TASK 2A REPORT

SUMMARY OF METHODS USED TO REPORT RESULTS FROM EXISTING WATER QUALITY-RELATED MONITORING PROGRAMS IN THE PECONIC ESTUARY

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A. Introduction:

The Peconic Estuary Program (PEP) and its partners are currently updating the Peconic Estuary Comprehensive Conservation and Management Plan (CCMP). As part of the CCMP update the participants also wish to evaluate and, if necessary, update their water quality monitoring strategy. PEP selected CoastWise Partners to assist in evaluating the current monitoring strategy.

This report summarizes methods currently used to report results from existing water quality-related monitoring programs and fulfills Task 2(a) of the PEP Water Quality Monitoring Strategy project. Additional information on parameters, sampling frequency, number of stations, and period of record are summarized in the Summary of Existing Water Quality Monitoring Programs (CWP 2019; Task 1(a) final report). A companion report entitled "Developing an Updated Reporting Strategy for Water Quality Monitoring Information" was developed as background for the Dec 2019 PEP TAC meeting and addresses the types of monitoring data and analyses which are needed to track progress toward meeting the draft CCMP Objectives.

The project is funded by an agreement awarded by the U.S. Environmental Protection Agency to the New England Interstate Water Pollution Control Commission in partnership with the Peconic Estuary Program. Although the information in this document has been funded wholly or in part by the United States Environmental Protection agency under agreement CE97230303 to NEIWPCC, it has not undergone the Agency's publications review process and therefore, may not necessarily reflect the views of the Agency and no official endorsement should be inferred. The viewpoints expressed here do not necessarily represent those of Peconic Estuary Program, NEIWPCC, or EPA, nor does mention of trade names, commercial products, or causes constitute endorsement or recommendation for use.

B. CCMP Water Quality-Related Goals and Objectives (as defined in the Sept 2019 Draft CCMP):

The September 2019 draft of the updated Peconic Estuary CCMP includes two overarching Goals (Clean Waters and Healthy Ecosystems with Abundant, Diverse Wildlife) which are directly related to water quality. Within each of these two Goals, the following Objectives will require water-quality related assessment and reporting to the public.

Goal: Clean Waters

- Objective D: Protect areas with clean water from degradation
- Objective E: Increase understanding of nitrogen pollution in groundwater and surface water, and decrease negative impacts from historical, current, and future pollution inputs
- Objective F: Reduce current and future inputs of pathogens, toxics, and plastics into groundwater and surface waters, and minimize their impacts

Goal: Healthy Ecosystems with Abundant, Diverse Wildlife

- Objective H: Restore and protect key habitats and species diversity in the estuary and its watershed

This report summarizes methods currently used to report results from existing water quality monitoring programs within the Peconic Estuary, and includes intended audiences, which draft CCMP Objectives each monitoring program could address, and an example of graphics or charts available through venues available to the public.

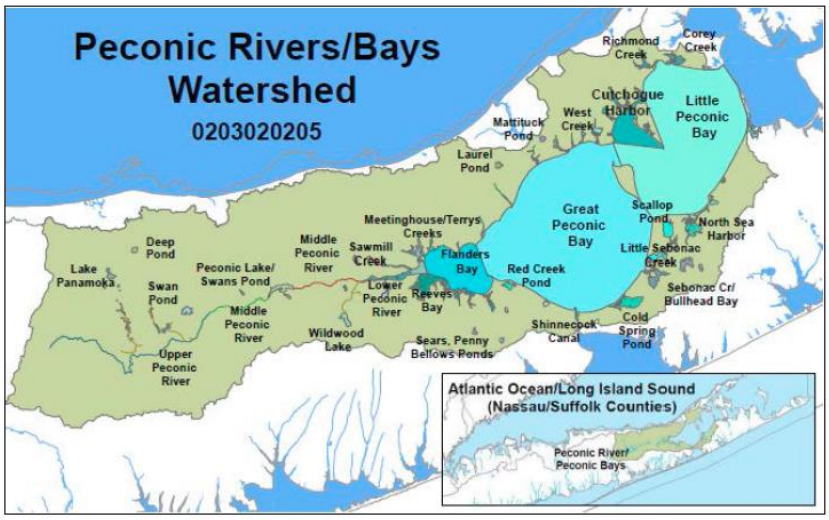
I. New York State Department of Environmental Conservation (NYSDEC), Division of Marine Resources, Fishery-Independent Trawl Survey

