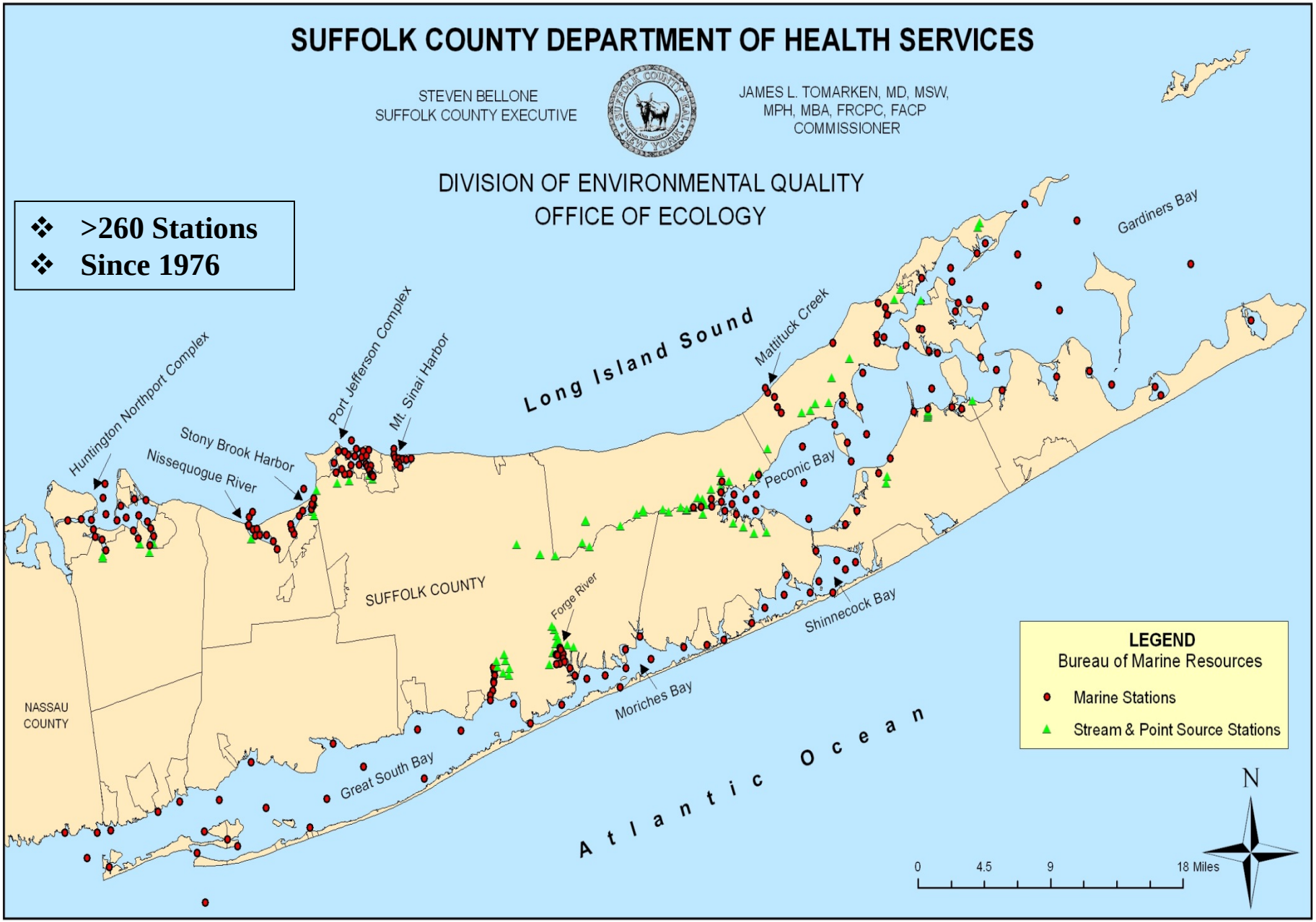
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES (SCDHS)

