
Margot Ernst
Wendy Liff Flynn
Marian Heiskell
Thomas W. Keese, III
Diane Lewis
Anne Manice
David Manning
Edward Mohlenhoff
Corneilius B. Murphy
Laura A.J. O'Donohue
Michael O'Keeffe
Ross Pepe
Deborah Rivel
Nathan Rudgers
Victoria Shaw
Irene Warshauer
Ross Whaley
John Wilkinson
Alexander Zagoreos

Erin M. Crotty
Executive Director

Constantine Sidamon-Eristoff
Founding Chairman

Audubon Overview

- My name is Sean Mahar and I am the Director of Government Relations for Audubon New York, the State program of the National Audubon Society representing 27 local Chapters and 50,000 members across the state. Our mission is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity. Thank you for the opportunity to address you today.
- In 2011, the National Audubon Society adopted a new strategic plan, *A Roadmap for Hemispheric Conservation 2012-2015*, to effectively address the unprecedented environmental challenges we face and coordinate our conservation activities. The plan is structured along the four major migratory bird flyways of North America and organized according to five complementary conservation strategies. In the Atlantic Flyway, our objective is to protect priority bird species and the habitats they depend on in New York State by focusing on putting working lands to work for birds & people, sharing our seas & shores, saving Important Bird Areas, shaping a healthy climate & clean energy future, and creating bird-friendly communities.
- On Long Island, through our Theodore Roosevelt Sanctuary and Audubon Center and Long Island Bird Conservation Program, we work closely with our 8 Audubon Chapters to advance conservation for our priority coastal bird species. We focus heavily on protecting beach nesting Birds through education and stewardship, and work with many partners and all levels of government to address the threats to, and prioritize conservation strategies to protect, the unique coastal and marsh habitat that these birds rely.
- Unfortunately, water quality impairments are a leading threat both to our priority species and their habitats, and nowhere is this more prevalent than along Long Island Sound.

Long Island Sound Leadership

- For more than two decades, Audubon has been leading the charge to restore this nationally significant estuary, and we are happy to share our experiences with you today, as we believe that they can serve as a model for effective, collaborative conservation to address water quality impairments throughout long Island.
- Central to our success at keeping the Sound on the road to recovery has been our ability to bring non-traditional allies to the table fighting for a common agenda under the umbrella of the Clean Water/Jobs coalition.

- The Coalition is a partnership of Audubon New York, the Construction Industry Council of Westchester & Hudson Valley, Inc., and the New York State Laborers. Formed in 1991, the Coalition has lobbied and advocated for CWSRF funding for public works projects such as wastewater treatment plant upgrades that have helped revive the Sound's habitat, made the Sound safer for recreation, and stimulated the local economy.
- This broad Coalition has achieved many important milestones in Congress including passage of the Long Island Sound Stewardship Act, which established a stewardship initiative to identify, protect, and enhance significant open space, ecological and recreational sites along the Sound, and passage and reauthorization of the Long Island Sound Restoration Act which provides funding for projects to protect the water quality of the Sound through wastewater treatment plant upgrades, and projects to meet the goals of nitrogen reduction.
- Through the work of the Coalition and others, the Sound has seen noticeable improvements in recent years, including the reopening of 2,500 acres of clamming beds in Hempstead Harbor that had been closed for nearly 40 years.
- We are on track to achieve the 58.5% nitrogen reduction goals in the Sound by 2017 deadline.
- Building off the successes in the Sound while ensuring they continue in the future, we look forward to working with you to leverage and enhance these partnerships with our key allies in the construction industry and labor to advance this focused initiative to improve water quality along the South Shore.

Solutions to the water crisis facing long Island

- In addition to expanded partnerships with non-traditional partners, this initiative needs to take an island wide approach to address the similar threats that are facing the South shore and North shore.
- This will not only improve water quality throughout the region, it will also provide a stronger leverage for Federal and state investments, especially through the Long Island Sound Restoration and Stewardship Acts and Clean Water State Revolving Fund.
- Toward that end, we need the state, Counties and local Governments to help us make the case for stronger investments in these programs to the Obama Administration and Congress.
- Specifically we urge you to call for a \$10 million appropriation for the Long Island Sound Program and \$1.4 billion for the CWSRF with a larger percentage of the SRF funding going to grants to help our cash strapped communities more quickly and effectively utilize these funds without overburdening rate payers.
- We applaud the leadership of EFC President Driscoll and his staff for their ongoing efforts to managing the Model SRF program in the nation.

