Reclaim Our Water

# DRAFT SUBWATERSHEDS WASTEWATER PLAN GENERIC ENVIRONMENTAL IMPACT STATEMENT

*"We are in a county that will no longer allow our water quality crisis to go unaddressed, but will come together to Reclaim Our Water"*

**Suffolk County Executive Steve Bellone**
2014 State of the County

Suffolk County
Department of Health Services

August 2019

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CDM Smith

# Draft Generic Environmental Impact Statement
# Suffolk County Subwatersheds Wastewater Plan

*Suffolk County Wastewater Management Program*
*for the Reduction of Nitrogen Loading from Wastewater Sources*

Suffolk County, NY


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# Section 1

# Executive Summary

This Draft Generic Environmental Impact Statement (Draft GEIS) has been prepared in accordance with the environmental review process for implementation of the primary recommendations in the Suffolk County Subwatersheds Wastewater Plan (SC SWP). The SC SWP supports the development of a Countywide wastewater management strategy through the establishment of 'priority areas' for nitrogen reduction, establishment of nitrogen load reduction goals for each priority area, and the development of a recommended wastewater upgrade strategy to meet nitrogen load reduction goals. Changes to the County Sanitary Code that have taken place under previous New York State Environmental Quality Review Act (SEQRA) reviews as well as those recommended in the SC SWP, will enable the Suffolk County Department of Health Services (SCDHS) to work with United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Towns, Villages, residents, property owners and stakeholders to implement the wastewater treatment technologies required to achieve nitrogen reduction to the groundwater, drinking water, and surface water resources across the County.

The SCDHS Division of Environmental Quality (DEQ) is the project sponsor. On August 31, 2016 SCDHS DEQ notified interested and involved agencies of its intent to assume Lead Agency status and as such in accordance with Title 6 NYCRR Part 617.6(a) and (b) to classify this proposed action as a Type I Action. No objections were received within 30 days of the mailing. As a result of this SEQRA coordinated review process Suffolk County was established as SEQRA Lead Agency and is responsible for conducting the environmental review of this action.

After Suffolk County was established as SEQRA Lead Agency, the Suffolk County Council on Environmental Quality (SC CEQ) reviewed this proposed project at their September 21, 2016 meeting and recommended to the Suffolk County Legislature that the action be classified as a Type I action with a Positive Declaration. The Suffolk County Legislature passed Resolution #849-2016 at their October 5, 2016 meeting, identifying the Proposed Action as a Type I action under SEQRA with a Positive Declaration requiring the preparation of a Draft Generic Environmental Impact Statement and the initiation of the scoping process.

A Final Scoping Document was prepared that included the addition of relevant issues identified during the public scoping process, as well as identification of issues not included in this Draft GEIS (i.e. outside the scope of the proposed project). At their February 15, 2017 meeting, the SC CEQ recommended that the Legislature adopt the Final Scoping Document. The Legislature passed Suffolk County Resolution 176-2017 at their March 28, 2017 meeting adopting the final scope of the Draft GEIS. (See Appendix C.)

Under SEQRA, the preparation of a Generic Environmental Impact Statement is appropriate for the consideration of 'an entire program or plan having wide application or restricting the range of future alternative policies or projects, including new or significant changes to existing land use plans, development plans, zoning regulations or agency comprehensive resource management plants.' [6NYCRR Part 617.10(a)(4)]

This Draft GEIS is prepared to comprehensively address requirements of both federal and state laws and regulations (i.e. 6NYCRR Part 617). In addition, this Draft GEIS is prepared using existing available data; no field studies were conducted, and no field data was specifically collected to prepare this document. It is recognized that site-specific data collection may be required to complete a Supplemental GEIS and/or a project specific, or study-area specific draft/final EIS (D/FEIS).

Suffolk County has developed the SC SWP in an open and transparent process, and has incorporated the information, experiences, perspectives and feedback provided by a wide variety of stakeholders engaged throughout the SC SWP development. The SC SWP was developed with the support of numerous stakeholders including NYSDEC, USEPA, County and Town government representatives, environmental organizations, and academia. The complete SC SWP is provided as Appendix B to this Draft GEIS.

A summary of the key conclusions based on the assessments within this Draft GEIS follows:

1. Suffolk County groundwater and surface water resources have been impacted from nitrogen introduced by sanitary wastewater. Priority areas for nitrogen reduction for groundwater/drinking water restoration and protection are shown on **Figure 1-1**. Priority areas for surface water restoration and protection are shown on **Figure 1-2**. Descriptions of these priority areas may be found in Sections 3.2.1.4 and 3.2.2.4 respectively. The SWP also recommended nitrogen load reduction goals to meet surface water quality endpoints (the load reduction goals are shown on **Figures 1-9** and **1-10**).

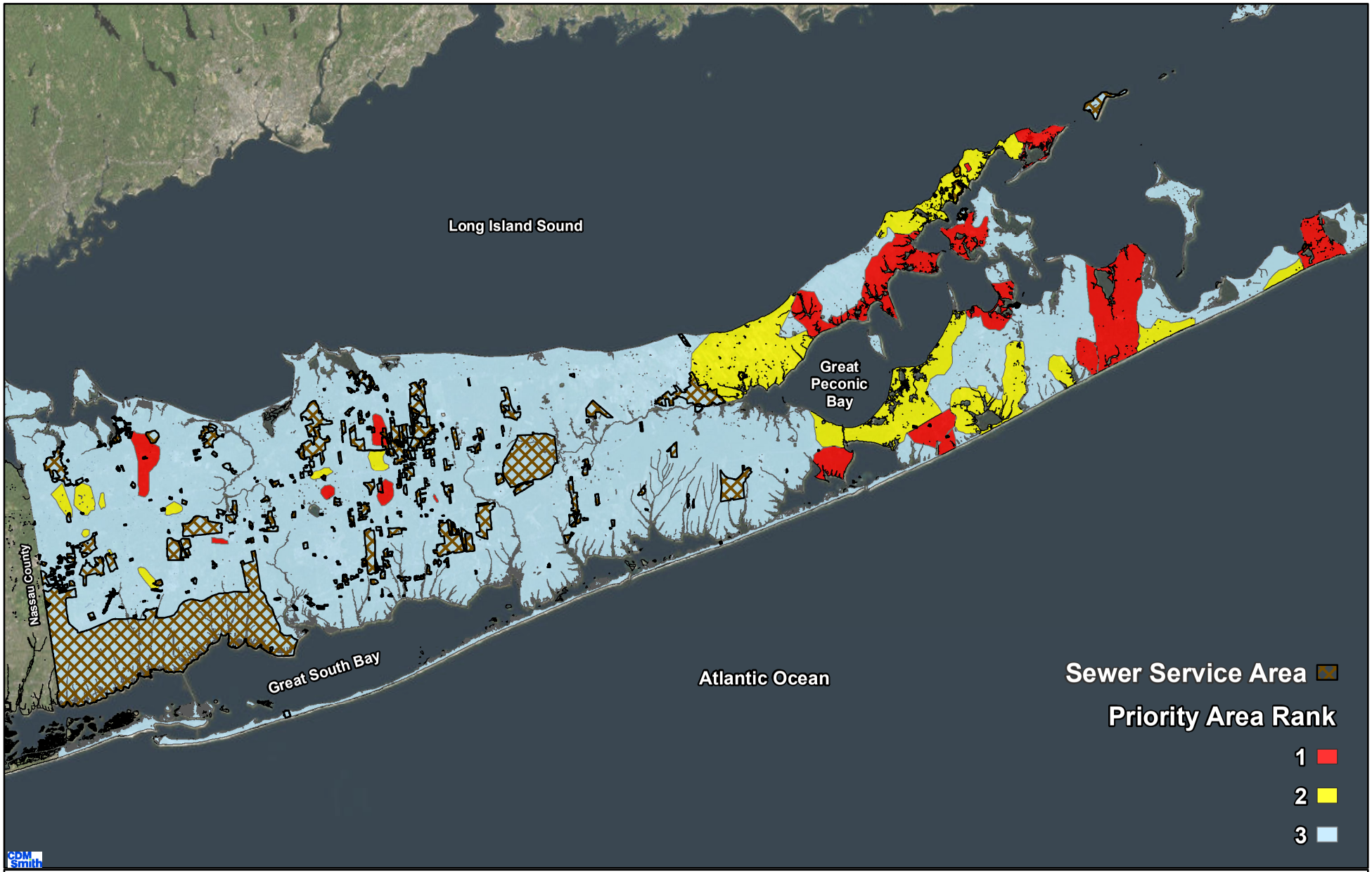
2. The more than 380,000 existing onsite wastewater disposal systems (OSDS) that exist in Suffolk County are not designed to address nitrogen removal.

3. The SC SWP (Appendix B of this document) evaluates the potential benefits of using Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS) and provides a recommended countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use.

4. The SC SWP provides recommended revisions to Article 6 of the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences to facilitate the more widespread use of "Appendix A" modified sewage disposal systems.

5. The SC SWP provides initial recommendations for a variety of other wastewater management strategies that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County.

6. The recommendations within the SC SWP that comprise the 'Proposed Action', were found to be consistent with the numerous county and regional management plans.

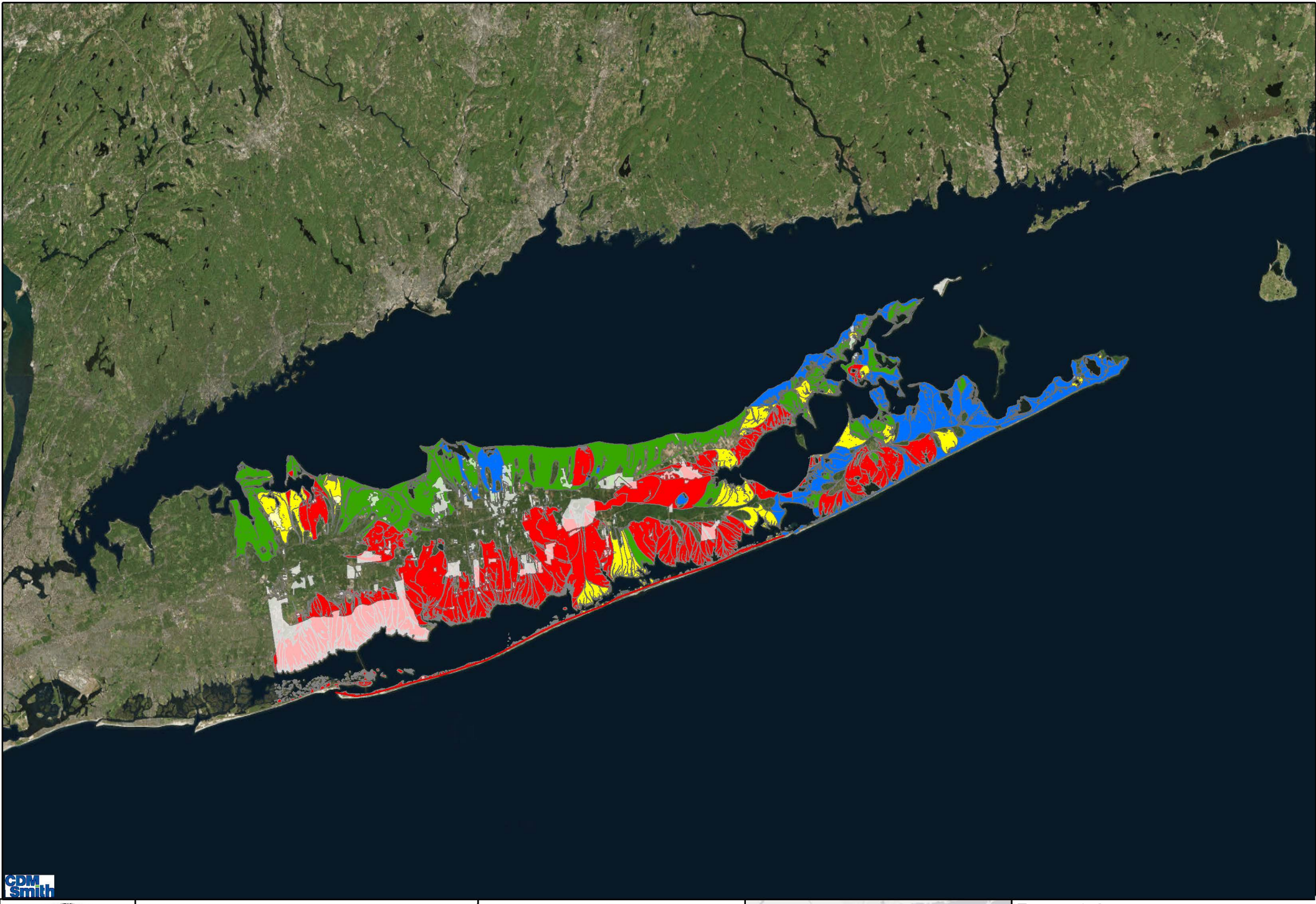



N

0 2.5 5 10 Miles

Date: 5/29/2019

**Figure 1-1**
**Groundwater Priority Areas**
**Suffolk County Subwatersheds Wastewater Plan**




**Ranking Group**

1 2 3 4

Sewered Area

N

0 50,000 100,000

Ft

Figure 1-2
200 Year Contributing Area
Surface Water Priority Ranking
Subwatersheds Wastewater Plan

7. Groundwater, drinking water and surface water quality would be improved by the reduced nitrogen concentrations resulting from implementation of the Proposed Action.

8. Water quality improvement would support a healthy aquatic ecosystem.

9. Implementation of the Proposed Action would not result in a negative impact to the natural environment, or historic and archaeological resources located throughout the County.

10. Human health benefits may be realized with the improvement in water quality as it pertains to possible reduction in harmful algal bloom (HAB) events, improved coastal ecosystems and improved water quality.

11. Growth inducement would be mitigated by maintaining the current review and approval processes in place on the County and the local levels.

12. The Proposed Action is forecasted to result in reduced nitrogen levels in untreated water at community wells within 50 years of securing a stable funding mechanism where this same reduction is forecasted to be achieved in two centuries if no action was taken by the County.

## 1.1 Proposed Action

The Proposed Action is the implementation of the recommendations included in the SC SWP comprising a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources originating within the County. The Proposed Action includes one aspect of a Countywide program to reduce nitrogen loading to groundwater and surface water within the County. Suffolk County remains dedicated to tracking the implementation of the program and to working with local jurisdictions and continuing coordination with related programs (e.g. estuary programs, LINAP, LICAP) to ensure the Countywide implementation strategy addressing nitrogen sources is advanced. The SC SWP primary scope includes a Countywide feasibility study for the use of I/A OWTS to replace existing OSDS. The SC SWP evaluates the potential benefits of using I/A OWTS and provides a recommended Countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use. In addition, the SC SWP provides recommended revisions to Article 6 of the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences to facilitate the more widespread use of "Appendix A" modified sewage disposal systems. Finally, the SC SWP provides initial recommendations for a variety of other wastewater management strategies that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County. Other primary recommendations documented in the SC SWP include, but are not limited to:

- Establishment of a Countywide Wastewater Management District (CWMD);
- Initial recommendations for sewer expansion and the use of clustered/decentralized systems;

- Identifies wastewater management strategies for locations with unique site conditions through the preparation of initial feasibility analyses called "advanced wastewater treatment pilot evaluations" (see Appendix E of the SC SWP); and,
- Other recommendations to address wastewater management needs where insufficient information is available to make final recommendations within the SC SWP.

The SC SWP includes a wide range of wastewater management strategies and recommendations. For the purposes of clarity, the recommendations described within the Proposed Action and specifically addressed through this Draft GEIS include:

- Description of how, when, and where to require the use of I/A OWTS in lieu of conventional septic systems or grandfathered cesspools (referred to as the "Recommended Wastewater Management Strategy" herein); including recommended modifications to Article 6 of the Suffolk County Sanitary Code to facilitate the more widespread implementation of I/A OWTS; and,
- Recommended modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code are proposed. The proposed modifications would increase the maximum flow accommodated by these treatment facilities as well as reduce the County's setback requirements for 'Appendix A sewerage treatment plants' (STPs) within specific land use classifications. This would not negate other standards (such as siting or good engineering practices) or regulations in place or the requirements for construction on the local level. The purpose of the recommended revisions to the requirements for Appendix A systems is to expand the use of Appendix A systems as a wastewater management tool in Suffolk County. This is anticipated to result in a significant net nitrogen load reduction below Article 6 requirements in areas that otherwise would have not been capable of implementing this tool under current requirements. Additional information regarding the environmental review analysis of the proposed revisions to Appendix A system requirements is provided in Section 6 of this DGEIS. Mitigation measures to ensure the revisions have the intended consequences are discussed in Section 9.

The wastewater management strategy recommended by the SC SWP includes four primary program phases. The phasing allows time for the County to accommodate program growth and ramp-up considerations while addressing the sanitary wastewater treatment requirements in priority areas and nitrogen load reduction goals established in the SC SWP. The four primary phases include:

- Phase I: Program Ramp-Up;
- Phase II: Mandated Wastewater Upgrades in Highest Priority Areas;
- Phase III: Mandated Wastewater Upgrades in Remaining Priority Areas; and,
- Phase IV: Mandated Wastewater Upgrades in all Other Areas.

Implementation of the SC SWP would require establishment of a stable and recurring revenue source to provide a funding mechanism to offset the costs of wastewater upgrades to property owners and would require legislative actions by the Suffolk County Legislature. Sections 4 and 8

of the SC SWP (Appendix B to this Draft GEIS) provide additional details on both the funding source and the overall recommended implementation approach. The evaluation of the Proposed Action in this Draft GEIS assumes a stable and recurring funding source is secured. The **Subwatersheds Wastewater Plan Conceptual Program Timeline** is depicted in **Figure 1-3** while **Table 1-1** provides program information by program phase**.**

Water quality improvements are forecasted assuming this program timeline. Should program implementation be accelerated, forecasted water quality improvements would be realized sooner. Alternatively, should the implementation be delayed, water quality improvements would also be realized at a later date than forecasted.

**Table 1-1 Subwatersheds Wastewater Plan Program Phases**

| Program Phase | Program Phase Objectives | Approximate Cost |
|---|---|---|
| **I**<br>**Program Ramp Up**<br>**9,000 WWT Upgrades**<br>**(5,000 retrofit; 4,000 new construction)** | -Continue voluntary upgrade incentive programs<br>-Ramp up RME and Industry Capacity<br>-Establish Countywide Wastewater Management District<br>-Establish Stable Recurring Revenue Source | $12-20M/year*<br>5 Years (2019-2023)<br>Total Phase = $95M |
| **II**<br>**Upgrades in Near Shore and Highest Priority Areas**<br>**207,000 WWT Upgrades**<br>**(177,000 retrofit; 30,000 new construction)** | -Continue Program Ramp Up (RME and Industry Capacity)<br>-Address all highest priority areas including:<br>*Upgrades in all near shore 0-2 year contributing areas.<br>*Upgrades in surface water priority area rank 1.<br>* Upgrades in groundwater/drinking priority area rank 1. | $65M-$69M/year<br>30 Years (2024-2053)<br>[95% complete]<br>Total Phase = $1.9B |
| **III**<br>**Upgrades in All Other Priority Areas**<br>**296,000 WWT Upgrades**<br>**(253,000 retrofit; 43,000 new construction)** | -Upgrades in all remaining priority areas.<br>*Remaining parcels in surface water priority area ranks 2,3 and 4.<br>*Groundwater/drinking water priority area rank 2 | $48M/year<br>15 Years (2054-2068)<br>Total Phase = $730M |
| **IV**<br>**Upgrades in Remaining Areas (Central Suffolk)**<br>**427,000 WWT Upgrades**<br>**(384,000 retrofit; 43,000 new construction)** | -Upgrades in all remaining areas (primarily central Suffolk County) | Annual Cost Target<br>$67M/year<br>Timeframe = TBD<br>Total Phase = $1.3B |
| ***** WWT upgrades represent cumulative installations of either I/A OWTS, sewering, or clustering**<br>**** Actual annual cost during Phase I will depend on funding availability from existing programs through County and NYS Septic Improvement Programs and Town Community Preservation Funds**<br>*** Retrofit = upgrade of existing onsite disposal system** | | |

## Figure 1-3 Subwatersheds Wastewater Plan Conceptual Program Timeline

**Phase I**

- Continue voluntary upgrade incentive programs.
- I/A OWTS for all new construction on vacant land and new additions countywide.
- Establish Countywide Wastewater Management (CWMD) District and Stable Recurring Revenue Source.
- Revisions for Appendix A modified sewage disposal systems

**Phase II**

- All parcels in Phase II to be upgraded by year 2054.
- Phased implementation of policy triggers to accommodate industry and RME growth/readiness.
- Targeted upgrades in all near shore 0-2 year contributing areas of surface water Priority Area Ranks 1, 2, 3, 4.
- Targeted upgrades in 2-25 (or 50) year contributing areas in surface water Priority Area Rank 1.
- Targeted upgrades in groundwater Priority Area Rank 1.