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**NYSDEC**	Each week from May through October, the survey samples 16 randomly chosen stations within Peconic Estuary. At the start of each tow, surface and bottom temperature, depth, salinity, dissolved oxygen and secchi disc depth were recorded. Depth was also recorded at the end of a tow.	Technical; Fisheries agencies	Data, reports and other information on this monitoring program are available from PEP staff. WQ data from this program were used as explanatory factors in a project entitled : Integrating Fish Trawl, Water Quality, and Benthic Mapping Data in the Peconic Estuary. Final Report to New York State Department of Environmental Conservation by Robert Cerrato, Roger Flood, Michael Frisk, Adrian Jordaan, Tyler Abruzzo, Alison Flanagan, and Michael White (undated report). Data could address Objectives D, E and H

II. New York State Department of Environmental Conservation (NYSDEC), Division of Water, RIBS Program

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**NYSDEC**	All major drainage basins in the state are monitored every 5 years.	State and federal water quality regulatory programs	RIBS program water quality data and information are used to support assessment and management functions within NYSDEC Division of Water (DOW), including the Waterbody Inventory/Priority Waterbodies List (WI/PWL), New York State's Clean Water Act Section 305(b) Water Quality Report, and Section 303(d) List of Impaired Waters of the state. Data could address Objectives D, E, and F

Example graphic and information reported in 2015 **NYS Section 305(b) Water Quality Report**



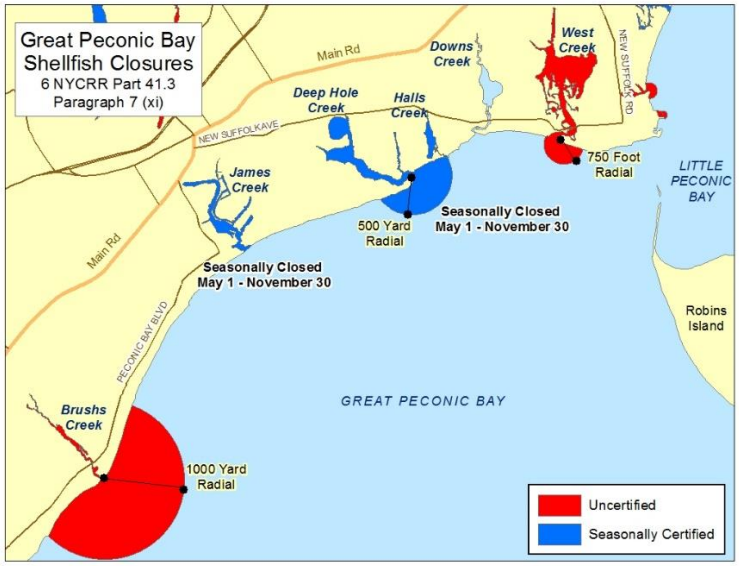
Peconic River/Bays Watershed
(0203020205)

Water Index Number	Waterbody Segment	Category
(MW6.1c) GB..LPB	Little Peconic Bay (1701-0172)	MinorImpacts
(MW6.1c) GB..LPB- 88	Cedar Beach Creek and tidal tribs (1701-0243) Corey	No Known Impacts
(MW6.1c) GB..LPB- 89	Creek and tidal tribs (1701-0244)	No Known Impacts
(MW6.1c) GB..LPB- 90	Richmond Creek and tidal tribs (1701-0245)	Impaired
(MW6.1c) GB..LPB-CH	Cutchogue Harbor and tidal tribs (1701-0045) Mud/	MinorImpacts
(MW6.1c) GB..LPB-CH-93, P420	East Creeks and tribs (1701-0377)	Impaired
(MW6.1c) GB..LPB-CH-94	Wickham Creek and tribs (1701-0378)	Impaired
(MW6.1d) GB..GPB	Great Peconic Bay and minor coves (1701-0165)	MinorImpacts
(MW6.1d) GB..GPB- 96	West Creek and tidal tribs (1701-0246)	Impaired
(MW6.1d) GB..GPB- 97 thru 104	Tidal Tribs to Gr Peconic Bay, Northshr (1701-0247)	Impaired
(MW6.1d) GB..GPB- 97 thru 104	Tribs (fresh) to Gr Peconic Bay, Northsh (1701-0249)	Unassessed
(MW6.1d) GB..GPB-P495	Mattituck (Marratooka) Pond (1701-0129)	Impaired
(MW6.1d) GB..GPB-P496	Laurel Pond (1701-0128)	No Known Impacts
(MW6.1e) FB	Flanders Bay, East/Center, and tribs (1701-0030)	Impaired
(MW6.1e) GB..FB,FB-111	Flanders Bay, West/Lower Sawmill Creek (1701-0254)	Impaired
(MW6.1e) GB..FB-105 thru 109	Tidal Tribs to Flanders Bay, North Shore (1701-0255)	MinorImpacts
(MW6.1e) GB..FB-110	Meetinghouse/Terrys Creeks and tribs (1701-0256)	Impaired
(MW6.1e) GB..FB-111	Sawmill Creek, Upper, and tribs (1701-0257)	MinorImpacts
(MW6.1e) GB..FB..P517	Merritts Pond (1701-0258)	Unassessed