Division of Environmental Quality & HABs

- **Marine Monitoring** (Water Quality and HABs)
  - Surface water samples collected by SCDHS staff
  - Water quality analysis and Brown Tide cell enumeration performed by the SCDHS's Public & Environmental Health Laboratory (PEHL).
  - Phytoplankton and Cyanobacteria identification and enumeration typically performed by the Gobler Lab at SUNY Stony Brook- Southampton
- **Beach Monitoring** (Bacteria & HABs)
  - Bathing water samples collected by SCDHS staff and summer interns
  - Analysis performed by SCDHS PEHL
  - Cyanobacteria
  - ~4,000 samples collected/bathing season
- **Marine Health**
  - Cyanobacteria bloom response (countywide)
- **Management Plans**
  - BTCAMP (1993)
  - PEP Program Office CCMP w/ BT Chapter (2001)
  - Comp Water Plan (2015)
  - HAB Action Plan (2017)
    - funded by Suffolk County Water Quality Protection and Restoration Program (WQPRP)


SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE
JAMES L. TOMARKEN, MD, MSW,
MPH, MBA, FRCPC, FACP
COMMISSIONER
DIVISION OF ENVIRONMENTAL QUALITY
OFFICE OF ECOLOGY
>260 Stations
Since 1976
Long Island Sound
Atlantic Ocean
Huntington Northport Complex
Stony Brook Harbor
Nissequogue River
Port Jefferson Complex
Mt. Sinai Harbor
Mattituck Creek
Peconic Bay
Gardiners Bay
Forge River
Shinnecock Bay
Moriches Bay
Great South Bay
SUFFOLK COUNTY
NASSAU COUNTY
LEGEND
Bureau of Marine Resources
Marine Stations
Stream & Point Source Stations
N
0
4.5
9
18 Miles

Key HAB Action Plan Management Recommendations:

Top Strategic Priority:

Reduce nitrogen and phosphorous loading to ground watersheds, surface watersheds and direct inputs to surface waters, particularly by upgrading septic systems

- County-wide upgrades and use of Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS)
  - Suffolk County Reclaim our Water Initiative
  - Septic Demo
    - 5 Provisionally Approved I/A OWTS Technologies; 9 I/A OWTS Demo Systems Pending Provisional Approval
    - 3 Experimental NRB systems installed at residential housing on Suffolk County Parks (NRB with SBU CCWT)
  - Septic Improvement Program (SIP)
    - *Status as of May 7, 2018* :
      - 188 Active SIP Grants
      - 62 SIP installations or in application process
    - NY SIP: ~800/year expected
- Reduction goals to be quantified in Subwatershed Plan (SWP)

SEPTIC DEMONSTRATION PROGRAM (I/A OWTS)

- *Phase 1 - Septic Demo Program*
  - Manufacturer Selection
    - 4 manufacturers selected to install 6 types of systems for a total of 19 systems
  - Homeowner Selection
    - 19 homes selected throughout the County via lottery by Legislative District
- *Phase 2 - Septic Demo Program*
    - 6 manufacturers applied to install 8 types of systems
    - Homeowner Selection - over 207 Applicants
    - 20 homeowners selected on July 26, 2016

COMMERCIAL DEMONSTRATION PROJECTS

Completed

- *Meschutt County Park*
  - –$ 300,000 County Funding
  - –Orenco AXMAX-225 Unit (Packed Bed Textile Recirculating Filter)
  - –Construction completed May 2016
  - –Average Total Effluent Nitrogen 17.2 mg/l (7-months composite sampling)
- *Sylvester Manor Educational Farm*
  - –$209,000 County Funding
  - – Vegetated gravel recirculating filter
  - –Construction Complete Spring 2017
  - –Average Total Effluent Nitrogen 14.5 mg/l (3-months composite sampling)
- *Lake Ronkonkoma Park*
  - –$408,000 County Funding (Enhanced Water Quality funding)
  - –Norweco Hydro-Kinetic I/A OWTS with Eljen geotextile gravelless sand filter leaching
  - –Construction Complete (to Be Sampled 2018)
- *Fishers Island Yacht Club*
  - -Yacht Club paid for system
  - -Vegetated gravel recirculating filter (AKA Constructed Wetland) with PSD
  - -System installed in Spring/Summer 2017

Pending

- *County Parks Pending Appropriation of funding (Enhanced Water Quality Funding)*
  - – *Cupsogue Beach County Park*
  - – *West Sayville County Park*
- *Vanderbilt Museum/Planetarium*
  - – $167,000 County Funding (Enhanced Water Quality funding)
  - – Currently in Design/Permitting Phase
- *TNC Upland Farms*
  - – $220,000 County Funding (Enhanced Water Quality funding)
  - – Constructed Wetland & NRB's
  - – Currently in Design/Permitting Phase

Septic Improvement Program (SIP)

Grant Program Details:

- Individual homeowners may be eligible for a grant up to $11,000.
- $10,000 will be provided toward the purchase and installation of an approved I/A OWTS and leaching structure, as well as for attendant engineering and design services.
- An additional $1,000 may be available for installation of Pressurized Shallow Drainfield for a maximum grant of up to $11,000.