- We also applaud their leadership in establishing the successful Green Innovation Grants program to incentivize the use of green infrastructure solutions to managing storm water and keeping more of it out of our aging treatment plants. Through this LI Water partnership we urge you to prioritize greater investments in this creative tool.
- This program has led communities in other areas of the state to create model green infrastructure programs that can be easily replicated in Nassau and Suffolk Counties.
- For example, Onondaga County's award winning Save the Rain program has relied on a mixed approach of grey infrastructure improvements to County facilities while promoting and encouraging a strong utilization of green infrastructure projects, from providing rain barrels to County residents to establishing 50 rain gardens throughout the county. This has reduced the need for more costly grey infrastructure projects in the future by simply keeping water out of the system and a similar program should be explored through this initiative.

State Funding Solutions

- Recently the federal Government has been providing significant resources to address our water infrastructure crisis, through the SRF, American Recovery and Reinvestment Act and through the Emergency Supplemental Appropriation for Hurricane Sandy Recovery, which have all been leveraged by matching funds from state and local governments.
- On the federal level, current appropriations for the CWSRF are slated for significant cuts shifting the federal government's share of the costs onto the state and cash strapped municipalities. Also, with the funds from the 1996 Clean Water, Clean Air Bond Act fully spent, there is more need than ever to increase investments (public and private) in these projects which has a direct impact on job creation in the region, as these investments help create and sustain good paying local jobs.
- That is why as part of this initiative, we urge the state to pursue a new environmental Bond Act to provide additional state investment to address the massive funding needs for water infrastructure improvements. Additional State investment also allows increases the ability to leverage the investments of all the parties – federal, state, and local governments. We simply cannot afford not to pursue another NY Bond Act, as the longer we wait to make these investments the problems only become more costly to fix.
- While we applaud and fully support the continuation of recent short term EPF investments through the Water Quality Improvements Program and the Governor's NY WORKs capital funding initiative, these are only putting a small dent in the gigantic need and shows the state cannot do it alone.
- Therefore, in addition to a Bond Act, we urge the state to play a catalytic role in devising innovative financing mechanisms to attract private capital investment to water infrastructure improvement projects.

- We are still exploring the details of how the State could play such a role, however, it's clear that greater private investment and participation in funding infrastructure improvements must be part of the financing equation. There is well documented financing needs that far outpace the availability of government funding. If we could develop the right market conditions to also attract private capital to finance water projects, it would help address the large funding gap for these critical environmental and public health improvement projects.
- Attracting private capital to water projects is also a natural progression of New York's leadership in financing environmental projects – from the creativity in managing the State Clean Water and Drinking State Revolving Funds to the establishment of the Green Bank.

Prioritize Ecological infrastructure solutions for Coastal Resilience

- Lastly, we greatly appreciate the focus of this initiative on working with nature to provide greater coastal resiliency and water quality improvements, and applaud the significant efforts already underway through the emergency supplemental appropriation programs to advance many creative solutions to move people and infrastructure out of harm's way, and restore coastal marsh habitat to provide greater storm surge and sea level rise buffer protection.
- In addition to providing a natural line of defense from coastal flooding, the region's beaches and salt marshes provide globally significant habitats for birds, fish and other wildlife. For example, Long Island supports 10% of the global population of the federally threatened and New York State endangered Piping Plover, as well as the largest breeding colony of the federally endangered Roseate Terns in North America (almost half of the northeast population).
- Coastal species like these are heavily dependent on beaches and barrier islands, and the natural processes that shape these habitats, and prioritizing enhanced stewardship offers an unprecedented opportunity to enhance populations of beach nesting birds and other wildlife, while providing protection for coastal communities and water quality.
- This is why we urge as part of this push for coastal resilience, we urge for the State, local partners and the federal agencies to prioritize a mix of 'hard' engineering innovations and enhancement of ecological infrastructure and barriers, to create long-term resilience for the region.
- This balanced, complementary approach to storm risk reduction, which promotes protection and restoration of natural features like wetlands, marshes, dunes, barrier islands and beaches, provides a cost effective solution that reduces flood risk to homes, businesses and infrastructure, while enhancing ecologically and economically important coastal habitat.
- In particular, this initiative must promote natural processes and avoid hard solutions, such as creating artificial dunes or erecting sand fencing and vegetation

plantings, in natural areas like State Parks, national wilderness areas and national wildlife refuges.