III. NYSDEC, Division of Marine Resources, Shellfish Growing Area Classification Unit

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**NYSDEC Bureau of Marine Resources**	Interactive web-based map is updated as needed, based on monitoring results. Areal extent of uncertified (not adequately assessed to open or close); seasonally certified; and temporary emergency closures are delineated. The PEP website has direct links to the NYSDEC Shellfish Bed Closures and Temporary Shellfish Bed Closures pages, and the Public Shellfish Mapper. https://www.peconicestuary.org/threats-to-the-peconic/water-quality-overview/water-quality-updates/ Local newspapers and websites post the shellfish closure telephone message. Example from Newday website: **Gather clams and other shellfish from certified waters only. Not all waters are open to shellfishing, and some open areas may be temporarily closed because of short-term water quality issues. A recording of temporary closures is available 24/7 at 631-444-0480.**	Recreational shellfish harvesters.	Data from some stations extends back to the 1970s Information on current shellfish growing area closures is available at https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=d98abc91849f4ccf8c38dbb70f8a0042 As part of its ongoing shellfish monitoring program, NYSDEC is also collaborating with a number of federal, state and local government agencies to and NGOs to identify shellfish harvesting areas impacted by marine biotoxins associated with harmful algal blooms, such as PSP, ASP and DSP, and initiate emergency closures in those areas to protect public health: https://www.dec.ny.gov/outdoor/64824.html Data could address Objectives D, F and H

Example from June 20, 2019 website visit. New York State Department of Environmental Conservation



IV. **PEP Long-Term Eelgrass Monitoring Program (PEP LTEMP)**

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water / Eelgrass Habitat	**Cornell University, Cooperative Extension of Suffolk County**	Annual Progress Reports are provided to the PEP office	PEP TAC and Management Committee	Data are summarized in annual reports, available on request from the PEP program office. Annual reports include the following. **For each station:** - areal extent over time is shown overlain on maps for the period of record (example from Gardiner's Bay shown below). - a table and graphic summarizing annual percent cover by eelgrass over time is included. - Time series graphics of shoot density and macroalgae percent cover data are shown for each station. - Water temp and light loggers are deployed during multiple days during summer months, and summary tables included. - summary of conditions and potential factors affecting them for each site are included in the text. - potential management actions for each site are included. **For all stations combined:** - shoot density by station is shown on one graph (graphic shown below) for the period of record. Earliest stations start in 1997 - macroalgae percent cover is shown by station on one graph Data could address Objectives D and H.

Note: For the 2017 monitoring season, it was agreed that all of the LTEMP sites, original and new, would be monitored, but for future seasons, the LTEMP sites that no longer support eelgrass (Northwest Harbor, Orient Harbor, Southold Bay, and the original Three Mile Harbor) would be monitored once every 3 years.