Income Criteria:

- Adjusted Gross Income less than or equal to $300,000/year is eligible for 100% of grant
- Adjusted Gross Income between $300,000/year - $500,000/year is eligible for 50% of grant
- Adjusted Gross Income of $500,000 or more will not be eligible for a grant (consistent with NYS Star Property Tax Rebate).

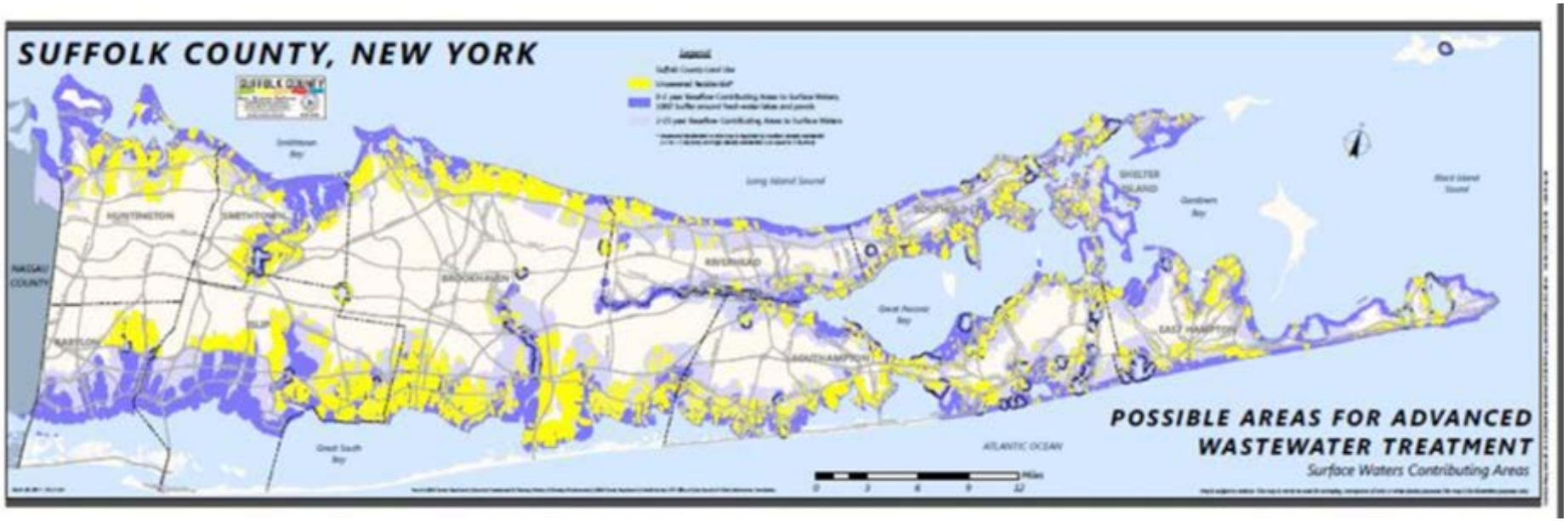
SUFFOLK COUNTY'S SEPTIC IMPROVEMENT PROGRAM

PRIORITY AREAS:

1) Parcels located within the Priority Critical Areas (high or medium density parcels within the 0-2 year groundwater travel time or high or medium density residential parcels within 1,000 feet of enclosed water bodies in Suffolk County)

2) Parcels located within Critical Areas (high or medium density parcels within the 2-25 year groundwater travel time)