- Also to maintain the benefits for water quality in the back bays, and the new habitat that's been created in the area, we strongly urge for the breach at old inlet to remain open and let nature take its course in this area.
- Avoid engineering projects and hard structures such as seawalls, riprap, jetties, or revetments in or around sensitive inlet habitats as these degrade the important habitats and exacerbate problems like coastal erosion;
- Prioritize offshore sediment sources for beach nourishment/restoration projects. Flood tidal shoals, inlet spits, or other sand sources around inlets should not be mined for sediment – removal of such sediment causes damage to important spawning areas for invertebrates, and disrupts critical roosting and foraging habitat for birds, moreover, such actions may lead to increased erosion on adjacent shores;
- Hard stabilizing structures (e.g., seawalls, revetments, jetties, riprap, etc.) should only be considered in situations concerning heavily developed lands
- Lastly, to maximize the longevity of these investments, and focus them in the areas with the greatest possible impact, the state and region must develop and adopt formal Sea Level Rise Projections and ensure planning and financing decisions take this reality into consideration.

Conclusion

- We once again thank you for the opportunity to offer the following comments today, and look forward to working with the Cuomo Administration and Nassau and Suffolk Counties on this important initiative to improve water quality and naturally improve coastal resilience.
- Audubon has a long history of working in other coastal ecosystems like the Gulf of Mexico and Coastal Louisiana to protect the natural features that provide a first line of coastal defense, and our experts are available as a resource to you as you continue to identify the needed strategies and next steps through this initiative.

Mitchell Pally, CEO Long Island Builders Institute

The Long Island Builders Institute recommended that each owner of a septic system purchased before a certain date be required to have the system tested to ensure it was meeting compliance requirements.

The State of New York should provide a tax credit to offset the cost of a renovated or replaced system which meets current standards.

Richard Amper, Executive Director, Long Island Pine Barrens Society

long island
clean
water !
partnership



Saving What Matters Most
LongIslandCleanWaterPartnership.org

LATEST ALERT

Encourage Governor Cuomo's Clean Water Initiative — Take action now!

[Take Action](#)



Take Action Today

Join the Long Island Clean Water Partnership. [Take Action!](#)

Become an Advocate



Tell elected officials you care about clean water.

[Take Action »](#)

In the News



Relevant news on water quality.

[Read More »](#)

Tell a Friend



Help spread the word about why water quality matters.

[Tell a Friend »](#)

WHAT'S IN THE WATER



newsday.com
\$1.25 / 11 EDITION
Tuesday
Sept. 24, 2003

SPORTS FINAL
Newsday
THE LONG ISLAND NEWSPAPER



NEWSDAY / NEWS 12 SPECIAL SERIES

POLLUTION AND LI'S WATER

Island's sole source lies beneath
254 Superfund toxic waste sites



Legislative Bill Drafting Commission
18313-01-4

S.
Senate
.....

IN SENATE--Introduced by Sen

--read twice and ordered printed,
and when printed to be committed
to the Committee on

..... A.
Assembly
.....

IN ASSEMBLY--Introduced by M. of A.

With M. of A. as co-sponsors

--read once and referred to the
Committee on

ENVCONIA
(Establishes the Long Island water
quality control act and the Long
Island commission on aquifer
protection)

En Con L. LI aquifer protection

AN ACT

to establish the "Long Island water
quality control act"; and to amend
the environmental conservation law,
in relation to the Long Island
commission on aquifer protection

The People of the State of New
York, represented in Senate and
Assembly, do enact as follows:

IN SENATE

Senate introducer's signature

The senators whose names are circled below wish to join me in the sponsorship
of this proposal:

a15 Addabbo	a02 Fungari	a28 Krueger	a55 O'Brien	a51 Stewart
a11 Avella	a59 Galligan	a34 Lanza	a58 O'Mara	a09 Stokes
a49 Ball	a12 Gianaris	a39 Larkin	a21 Parker	a14 Smith
a42 Bonacic	a41 Dipert	a77 Latture	a17 Perillo	a26 Squitron
a04 Boyle	a22 Golden	a01 LaValle	a50 Perkins	a16 Szustky
a44 Breslin	a47 Griffin	a52 Libon	a01 Ruzenski	a15 Stewart
a38 Caracci	a60 Grassi	a87 Lallo	a08 Ruckie	Conasa
a50 DeFrancisco	a06 Hanes	a05 Marzullo	a75 Rivera	a40 Tkaczyk
a12 Diaz	a16 Howell	a41 Marchione	a56 Soback	a51 Valiczy
a14 Dinn	Thompson	a07 Martin	a19 Sampson	a77 Young
a11 Espalido	a27 Hoyman	a62 Mariani	a10 Sanders	a03 Zabin
a49 Farley	a63 Kennedy	a25 Montgomery	a27 Savino	a08
a17 Faldut	a34 Klein	a54 Nazzola	a29 Serrano	a20