**Phase III**

- All parcels in phase III to be upgraded by 2069.
- Targeted upgrades in 2-25 (or 50) year contributing areas of surface water Priority Area Ranks 2, 3, 4.
- Targeted upgrades in groundwater Priority Area Rank 2.

**Phase IIA**
Cumulative WWT
Installs: ~8,500
(~4,500 Retrofits)
(~4,000 New)

**Phase IIB**
Cumulative WWT
Installs: ~16,500
(~10,500 Retrofits)
(6,000 New)

**Phase IIC**
Cumulative WWT
Installs: 88,800
(73,800 Retrofits)
(15,000 New)

**Phase IID**
Cumulative WWT
Installs: 103,250
(86,250 Retrofits)
(17,000 New)

Cumulative WWT
Installs: 218,000
(186,000 Retrofits)
(32,000 New)

Cumulative WWT
Installs: 297,500
(252,500 Retrofits)
(43,000 New)

**Estimated ~500 installs**
(estimated based on existing install rates; voluntary only)

**~2,000 installs per year**
(1,000 retrofits)
(1,000 New Construction)

**~4,000 installs per year**
(3,000 Retrofits)
(1,000 New Construction

**~6,750 installs per year**
(5,750 Retrofits)
(1,000 New Construction)

**~7,250 installs per year**
(6,250 Retrofits)
(1,000 New Construction)

**~7,650 installs per year**
(6,650 Retrofits)
(1,000 New Construction)

**~5,500 installs per year**
(4,500 Retrofits)
(1,000 New Construction)

**2019**
Baseline: County/NYS SIP and Town CPF for Voluntary Upgrades
**$12 Million Per Year**

**2020**
Baseline
+ New Construction (Vacant Lots and New Additions)
+ Revisions to Appendix A of the Construction Standards
**$20 Million Per Year**

**2022**
**CWMD Established**

**2024**
**CWMD Revenue Stream Established**

**2024**
Baseline
+ New Construction
+ Targeted Upgrades at Failure 0-2 year Contributing Area
+ GW Priority Rank 1
**$56 Million Per Year**

**2026**
Baseline
+ New Construction
+ Targeted Upgrades at Failure 0-2 year Contributing Area
+ GW Priority Rank 1
+ Property Transfer in 0-2 year
+ GW Priority Rank 1
**$58 Million Per Year**

**2037**
Baseline
+ New Construction
+ Targeted Upgrades at Failure and Property Transfer in 0-2 year Contributing Area
+ GW Priority Rank 1
+ Failure in Surface Water Priority Rank 1
**$68 Million Per Year**

**2039**
Baseline
+ New Construction
+ Targeted Upgrades at Failure and Property Transfer in 0-2 year Contributing Area
+ Failure in SW Priority Rank 1
+ GW Priority Rank 1
+ Property Transfer in SW Priority Rank 1
**$68 Million Per Year**

**2054**
**Phase II Complete**
**Begin Phase III**
Continue Baseline
+ New Construction/ New Addition Mandate
+ Targeted Upgrades at Failure and Property Transfer for SW Priority Ranks 2-4 in 2-25/50 year Contributing Areas
+ GW Priority Rank 2
**$46 Million Per Year**

**2069**
**Phase III Complete**
**Begin Phase IV**
Continue Baseline
+ New Construction/ New Addition Mandate
+ Targeted Upgrades at Failure and Property Transfer for Remaining 130,000 Parcels Countywide

Notes

1. Blue Font = new requirement set forth in that particular year; Black Font = preexisting requirement(s) set forth in previous years(s).
2. Retrofits include upgrade of existing OSDS only (no new construction or building addition). New Construction = new construction on vacant land for purposes of this figure.
3. Upgrade rates shown are estimated using the best available data and are rounded for simplification.
4. All dollar values shown are estimated capital costs in current dollars (no inflation) for grants to offset costs to property owners through a stable and recurring revenue source and/or existing funding mechanisms (SIP, CPF, etc.)
5. WWT = Wastewater Treatment via individual I/A OWTS, Sanitary Sewer Connection, or Clustering. All costs based upon use of I/A OWTS; however, select parcels may benefit more from connection to existing sewer districts, connection to a new STP, or through the use of clustered/decentralized systems. Final recommendations for targeted sewer expansion areas and/or clustered systems to be provided once a stable and recurring revenue source and Countywide Wastewater Management District have been established.
6. Revision to Appendix A of the Construction Standards in 2020 includes revised setbacks based on land use and increase in allowable flow up to 30,000 gpd.
7. 2019-2023: assumes a $12 to $20 Million annual incentive allotment from State and County SIP and Town CPF programs to fund voluntary upgrades and upgrades at new construction with a building addition. Funding range to account for uncertainty in funding availability wherein $12 million represents minimum available to maintain County/NYS SIP programs and $20 million represents the maximum funding need to fund existing voluntary plus building addition upgrades.
8. 2024-2069: assumes $12 Million annual incentive allotment to fund 600 voluntary upgrades within priority areas and failures outside of mandated area.

**Figure 1-4** provides an overview of the Subwatersheds Wastewater Plan implementation phases. Phase I, the program ramp-up phase, would be a continuation of the existing voluntary I/A OWTS implementation program along with I/A OWTS installations for new construction countywide. As shown in purple, I/A OWTS would be installed within the 0 to 2-year groundwater contributing area to surface waters and the surface water and groundwater Priority rank 1 areas during Phase II. During Phase III, shown in light blue, I/A OWTS installation would continue throughout the surface water Priority Rank 2, 3 and 4 areas and all groundwater/drinking water Priority Rank 2 areas. Finally, during Phase IV, I/A OWTS would be installed at all remaining parcels. Further description of each Phase may be found in Section 4.2 of this Draft GEIS and Section 4.4 of the SC SWP.

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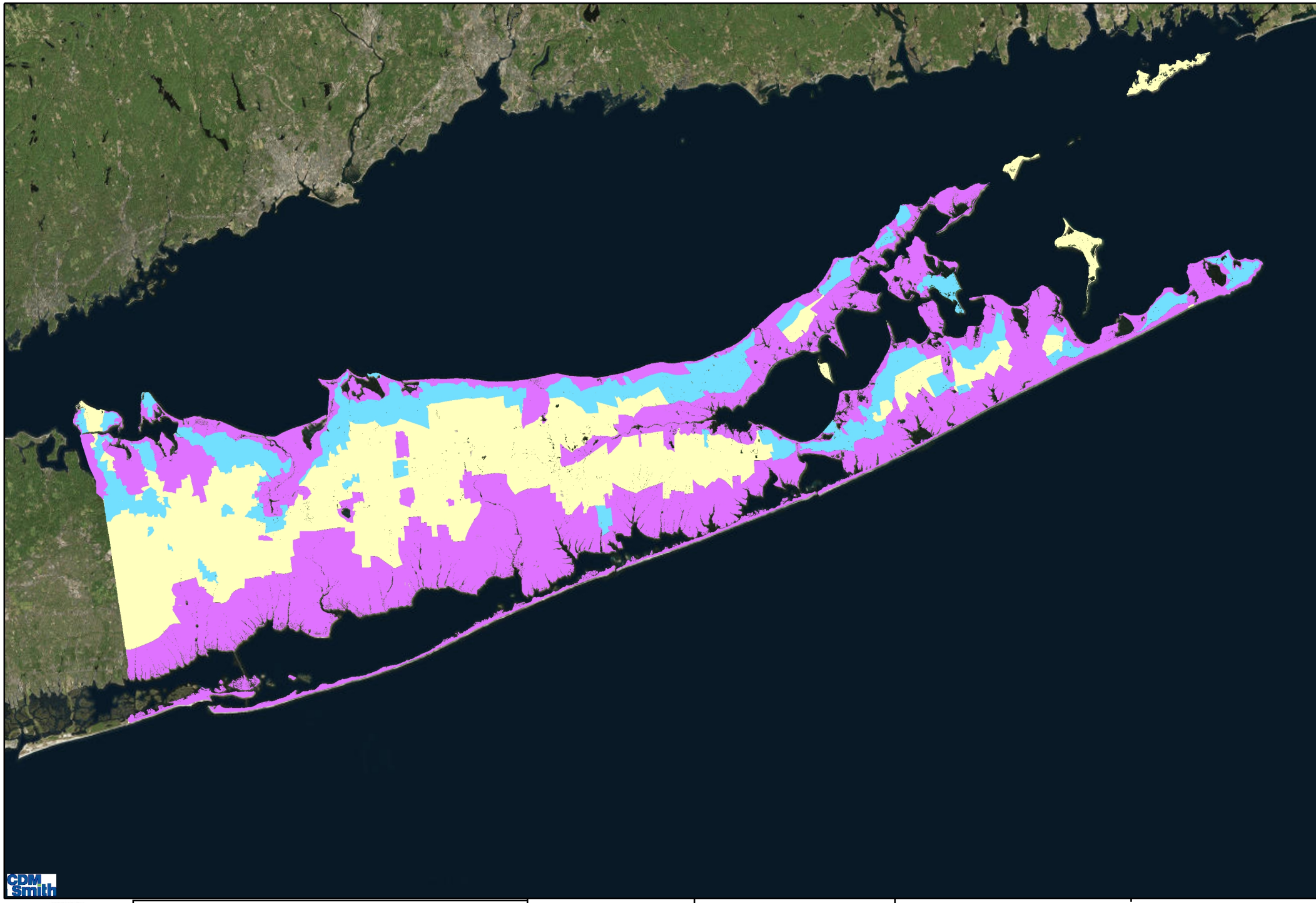



Figure1-4 SC Subwatersheds Wastewater Plan

**Implementation Phase**

II III IV

N

0 24,500 49,000

Ft

**Phase II**

SW Priority Area 1
GW Priority Area 1
0-2 Year Contributing Area

**Phase III**

SW Priority Area 2-4
GW Priority Area 2
2-25/50 Year Contributing Area

**Phase IV**

Remaining Surface Water and Groundwater Protection Parcels

### 1.1.1 Proposed Changes to the Suffolk County Sanitary Code and Construction Standards

Implementation of a Countywide wastewater plan that includes the use of onsite nitrogen reducing technologies to replace existing OSDS and that would be required for all new construction would require changes to the existing Suffolk County Sanitary Code and Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other Than Single-Family Residences.

Prior to the preparation of the SC SWP, the County adopted Article 19 and amendments to Article 6 to allow for the voluntary installation of I/A OWTS. Article 19 of the Suffolk County Sanitary Code was approved by the Suffolk County Board of Health and Suffolk County Legislature in the summer of 2016. Article 19 was enacted to facilitate development and use of I/A OWTS in Suffolk County as an environmental conservation and public health protection measure. It authorizes the SCDHS, as a Responsible Management Entity (RME), to develop and use resources, standards, capabilities and systems to ensure that I/A OWTS are properly managed and maintained and ultimately to ensure that I/A OWTS are performing properly and reducing nitrogen as designed.

With leadership from Suffolk County, the Article 6 Work Group recommended implementing Sanitary Code amendments in a two-phased approach. Phase I Sanitary Code changes, adopted in January 2018, included modifications that did not need to wait for additional study (i.e. preparation of the SC SWP). It should be noted that the adoption of Article 19 and associated I/A OWTS Construction Standards (both Residential and Commercial, i.e., Other than Residential) have undergone previous SEQRA environmental reviews. Phase II Sanitary Code changes included recommendations to facilitate the more widespread use of I/A OWTS for both new construction and to replace existing OSDS. Because there are more than 380,000 existing OSDS Countywide, Phase II changes were recommended to be evaluated under the SC SWP in order to prioritize when and where I/A OWTS should be implemented first in Suffolk County through the establishment of "priority areas" (e.g., areas identified as having the poorest water quality when compared to other areas in the County).

The proposed Phase II sanitary code changes include:

- Requiring I/A OWTS upon new construction of residential, commercial, or institutional facilities;
- Requiring I/A OWTS upon system failure of existing septic systems at residential, commercial, and institutional properties; and,
- Requiring I/A OWTS upon property transfer of residential, commercial, and institutional properties where the parcel is not currently connected to an STP;

Subsequent to identification of the Phase II Sanitary Code changes identified above, revision to the Sanitary Code to increase the maximum allowable flow of Appendix A STPs from 15,000 gallons per day (gpd) to 30,000 gpd was identified to facilitate the use of Appendix A modified sewage disposal systems. Likewise, a reduction in the setback requirements for Appendix A systems was proposed through changes to the SCDHS Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage

Systems". The changes proposed, in consultation with the Article 6 Workgroup and other stakeholders, include the reduction of the minimum setback distances for certain land uses established in Tables A-1 and A-2 of Appendix A Standards.

The County also acknowledges the importance of sewer district expansion, creation of new sewer districts and new sewerage treatment plants (STPs) in the treatment of nitrogen from sanitary wastewater sources. This technology is mentioned throughout the Draft GEIS and specifically calls attention to existing proposed sewering projects. Proposed sewering projects in the SC SWP are divided into two primary categories; 1) 'presumptive sewered areas', that have construction funding identified and are presumed to be moving forward for the purposes of the SC SWP evaluations; and, 2) 'other sewered areas' that include existing sewering proposals that have already been identified by the County or stakeholders and the identification of other areas that might benefit from sewering, but which have not been evaluated yet for feasibility. All sewer projects are subject to project-specific environmental reviews. Table 6-1 (Section 6 of this Draft GEIS) includes a list of the presumptive sewering projects. A summary of the sewering recommendations can be found in Section 8.1.5 of the SC SWP.

## 1.2 Purpose and Need

Briefly stated, the need is to address the negative effects of nitrogen loading to the water resources within the County, specifically from onsite sanitary wastewater. The overall project purpose is to restore and protect these water resources by reducing wastewater nitrogen loading to groundwater, drinking water, and surface water.

The SC SWP (Appendix B to this document) provides detail as to the predicted nitrogen concentration in groundwater throughout the County and the impairment of surface water quality as a result of nitrogen loading without the Proposed Action. **Figure 1-5** illustrates the groundwater model-simulated concentration of nitrogen in the shallow upper glacial aquifer if existing conditions of land use and wastewater management remained in place for 200years. Areas shown in red on the figure are areas where nitrogen concentrations are projected to exceed the NYS drinking water standard of 10 mg/L if no action is taken; these areas are generally located downgradient of densely developed unsewered areas. Groundwater discharging from the shallow aquifer to downgradient surface water bodies carries this nitrogen load to the surface waters, leading to environmental impacts.

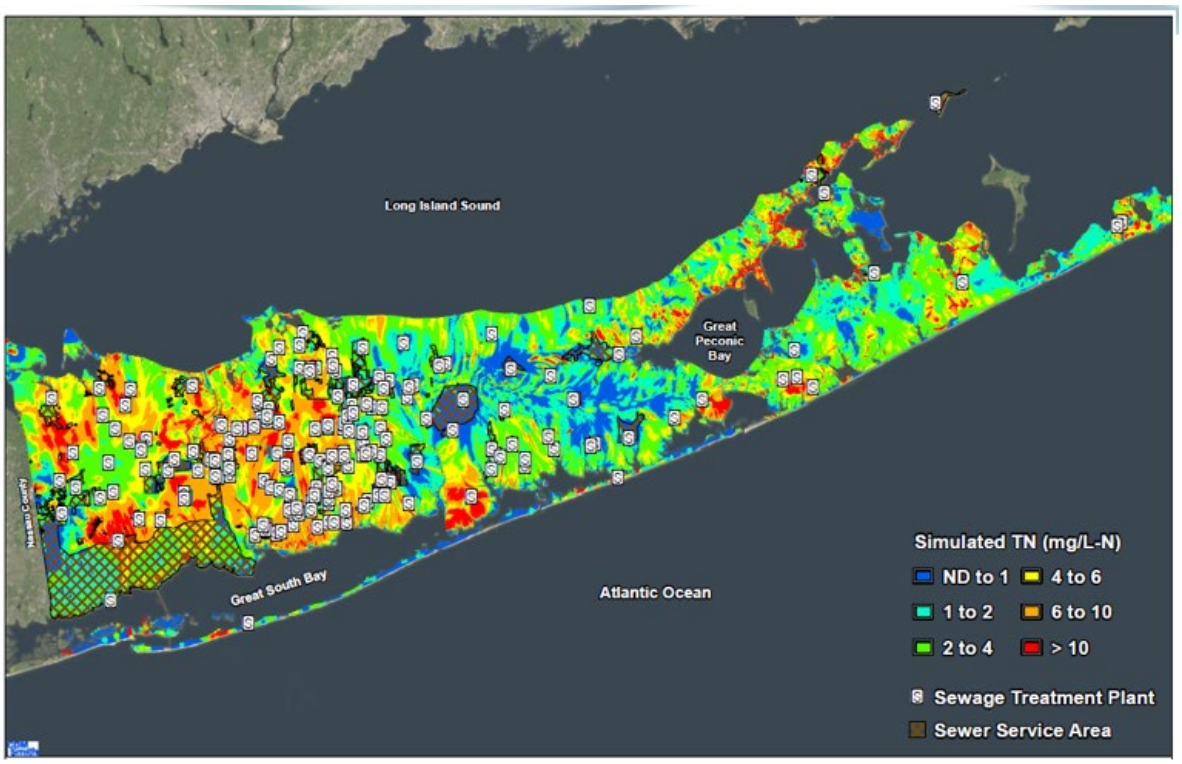



**Figure 1-5 Model-Simulated Nitrogen Concentration in the Shallow Upper Glacial Aquifer after 50 Years of Existing Land Use and Wastewater Management**

In Suffolk County, approximately 74 percent of homes are unsewered and discharge sanitary wastewater containing nitrogen to the underlying groundwater that provides both the only source of potable supply for County residents and baseflow to the surface water features in the County. Cesspools and septic systems have been identified by scientists, academic researchers and government regulatory agencies as a significant and continuing threat to water quality. (**Comp Plan, 2015**, Executive Summary, page ES-4 and Section 3) Excess nitrogen is a contributing factor to reduced oxygen levels that can cause fish kills, to the growth of harmful algal blooms, to wetland degradation and impacts to coastal marine habitats. Elevated levels of nitrogen have also been found in the groundwater that comprises the Island's sole source aquifer and source of drinking water supply (**Comp Plan, 2015,** Executive Summary, page ES-25 and Section 3). Sobering statistics of nutrient related impacts to Suffolk County waters (SC SWP Section 1.1.3) include:

- 40.3% increase in nitrogen concentrations in untreated water from the same set of 175 upper glacial wells measured in 1987 and 2013 from 2.63 mg/L to 3.69 mg/L (well below the drinking water maximum contaminant level of 10 mg/L);
- Nitrogen traveling vertically down through the aquifer resulted in an 80 percent increase in nitrogen concentrations in untreated water from the same set of 213 Magothy wells sampled in 1987 and 2013 from 0.95 mg/L to 1.71 mg/L(well below the drinking water maximum contaminant level of 10 mg/L);
- 10% increase in nitrogen concentrations in marine waters in Suffolk County over the past 10 years, and more specifically:

    - 45.7% increase in nitrogen concentrations in Long Island Sound harbors
    - 53.8% increase in nitrogen concentrations in Peconic Estuary enclosed bays
    - 60.4% increase in nitrogen concentrations in the far eastern south shore bays
    - 30% increase in nitrogen concentrations in eastern Great South Bay;
- Increased nitrogen levels have been one of the factors contributing to the following:
    - HAB events have been documented in each of the three major estuaries every year for the past 10 years. There have been more than 180 documented individual HAB events in marine waters, and greater than 50 HAB events in freshwaters within the last 10 years alone;
    - Over half of the 124 sampled marine water bodies within Suffolk County had dissolved oxygen hypoxic events over the past 10 years;
- 13.1% of native vegetated tidal wetlands have been lost in Suffolk County since 1974 as a result of dredging, filling, sea level rise and nutrient enrichment;
    - Greater than 85% eelgrass beds have been lost in the Peconic Estuary since 1930: these observations are corroborated by the predicted unit nitrogen loads exceeding acceptable published values (see section 1.1.3 of the SC SWP) by one to two orders of magnitude within many water bodies in Suffolk County;
    - Hard clam harvests in the Great South Bay have fallen by greater than 93% over the past 25 years (increased nitrogen concentration being one of the factors, overfishing being one of the primary causes of the hard clam harvest reduction, and HABs are preventing their recovery); and
    - Up to 12,233 acres of waterways have been closed (seasonal or permanent) to shell fishing in recent years due to PSP biotoxins associated with HABs.