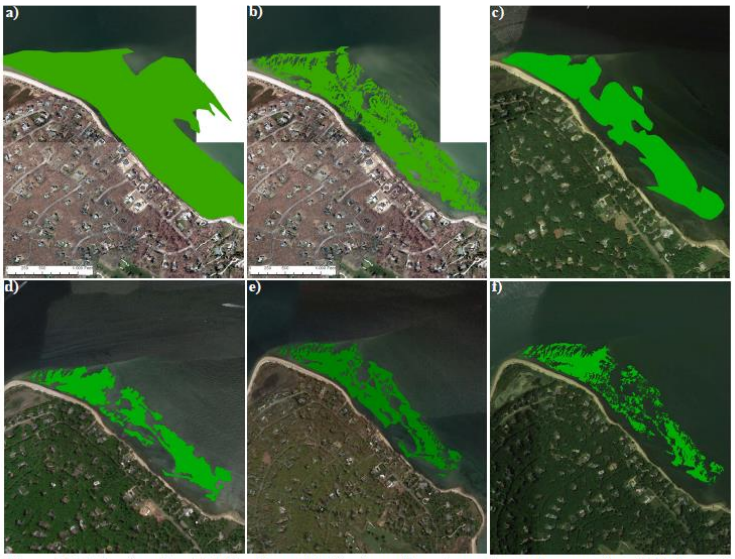
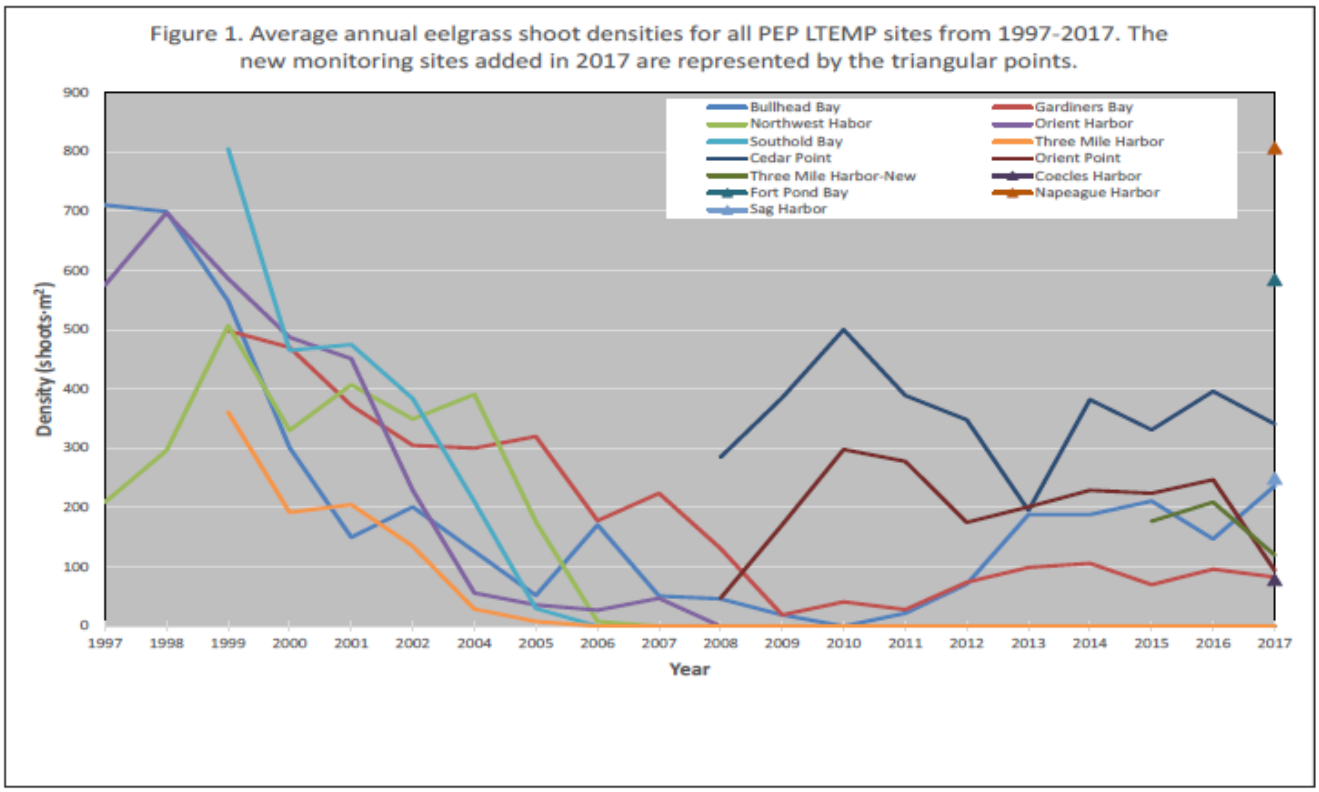


Figure GB-4. A series of aerial delineations of the Gardiners Bay eelgrass from select years from 2000 through 2016. The years represented are a) 2000, b) 2010, c) 2014, d) 2015, e) 2016, and f) 2017.