IN ASSEMBLY

Assembly introducer's signature

The Members of the Assembly whose names are circled below wish to join me in the
multi-sponsorship of this proposal:

a09 Abate	a147 DiPietro	a076 Collins	a132 Palmisano	a090 Giacchi
a092 Abusani	a115 Duprey	a090 Kim	a002 Palumbo	a022 Schapiro
a084 Arroyo	a004 Englebright	a131 Kelli	a088 Pardo	a114 Sica
a075 Aubey	a109 Faly	a048 Laha	a141 Peoples	a110 Stock
a120 Barclay	a071 Farrell	a013 Lanza	Stokes	a127 Stupe
a186 Baroni	a126 Fiach	a050 Lento	a058 Pury	a011 Tweeney
a082 Benedetto	a008 Filipavick	a125 Libon	a006 Pichardo	a112 Trillani
a117 Blankenship	a124 Fritoli	a082 Lopez, F	a089 Pirofino	a101 Tansley
a062 Bovelli	a093 Galef	a121 Lopez	a073 Queri	a001 Thiele
a026 Brannaman	a137 Giant	a010 Liguacci	a019 Ra	a001 Thome
a044 Brennan	a007 Garbarino	a121 Maga	a012 Rata	a011 Tito
a119 Brindisi	a148 Giglio	a129 Magaroli	a006 Ramon	a146 Water
a178 Brennan	a000 Gironi	a064 Mallonakis	a078 Rivers	a041 Weinmann
a040 Brock-Kroony	a064 Glick	a050 Markey	a120 Roberts	a020 Weisenberg
a003 Buckwald	a023 Goldfeder	a090 Mayer	a006 Robinson	a024 Wapner
a118 Butler	a159 Goodill	a108 McDonald	a008 Rodriguez	a070 Wright
a103 Cabell	a075 Gottfried	a014 McDonough	a072 Rina	a096 Zabrowski
a043 Casera	a005 Graf	a017 McKeon	a067 Rosenthal	a054
a145 Cerreto	a100 Gaudier	a007 McLaughlin	a025 Rorie	a055
a033 Clark	a170 Hawley	a078 Miller	a116 Russell	a059
a047 Cohen	a003 Haeble	a002 Milson	a049 Ryan	a060
a012 Cook	a003 Hennessey	a015 Montesanti	a009 Saladino	a077
a144 Corwin	a028 Iovino	a136 Moretto	a111 Santabarbara	a079
a003 Cramer	a049 Hinkal	a077 Mosley	a029 Scarborough	a008
a122 Crutch	a010 Hooper	a079 Moys	a014 Schindl	a113
a021 Curtin	a042 Jacobs	a115 Nejay	a090 Schimniger	a138
a063 Cusick	a007 Jaffe	a017 Nolan	a007 Sepelinski	a141
a045 Cymbrowitz	a135 Johns	a130 Oake	a065 Silver	
a053 Devita	a094 Katz	a069 O'Donnell	a007 Sussmanwitz	
a014 DeBekker	a074 Kavanagh	a011 Oels	a014 Szwarc	
a001 DiCorleto	a142 Keenan	a091 Ott	a104 Skarabin	

1) Single House Bill (introduced and printed separately in either or both houses), Uni-Bill (introduced simultaneously in both houses and printed as one bill). Senate and Assembly introducer sign the same copy of the bill).

2) Circle names of co-sponsors and return to introduction clerk with 2 signed copies of bill and 4 copies of memorandum in support (single house); or 4 signed copies of bill and 8 copies of memorandum in support (uni-bill).

TOP STORIES

LI's water quality focus of task force







Credit: Newsday



Credit: Newsday





Saving What Matters Most
LongIslandCleanWaterPartnership.org

**90 Partner Organizations
+ Counting**

**7,500 Individual Members
+ Counting**

Join the movement!



facebook.com/cleanwaterpartnership



Follow us on

twitter

[@LICleanH2O](https://twitter.com/LICleanH2O)

Long Island *Can!*