Nitrogen contamination associated with discharge of sanitary wastewater has been studied and documented in the ***Long Island Comprehensive Waste Treatment Management Plan*** (208 Plan, 1978), the ***1987 Suffolk County Comprehensive Water Resources Management Plan, the draft 2011 Suffolk County Comprehensive Water Resources Management Plan*** and the ***2015 Suffolk County Comprehensive Water Resources Management Plan***.

In response to the mounting water quality concerns and the findings of the Comp Water Plan, County Executive Steve Bellone tagged nitrogen pollution as environmental "public water enemy number one" and announced Suffolk County's Reclaim Our Water initiative, a multifaceted program established to arrest the mounting nitrogen crisis.

> "We are a county that will no longer allow our water quality crisis to go unaddressed, but will come together to Reclaim Our Water."
>
> - Suffolk County Executive Steve Bellone

On a parallel track, New York State appropriated five million dollars to address nitrogen pollution on Long Island, leading to the joint initiative by the NYSDEC and the Long Island Regional Planning Council (LIRPC) to develop a Long Island Nitrogen Action Plan (LINAP). Working together, NYSDEC and LIRPC established a Project Management Team and engaged a broad group of stakeholders to develop a science-based, long term plan to address a variety of sources of nitrogen, including cesspools and septic systems. The primary goals of the LINAP are to:

- Identify sources of nitrogen to surface waters and groundwater;
- Establish nitrogen reduction endpoints; and,
- Develop an implementation plan to achieve reductions.

The LINAP identified the preparation of Subwatershed Wastewater Plans (SWP) for Nassau and Suffolk County as critical stepping stones for the overall success of the LINAP. The SWPs identify the sources of nitrogen on Long Island, characterize the water quality and ecological sensitivity to nitrogen in all water bodies, and provide a recommended strategy of how to address nitrogen from wastewater sources. Furthermore, the SWPs are to establish initial load reduction goals, and, of critical importance, identify water resources where wastewater management alone may not result in sufficient nitrogen removal to protect the environment and human health. The identification of these water bodies will pave the way for future evaluations of alternate means for nitrogen mitigation to address legacy pollution such as permeable reactive barriers, in-water aquaculture/bioharvesting, hydromodification, and fertilizer management.

A critical element of the overall Reclaim Our Water initiative, the objective of the Countywide wastewater management strategy is to significantly reduce nitrogen loading to the water resources within the County so that restoration can begin, to protect existing surface water resources with good water quality from suffering the same fate as those with poor water quality, and to protect our vulnerable sole source drinking water aquifer. The SC SWP fulfills the recommendations set forth in the **Comp Water Plan**, serves as a critical component of the overall LINAP, and can be a decision support tool utilized by local Town/Village policymakers and individual estuary programs to support ongoing related initiatives.

The SC SWP provides the first countywide evaluation and wastewater management strategy since the 1978 208 Study and represents a historic first in Suffolk County.

## 1.3 Potential Impacts of Proposed Action

The potential beneficial and negative impacts of the Proposed Action on each environmental parameter identified during project scoping was assessed. The Draft GEIS provides an evaluation of the potential significant adverse impacts and the reasonable likelihood of their occurrence should the Proposed Action be implemented. Potential short-term or construction related

impacts and potential long-term impacts are evaluated. The following environmental criteria were identified during project scoping.

- Land Use, Consistency with Community Plans and Character
- Groundwater, Drinking Water and Surface Water Resources
- Natural Resources
- Historic and Archaeological Resources
- Noise and Odors
- Human Health (Contaminant Exposure/Hazardous Materials)
- Environmental Justice

The potential impacts identified by environmental criteria are summarized below, followed by. a discussion of cumulative impacts including the growth inducement potential of implementing the Proposed Action.

### 1.3.1 Land Use, Consistency with Community Plans and Character

If the Proposed Action, including the proposed changes to Article 6 of the County Sanitary Code and Appendix A Standards are implemented, they would not have a direct impact on land use as the approvals of development projects would continue to be made on the local level (i.e. Town and Village).

While the Proposed Action does not include or require development (i.e. new housing projects, commercial buildings, etc.) to take place, it is recognized the implementation of the Proposed Action may affect new development, re-development, and existing land uses. Site-specific land use changes are controlled by local zoning, policies and plans of the applicable Town or Village in Suffolk County. The Proposed Action does not limit or change the local entity jurisdiction to approve or deny development within its boundaries. The use of I/A OWTS does not initiate development. The Statement of Purpose of Article 19 specifically states that "it is not the intent of this Article to alter density requirements for unsewered parcels."

However, it is noted in the assessment that the implementation of the Proposed Action may affect new development, re-development, and existing development density through the proposed amendments to the Suffolk County Sanitary Code, if the development is allowed by the local municipality. The proposed amendments to the Sanitary Code and Appendix A Standards would allow Appendix A systems to treat an increased flow of 30,000 gallons per day and reduce setback requirements in specific land use types, if the development is approved by the local municipality. Land use and development would remain under the jurisdiction of the local zoning, policies and plans

Sewerage treatment plants (STPs) are a proven technological approach for the treatment of nitrogen from sanitary wastewater and have been identified as such under the Proposed Action. STP projects are often associated with development. The review and approval of development would continue to reside with the local municipality having jurisdiction. Proposals for new STPs and or sewer district expansions would also continue to be the subject of their own

environmental review under SEQRA. Siting requirements for Appendix A systems require that proposed projects provide an overall nitrogen load that is significantly lower than permitted under Article 6 of the Suffolk County Sanitary Code within high priority areas. As recommended in this DGEIS, this requirement should be extended to all proposed projects in Suffolk County (e.g., not just priority areas) and consideration should be given to codifying this requirement in Article 6 of the Suffolk County Sanitary Code.

In conclusion, no impacts to land use were identified specific to the implementation of the Proposed Action.

The Proposed Action was assessed with respect to its consistency with the Suffolk County Comprehensive Master Plan 2035 - Framework for the Future, the Suffolk County Comprehensive Water Resources Management Plan, the Long Island Pine Barrens Protection Act, the Central Pine Barrens Comprehensive Land Use Plan, the Special Groundwater Protection Area Plan, the Long Island Sound Study and the Long Island Sound Comprehensive Conservation and Management Plan (CCMP 2015), the Peconic Estuary Program's 2017 Peconic Estuary Program Habitat Restoration Plan, the South Shore Estuary Reserve CMP and the Long Island Nitrogen Action Plan. The Proposed Action was found to be consistent with the goals and objectives of each community plan evaluated.

## 1.3.2 Groundwater, Drinking Water, and Surface Water Resources

Implementation of the Proposed Action would result in improved groundwater quality and surface water quality and would provide both local and cumulative benefits as summarized below.

### 1.3.2.1 Groundwater Impacts

Implementation of the SC SWP (including the specific elements of the Proposed Action) would provide beneficial impacts to groundwater quality as nitrogen loading would be significantly reduced. No adverse impacts to groundwater quality are anticipated to result from I/A OWTS implementation or modification to the Sanitary Code and Appendix A Standards.

Suffolk County's three-dimensional groundwater flow and solute transport models were used to evaluate the nitrogen concentrations in groundwater that would result from implementation of the Proposed Action; e.g., implementation of sanitary sewering in the presumptively sewered areas and implementation of I/A OWTS on all other unsewered parcels throughout the County.

The cumulative improvement in shallow upper glacial groundwater quality that is predicted to result from the Proposed Action is illustrated by **Figures 1-6** and **1-7**. **Figure 1-6** illustrates the model-predicted nitrogen concentrations in the shallow upper glacial aquifer after sewering the presumptively sewered areas and I/A OWTS implementation on all other currently unsewered developed parcels throughout the County. A comparison of **Figures 1-5** and **1-6** reveals the significant reduction in groundwater nitrogen concentrations in densely developed unsewered areas that will result from the Proposed Action.

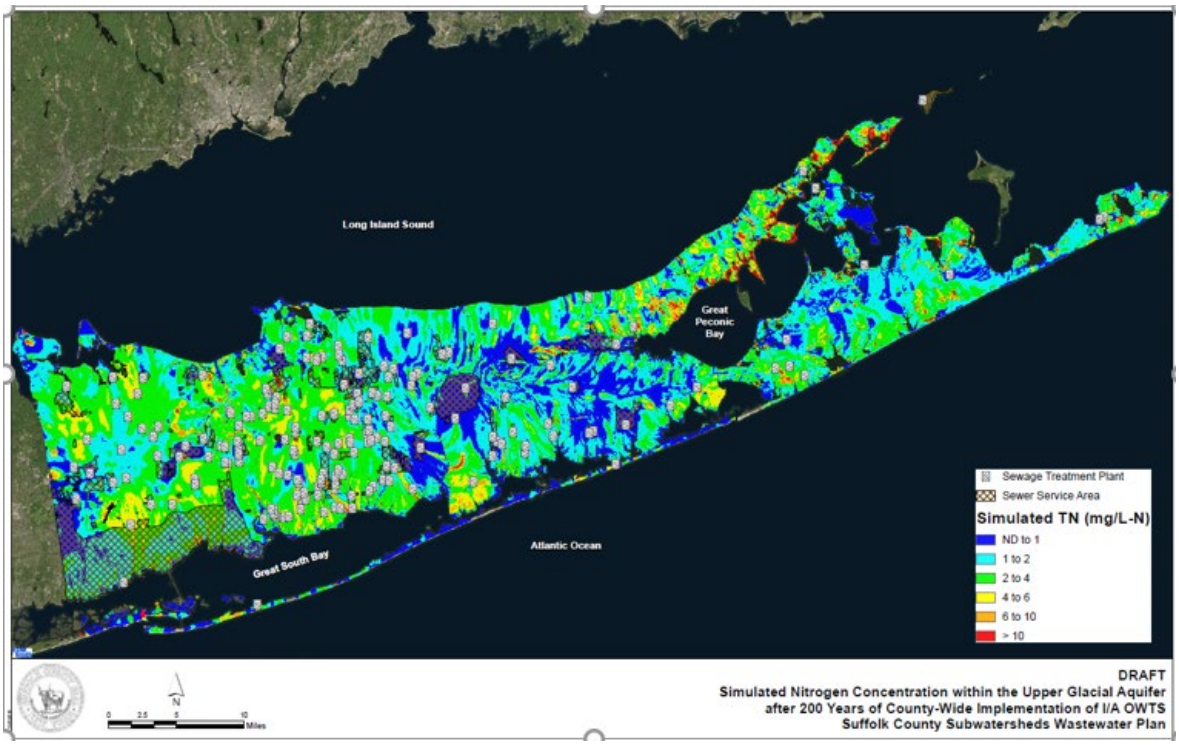



**Figure 1-6 Predicted Nitrogen Concentrations in the Shallow Upper Glacial Aquifer after SC SWP Implementation**

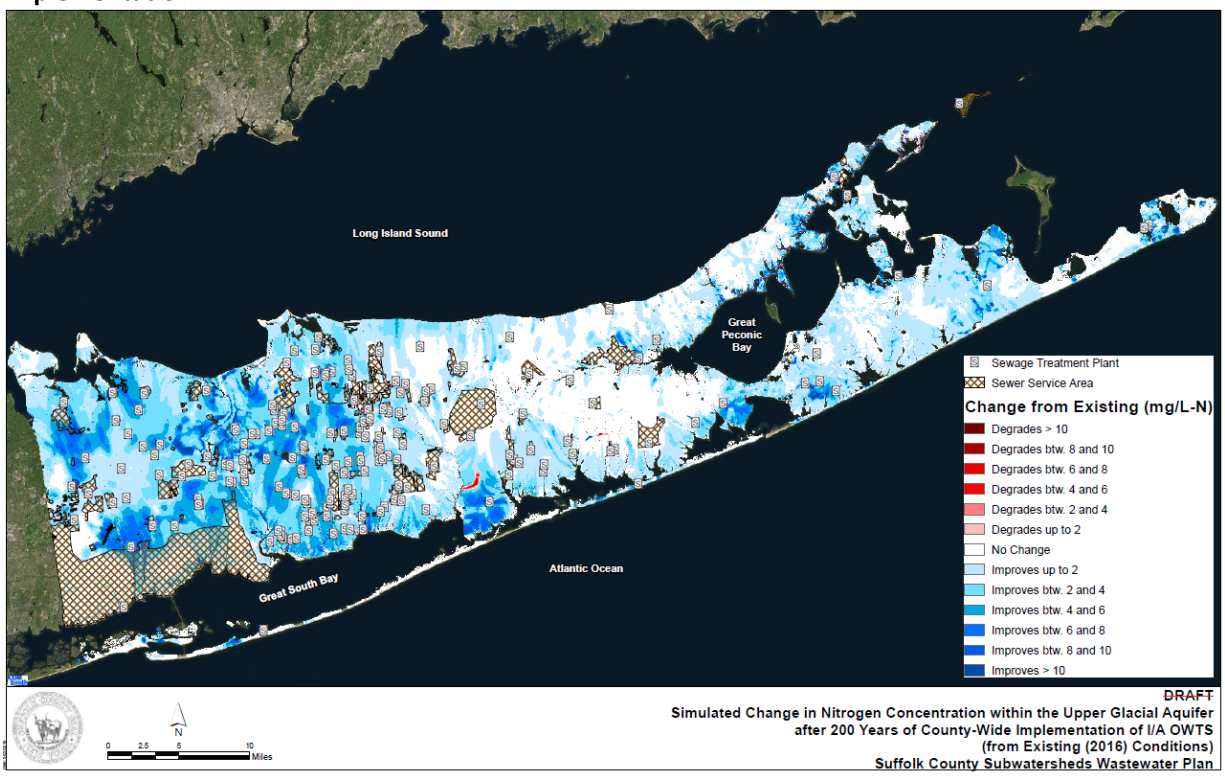



**Figure 1-7 Simulated Reductions in Shallow Upper Glacial Aquifer Nitrogen Concentration after SC SWP Implementation**

Areas shown in dark blue on **Figure 1-7** are areas where the predicted nitrogen concentration in the shallow upper glacial aquifer would be less than 1 mg/L; nitrogen concentrations in areas shown in light blue are predicted to be less than 2 mg/L. Predicted nitrogen concentrations in the shallow upper glacial aquifer are simulated to be less than 4 mg/L in areas shown in green, and between 4 and 6 mg/L in areas shown in yellow. The greatly reduced extent of areas shown in red and orange (e.g., greater than 10 mg/L and 6 mg/L respectively) demonstrates the benefit of SC SWP implementation. The limited areas that are predicted to have nitrogen concentrations in the shallow upper glacial aquifer exceeding 6 mg/L are generally limited to agricultural areas and areas immediately downgradient of sewage treatment plants.

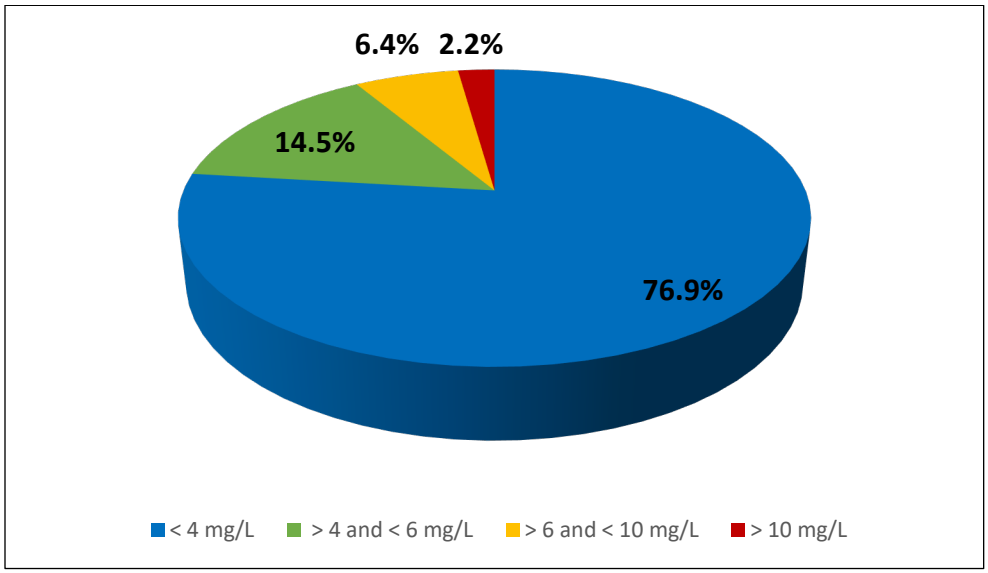
Reductions in shallow upper glacial aquifer nitrogen concentrations are predicted in all unsewered developed areas as shown on **Figure 1-7. Figure 1-7** illustrates the predicted change (e.g., improvement) in groundwater quality after implementation of the Proposed Action; e.g., sewering in presumptively sewered areas and I/A OWTS installations at all other currently unsewered parcels. The figure shows increasing reductions in simulated nitrogen concentrations from white (no change, or very small change) to increasingly deeper shades of blue, indicating increasing simulated reductions in nitrogen. As anticipated, the deeper shades of blue indicating improved nitrogen concentrations of 4 to over 10 mg/L are located in the most densely populated areas where the nitrogen load from sanitary wastewater loading will be most significantly reduced by wastewater management. Areas shown in white are generally areas that are either already sewered (e.g., Suffolk County Sewer District No. 3), sparsely populated (e.g., Pine Barrens areas in Brookhaven and Riverhead), agricultural areas (e.g., areas of the North Fork) or otherwise preserved lands (e.g., Mashomack Preserve on Shelter Island).