Example graphic from the Annual Progress Report: Areal delineation showing eelgrass extent over time



Example graphic from the Annual Progress Report: average annual eelgrass shoot density by sites over time.

V. **Stony Brook University, School of Marine and Atmospheric Sciences (SBU/SOMAS)**

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**Stony Brook University, SOMAS, LIMMN Program**	The Gobler Laboratory continuously monitors dozens of locations across Long Island from Memorial Day to Labor Day with the results being reported live during weather reports to inform the public about the quality of the water around Long Island.	General public; beachgoers.	During active sampling periods, real-time data are available at https://you.stonybrook.edu/goblerlab/real-time-water-quality-data/ Data could address Objectives D, E, F and H.

Example of live TV water quality report from Gobler Lab data collections.

Real-time monitoring information posted on Gobler Lab website on Jun 26, 2019

Long Island Marine Monitoring Network Dashboard

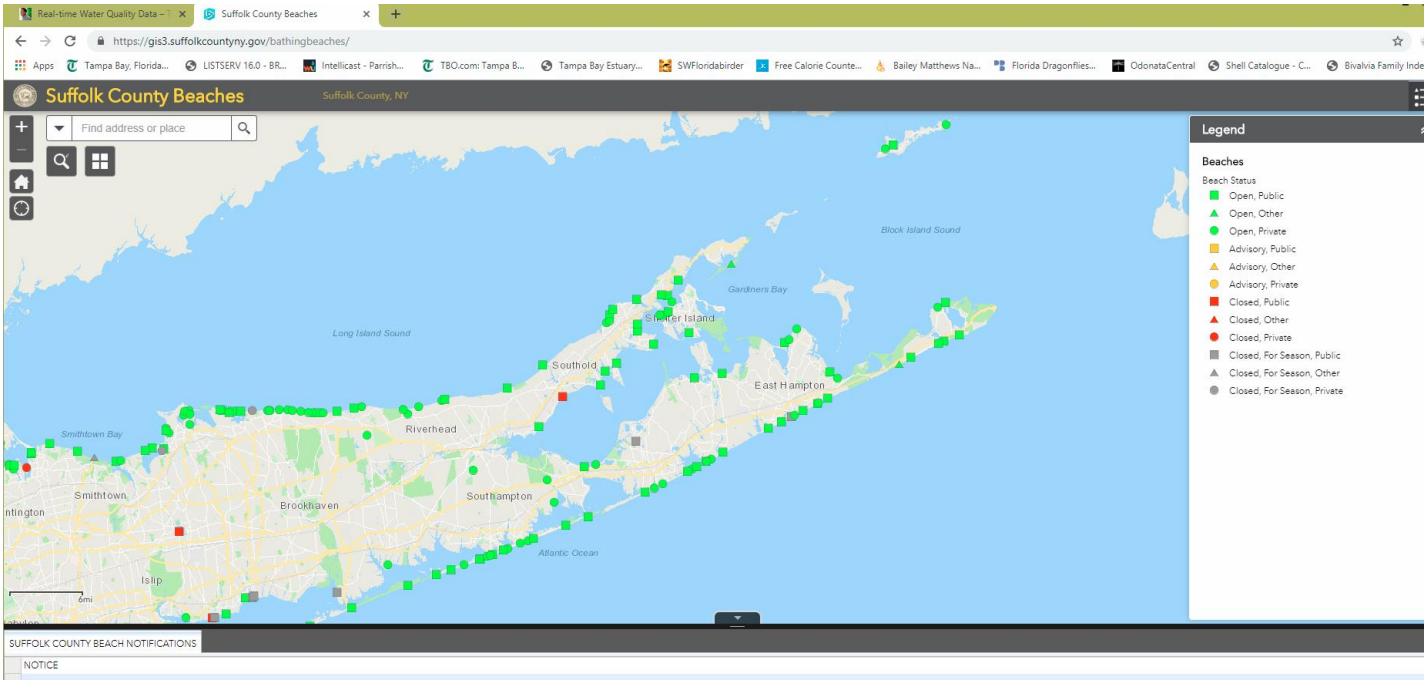
Station	Georgica Pond Buoy	Bellport Bay	Port Jefferson Harbor	Wainscott Pond	Sag Harbor	Conscience Bay	Great South Bay Buoy
Water Temperature	76.39 °F (24.66 °C)	76.32 °F (24.62 °C)	69.152 °F (20.640 °C)	32 °F (°C)	69.57 °F (20.87 °C)	°F (°C)	75.53 °F (24.18 °C)
Depth/Tide	2.38 ft (0.73 m)	3.82 ft (1.17 m)	1.43 ft (0.435 m)		12.11 ft (3.69 m)	ft (m)	
pH	8.02	7.43	7.890		7.71		
Nitrate				mgrams/liter			
Salinity	14.38 PSU	6.58 PSU	25.190 PSU	PSU	27.28 PSU	PSU	24.2784 PSU
Chlorophyll A	7.14 µgrams/liter	17.22 µgrams/liter	8.520 µgrams/liter	µgrams/liter	6.91 µgrams/liter	µgrams/liter	02.90 µgrams/liter
Phycocyanin	0.14 µgrams/liter			µgrams/liter			
Phycoerythrin		56.30 µgrams/liter	13.000 µgrams/liter		10.60 µgrams/liter	µgrams/liter	
Dissolved Oxygen	7.95 mgrams/liter	5.07 mgrams/liter	7.680 mgrams/liter	mgrams/liter	5.80 mgrams/liter	mgrams/liter	
Oxygen Saturation	103.72 %	63.28 %	99.100 %	%	76.19 %	%	
Turbidity						ND NTU	2.11 NTU
PAR						ND µEinsteins/m2sec	2318.0 µEinsteins/m2sec