3) Parcels located outside Critical Areas



SUBWATERSHEDS WASTEWATER PLAN
EARLY LINAP ACTION

- **Science Based Bridge to Support Policy Decisions - Transition from Septic Demo and SIP to wide-scale implementation**
- **Provide recommended blueprint for wastewater upgrades:** Set priority areas, nitrogen load reduction goals, and describe where, when, and what methods to implement to meet reduction goals (I/A OWTS, sewering, clustered, other)
- **Completed using series of models, data evaluations, and cost-benefit analysis:**
  - FIRST unified evaluation of our three major estuary system watersheds since the 1970s LI 208 Study: 189 Subwatershed boundaries, nitrogen loads, impacts, and load reduction goals.
  - FIRST EVER to be completed with an integrated and predictive groundwater model
- **Cost-Benefit to Support Policy and Funding Decisions:** evaluate trigger points and related cost/staff impacts for requiring I/A OWTS (e.g., sensitive areas, new construction, on property transfer, system failure, etc.); Countywide water quality district.
- **DRAFT SWP: ~July 2018**
- **Generic Environmental Impact Statement Findings: ~Nov/Dec 2018**

Suffolk County Department of Health Services
Proposed Sanitary Code Policy Changes

Policy 1: "Grandfathering" for Commercial Properties

Policy 2: Permit Requirements for Retrofits & Replacements

Policy 3: Require I/A OWTS for New Construction

Policy 4: Require I/A OWTS for existing systems (e.g. failure, sunset etc..)

Policy 5: Require I/A OWTS upon Property Transfer

Policy 6: Amend Unsewered Density Limit to 1 Unit / Acre for all Hydrogeologic Zones

Phase - I

- Approved by SC Legislature and SC BOH 2017
- Changes effective January 2018 for Grandfathering
- Changes to take effect July 2018 for reporting of pump-outs, replacements, and retrofits.
- Changes to take effect July 2019 for permits for replacements or retrofits

Phase - II

- Goal to Implement ASAP after 2018 SWP GEIS Findings Statement
- Dependent on Sub-watersheds Wastewater Plan Recommendations (County Wide vs Critical/Priority Areas)
- Policy 4 and 5 may be dependent on establishment of Wastewater Management District and Funding Mechanism
- Requires increase in SCDHS Staffing

Key HAB Action Plan Management Recommendations (cont'd):

- **Actively endorse/promote the Georgica Pond pilot project as a model for subwatersheds**
  - interception and treatment of nutrients in domestic wastewater from homes around the Pond
  - more frequent opening of a cut between the Pond and the ocean
  - real-time monitoring of groundwater and Pond waters
  - pilot evaluation part of SWP; Consultant expected to have highlights and results in June
  - Phosphorus role (**including Lake Ronkonkoma**)
- **Establish ongoing HAB Management Workgroup**
  - Convene an annual symposium Current Status: Today!
  - Consist of governmental agencies at various levels
  - university scientists
  - local National Estuary Program offices and others entities involved in HABs
  - Achieve inter-governmental cooperation and consistency in HAB and nutrient management policies/practices
  - Report on output & outcomes; prepare plan updates
- **Conduct an assessment of the potential utility of using seaweed farms and/or suspension-feeding shellfish aquaculture facilities**
  - Status: Suffolk County Kelp Aquaculture Feasibility
    - funded by SC and conducted by Cornell Cooperative Extension of Suffolk County's marine program

Peconic Estuary Seaweed Aquaculture Feasibility Study

- Suffolk County EDP funding CCE of Suffolk County to conduct a **Pilot study on aquaculture of Sugar Kelp. Map next slide.**
- Seaweed aquaculture is an emerging “green industry” that can offer considerable environmental and economic benefits to the region.
- **The main purpose** is to evaluate the potential of this new industry to improve water quality via bio-extraction of nitrogen and carbon, while producing a high-demand, renewable product.
- Promissory preliminary results show kelp growth reaching commercial size at Long Beach in Gardiners Bay and at Flanders Bay
- A well-established kelp aquaculture program can potentially be a significant way to reduce nitrogen loading removal as well as provide new opportunities for aquaculture practices.