#### 1.3.2.2 Drinking Water Impacts

Beneficial impacts to drinking water are projected to result from implementation of the Proposed Action. **Figures 1-6, 1-7 and 1-8** illustrate the beneficial impacts of SC SWP implementation on drinking water as nitrogen concentrations in untreated water are reduced. **Figures 1-6** and **1-7** highlight the reduced nitrogen concentrations in the shallow upper glacial aquifer that is the primary source of the private supply wells in the County and **Figure 1-8** summarizes the reduced nitrogen concentrations in untreated water at community supply wells. No adverse impacts to drinking water are anticipated to result from I/A OWTS implementation or from Sanitary Code modification.

**Figure 1-8** compares the distribution of model-simulated nitrogen concentrations in community supply wells before and after implementation of the Proposed Action. The top panel in the figure shows the distribution of simulated nitrogen concentrations resulting from existing land uses based on existing conditions of wastewater management; i.e., the SC SWP was not implemented, and shows that untreated water in approximately 2 percent of the community supply wells in Suffolk County is projected to exceed the 10 mg/L Maximum Contaminant Level (MCL) if current conditions in land use and wastewater management remain constant for 50 years. The bottom panel in **Figure 1-8** shows the distribution of simulated nitrogen concentrations resulting from implementation of the Proposed Action and illustrates the dramatic anticipated improvements in groundwater quality. The figure shows that nitrogen concentrations in over 96 percent of the community supply wells would be reduced to less than 4 mg/L after 50 years. Nitrogen concentrations in only 2.2 percent of the wells are simulated to be reduced to between 4 and 6

mg/L, one percent is simulated to be between 6 and 10 mg/L and 0.4 percent are simulated to exceed 10 mg/L.



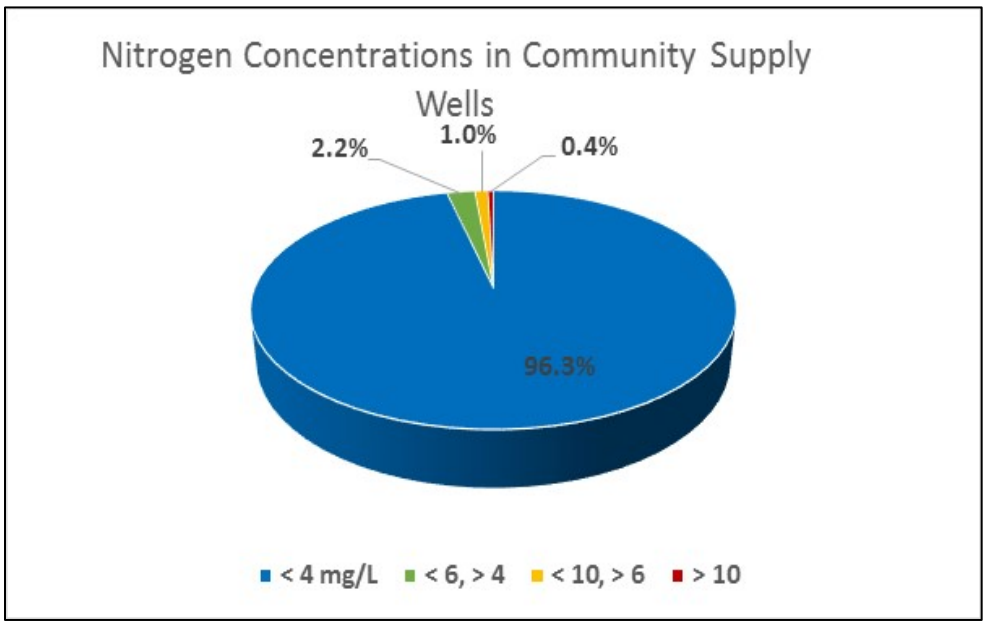




**Figure 1-8 Model-simulated Distribution of Nitrogen Concentrations in Community Supply Wells before and after SC SWP Implementation**

It should be noted that the wells where untreated raw water is simulated to exceed 10 mg/L are in an agricultural area where sanitary wastewater treatment alone was not predicted to reduce the nitrogen concentrations to less than 10 mg/L.

### 1.3.2.3 Surface Water Impacts

The primary objective of the Proposed Action is to reduce nitrogen loading to surface waters to improve water quality in water bodies with documented impacts and to protect water quality in water bodies where ideal water quality is observed. The Proposed Action would significantly

reduce the nitrogen loading to surface waters resulting in the anticipated water quality benefits associated with reduced nitrogen loading

The proposed reduction in nitrogen loading would establish the conditions necessary to support restored ecosystems, increased biodiversity, protection of human health and result in economic benefits. Benefits are anticipated to include:

- Increased dissolved oxygen concentrations and reduction in the intensity and frequency of hypoxic episodes resulting in the conditions required to support healthier ecosystems and increased biodiversity;
- Reduction of harmful algal blooms which would improve shell fishing; result in less beach closures; and provide for the protection human health against HAB-related bio-toxins;
- Clearer waters which would create conditions more conducive for eelgrass growth and establishment of submerged aquatic vegetation, which would provide protection from storm-surge.

As detailed in the SC SWP, the Proposed Action would result in both local improvements to groundwater and surface water quality and a cumulative improvement in the water quality of the groundwater and surface water resources. In addition, the beneficial impacts of SC SWP implementation on drinking water is anticipated as nitrogen concentrations in untreated water would be reduced

As described in Section 2.1.8 of the SC SWP, nitrogen load reduction goals for surface waters were established under a variety of approaches for a variety of water quality endpoints. One method evaluated the comparison of the unit nitrogen load * residence time for each subwatershed to the unit-nitrogen load * residence time for Suffolk County surface waters that have demonstrated ideal water quality over the past ten years (e.g., the unit nitrogen load * residence time represents the "normalized" nitrogen load for each waterbody whereby the predicted nitrogen load is divided by the waterbodies volume and then multiplied by the waterbodies flushing/residence time; this ensures that each waterbody's nitrogen load is compared on an apples to apples basis). Water quality data for water bodies with ideal water quality showed:

- Dissolved oxygen levels greater than NYSDEC's chronic water quality standard of a 4.8 mg/L daily average in 90 percent of all samples;
- Chlorophyll-*a* levels less than 5.5 µg/L in 90 percent of all samples collected, OR average blooming season chlorophyll-a levels less than 5.5 µg/L.
- Water clarity (as measured by secchi depth) greater than two meters (6.56 feet) during the blooming season;
- No observed harmful algal blooms (HABs) for species that are associated with primarily human health impacts during the past ten years, and
- A maximum of one HAB for species that are associated with primarily environmental impacts in the past ten years.

Recognizing the challenges in achieving ideal water quality in all surface waters, Suffolk County also established nitrogen load reductions based on comparison of the unit nitrogen load * residence time for each subwatershed to the unit-nitrogen load * residence time for Suffolk County surface waters that have demonstrated compliance with the identified dissolved oxygen and HAB endpoints.

**Figure 1-9** shows that implementation of the Proposed Action would result in nitrogen loads consistent with the dissolved oxygen/ HAB endpoints for all of the Long Island Sound Wastewater Management Areas, except one, for four of the Peconic Estuary Wastewater Management Areas and for four of the South Shore Estuary Wastewater Management Areas. While significant progress in water quality improvement will be provided for Wastewater Management Areas 7, 10, 16 and 18, additional nitrogen load reductions would be required to consistently achieve the desired dissolved oxygen and HAB endpoints. **Figure 1-9** compares the reductions in sanitary wastewater nitrogen loading that would be required to achieve the average unit nitrogen load * residence time for waterbodies that have had no documented dissolved oxygen hypoxia or HAB events over the past 10 years before and after implementation of the Proposed Action. **Figure 1-9** shows that sanitary nitrogen loads in the dark green and light green shaded water bodies would need to be reduced by between 1 and 20 percent and 21 and 40 percent respectively, to achieve ideal water quality. Sanitary nitrogen load reductions of between 41 and 60 percent and 61 and 80 percent would be required to achieve ideal water quality in the surface water bodies shown in light orange and dark orange, while between 81 percent and 100 percent of the sanitary nitrogen load in the areas shaded in red would be required to achieve ideal water quality. The top panel shows that the highest nitrogen load reduction goals shown in red (80 to 100 percent) and dark orange (60 to 80 percent) tend to be located in densely populated areas discharging to poorly flushed water bodies and are also associated with the highest Priority Rank areas.

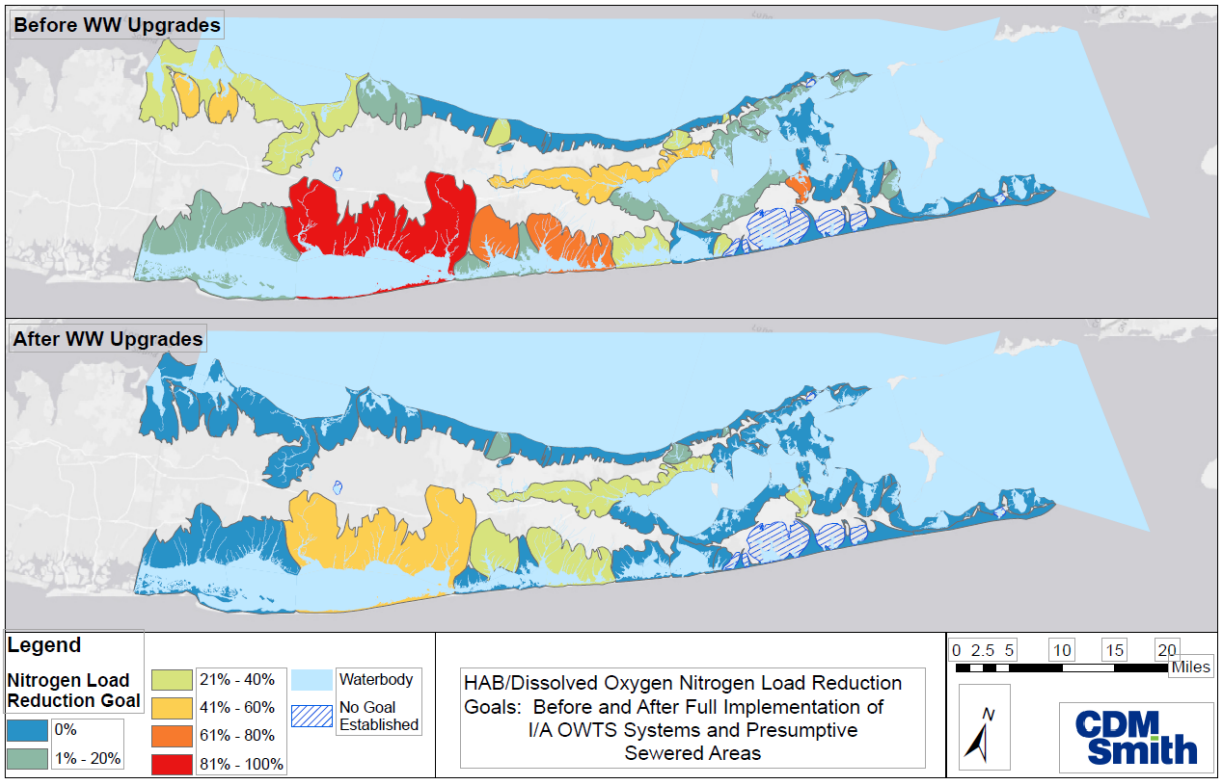
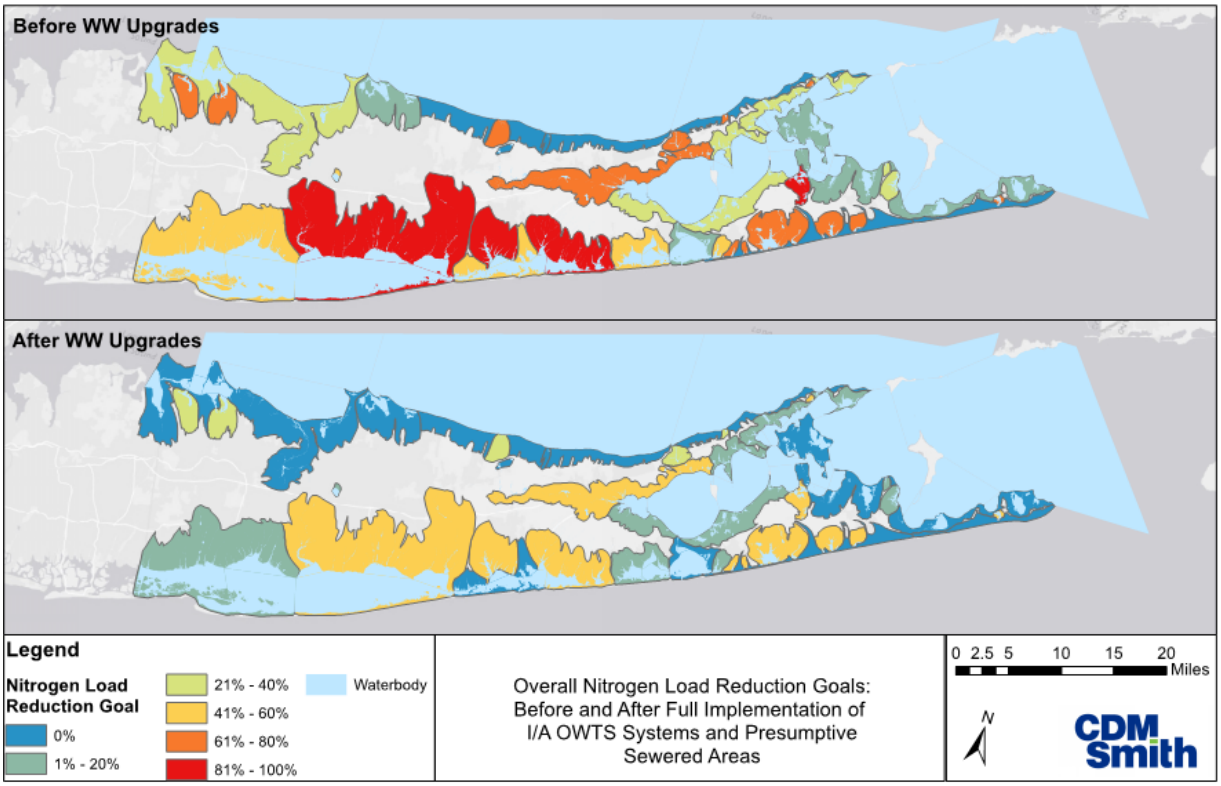



**Figure 1-9 Progress Towards Achievement of Unit Nitrogen Loads Consistent with Water Bodies that have Experienced No Dissolved Oxygen Hypoxic Events and No HAB Events in the Past 10 Years**

Note: The upper panel in the figure shows the nitrogen load reductions required to achieve the same unit nitrogen load observed in Suffolk County waters with no hypoxic or HAB events. The lower panel shows the much lower nitrogen load reductions required to achieve the unit nitrogen loads after SC SWP implementation.

**Figure 1-10** illustrates the progress towards achievement of the overall (ideal) water quality goals expected to result from reduction of sanitary nitrogen loads to the unit nitrogen load * residence time. The lower panel in **Figure 1-10** depicts the substantial progress towards ideal water quality that would be achieved by implementation of the Proposed Action. The figure shows that the Proposed Action would be successful in completely achieving water quality goals for four of the six LIS wastewater management areas, one of the six Peconic Estuary watershed wastewater management areas, two of the six South Shore Estuary wastewater management areas and the Atlantic Ocean.




Note: The upper panel in the figure shows the nitrogen load reductions required to achieve the same unit nitrogen load observed in Suffolk County waters exhibiting ideal water quality. The lower panel shows the much lower nitrogen load reductions required to achieve the unit nitrogen loads after SC SWP implementation.

**Figure 1-10 Progress Towards Achievement of Ideal Water Quality after Implementation of the Proposed Action**

## 1.3.3 Natural Environment

Implementation of the Proposed Action would not result in negative impacts to the natural environment. Replacement of an OSDS with an I/A OWTS would require the temporary removal of existing vegetation, likely lawn, to remove the existing OSDS and install the I/A OWTS. The area would then be replanted or reseeded. This is similar to the disturbance required for the replacement of an existing OSDS and is a short-term impact.

The proposed changes to the Sanitary Code and the Appendix A Standards would not result in an alteration to regulations regarding disturbance or siting of OSDS within floodplains and flood zones within Suffolk County. The potential impacts associated with new STPs, new sewer districts, the expansion of existing sewer districts, and individual clustered/decentralized systems (including Appendix A systems) would be evaluated in project-specific environmental reviews.

Existing regulatory requirements that address development (i.e. local building codes, zoning, and site plan approvals), the use of wetland areas and floodplains, the use of Critical Environmental Areas and the protection of threatened and endangered species would remain in-place and would not be affected by the Proposed Action. The Proposed Action does not minimize the need to comply with existing Federal, State or local regulations protecting critical environmental areas,

endangered and threatened species, wetlands or floodplains. In fact, implementation of the Proposed Action is projected to result in groundwater and surface water quality improvements that would support improvements to the associated natural environment. Excess nitrogen has been linked, for example, to water quality issues resulting in increased chlorophyll-a and reduced water clarity, storm-surge protection provided by coastal wetlands and aquatic vegetation, and an overall increase in the number of HABs. Existing measures in place to protect environmentally-sensitive areas throughout the County would not be affected by the implementation of the Proposed Action.

### 1.3.4 Historic and Archaeological Resources

The impact of the Proposed Action on historic and archaeological resources was evaluated. Existing safeguards would remain in place under the Proposed Action, continuing to provide protection through existing permitting and approval processes.

The I/A OWTS currently approved by Suffolk County for provisional use as defined in Article 19 of the Suffolk County Sanitary Code are primarily below grade facilities. On most parcels, only visible components would be low profile covers for access to the system. The visibility of access covers can be further reduced through landscaping if desired. Based on the below ground locations of the I/A OWTS, there would not be negative impacts to the setting or character of individual historic properties where such systems may be modified, nor would they have an adverse impact on the overall historic character or appearance of larger historic districts.

The proposed change to the Appendix A Standards reducing the setback requirements for specific land uses, would not negate the need for consultation with New York SHPO prior to project implementation. No long-term impact to historic structures has been identified by implementation of the Proposed Action as they pertain to Appendix A systems.

With the completion of any required archaeological analyses and continued consultation with OPRHP, neither installation and operation of I/A OWTS, nor the proposed modification to the Sanitary Code and Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage Systems" would result in impacts on archaeological resources.

The potential impacts associated with new STPs, new sewer districts and expansion of existing sewer districts would be evaluated in project-specific environmental reviews that may include the need for additional consultation with NYSOPRHP.

### 1.3.5 Noise and Odors

The Proposed Action is not anticipated to result in significant adverse noise or odor impacts. s. Noise complaints have not been raised by residents currently utilizing I/A OWTS, nor have odor complaints been logged. Modified Appendix A systems and STPs would continue to be required to meet the requirements of the local municipal code as well as those standards established by the County.

#### 1.3.5.1 Noise

As with existing OSDS, the I/A OWTS are located underground or within structures, shielding receptors from any noise produced by the pumps and/or blowers. Even so, it is assumed the I/A

OWTS would comply with local applicable noise codes or ordinances. To date, there have been no identified noise issues associated with the I/A OWTSs approved for use.

Any major facilities or projects proposed in the future, such as sewer expansion projects, new Appendix A STPs, or individual/specific clustering projects, are subject to project-specific environmental review that would include consideration of potential noise effects. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require that noise control is included in the design of Appendix A STPs to qualify for reduced setbacks.

Consequently, the Proposed Action would not result in substantial changes to noise levels at receptors in the County and would not result in significant adverse noise impacts.

#### 1.3.5.2 Odors

Wastewater treatment in general has been identified as a potential source of noticeable offsite odors. As part of the Proposed Action, I/A OWTS would replace an OSDS that consists of a septic tank, leaching structures, and does not have active or mechanical means of treatment or supplemental filtering. I/A OWTS would be installed below ground similar to that of a traditional onsite wastewater disposal system. The I/A OWTS would not result in new odor sources.