VI. Suffolk County Department of Health Services (SCDHS), Office of Ecology

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**SCDHS, Ecology**	Posted on the SCDHS website. No set reporting frequency. -Water Quality Data ~1976 – 2018 (Excel file) Sampling Station Map(s) (JPEG) Sampling Station Locations (Lat/Long) & Descriptions (Excel file) Data Notes (Units of measure, acronym meanings, etc.) (Excel file) Data Reliability Disclaimer & Citation (Word file)	Technical users; Suffolk County; regulatory agencies; interested public	Data and metadata are available at https://gisportal.suffolkcountyny.gov/gis/home/item.html?id=8107f192ffac406380b6d61d3d3dbf7d An extensive metals and organics data set is also available for stream and point source stations from SCDHS Data could address Objectives D and F

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality: Bacteriological	**SCDHS, Ecology**	Risk-based; twice per week at higher-risk beaches, less frequently at lower-risk beaches https://www.suffolkcountyny.gov/Departments/Health-Services/Environmental-Quality/Ecology/Beach-Monitoring-Program includes links for a map of bathing beach closures; current beach water quality data (shown as a map); and a telephone Beach Hotline (631-852-5822). Updated as new data are collected.	Suffolk County regulatory and public health departments for beach and shellfish area closures. General public for beach closures	Data and metadata available at https://gisportal.suffolkcountyny.gov/gis/home/item.html?id=025cb4dadb57413980dbd7e760b94da8 SCDHS also collaborates with NYSDEC and SBU/SOMAS to identify shellfish harvesting areas impacted by marine biotoxins associated with harmful algal blooms, such as PSP, ASP and DSP, so that NYSDEC can initiate emergency closures in those areas when necessary to protect public health (see https://www.dec.ny.gov/outdoor/64824.html). Data could address Objectives D and F

Sample map of bathing beach status on eastern Long Island from Suffolk County website, June 26, 2019.