Above: County Executive Steve Bellone and Legislator Al Krupski assist in harvesting a kelp line at Cedar Beach, Southold on June 8, 2017. Photos provided by CCE

Peconic Estuary Seaweed Aquaculture Feasibility Study

: One vertical kelp dropper line at each each Kelp Study site

1 inch = 5.52 miles

5 2.5 0 5 Miles

Water Quality Division

Prepared by: Camilo Salazar
Date: 10/03/2017

Kelp lines coordinates and growth data provided by Stephen Schott, Cornell Cooperative Extension of Suffolk County

Key HAB Action Plan Management Recommendations (cont'd):

- **The county should prioritize permeable reactive barriers (PRBs) in key locations to address the legacy nitrogen in river, ponds and embayments.**

- **Actively endorse/promote green infrastructure projects that limit the discharge of nitrogen to surface waters via stormwater runoff.**
  - A notable example is the construction of a sizable rain garden at Centerport Beach where ~80% of the stormwater is captured, thereby increasing infiltration and degradation by soil bacteria.
  - Green infrastructure pilot projects should be incorporated into subwatershed pilot areas (E.g. Georgica Pond, Lake Ronkonkoma).
  - Living shoreline projects (E.g. CCE project in Southold)

Key HAB Action Plan Management Recommendations (cont'd):

- **Actively endorse/promote resource restoration efforts**
  - **Should be based on metrics and criteria (not simply geography) and be aligned with results of ecological endpoint monitoring.**
  - **Follow consistent specific monitoring protocols so they can be accurately and consistently compared across geographies.**
    - Convene a workgroup to create criteria for choosing restoration sites and monitoring methods.

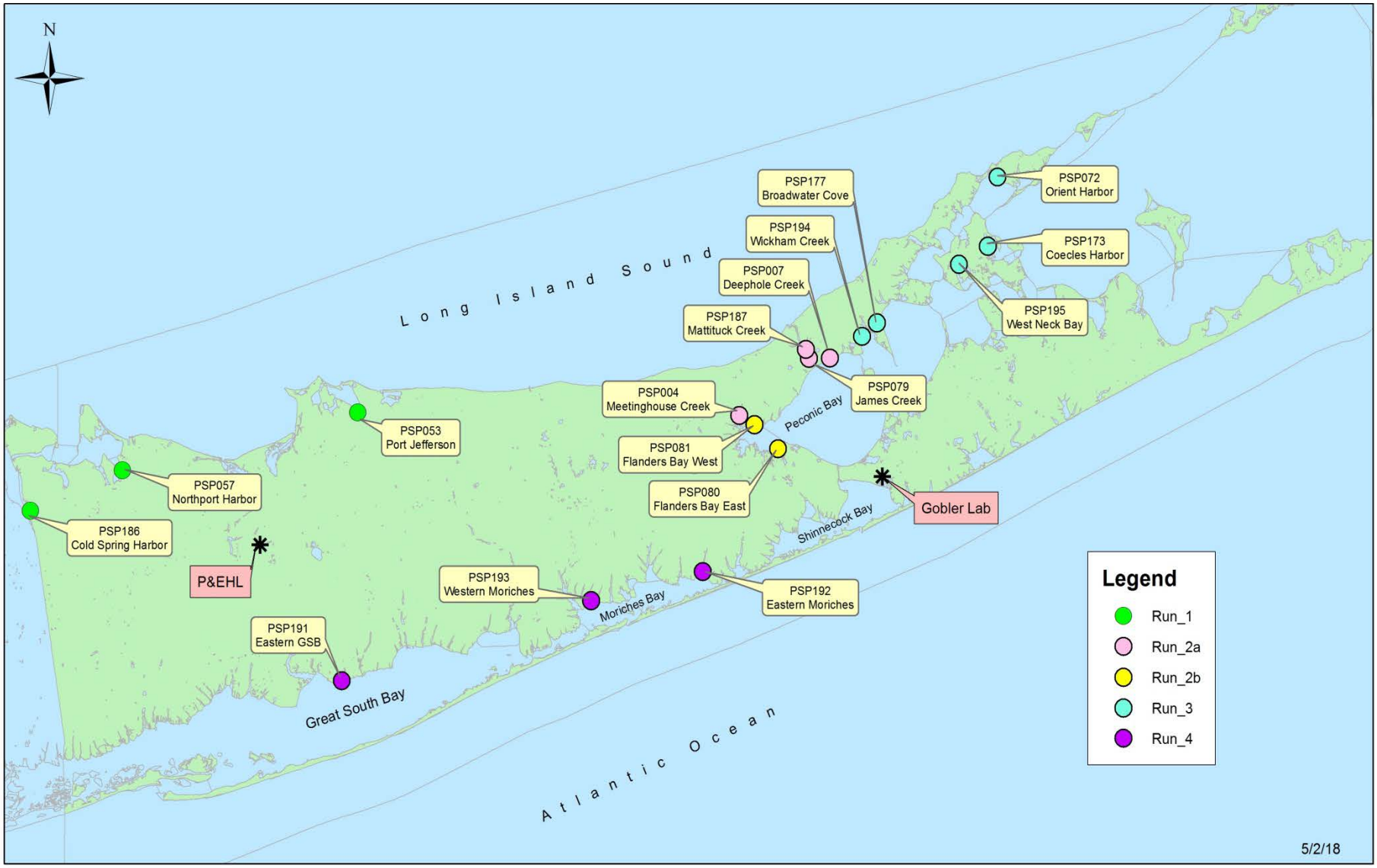
Examples:

- Shellfish (scallop, clam and oyster)
- Submerged aquatic vegetation (SAV)

Key HAB Action Plan Monitoring Recommendations:

- **Suffolk County and the NYSDEC should institute routine monitoring for the presence of the Diarrhetic Shellfish Poison (DSP) toxin.**
  - Advanced monitoring technologies:
  - Passive Solid-Phase Adsorption Toxin Tracking (SPATT, water column)
  - Abraxis Protein Phosphate Inhibition Assay (PP2A, shellfish meats)
  - SoMAS in collaboration with DEC (as lead regulatory agency).
    - Suffolk County funded 17 stations in 2018 operating budget (contracted with Dr. Gobler). Map next slide.
- **Deploy a sensor buoy in Lake Ronkonkoma for real time monitoring of cyanobacteria**
  - Maintained by USGS
  - Estimated cost: $50,000 startup, $10,000/year for maintenance. Funding source TBD.
- **Evaluate use of the cutting edge remote sensing technologies**
  - Imaging FlowCytobot (IFCB)
    - continuously captures high resolution images of algal cells; the optical and image data are then transmitted to shore in real time.
    - SoMAS and/or SCHDS lead. Estimated cost: $135,000 startup; $10,000/year for maintenance. Funding source TBD.

Suffolk County DSP and PSP toxin monitoring 2018



Key HAB Action Plan <u>Public Health and Outreach</u> Recommendations:

- **Establish/maintain an HAB Website to access current info on all HABs**
  - Availability for public to report unusual environmental conditions that might be associated with an emergent HAB
  - Fresh water and marine (DEC currently maintains a fresh water HAB website).
  - Maintained by SCDHS
  - Populated with information by SCDHS, SUNY Stony Brook and NYSDEC
  - Estimated cost: $75,000. Funding source TBD.

Key HAB Action Plan Research/Investigation Recommendations:

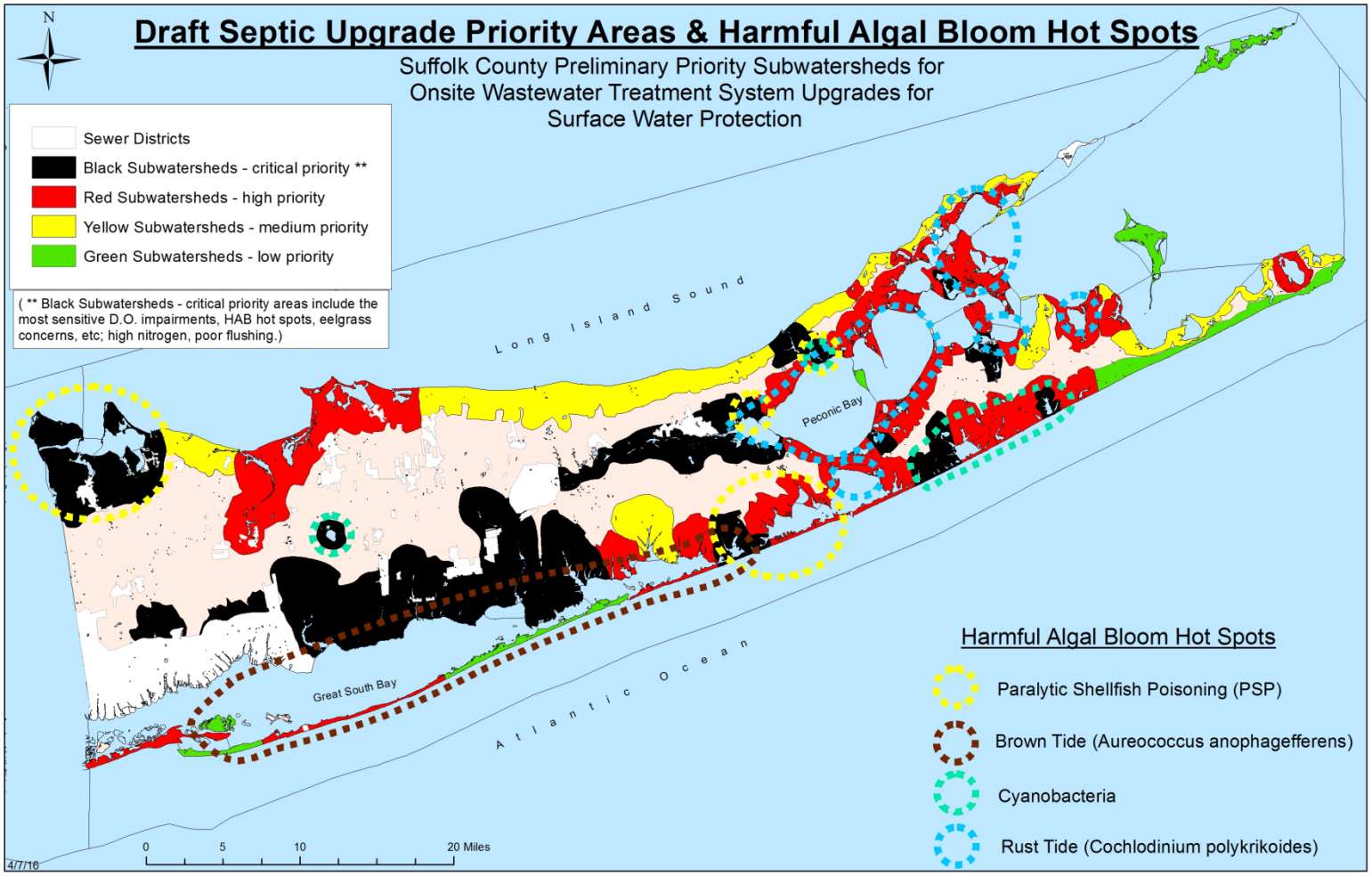
- **Secure and allocate funding for priority research needs in Suffolk County, similar to the Brown Tide Research Initiative model in the 1990s, which led to several breakthroughs in understanding and managing the Brown Tide. Such HAB research would require at least 1 million dollars a year, over the next 5 years.**

- **Develop HAB-specific predictive water quality modeling for the establishment of refined nutrient load reduction goals.**
  - In coordination with project partners/workgroups

Key HAB Action Plan Research/Investigation Recommendations (cont'd):

- **Conduct an assessment of the potential utility of using seaweed farms and/or suspension-feeding shellfish aquaculture facilities (collectively referred to as bio-extraction) as a way to reduce nutrient levels in County waters and/or to forestall or mitigate the development of HABs.**
  - collaborate with the recently funded DEC bio-extraction coordinator
- **Assess role of legacy sediments for purposes of improving management.**
- **Suffolk County along with collaborating agencies (NYSDEC as lead) should assess the utility and practicality of treating HAB-prone freshwater lakes and ponds with various control methods (e.g., alum in Lake Ronkonkoma) as a means to limit cyanobacteria growth and/or the availability of nutrients (N and/or P) to potentially prevent the development of toxic blooms.**

Department of Health Services
Draft Subwatersheds Mapping of priority areas



- **Suffolk County HAB Action Plan**
- **Synthesis (Historical Occurrence and Current Status of HABs)**

Find them online at:

http://www.reclaimourwater.info/Portals/60/docs/HABActionPlan.pdf

http://www.reclaimourwater.info/Portals/60/docs/HABSynthesis.pdf

Reclaim Our Water