The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require odor reduction be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Site specific projects would be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would be evaluated. Therefore, the Proposed Action is not anticipated to result in odors noticeable offsite and would not have the potential to cause significant adverse odor impacts.

### 1.3.6 Human Health (Contaminant Exposure/Hazardous Materials)

The proposed action was evaluated with respect to impacts to human health from exposure to contaminants and hazardous materials. It was found, the implementation of the Proposed Action would not result in increased exposure to hazardous materials or a potential long-term negative impact to human health.

The installation and use of I/A OWTS units does not require the use or storage of chemicals or other hazardous materials. The flow discharged from the units is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health.

Instead, upgrading of failed systems and old/grandfathered systems is expected to result in increased separation of the system to the groundwater table and reduced failures which in turn results in less human health hazards associated with exposures to sewage and potential physical harm from a collapsed system. Chemicals and/or hazardous materials that were previously known to be disposed of in OSDS would need to be assessed and remediated in accordance with SCDHS's 'action levels' stated in the SCDHS Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code (Article 12 - SOP #9-95).

Reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) would have a positive impact on water quality that can result in an improvement in human health. For example, reduced nitrogen concentrations should result in a reduction in the number and intensity of HAB events on a Countywide basis, which would result in reduced HABs related toxins within shellfish and therefore increased protection of human health.

The shift from conventional sanitary system construction material, which was mainly concrete, to I/A OWTS introduces additional materials including plastics such as polyethylene and fiberglass for major structural components. Both are widely accepted materials used in many applications across the nation, and neither are known to cause contamination from their use in I/A OWTS. As a precautionary measure, and to proactively address concerns with emerging contaminants, SCDHS is developing a long-term monitoring plan that will address sewage treatment plants, conventional septic systems and I/A OWTS and will include influent, effluent and upgradient and downgradient groundwater sampling.

### 1.3.7 Environmental Justice Assessment

The potential for the Proposed Action to cause disproportionate adverse impacts on minority or low-income populations within Suffolk County was assessed. It was concluded, the Proposed Action would not have the potential to result in a significant or disproportionate adverse impact to environmental justice communities.

NYSDEC has designated several potential environmental justice areas within Suffolk County, which include four areas within the Town of Southampton, the Shinnecock Indian Nation Reservation, one area within the Town of East Hampton, two areas within the Town of Huntington, two areas within the Town of Babylon, two areas within the Town of Islip, six areas within the Town of Brookhaven, and the Unkechaug Nation Poospatuck.

The project area addressed by the SC SWP includes all unsewered parcels in Suffolk County. Therefore, the Proposed Action is applicable to all parcels within the County borders and would not disproportionately affect parcels within environmental justice areas. Grant funding opportunities exist that are now and would continue to be made available to County residents who meet eligibility criteria to minimize the financial burden to residents. Further, the implementation of the Proposed Action (reduction in nitrogen loading to groundwater and surface water) would improve water quality for all residents.

As a Countywide project that primarily involves changes to wastewater policies and regulations, the overall implementation of the Proposed Action would not disproportionately affect environmental justice communities. Site specific facilities and projects related to wastewater management, such as new STPs or individual/specific clustering projects, would require their own environmental review, which would include consideration of potential environmental justice impacts.

### 1.3.8 Short-term or Construction Related Impacts

Significant short-term adverse impacts were not determined to arise by the implementation of the Proposed Action. The Proposed Action does not include the development of a specific project. Installation of the nitrogen reducing I/A OWTS would result in similar property disturbance when compared to traditional septic facilities. Installation of an I/A OWTS on a parcel would not impact land use, result in a potential impact to historic or archeological features or generate noise

levels greater than those that are currently generated by installation of conventional OSDSs. The reduction in nitrogen loading to ground and surface waters would improve water quality and therefore be a positive effect on human health and the natural environment.

Short-term or construction related impacts associated with the Proposed Action were found to be associated with land disturbance required for the installation of I/A OWTS, sewer projects, and clustered/decentralized projects. Short-term impacts associated with the installation of individual conventional onsite wastewater disposal systems (OSDS) are generally addressed through intra- and interagency coordination. These measures are in place as safeguards and are not proposed to be changed as part of the Proposed Action. While individual application requirements for residential, commercial, and subdivisions vary, in each case the property owner, design professional, and/or agent must respond and attest to a series of questions, under penalty of law, pertaining to existing environmental conditions and/or other required permits or variance(s).The limits of disturbance for I/A OWTS are expected to be similar to that of the traditional OSDS. Environmental safe-guards in place, such as, erosion control and restoration would not be altered with the implementation of the Proposed Action. Proposed sewer projects and clustered/decentralized projects would also have short-term construction related impacts. These projects will require project-specific environmental review (SEQRA) which would evaluate all potential short-term impacts. In addition, these projects will continue to need site plan approval, comply with local building codes and adhere to zoning requirements. Site development approval remains the responsibility of the local municipality. In conclusion no short-term impacts to land use are identified specific to the Proposed Action.

The proposed increase in flow to an Appendix A facility and the proposed reduction in setbacks associated with specific land use types also not anticipated to increase the potential short-term impacts should these facilities be approved. Safe-guards would remain in place, including site selection guidelines, federal/state/local permitting requirements and local development approvals. New STPs, new sewer districts and sewer district expansions presumed to move forward as noted in Section 6.2 of this Draft GEIS are subject to their own environmental reviews. Short-term impacts are addressed as part of those site-specific proposed projects.

## 1.3.9 Cumulative Impacts

The Proposed Action was looked at in a broader context and an assessment of the potential cumulative effects under the three conditions identified during project scoping was prepared. The primary cumulative impact identified was a beneficial impact to groundwater, drinking water and surface water quality resulting from reduced nitrogen loading. The three conditions assessed were as follows:

- Water export/impact to water supply
- Potential for growth inducement within the County
- Energy demand (greenhouse gas impact)

### 1.3.9.1 Water Export/Impact to Water Supply

The cumulative impacts of water export on the groundwater table, water supply and on stream baseflows as a result of implementation of the recommendations in the SC SWP were evaluated in

Section 6.1. The sole cumulative change to water export/water supply was determined to be an improvement in groundwater quality and downgradient surface water quality.

If I/A OWTS are implemented throughout the County there are no anticipated impacts to the groundwater table, the groundwater supply or to stream baseflows attributed to their use. Sanitary wastewater that currently recharges the aquifer as cesspool or conventional OSDS discharge would continue to recharge the aquifer from the parcel-specific I/A OWTS. Consequently, there would be no change to the water table elevation, availability of potable supply, stream baseflows or wetland areas resulting from the use of I/A OWTS in place of cesspools or conventional OSDS.

The cumulative impact to water supply quality is shown to be beneficial, in that the nitrogen concentration in untreated water supplies would be reduced.

Individual sewering projects could have unintended consequences such as localized drawdown of the groundwater table and reduced groundwater baseflow to nearby streams, construction through sensitive areas, and potential impacts to adjacent potable supply wells (if not sited properly). Diversion of sanitary wastewater effluent from existing OSDS within the presumptive sewer project areas to off-shore surface waters was determined to result in an insignificant reduction in groundwater recharge and would have no impact on the ability to provide the approximately 245 MGD of potable supply used Countywide on a daily basis. It is important to note that SCDHS Guidance Memorandum #28 (July 24, 2017) provides the requirements necessary for siting proposed or expanded STPs to determine potential impact to drinking water supplies. Changes/modification to these guidance requirements are not proposed. Individual sewering projects would, as part of the project-specific environmental review process, evaluate the potential negative effect to water supply and to local surface water baseflow.

### 1.3.9.2 Potential for Growth Inducement within the County

The proposed changes to the Sanitary Code and to Appendix A of the Standards for the Approval of Plans and Construction for Sewage Disposal Systems for Other than Single-Family Residences were analyzed as to their potential to induce growth (increase development) within the County. Where available sanitary treatment has provided a barrier to parcel development, an individual municipality may wish to re-examine their local zoning code and amend as required in conformance with local planning goals.

*I/A OWTS Implementation*

Implementation of I/A OWTS in place of OSDS would not result in growth or potential growth in Suffolk County. Article 19 was enacted to facilitate development and use of I/A OWTS in Suffolk County as an environmental conservation and public health protection measure. Article 19 of the Suffolk County Sanitary Code, adopted by the Suffolk County Legislature in 2016, provides a historic first by permitting the voluntary use of I/A OWTS in Suffolk County. Article 19 also states that 'it is not the intent of that Article to alter density requirements for unsewered parcels'.

*Modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code*

An increase in lot or parcel density above what is currently allowed under existing zoning would not be induced from the increase in design flows for Appendix A systems Modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code are proposed to facilitate the use of clustered/ decentralized systems to reduce nitrogen loading from sanitary

wastewater in Suffolk County. Adoption of the proposed amendments to Article 6 of the Sanitary Code would allow flows up to 30,000 gpd, doubling the sanitary flow the treatment system could receive as well as reducing the setback requirements for certain land use types. The need to meet local zoning requirements, site plan review and approval, to obtain building permits, etc. would remain unchanged. The increase in potential permitted treatment flow within Article 6 would also not negate the need for environmental review if review triggers are met under SEQRA, for example or other requirements per Federal or State regulations. In addition, as is today, each project would still be required to provide a STP siting evaluation report (Office of Wastewater Technical Memorandum #28) considering environmental aspects of the proposed work. For example, individual projects would still need to demonstrate a significant reduction in nitrogen load when compared to the allowable load under Article 6 density requirements. A project-specific Feasibility Report would also continue to be required. There are no proposed changes to this requirement.

Therefore, proposed increase in permittable flow and the reduction in setback requirements for certain land use types are not in and of themselves growth inducing.

*Presumptive Sewering Projects, Sewering and Clustered/Decentralized Recommendations*

The identification of STPs and clustered/decentralized systems as an effective tool in addressing nitrogen from sanitary wastewater would support growth approved by a local municipality but would not be growth inducing on its own. The presumptive sewered areas and areas identified as potentially benefitting from sewer expansion and/or clustered/decentralized systems identified in Section 4.5.2 of the SC SWP are independent on-going projects that have been incorporated into the SC SWP as part of the Countywide effort to address nitrogen loading from currently unsewered areas. As is true elsewhere throughout the County, new development within each area to be sewered would be in accordance with the local zoning, policies and plans. In some cases, these sewering projects could support growth, but only in accordance with Town-specific zoning and plans.

The presumptive sewering projects are in various stages of project execution including; feasibility study, preliminary design, environmental review, funding, etc. Local municipality zoning and development approval remains required. As such, the local municipality remains responsible for the growth within its borders.

#### 1.3.9.3 Energy Demand (Greenhouse Gas Impact)

The implementation of the Proposed Action includes the use of I/A OWTS that have an energy requirement and therefore have the potential to result in greenhouse gas (GHG) impact. GHG impact is discussed in terms of the amount of carbon dioxide emissions added by Countywide operation of I/A OWTS. STPs and Appendix A treatment systems would also have an energy demand and associated GHG impact. The energy demand associated with I/A OWTS, STPs and decentralized/centralized treatment systems is unavoidable. The use of renewable energy sources where available would mitigate the GHG impact.

### 1.3.10 Unavoidable Adverse Impacts

The Proposed Action does not include the development nor require the development of a physical project. The changes to the Sanitary Code and Appendix A requirements are proposed to address water quality impacts associated with nitrogen loading from existing onsite wastewater disposal

systems (OSDS). Future development would continue to be reviewed and approved as is done now by the local entity having jurisdiction. The County would continue the requirement to review and approve onsite wastewater treatment systems. The SCDHS siting guidelines for STPs would not be changed. The need for feasibility studies, good engineering practices, and environmental review and permitting would be unchanged. The energy demand associated with I/A OWTS, STPs and cluster/decentralized treatment systems is unavoidable. The use of renewable energy sources where available would mitigate the GHG impact.

Based on the analyses conducted, there were no significant adverse environmental impacts identified that would not be adequately addressed or mitigated if the County was to implement the recommended wastewater management plan, associated Sanitary Code changes, and associated changes to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences under the Proposed Action. As recommended in Section 8.6.11 of the SC SWP, an Adaptive Management Plan would be prepared to provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources.

### 1.3.11 Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action, natural and man-made resources would be expended. For example, resources would be needed in the manufacturing and installation of the approved I/A OWTS. The commitment of the resources required (such as metal and plastic) to construct the I/A OWTS unit would result in those resources not being available for other uses.

Resources such as land, construction materials, and human effort to design, install, monitor and maintain the STP would be required. The analysis of the specific commitment of resources associated with individual STP or clustered/decentralized projects would likely be addressed in a project specific environmental review (i.e. project specific SEQRA review). One would expect that resources such as land for a project site, equipment, labor, and energy would be required for individual STP or cluster/decentralized projects. Operation of a STP would also include a commitment of energy. These project commitment of resources would be the same with or without the implementation of the Proposed Action.

### 1.3.12 Mitigative Measures

The implementation of a Countywide wastewater management plan would result in the reduction in nitrogen loading from wastewater sources so as to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County. Water quality improvement is a beneficial outcome of the Proposed Action and does not require mitigative measure. The recommendations within the SC SWP overlap several parallel ongoing initiatives focused on restoring and maintaining water quality in Suffolk County. The County would continue to build upon their work together with LINAP, local town and village initiatives to maximize efficiency and reduce redundancy to advance measures to reduce nitrogen load and improve overall water quality.

Several wastewater management technologies were evaluated to address nitrogen loading from OSDS. While the recommendations within the SC SWP focus on the use of I/A OWTS as the primary wastewater management strategy, initial recommendations for other management

methods, including sewer expansion, and clustering/decentralized systems are also provided (but would require follow up study and project-specific feasibility analysis before final recommendations can be provided).

There are regulatory and institutional mechanisms in place to mitigate impact. The County, under Article 19 of the Sanitary Code, has measures in place establishing stringent requirements for design, operation/maintenance and performance testing of onsite treatment systems to minimize the potential for negative impact requiring additional mitigative measures. Treatment units that do not perform would be removed from the County's list of approved vendors. Change to the Sanitary Code increasing the permittable flow to Appendix A facilities does not reduce the requirement for complying with the County's established facility siting criteria and meeting the existing standards as established by SC DHS, nor is the development review process by the local municipality having jurisdiction modified. These reviews and standards would remain in place under the Proposed Action.

Best practices for soil erosion and sediment control required by the local jurisdiction as part of the local municipality review process during the installation of the I/A OWTS would limit the potential for offsite impacts as a result of this process. Appendix A facility construction may trigger review and compliance with NYSDEC erosion control and stormwater management measures should the construction area be 1 acre or more in size. In addition, local jurisdictional review of the development would include stormwater management and erosion control and would not be negated by the proposed changes to the Standards.

While individual application requirements for residential, commercial, and subdivisions vary, in each case the property owner, design professional, and/or agent must respond and attest to a series of questions, under penalty of law, pertaining to existing environmental conditions and/or other required permits or variance(s). Using the information obtained on the application, the Office of Wastewater Management then requires that all other permits and/or variance requirements related to environmental management of the project are submitted to the Department before the permit to construct the proposed sanitary system is released. Inspection and oversight of requirements stipulated in the individual permits are than completed by the individual issuing agency, as necessary. This process is not proposed to be altered at this time.

Examples of other local Town/Village, New York State, and SCDHS requirements that may be required before a permit to construct is released includes, but is not limited to:

- Town/Village Wetland Permits;
- NYSDEC Wetland Permits;
- Town/Village requirements for satisfaction of local BOR appeals/approvals;
- Town/Village Erosion and Sediment Control Plans;
- NYS Erosion and Sediment Control Plans;
- Meeting SCDHS Office of Pollution Control sanitary testing, remediation, and abandonment requirements; and,

- Meeting SCDHS Office of Water Resources supply well siting requirements.

These requirements would remain under the Proposed Action. No additional mitigative measures are identified.

In addition, the Proposed Action includes the County's development of an Adaptive Management Plan that would provide the mechanisms to ensure that critical program elements are in-place prior to moving forward with individual program elements (e.g., industry readiness, design professional readiness, scavenger plant capacity). The Adaptive Management Plan would also include a recommended strategy to establish an integrated, collaborative framework for cross-coordination of programs. The Adaptive Management Plan would provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources.

## 1.4 Alternatives Analysis

Five alternatives to the Proposed Action were identified during project Scoping and evaluated in this Draft GEIS. Although evaluated as 'instead of' implementation of the Proposed Action, aspects of some alternatives may be beneficial from an overall wastewater management perspective. Through the Adaptive Management strategy, the County would continue to evaluate and incorporate measures that support the County's nitrogen load reduction goals.

The alternatives are as follows;

- No Action Alternative - Continued use of OSDS and the patchwork of wastewater collection and treatment systems that currently exist within the County. The No Action Alternative would continue the use of traditional OSDS on residential and commercial parcels except for the voluntary use of I/A OWTS and the mandatory installations under the circumstances defined by the Towns of Brookhaven, East Hampton, Shelter Island and Southampton and the Villages of East Hampton, Quogue, Sag Harbor and Southampton. Modification to the County Sanitary Code Article 6 and Appendix A would not be advanced. The potential development of new wastewater treatment facilities and the establishment of individual sewer districts would continue as in the past, fragmented and provided as a service in discrete areas of the County.

- Countywide centralized wastewater collection and treatment systems (expansion of existing sewer districts and/or establishment of new sewer districts) to treat sanitary wastewater from existing developed parcels. As defined, this alternative would discharge all treated sanitary effluent off-shore.

- Increase minimum lot size Countywide –Increase minimum lot size for new residences from 20,000 square feet (1/2 acre) to 40,000 square feet (1 acre) in all groundwater management areas to reduce nitrogen loading from on-site discharge of sanitary wastewater

- County purchase of 'priority area' properties using Open Space funding – Property purchases would be limited to undeveloped parcels

- Dual plumbing/dual water systems – Separate piping to address household grey and blackwater.

### 1.4.1 Comparison of Alternatives

A summary and comparison of the impacts or effects (negative and positive) of the alternatives described compared with the impacts associated with the implementation of the Proposed Action follows.

The Proposed Action and three of the five alternatives to the Proposed Action have the potential to reduce nitrogen and one of the three alternatives would achieve the County's nitrogen reduction objectives. The No Action alternative would not achieve the nitrogen reduction goals Countywide. Implementation of a dual plumbing/dual water systems would not in and of itself achieve nitrogen reduction; additional requirements would need to be put in place to address the management of the waste stream from these systems.

Of the three alternatives that achieve nitrogen reduction, two (increasing minimum lot sizes Countywide and purchase of open space in priority areas) would only address future discharge of nitrogen and would not address the current nitrogen loading from onsite systems. Therefore, these two alternatives would not achieve the nitrogen load reduction targets established for each subwatershed.

Countywide centralized wastewater collection and treatment systems is the only alternative to the Proposed Action to address current and future nitrogen loading. Adverse impacts would be observed under the No Action alternative, Increase Minimum Parcel Size Purchase of Open Space alternative, and the Dual Plumbing alternative as the current nitrogen loading from OSDSs would remain unchanged except for the potential for future nitrogen loading.

The most beneficial human health and natural environment impacts would be anticipated from implementation of the Proposed Action or centralized sewering. However, of the five alternatives and the Proposed Plan, the Countywide centralized wastewater collection and treatment systems alternative would likely have the greatest construction-related impacts as sewering would have to be installed in unsewered areas throughout the County and at least one new WWTP would need to be built. In addition, the Countywide centralized wastewater collection and treatment system alternative also has the potential to negatively impact the groundwater table, surface water baseflows and wetland areas.