VII. Suffolk County Department of Health Services (SCDHS), Office of Water Resources

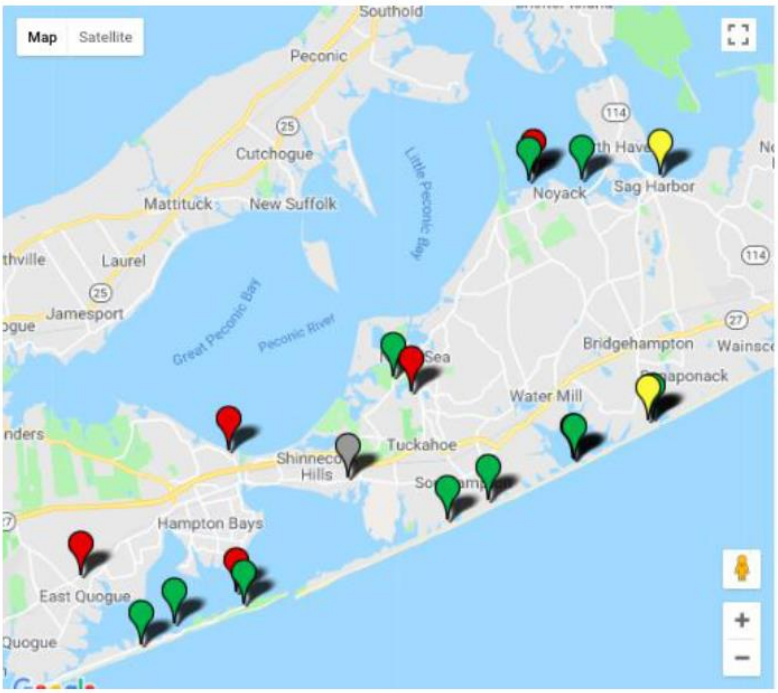
Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Community Public Supply Wells	**SCDHS, Water Resources**	Unknown. Data do not appear to be available on the County website	Suffolk County regulatory departments	Suffolk County reports that data for some wells goes back to 1998, while other, newer wells, only have data going back to the year they went on-line. Some historic data goes back to 1980s.
Non-Community Public Supply Wells	**SCDHS, Water Resources**	Unknown. Data do not appear to be available on the County website	Suffolk County regulatory departments	Suffolk County reports that readily available data for some wells goes back to 1998, while other, newer wells, only have data going back to the year they went on-line. Some historic data goes back to 1970s
Monitoring Wells	**SCDHS, Water Resources**	Unknown. Data do not appear to be available on the County website	Suffolk County regulatory departments	Suffolk County reports that readily available data for some wells goes back to 2011. Earlier data (paper copies) goes back to 1970s. Parameters will vary depending on sample year (older samples generally have less parameters). Some stations were only sampled one or time times, some wells have a longer sampling history.
Freshwater Streams	**SCDHS, Water Resources**	Unknown. Data do not appear to be available on the County website	Suffolk County regulatory departments	Suffolk County reports that data for some streams goes back to 1970s. Parameters will vary depending on sample year. Some stations were only sampled one or time times, fewer have a long sampling history

Note: Parameters monitored include carbamate pesticides, Dacthal and metabolites, metals, volatile organic compounds, bacteria, 1,4-dioxane, standard inorganics, chlorinated pesticides, herbicide metabolites and semi-volatiles. (All parameters may not be analyzed at all sites in all years.)

VIII. Surf Rider Foundation / Blue Water Task Force

Category	Monitoring Entity	Reporting Frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**Surf Rider Foundation/ BWTF**	Citizen volunteers collect WQ samples at area beaches. All data are shared online on the Blue Water Task Force website, via social media by the participating organizations, in "Water Quality Alert" emails and press releases, and on a mobile application hosted by Swim Guide. Presentations and workshops are also held throughout the year to inform local decision makers of water quality issues of concern and to engage members of the public and school children.	General public	Annual report available at https://easternli.surfrider.org/wp-content/uploads/2018/06/2017_ELI-BWTF_WaterQualityAnalysis.pdf Sampling is conducted on a weekly basis during the summer months, bi-weekly during the spring and fall, and monthly during the winter. Color-coded points: Enterococcus (MPN/100 ml): • Green (0-35) Low Bacteria* • Yellow (36-104) Medium Bacteria • Red (> 104) High Bacteria • Other bacteria measured† Data could address Objectives D and F