## 1.5 Transfer of Development Rights (TDRs)

Transfer of development rights programs exist for many of the towns and villages that make up Suffolk County. Requirements for approval of water supply and sewage disposal systems are included in the Suffolk County Sanitary Code. Development density standards are established by the SCDHS. These standards are in effect to protect the groundwater quality in specific recharge areas across the County. Article 6 Sections 760-602, 760-608 and 760-610 allow for the use of transfer development rights (TDR) to conform with the standards established by the SC DHS and as a mechanism by which an unsewered parcel or project can exceed the allowable sanitary density.

SC DHS General Guidance Memorandum #27 dated May 5, 2014 provides guidelines for the use of TDR and Pine Barrens credits for sanitary density credit. Memorandum #27 provides information

on methods, requirements and limitations on the use of TDR. TDR are used when an applicant wishes to transfer allowable sanitary density from one parcel ('sending') to another parcel ('receiving') to allow for increased development on the 'receiving' parcel. The TDR standards protect groundwater, drinking water and surface water quality while offering developers flexibility.

It should be noted, the County's existing use of Transfer Development Rights has not been modified in the SC SWP, nor is it specifically identified as an implementation strategy in the SC SWP. Hence, the SC SWP would not have any impact to the County's TDR program. Should the Sanitary Code be modified to revise the TDR strategy in the future, it will be the subject of its own review under SEQRA.

## 1.6 Project/Site Specific and Subsequent Review Requirements Under SEQRA

There is no new development associated with the Proposed Action, however, the implementation of the Proposed Action may affect future development potential, demand for utilities, and existing land uses. It is intended that the SC SWP be implemented in phases, using an adaptive management approach, such that both the County's wastewater management program and the effectiveness of the wastewater management program are evaluated according to a regular schedule and modifications are incorporated as appropriate. Future revisions to the SC SWP may prompt changes requiring additional review under SEQRA. Potential impacts to the natural or physical environment as well as to utilities and community services associated with the implementation of site-specific projects will be addressed by subsequent SEQRA review.

Although specific conditions or criteria under which a future action or actions would require additional review under SEQRA are identified, it is also noted that the examples provided is not inclusive of all possible triggers for supplemental review.

Example actions, thresholds or criteria that could trigger supplemental review under SEQRA that have been identified include the following.

- Additional change to the County Sanitary Code or construction standards to implement the recommendations in the SC SWP. This would include;
    - Changes to Article 6 in accordance with the four phase recommended wastewater alternative to address commercial properties that exceed design flowrates of greater than 1,000 gpd. Additional information/data is needed for these systems before finalizing policy recommendations as discussed in Section 8 of the SC SWP.
    - Additional Code changes to address Appendix A systems.
    - Additional changes to the Suffolk County Sanitary Code or Office of Wastewater Management construction standards to address sites or parcels with unique challenges such as not meeting setback requirements and/or other site constraints.
    - Changes required to address Special Use Areas such as schools, fire house, police departments and libraries.

  - Changes to Article 6 for increased minimum lot size within select GMZs or subwatersheds.
  - Changes to streamline the approval process for Appendix A systems.
  - Changes to address home elevations performed as part of a resiliency project.
  - Changes as a direct result of the performance monitoring of I/A OWTS and Appendix A systems;
  - Changes that include the use of non-standard bacteria and/or chemicals in the I/A OWTS;
  - Changes to address environmental conditions effected by climate change.
  - Changes to address contaminants other than nitrogen.
  - Adopting requirements to implement the SC SWP not reflected in this Draft GEIS.
- Significant change in the recommendations and/or the implementation plan included in the SC SWP;
- The approval of new I/A OWTS with installation/construction requirements that significantly exceed that of a conventional septic system;
- Significant changes required as a result of the County's periodic program review and program monitoring (Adaptive Management), and
- Newly discovered information whose importance and relevance is required for the Lead Agency to make its determination.

Potential actions (related to wastewater treatment) that would not fall under the category of supplemental review under SEQRA were also identified. Example projects or actions that trigger review under SEQRA include:

- Proposed new wastewater treatment plant (WWTP);
- Proposed expansion of existing WWTP;
- Proposed creation of a new sewer district;
- Proposed expansion of an existing sewer district;
- Proposed creation of a new scavenger waste treatment facility;
- Proposed expansion of an existing scavenger waste treatment facility;
- Proposed clustered/decentralized treatment system, including Appendix A modified sewage disposal systems, not under review as part of a new subdivision; and
- Proposed change to local law, including but not limited to a proposed change to the SC Sanitary Code or other legislative action not addressed under this SEQRA review.

As for any proposed project or action, the level of review under SEQRA would be determined by the Lead Agency.

## 1.7 Document Organization

This Draft GEIS fulfills the regulatory requirements as stated in 6NYCRR Part 617. The Draft GEIS is divided into 12 sections. The document sections and outline of their content follows.

**Section 1 - Executive Summary** – The Executive Summary provides a succinct summary of the Draft GEIS including the project description, major findings of the environmental analysis, mitigation recommendations, and topics requiring further site-specific study and assessment prior to implementation.

**Section 2 - Proposed Action, Purpose and Need** - A concise description of the Proposed Action that consists of the SC SWP recommendations including a phase implementation of the County's wastewater management strategy to reduce nitrogen loading from sanitary wastewater and recommended changes to Suffolk County's Sanitary Code and Construction Standards (e.g., recommendations for Appendix A STPs) and the development of an Adaptive Management Plan. The Purpose and Need for reduction of nitrogen loading to groundwater (including drinking water) and surface water is summarized.

**Section 3 - Existing Environmental Setting** – Current readily available data sources are used to describe the baseline environmental setting of the County. Characterization of groundwater, drinking water and surface water quality is based on the information presented in the SC SWP.

**Section 4 - Potential Impacts of Proposed Action** – An evaluation of potential significant adverse and positive environmental impacts and the reasonable likelihood of their occurrence due to the Proposed Action is presented in this section of the Draft GEIS.

**Section 5 - Short-term or Construction Impacts** – Short-term or construction-related impacts associated with the implementation of the Proposed Action are described in general in this section.

**Section 6 - Cumulative Impacts** – The potential cumulative impacts associated with the implementation of the Proposed Action on the environment, natural resources and cultural environment is provided. The scenarios considered in this section include;

- Water export/impact to water supply,
- Potential for growth inducement within the County, and
- Energy demand (greenhouse gas impact).

**Section 7 - Unavoidable Adverse Impacts** -This section summarizes those negative impacts that cannot be avoided or adequately mitigated if the Proposed Action is implemented.

**Section 8 – Irreversible and Irretrievable Commitments of Resources** – This section discusses the nonrenewable natural resources that would be committed by implementation of the Proposed Action.

**Section 9 - Mitigative Measures** -Where significant project related adverse impacts are identified based on the analysis conducted in the Draft GEIS, measures to mitigate these potential impacts to the extent practicable are noted. This includes potential short-term construction as well as long-term (ex. operational) impacts.

**Section 10 - Alternatives Analysis** – This section of the Draft GEIS describes and evaluates reasonable alternatives to the Proposed Action and their potential for meeting the goals and objectives of reducing nitrogen loading to groundwater and surface water resources throughout the County. The following alternatives are evaluated in the Draft GEIS:

- No Action Alternative: Continued use of septic systems and the patchwork of wastewater collection and treatment systems that currently exist within the County;
- Countywide centralized wastewater collection and treatment systems (expansion of existing sewer districts and/or establishment of new sewer districts) to treat wastewater from existing developed parcels;
- Increasing minimum lot sizes Countywide (to limit nitrogen loading on a parcel basis);
- County purchase of 'priority areas' using Open Space funding; and,
- Dual plumbing/dual water systems.

**Section 11 - Transfer of Development Rights (TDRs)** - The County's use of TDRs if included as an implementation strategy in the SC SWP is discussed in general terms.

**Section 12 - Project/Site Specific and Subsequent Review Requirements Under SEQRA** - This section provides a description of specific conditions or criteria under which a future action or actions would require additional review under SEQRA.

# Section 2

# Proposed Action, Purpose and Need

This Draft Generic Environmental Impact Statement (DGEIS) has been prepared in accordance with the environmental review process required for the approval and implementation of the recommendations in the Suffolk County Subwatersheds Wastewater Plan (SC SWP). Under SEQR (§617.10), a "Generic" EIS, or GEIS, is prepared when a proposed action represents a comprehensive program having wide application and defining the range of future projects in the affected area. The SC SWP supports the development of a Countywide wastewater management strategy through the establishment of 'priority areas' for nitrogen reduction, establishment of nitrogen load reduction goals for each priority area, and the development of a recommended wastewater upgrade strategy to reduce nitrogen toward the established nitrogen load reduction goals. Changes to the County Sanitary Code that have taken place under previous New York State Environmental Quality Review Act (SEQRA) reviews as well as those recommended in the SC SWP, will enable the Suffolk County Department of Health Services (SCDHS) to work with United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Towns, Villages, residents, property owners and stakeholders to implement the recommended wastewater upgrade strategy.

The Proposed Action as defined in Section 2.1, includes a roadmap of wastewater policy recommendations. The 'purpose' of the Proposed Action simply stated is the reduction of nitrogen to groundwater and surface water from onsite wastewater disposal systems (OSDS). The Proposed Action addresses the 'need' for action to reduce the negative impacts of nitrogen on groundwater and surface water throughout the County. The purpose and need are further discussed in Section 2.2.

The Proposed Action is the implementation of the recommendations included in the (SC SWP) comprising a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources originating within the County. While the SC SWP evaluated a variety of wastewater management strategies including the use of Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS), sewering, and clustered/decentralized systems, the initial recommended alternative focuses wastewater upgrades using I/A OWTS as sewer expansion and clustered/decentralized systems will require additional study through project-specific Feasibility Study. There are an estimated 365,000 residential OSDS and an estimated 18,700 commercial OSDS in Suffolk County that are not designed to remove nitrogen and other contaminants that are contributing to the continued degradation of water resources within Suffolk County. The SC SWP evaluates the potential benefits of using I/A OWTS and provides a recommended countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use. In addition, the SC SWP provides recommended revisions to Article 6 of the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences to facilitate the more widespread use of "Appendix A" modified sewage disposal systems. Finally, the SC SWP

plan provides initial recommendations for a variety of other wastewater management strategies that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County. Other primary recommendations documented in the SC SWP include, but are not limited to:

- Establishment of a Countywide Wastewater Management District;
- Initial recommendations for sewer expansion and the use of clustered/decentralized systems;
- The identified wastewater management strategies for locations with unique site conditions through the preparation of initial feasibility analyses called "advanced wastewater treatment pilot evaluations" (see Appendix E of the SC SWP); and,
- Other recommendations to address wastewater management needs where insufficient information is available to make final recommendations within the SC SWP.

This Draft GEIS considers all parcels within the County borders that would be affected by the implementation of a Countywide wastewater plan. The complete SC SWP is included as Appendix B to this Draft GEIS. Section 2 of the SC SWP describes the approaches used to develop the subwatershed boundaries, nitrogen loads and nitrogen load reduction goals, while Appendix D of the SC SWP provides the subwatershed-specific mappings, nitrogen loads and scorecards. The following list is a high-level overview of the methodology used in the SC SWP to develop the provided recommendations:

- Delineation of 191 surface water subwatershed boundaries (e.g., groundwater contributing areas) based on a common platform of assumptions and boundary conditions;
- Estimation of parcel-specific nitrogen loads generated by sanitary wastewater, fertilizer, atmospheric deposition and pets;
- Use of a three-dimensional groundwater model to simulate the migration of the nitrogen loads through the groundwater system;
- Estimation of future equilibrium concentrations of nitrogen in public supply wells and nitrogen loads to 191 subwatersheds;
- Development of the first-ever comprehensive Excel-based water quality database and HAB database in Suffolk County that includes all readily available water quality data from a wide variety of sources compiled into a single, seamless, database (includes over 332,000 individual data points comprised of sample results obtained from the SCDHS' on-line portal and data obtained from the United States Geologic Survey (USGS), Stony Brook School of Marine and Atmospheric Sciences (SoMAS), the three estuary programs (Long Island Sound, Peconic Estuary and South Shore Estuary), Towns, and NYSDEC);
- Prioritization of areas for nitrogen load reduction;
- Estimation of nitrogen load reduction goals for each area;

- Cost-benefit evaluations to identify wastewater management alternatives; and
- Policy recommendations to facilitate implementation of a Countywide wastewater program that considers established priority areas, nitrogen load reduction goals, cost-benefit, and anticipated revenue sources.

As described previously, the SC SWP includes a wide range of wastewater management strategies and recommendations. For the purposes of clarity, the recommendations described within the Proposed Action and specifically addressed through this DGEIS include:

- Description of how, when, and where to require the use of I/A OWTS in lieu of conventional septic systems or grandfathered cesspools (referred to as the "Recommended Wastewater Management Strategy" herein); including recommended modifications to Article 6 of the Suffolk County Sanitary Code to facilitate the more widespread implementation of I/A OWTS; and,
- Recommended modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code are proposed. This proposed modification would reduce the County's setback requirements for Appendix A STPs with underground tankage within specific land use classifications to increase the use of these systems as a wastewater management tool. This would not negate other standards (such as siting or good engineering practices) or regulations in place, or the requirements for construction on the local level.

The SC SWP elements would be implemented in phases over a period of decades to accommodate industry and County staff requirements and other program ramp-up considerations. The wastewater management strategy recommendations are more fully described in the following subsections.

## 2.1 Proposed Action: Recommended Wastewater Management Strategy

Suffolk County's recommended Wastewater Management Strategy is based on the evaluations conducted as part of the SC SWP. The SC SWP recommendations provide a roadmap of policy recommendations for the implementation of a Countywide wastewater management strategy targeting the reduction of nitrogen pollution emanating from non-point wastewater sources. While the primary initial focus of the SC SWP is on the use of I/A OWTS, the overall strategy also considers the relative benefits of implementing other wastewater management alternatives such as sewer expansion and/or clustered/decentralized systems and provides an initial platform of recommendations for sewering and clustering that can be built on in future studies. Because sewer expansion and individual clustered/decentralized projects require careful, site-specific evaluation of cost, implementability, and relative benefit and impact to the environment, these strategies would likely require individual project-specific feasibility studies and SEQRA reviews. However, initial planning recommendations for these strategies are provided in the SC SWP as they are a critical overall component of an integrated countywide wastewater upgrade program.

To accommodate new information and data that may impact the recommendations of the SC SWP (including project-specific feasibility studies and/or new recommendations for sewering and clustering), the County plans to implement an adaptive management approach that would be

phased in over decades. The phased implementation approach and adaptive management strategy is described in Section 8.4.11 of the SC SWP. The strategy defines actions that would prompt wastewater treatment upgrades.

**Figure 2-1** illustrates the areas contributing groundwater to surface waters and to community supply wells (please see Section 3.2.2.3 of this Draft GEIS for a detailed description). This output of the groundwater model was used to define the Priority Areas for wastewater management. **Figure 2-2** shows the Priority Areas for groundwater/drinking water restoration and protection and **Figure 2-3** shows the Priority Areas for surface water protection/restoration. Descriptions of these priority areas may be found in Sections 3.2.1.4 and 3.2.2.4 respectively.

Section 4.4 of the SC SWP includes an evaluation of eight alternative wastewater management strategies. The wastewater management strategy recommended by the SC SWP includes four primary program phases. The phasing allows time for the County to accommodate program growth and ramp-up considerations while addressing the sanitary wastewater treatment requirements in priority areas and nitrogen load reduction goals established in the SC SWP. The four primary phases include:

- Phase I: Program Ramp-Up;
- Phase II: Mandated Wastewater Upgrades in Highest Priority Areas;
- Phase III: Mandated Wastewater Upgrades in Remaining Priority Areas; and,
- Phase IV: Mandated Wastewater Upgrades in all Other Areas.

Implementation of the SC SWP would require establishment of a stable and recurring revenue source to provide a funding mechanism to offset the costs of wastewater upgrades to property owners and would require legislative actions by the Suffolk County Legislature. Sections 4 and 8 of the SC SWP (Appendix B to this Draft GEIS) provide additional details on both the funding source and the overall recommended implementation approach. The evaluation of the Proposed Action in this Draft GEIS assumes a stable and recurring funding source is secured. The **Subwatersheds Wastewater Plan Conceptual Program Timeline** is depicted in **Figure 2-4** while **Table 2-1** provides program information by program phase. It should be noted that this is just one possible timeline. Should the number of system installations exceed those noted on the timeline, corresponding water quality benefits (nitrogen load reduction) would also be realized more quickly. Alternatively, should the program implementation schedule lag, water quality improvements (nitrogen load reduction) would be delayed. This would trigger re-evaluation of the program under the County's proposed Adaptive Management Strategy (see Section 2.1.7 and Section 9.2 of this Draft GEIS).

**Figure 2-5** provides an overview of the Subwatersheds Wastewater Plan implementation phases. Phase I, the program ramp-up phase, would be a continuation of the existing voluntary I/A OWTS implementation program along with I/A OWTS installations for new construction countywide. As shown in purple, I/A OWTS would be installed within the 0 to 2-year groundwater contributing

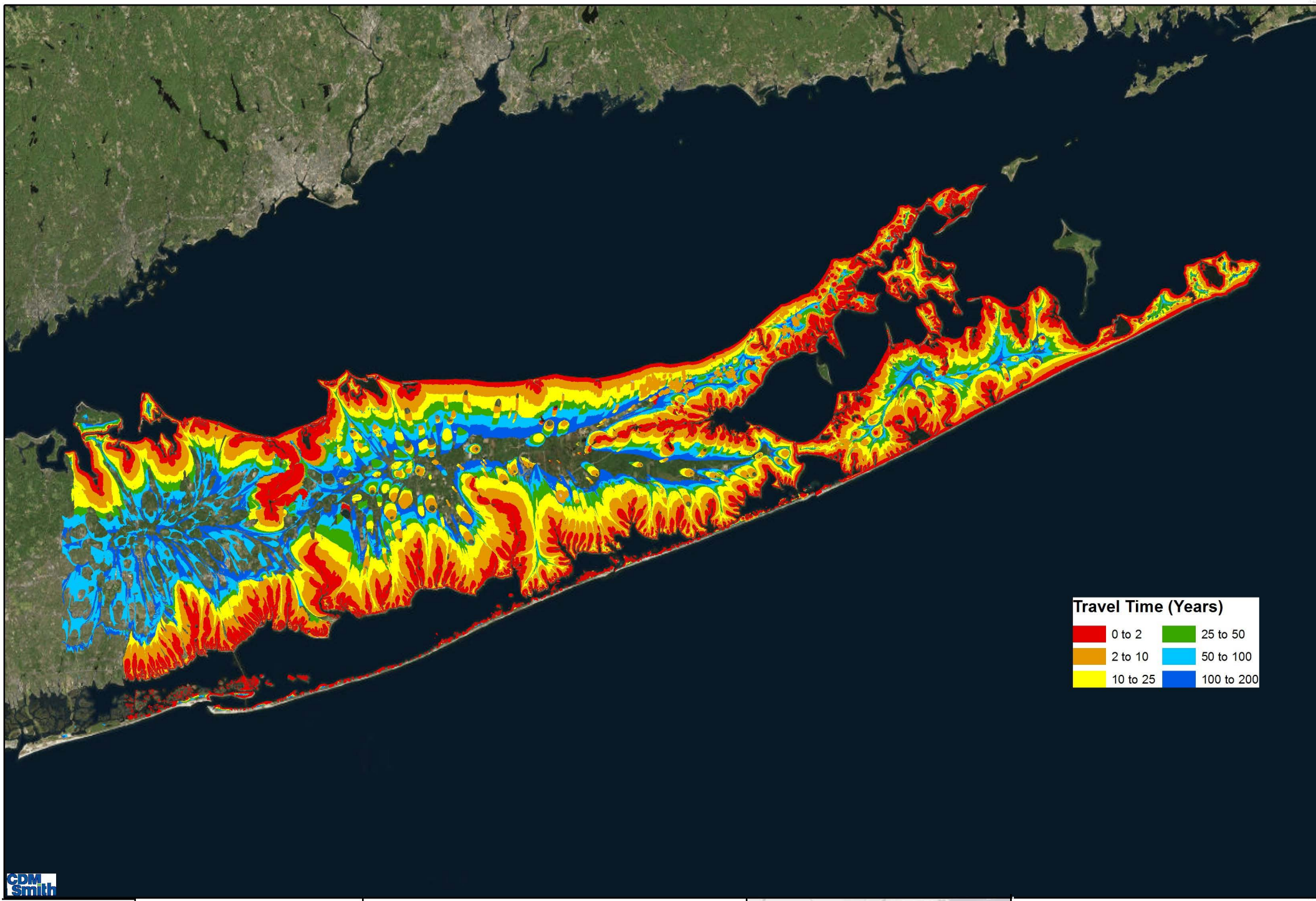



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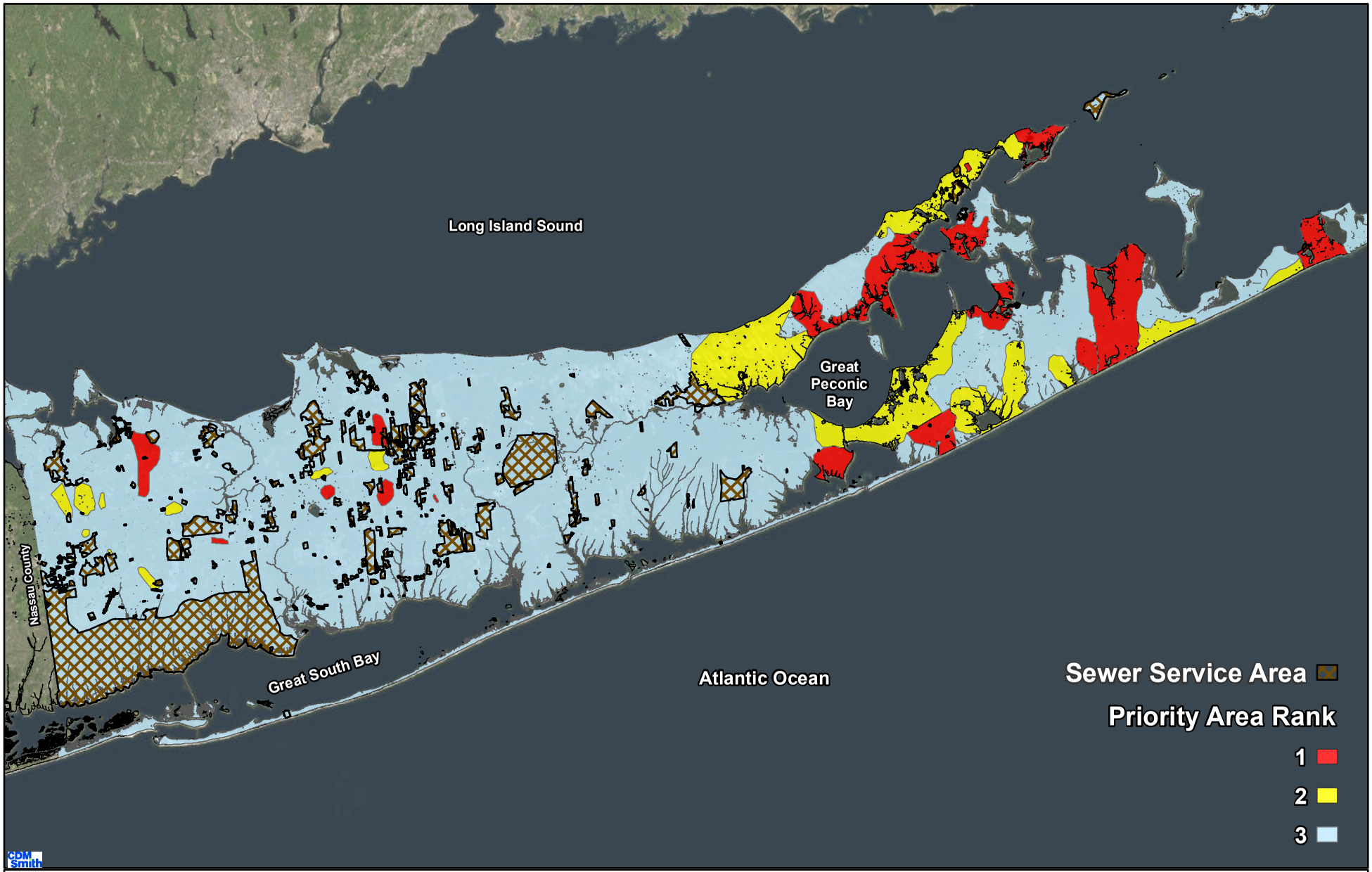
Figure **2-1** Groundwater Contributing Areas to Surface Waters and Community Supply Wells Subwatersheds Wastewater Plan

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0 2.5 5 10 Miles

Date: 5/29/2019

**Figure 2-2**
**Groundwater Priority Areas**
**Suffolk County Subwatersheds Wastewater Plan**

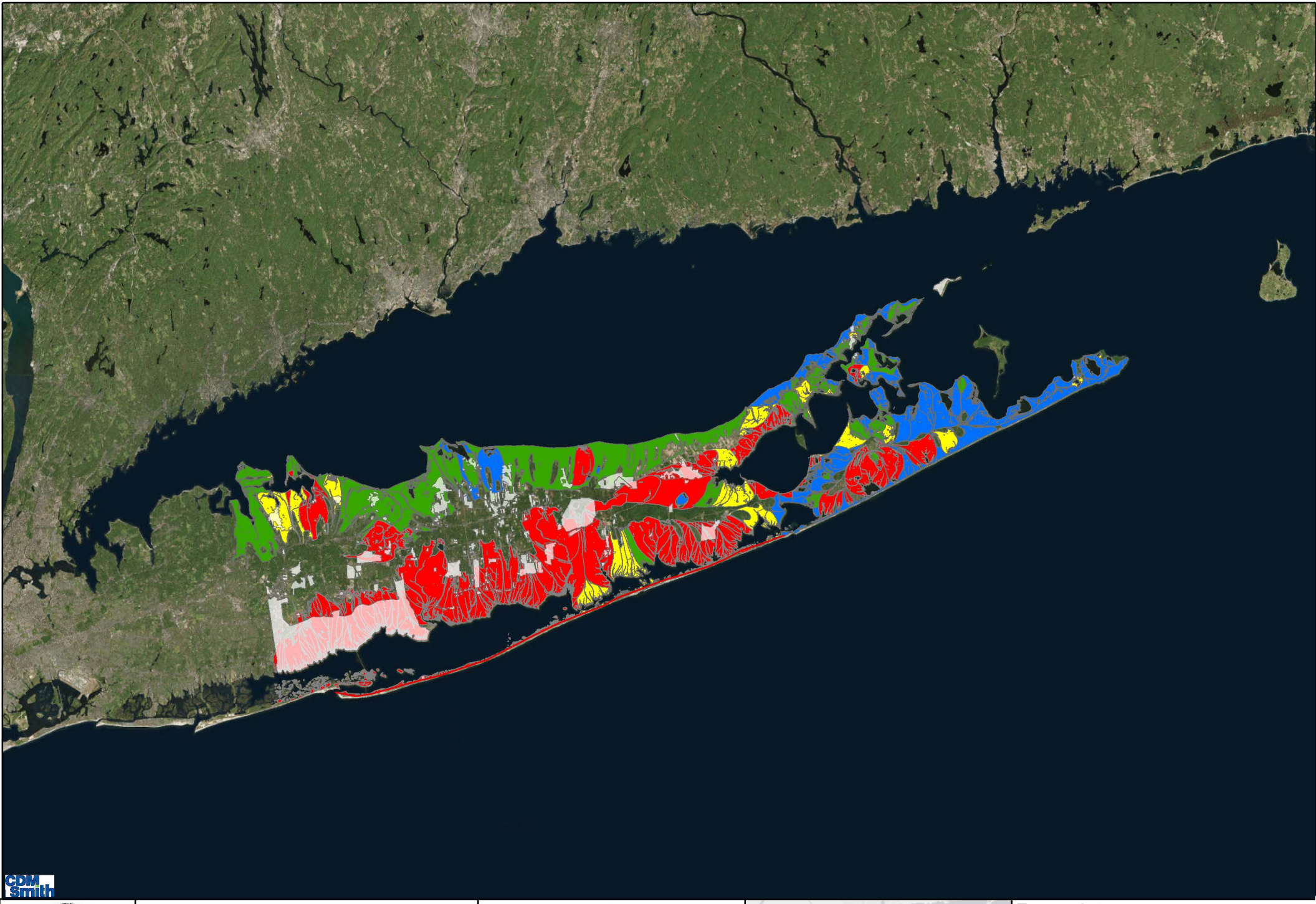


Figure 2-3
200 Year Contributing Area
Surface Water Priority Ranking
Subwatersheds Wastewater Plan

## Figure 2-4 Subwatersheds Wastewater Plan Conceptual Program Timeline

**Phase I**

- Continue voluntary upgrade incentive programs.
- I/A OWTS for all new construction on vacant land and new additions countywide.
- Establish Countywide Wastewater Management (CWMD) District and Stable Recurring Revenue Source.
- Revisions for Appendix A modified sewage disposal systems

**Phase II**

- All parcels in Phase II to be upgraded by year 2054.
- Phased implementation of policy triggers to accommodate industry and RME growth/readiness.
- Targeted upgrades in all near shore 0-2 year contributing areas of surface water Priority Area Ranks 1, 2, 3, 4.
- Targeted upgrades in 2-25 (or 50) year contributing areas in surface water Priority Area Rank 1.
- Targeted upgrades in groundwater Priority Area Rank 1.

**Phase III**

- All parcels in phase III to be upgraded by 2069.
- Targeted upgrades in 2-25 (or 50) year contributing areas of surface water Priority Area Ranks 2, 3, 4.
- Targeted upgrades in groundwater Priority Area Rank 2.

**Phase IIA**
Cumulative WWT
Installs: ~8,500
(~4,500 Retrofits)
(~4,000 New)

**Phase IIB**
Cumulative WWT
Installs: ~16,500
(~10,500 Retrofits)
(6,000 New)

**Phase IIC**
Cumulative WWT
Installs: 88,800
(73,800 Retrofits)
(15,000 New)

**Phase IID**
Cumulative WWT
Installs: 103,250
(86,250 Retrofits)
(17,000 New)

Cumulative WWT
Installs: 218,000
(186,000 Retrofits)
(32,000 New)

Cumulative WWT
Installs: 297,500
(252,500 Retrofits)
(43,000 New)

**Estimated ~500 installs**
(estimated based on existing install rates; voluntary only)

**~2,000 installs per year**
(1,000 retrofits)
(1,000 New Construction)

**~4,000 installs per year**
(3,000 Retrofits)
(1,000 New Construction

**~6,750 installs per year**
(5,750 Retrofits)
(1,000 New Construction)

**~7,250 installs per year**
(6,250 Retrofits)
(1,000 New Construction)

**~7,650 installs per year**
(6,650 Retrofits)
(1,000 New Construction)

**~5,500 installs per year**
(4,500 Retrofits)
(1,000 New Construction)

**2019**
Baseline: County/NYS SIP and Town CPF for Voluntary Upgrades
**$12 Million Per Year**

**2020**
Baseline
+ New Construction (Vacant Lots and New Additions)
+ Revisions to Appendix A of the Construction Standards
**$20 Million Per Year**

**2022**
**CWMD Established**

**2024**
**CWMD Revenue Stream Established**

**2024**
Baseline
+ New Construction
+ Targeted Upgrades at Failure 0-2 year Contributing Area
+ GW Priority Rank 1
**$56 Million Per Year**

**2026**
Baseline
+ New Construction
+ Targeted Upgrades at Failure 0-2 year Contributing Area
+ GW Priority Rank 1
+ Property Transfer in 0-2 year
+ GW Priority Rank 1
**$58 Million Per Year**

**2037**
Baseline
+ New Construction
+ Targeted Upgrades at Failure and Property Transfer in 0-2 year Contributing Area
+ GW Priority Rank 1
+ Failure in Surface Water Priority Rank 1
**$68 Million Per Year**

**2039**
Baseline
+ New Construction
+ Targeted Upgrades at Failure and Property Transfer in 0-2 year Contributing Area
+ Failure in SW Priority Rank 1
+ GW Priority Rank 1
+ Property Transfer in SW Priority Rank 1
**$68 Million Per Year**

**2054**
**Phase II Complete**
**Begin Phase III**
Continue Baseline
+ New Construction/ New Addition Mandate
+ Targeted Upgrades at Failure and Property Transfer for SW Priority Ranks 2-4 in 2-25/50 year Contributing Areas
+ GW Priority Rank 2
**$46 Million Per Year**

**2069**
**Phase III Complete**
**Begin Phase IV**
Continue Baseline
+ New Construction/ New Addition Mandate
+ Targeted Upgrades at Failure and Property Transfer for Remaining 130,000 Parcels Countywide

Notes

1. Blue Font = new requirement set forth in that particular year; Black Font = preexisting requirement(s) set forth in previous years(s).
2. Retrofits include upgrade of existing OSDS only (no new construction or building addition). New Construction = new construction on vacant land for purposes of this figure.
3. Upgrade rates shown are estimated using the best available data and are rounded for simplification.
4. All dollar values shown are estimated capital costs in current dollars (no inflation) for grants to offset costs to property owners through a stable and recurring revenue source and/or existing funding mechanisms (SIP, CPF, etc.)
5. WWT = Wastewater Treatment via individual I/A OWTS, Sanitary Sewer Connection, or Clustering. All costs based upon use of I/A OWTS; however, select parcels may benefit more from connection to existing sewer districts, connection to a new STP, or through the use of clustered/decentralized systems. Final recommendations for targeted sewer expansion areas and/or clustered systems to be provided once a stable and recurring revenue source and Countywide Wastewater Management District have been established.
6. Revision to Appendix A of the Construction Standards in 2020 includes revised setbacks based on land use and increase in allowable flow up to 30,000 gpd.
7. 2019-2023: assumes a $12 to $20 Million annual incentive allotment from State and County SIP and Town CPF programs to fund voluntary upgrades and upgrades at new construction with a building addition. Funding range to account for uncertainty in funding availability wherein $12 million represents minimum available to maintain County/NYS SIP programs and $20 million represents the maximum funding need to fund existing voluntary plus building addition upgrades.
8. 2024-2069: assumes $12 Million annual incentive allotment to fund 600 voluntary upgrades within priority areas and failures outside of mandated area.

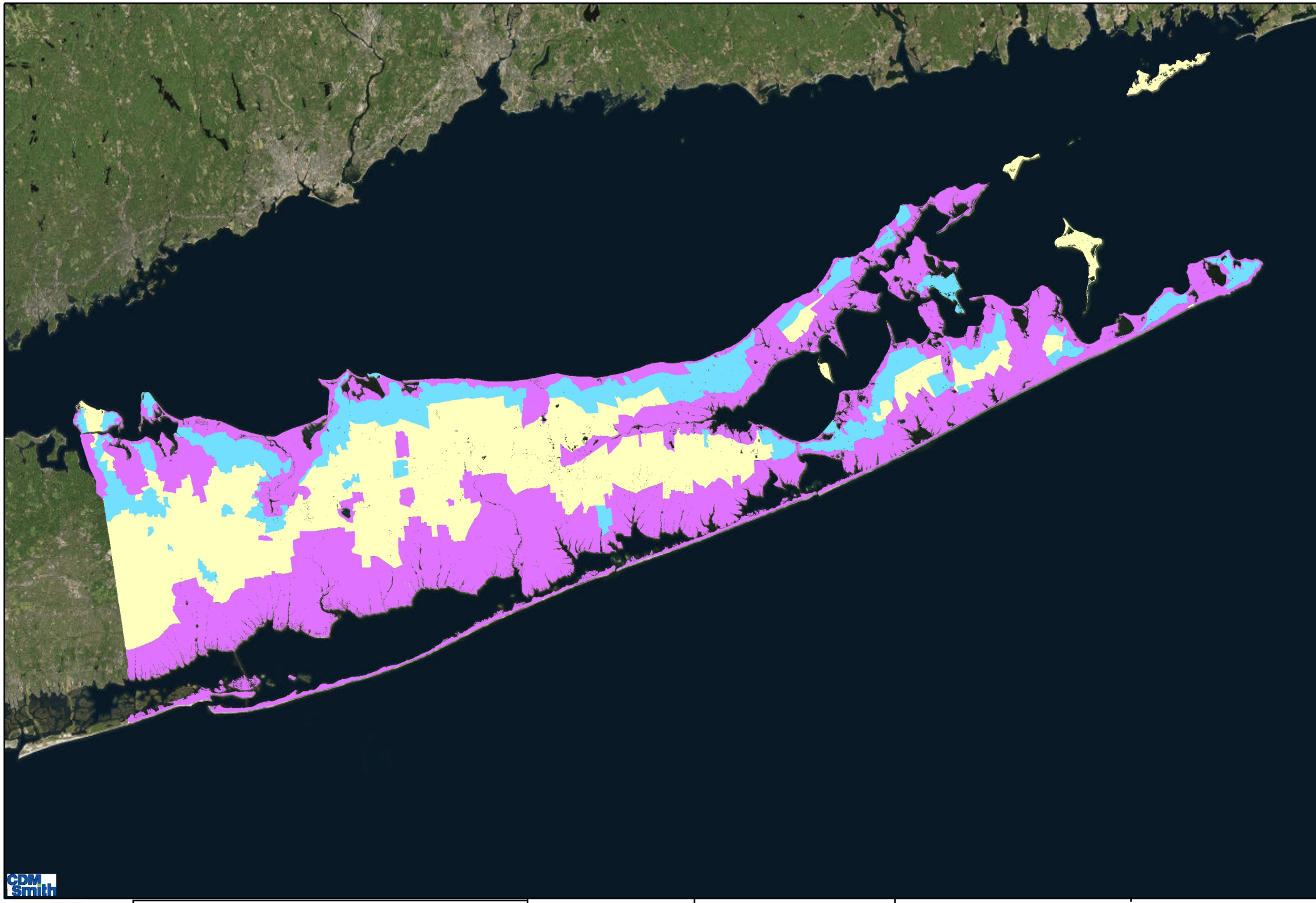


Figure 2-5 SC Subwatersheds Wastewater Plan

**Implementation Phase**

II III IV

N

0 24,500 49,000

Ft

**Phase II**

SW Priority Area 1
GW Priority Area 1
0-2 Year Contributing Area

**Phase III**

SW Priority Area 2-4
GW Priority Area 2
2-25/50 Year Contributing Area

**Phase IV**

Remaining Surface Water and Groundwater Protection Parcels

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**Table 2-1 Subwatersheds Wastewater Plan Program Phases**

| Program Phase | Program Phase Objectives | Approximate Cost |
|---|---|---|
| **I**<br>**Program Ramp Up**<br>**9,000 WWT Upgrades**<br>**(5,000 retrofit; 4,000 new construction)** | -Continue voluntary upgrade incentive programs<br>-Ramp up RME and Industry Capacity<br>-Establish Countywide Wastewater Management District<br>-Establish Stable Recurring Revenue Source | $12-20M/year*<br>5 Years (2019-2023)<br>Total Phase = $95M |
| **II**<br>**Upgrades in Near Shore and Highest Priority Areas**<br>**207,000 WWT Upgrades**<br>**(177,000 retrofit; 30,000 new construction)** | -Continue Program Ramp Up (RME and Industry Capacity)<br>-Address all highest priority areas including:<br>*Upgrades in all near shore 0-2 year contributing areas.<br>*Upgrades in surface water priority area rank 1.<br>* Upgrades in groundwater/drinking priority area rank 1. | $65M-$69M/year<br>30 Years (2024-2053)<br>[95% complete]<br>Total Phase = $1.9B |
| **III**<br>**Upgrades in All Other Priority Areas**<br>**296,000 WWT Upgrades**<br>**(253,000 retrofit; 43,000 new construction)** | -Upgrades in all remaining priority areas.<br>*Remaining parcels in surface water priority area ranks 2,3 and 4.<br>*Groundwater/drinking water priority area rank 2 | $48M/year<br>15 Years (2054-2068)<br>Total Phase = $730M |
| **IV**<br>**Upgrades in Remaining Areas (Central Suffolk)**<br>**427,000 WWT Upgrades**<br>**(384,000 retrofit; 43,000 new construction)** | -Upgrades in all remaining areas (primarily central Suffolk County) | Annual Cost Target<br>$67M/year<br>Timeframe = TBD<br>Total Phase = $1.3B |
| ***** WWTP upgrades represent cumulative installations of either I/A OWTS, sewering, or clustering**<br>**** Actual annual cost during Phase I will depend on funding availability from existing programs through County and NYS Septic Improvement Programs and Town Community Preservation Funds**<br>*** Retrofit = upgrade of existing onsite disposal system** | | |

area to surface waters and the surface water and groundwater Priority rank 1 areas during Phase II. During Phase III, shown in light blue, I/A OWTS installation would continue throughout the surface water Priority Rank 2, 3 and 4 areas and all groundwater/drinking water Priority Rank 2 areas. Finally, during Phase IV, I/A OWTS would be installed at all remaining parcels. Further description of each Phase may be found in Section 4.2 of this Draft GEIS and Section 4.4 of the SC SWP.