Sample map: Blue Water Task Force sampling locations in Southampton, New York

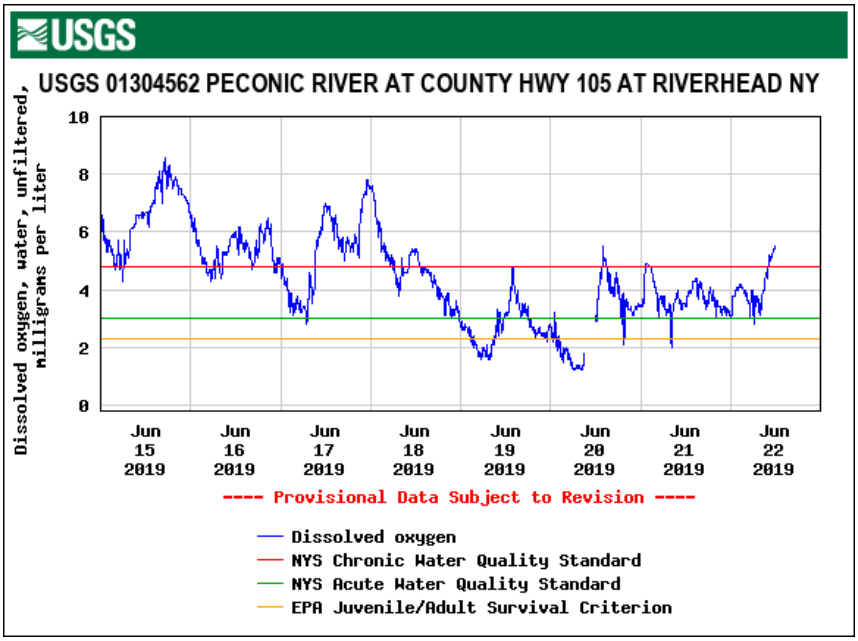


IX. USGS continuous monitoring stations

Category	Monitoring Entity	Reporting frequency and methods	Intended audiences	Notes/Comments
Surface Water Quality	**USGS**	Continuous WQ monitoring at 6 to 30-min. intervals, depending on parameter. Interactive site allows viewers to select and display data for various time periods (day, past month, past year, period of record). Graphics include WQ standards where available. The PEP website has a direct link to these USGS websites.	Technical users and interested public	USGS site no. 01304562 at Riverhead; data and metadata available at https://waterdata.usgs.gov/ nwis/uv/?site_no=01304562 USGS site no. 01304200 at Orient Point; data and metadata available at https://waterdata.usgs.gov/ ny/nwis/inventory/ ?site_no=01304200&agency_cd=USGS Parameters include sampling depth, water temperature, specific conductance, DO, pH, chlorophyll, elevation, turbidity, salinity and nitrate concentration. Data could address Objectives D and E

Note: USGS has also collected a large quantity of shorter-term (project-specific) surface and ground water quality data at numerous sites in the Peconic Estuary and its watershed. These historical data sets are available from the agency's NWIS website https://waterdata.usgs.gov/nwis.

Example graphic
Dissolved oxygen, water, unfiltered, milligrams per liter, monitor
Most recent instantaneous value: 5.5 06-22-2019 11:54 EST



C. Summary of reporting mechanisms for existing water quality monitoring programs

I. New York State Department of Environmental Conservation (NYSDEC), Division of Marine Resources, Fishery-Independent Trawl Survey
II. New York State Department of Environmental Conservation (NYSDEC), Division of Water, RIBS Program
III. NYSDEC, Division of Marine Resources, Shellfish Growing Area Classification Unit
IV. PEP Long-Term Eelgrass Monitoring Program (PEP LTEMP)
V. Stony Brook University, School of Marine and Atmospheric Sciences (SBU/SOMAS)
VI. Suffolk County Department of Health Services (SCDHS), Office of Ecology
VII. Suffolk County Department of Health Services (SCDHS), Office of Water Resources (wells and streams)
VIII. Surf Rider Foundation / Blue Water Task Force
IX. USGS continuous monitoring stations

Questions *	Monitoring Programs								
	I	II	III	IV	V	VI	VII	VIII	IX
1. State or federal QA/QC?	Y	Y	Y	Y	Y	Y	Y	N	Y
2. Data accessible?	From PEP	Y	Y	From PEP	Y	Y	From PEP	Y	Y
3. Data routinely updated?	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Data used for widespread public audience?	Y	Y	Y	Y	Y	Y	N	Y	Y
5. Includes parameters needed to assess progress towards CCMP objectives?	Y	Y	Y	Y	Y	Y	Y	Y	Y

Y= Yes
N= No

* Full text of questions

1. Are WQ samples and laboratory analyses subject to state or federal Quality Assurance/Quality Control standards?

2. Are the water quality (WQ) data made available to the public via electronic access?

3. Are the WQ data updated routinely?

4. Are the data used for reporting for a widespread public audience?

5. Does the monitoring program collect parameters identified as critical to support assessment of progress towards PEP draft CCMP Objectives?