### 2.1.1 Proposed Changes to the Suffolk County Sanitary Code and Construction Standards

Implementation of a Countywide wastewater plan that includes the use of onsite nitrogen reducing technologies would require changes to the existing Suffolk County Sanitary Code and Construction Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other Than Single-Family Residences.

Prior to the preparation of the SC SWP, the County adopted Article 19 and amendments to Article 6 to allow for the voluntary installation of I/A OWTS. Article 19 of the Suffolk County Sanitary Code was approved by the Suffolk County Board of Health and Suffolk County Legislature in the summer of 2016. Article 19 was enacted to facilitate development and use of I/A OWTS in Suffolk

County as an environmental conservation and public health protection measure. It authorizes the Suffolk County Department of Health Services (SCDHS), as a Responsible Management Entity (RME), to develop and use resources, standards, capabilities and systems to ensure that I/A OWTS are properly managed and maintained, and ultimately to ensure that I/A OWTS are performing properly and reducing nitrogen as designed. Amendments to Article 6 of the Suffolk County Sanitary Code were approved by the Suffolk County Board of Health and Suffolk County Legislature in December 2017. The amendments address the replacement or retrofit of existing cesspools and grandfathering of pre-existing non-conforming commercial sanitary flows.

Suffolk County, like many other areas in the United States, is already taking steps to increase the use of I/A OWTS technologies in areas that will not be served by conventional sewage treatment plants. Specifically, Article 19 of the Suffolk County Sanitary Code, adopted by the Suffolk County Legislature in 2016, provides a historic first by permitting the voluntary use of I/A OWTS in Suffolk County. In addition, Suffolk County is implementing an I/A OWTS demonstration program and the Suffolk County Septic Improvement Program. The I/A OWTS demonstration program initiated in 2014 was designed to evaluate the performance of I/A OWTS in Suffolk County and to begin the creation and promotion of a local I/A OWTS market. A total of 19 systems that were donated by four vendors representing six technologies were installed between June 2015 and April 2016. Four of these technologies received Provisional Approval as of February 2019. The program was expanded and on July 21, 2016, 21 homeowners were selected from a lottery and additional I/A OWTS were installed beginning November 2016 through spring 2018 (SC SWP Section 1.1.4.4.1). The Septic Improvement Program (SIP) announced in 2017, was the County's first grant and loan incentive program for I/A OWTS to be launched in NYS. In addition to promoting the use of I/A OWTS in Suffolk County, the SIP acts as a pilot program for the eventual implementation of a larger countywide phased septic upgrade program, should a reoccurring revenue source be established. Under the SIP, homeowners who decide to replace their cesspool or septic system with the new I/A OWTS may be eligible for combined grants of up to $30,000. Grants are disbursed through a combination of two funding sources. (SC SWP Section 1.1.6.4).

Finally, select Towns/Villages have already advanced requirements for the use of I/A OWTS in sensitive areas by setting forth local laws requiring the installation of I/A OWTS and/or by offering an I/A OWTS rebate program using Community Preservation Funds (CPF). The Towns of Southampton, East Hampton, and Shelter Island have established I/A OWTS rebate programs to offset the cost of installing I/A OWTS within their respective jurisdictions. Rebate funds are generated through the CPF. The CPF was initially established by voter referendum in 1998, when voters in East Hampton, Riverhead, Shelter Island, Southampton and Southold approved a real estate transfer tax of two percent on each transaction occurring in these towns. On November 8, 2016, voters in the five East End Towns extended the CPF to 2050 and added the opportunity for each Town to invest up to 20 percent of the funds toward water quality improvement projects, which includes funding for the I/A OWTS rebate programs. In addition, four towns and four villages in the County have adopted laws mandating the installation of I/A OWTS under certain circumstances. See **Table 2- 2** for a listing of I/A OWTS mandates by Town and Village within Suffolk County.

**Table 2-2 Summary of Existing I/A OWTS Mandates in the Towns & Villages of Suffolk County**

| Jurisdiction | Description of I/A OWTS Upgrade & Install Mandates | Effective Date |
|---|---|---|
| Town of East Hampton | An I/A OWTS shall be required for the following projects:<br>- All new residential and commericial construction;<br>- Any voluntary replacement of an existing system;<br>- Any substantial expansion (50% increase in GFA or value) of existing residential and commercial buildings; or<br>- All nonresidential properties that require site plan review. | 1/1/2018 |
| Village of East Hampton | An I/A OWTS shall be required for the following residential projects:<br>- All new construction or reconstruction of new single-family or multiple family residences or buildings capable of being used as a residence,<br>- Any substantial expansion (25% increase in GFA) of existing residential buildings; or<br>- Any construction that increases the number of bedrooms beyond the number authorized in previous SCDHS permits. | 2/7/2019 |
| Town of Southampton | The following residential projects located within the High Priority Area require an I/A OWTS:<br>- All new residential construction;<br>- Any substantial sanitary system upgrade required by the SCDHS;<br>- An increase in 25% of the floor area of a residential building; or<br>- When required by the Town Conservation Board or the Environment Division. | 10/1/2017 |
| Village of Sag Harbor | An I/A OWTS shall be required for the following projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade (cost of upgrade equals or exceeds 50% of the cost of the current system) or replacement of a residential septic system required by SCDHS;<br>- An increase of 25% or more in the floor area of a residential building;<br>- Any new residential septic system or substantial upgrade required by the Harbor Committee; or<br>- All nonresidential properties that require site plan review. | *Expected* 3/12/2019 |
| Village of Southampton | An I/A OWTS approved by the SCDHS shall be required for the following residential projects located within the high-priority area and medium-priority area as identified in the Town of Southampton Community Preservation Fund Water Quality Improvement Project Plan:<br>- All new residential construction;<br>- Any substantial septic system upgrade required by the SCDHS or the Village Zoning Board of Appeals pursuant to a wetlands (natural resource) special permit under Article IIIA of the Zoning Code; or<br>- Any increase in the number of bedrooms in an existing residence. | 12/1/2017 |
| Village of Quogue | An I/A OWTS shall be required for the following residential projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade in a high-priority area or a medium-priority area;<br>- An addition or renovation to an existing residence that results in an increase of 25% or more in the gross floor area (as defined in § 196-49) of such residence; or<br>- A substantial renovation to an existing residence (whether or not the gross floor area is increased), the cost of which, as determined in connection with the granting of a building permit, exceeds $500,000. | 3/18/2018 |
| Town of Shelter Island | An I/A OWTS approved by the SCDHS shall be required for the following projects:<br>- Any new residential construction with greater than 1500 square foot living areas; or<br>- Any residential or commercial septic system upgrade required by the SCDHS. | 3/23/2018 |
| Town of Brookhaven | An I/A OWTS shall be required for the following residential projects for properties located in the Nitrogen Protection Zone (500' from a body of water):<br>- New construction of a residential dwelling; or<br>- Major addition that increases the amount of bedrooms or bathrooms. | 1/1/2017 |

With leadership from Suffolk County, the Article 6 (Single-Family Residences, Realty Subdivisions, Developments and Other Construction Projects) Work Group recommended implementing Sanitary Code amendments in a two-phased approach (please note that these phases are separate from the SC SWP implementation phases described above and have been integrated into the SC SWP recommendations). The Article 6 Work Group recommended Phase I Sanitary Code changes, adopted in January 2018, included modifications that did not need to wait for additional study (i.e. preparation of the SC SWP). It should be noted that the adoption of Article 19 and associated

I/A OWTS Construction Standards (both Residential and Commercial, i.e., Other than Residential) have undergone previous SEQRA environmental reviews.

Article 6 Work Group Phase I Sanitary Code changes (adopted January 2018) included:

1. Addressing 'Grandfathering' for commercial properties. This amendment addresses the grandfathering of pre-existing non-conforming commercial sanitary flows. Pre-existing non-conforming commercial sanitary flows from some commercial sites would have previously qualified for an exemption to permit their pre-existing non-conforming sanitary flow. However, this amendment to Article 6 requires these commercial sites to install I/A OWTS at the time of application to the SCDHS Office of Wastewater Management for approval of their sanitary and water supply to maintain their sanitary flow. (Such applications to the SCDHS are required when there is new construction, including additions to or changes of use of existing buildings.).

2. Establishing reporting requirements for sanitary pump-outs; and,

3. Eliminating the practice of replacing cesspools in-kind by requiring installation of a sanitary system that conforms to current standards. This amendment requires SCDHS approval for replacements and retrofits of failed onsite sewage disposal systems if the property owner chooses to replace the system in-kind. This change would eliminate the option to install a cesspool as a means of onsite sewage disposal upon failure of an existing onsite sewage disposal system and require, at a minimum, a conventional system consisting of a septic tank and a leaching structure.

The Article 6 Work Group recommended Phase II sanitary code changes would guide how, when, and where to implement I/A OWTS for the protection of the groundwater and surface waters. The SC SWP is the platform used to develop recommendations for how to implement the Article 6 Work Group Phase II sanitary code changes. The Article 6 Work Group Phase II proposed changes to the County's Sanitary Code address parcels that are not currently connected to an STP and/or presumed not to be connected to an STP. The proposed changes include:

- Requiring I/A OWTS upon new construction of residential, commercial, or institutional facilities;
- Requiring I/A OWTS upon system failure of existing septic systems at residential, commercial, and institutional properties; and
- Requiring I/A OWTS upon property transfer of residential, commercial, and institutional properties.

Subsequent to identification of the Article 6 Work Group Phase II Sanitary Code changes described above, revision to the Sanitary Code to increase the maximum allowable flow of Appendix A STPs from 15,000 gallons per day (gpd) to 30,000 gpd was identified to facilitate the use of Appendix A modified sewage disposal systems. In addition, there are proposed changes to the Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage Systems". The changes proposed by the County, in

consultation with the Article 6 Workgroup and other stakeholders, include reduction of the minimum setback distances established in Tables A-1 and A-2 of Appendix A Standards (for treatment systems with below grade tankage). Finally, Suffolk County is evaluating the permitting/construction approval process for Appendix A systems to streamline retrofits (e.g., SCDHS approval only [proposed requirement] versus SCDHS and SCDPW approval [current requirement]).

It should be noted that the SC SWP does not provide any specific policy recommendations to streamline the approval process, but rather defines the obstacles to streamlined approval and provides initial recommendations how the defined hurdles may be overcome.

### 2.1.2 Establishment of a Countywide Wastewater Management District (CWMD) and Responsible Management Entity (RME)

One of the fundamental requirements for the successful implementation of a wastewater management program is the ability to appropriate and expend funding in a systematic way. Establishment of a Countywide Wastewater Management District (CWMD) is proposed to provide both the administrative structure and the establishment of a recurring revenue source required to help offset the cost to individual property owners to implement the recommended wastewater management strategy. In parallel with the development of the SC SWP, the County is working with the LINAP Management Team to advance a feasibility study to clarify the process for establishment of such a District.

In addition to the establishment of a CWMD, establishment of a RME is recommended to provide the administrative and financial structure for Suffolk County to protect ground and surface water resources in the County from further impacts due to nitrogen loading from septic systems and cesspools. In doing this, the RME, as defined in County Sanitary Code Article 19, will oversee and manage the installation and long-term operation and maintenance of all I/A OWTSs. The SCDHS Office of Wastewater Management will serve as the RME.

The Countywide Wastewater Management District would provide a means by which to both assign the capital obligation as a benefit assessment and establish a recurring revenue source to support implementation of the recommended wastewater management strategy.

Suffolk County has considered several funding options to support funding of wastewater upgrades. Funding options are discussed in Section 1.1.6.4.5 of the SC SWP and focus on making the cost of I/A OWTS systems more affordable for homeowners. Suffolk County is currently offering financial assistance to residents to install an approved I/A OWTS through a grant and low-interest loan program. The SIP consists of both a grant and low-interest financing program and is a component of the County's Reclaim Our Water initiative.

Homeowners meeting the funding criteria currently follow an application process where they are scored and ranked in the following order of priority:

- A qualifying Residential Parcel located within the Priority Critical Areas (high and medium density residential parcels less than one acre located within the 0 to 2-year groundwater travel time to surface waters as defined in the Suffolk County Comprehensive Water

Resources Management Plan or high or medium density residential parcels within 1,000 feet of enclosed water bodies in Suffolk County);

- A qualifying Residential Parcel located within Critical Areas (high and medium density residential parcels less than one acre located within the 2 to 25-year groundwater travel time to surface waters as defined in the Suffolk County Comprehensive Water Resources Management Plan); and lastly,
- A qualifying Residential Parcel located outside of a Priority Critical Area or outside of a Critical Area.

The amended law passed by the County Legislature on December 18, 2018 increased the grant amount to $20,000 for eligible applicants. The amended law includes relaxed eligibility requirements and clearly puts the responsibility for paying the designer on the homeowner. The increase in grant amount is a combination of an additional $5,000 for low to moderate households and individual grants up to $15,000, that includes an incentive for Pressurized Shallow Draining Fields/Nitrogen Polishing Units. This is an increase from the $10,000 grant amount available in 2018. The increased funding is to encourage greater participation. Other changes include allowing grants for multi-family homes and residential properties within-house businesses. County employees are also now eligible to apply for grants, consistent with State law. Grants are also available to leased/rental/seasonal property owners.

The eligibility criteria for the grants include:

- Residence must be served by a septic system or cesspool and not connected to a public sewer or located in any sewer district or any proposed sewer district.
- Availability of valid Certificate of Occupancy (CO) or Certificate of Zoning Compliance for the residence.
- Income verification (Federal income tax return).

Although new construction is not eligible; construction projects on existing residences (ex. building expansion) may be eligible.

SIP applications have been accepted as of July 3, 2017. As of December 31, 2018, 470 completed applications have been received by the County. Of the 470 applications, 316 applicants were issued grant certificates. A total of 54 I/A OWTS have been installed. There are 64 additional systems that are pending installation.

Additional funding sources include a grant of up to $10,000 from New York State and Town-sponsored rebates from the Towns of Southampton, East Hampton and Shelter Island. Low interest loans administered by Community Development Corporation of Long Island Funding Corporation are also available for qualifying homeowners.

### 2.1.3 Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) – as defined by Article 19 of the Suffolk County Sanitary Code

I/A OWTS are individual onsite advanced nitrogen removal wastewater treatment units that can be used in lieu of conventional septic systems and are currently defined in Article 19 of the Suffolk County Sanitary Code. The use of I/A OWTS on a voluntary basis is established under Article 19, which has been approved by the Suffolk County Legislature and undergone project-specific SEQRA. Therefore, evaluations in this DGEIS and the SC SWP are focused on recommendations for future changes to the Suffolk County Sanitary Code that would facilitate the eventual upgrade of an estimated 365,000 existing residential and 18,700 commercial onsite conventional sanitary wastewater systems and cesspools to I/A OWTS.

The use of I/A OWTS are approved for Single-Family Residential properties and Other Than Single Family Residential properties that meet the allowable flow/design limitations of I/A OWTS technologies approved for use by the County.

### 2.1.4 Clustered/Decentralized Systems

Clustered/decentralized systems include the connection of two or more parcels with a maximum design flow of 30,000 gpd or less of sanitary wastewater to a common wastewater treatment system. Clustered/ decentralized systems may be required and/or beneficial at locations where individual I/A OWTS are not technically feasible and conventional STPs are not cost-effective, such as mobile home parks, new housing developments, downtown hamlets, and grandfathered sites. Clustered/ decentralized wastewater treatment systems could include the use of I/A OWTS, STPs as defined in Appendix A of the Construction Standards for Sewage Disposal Systems Other Than Single Family Residences (e.g., the Commercial Standards), and STPs as defined in Appendix B of the Commercial Standards and Article 6 of the Suffolk County Sanitary Code.

Modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code are proposed to expand the application of clustered/ decentralized systems in Suffolk County. The use of Appendix A systems is currently limited to design flows up to 15,000 gallons per day (gpd). Adoption of the proposed amendments to Article 6 (as noted in Section 2.1.1) of the Sanitary Code would allow flows up to 30,000 gpd.

The proposed changes to the Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage Systems" address the setback requirements for these types of facilities as required by the County. The proposed change would reduce the setback requirement of the 'Appendix A treatment system' with below grade tankage based on the land use of Appendix A system siting parcel and the adjoining parcels. These proposed changes would not negate the requirements per Federal and State regulations or those of the local municipality in which the facility may be located. The changes proposed by the County include the reduction of the setback requirements in Table A-2 of Appendix A for Appendix A STPs with below grade tankage located adjacent to specific land use categories as depicted on **Table 2-3**.The proposed Appendix A system setback requirements were developed based on an evaluation conducted as part of the SC SWP (see Section 8.1.2.1) and considered setback requirements established by other jurisdictions and engineering mitigative options.

**Table 2-3 Proposed Setbacks for Appendix A Clustered/Decentralized Systems**

| Proposed Setbacks (feet) for Appendix A STPs | | | | | | |
|---|---|---|---|---|---|---|
| | | Distance (feet) to Structure and Neighboring Property Line: | | | | |
| **Property Use Served By Appendix A STP** | STP Structure | Habitable Structure | Non-Habitable Structure | Residential Property Line | Mixed Use Property Line | Commercial Property Line |
| **Residential Use i.e. Single-Family, Condo's, Townhouses, Apartments, Co-Op's** | Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A) | 75 | 50 | 75 | 25 | 10 |
| **Commercial** | Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A) | 10 | 10 | 75 | 25 | 10 |
| **Mixed Use w/ more than 25% of the site commercial use** | Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A) | 25 | 10 | 75 | 25 | 10 |
| **All Uses** | Enclosed STP w/above grade tanks w/o Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A) | 200 | 100 | 150 | 150 | 150 |
| **All Uses** | Enclosed STP w/above grade tanks w/Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A) | 75 | 50 | 75 | 75 | 75 |
| **All Uses** | Leaching Structures | 10 | 10 | 10 | 10 | 10 |

As shown in **Table 2-3** proposed setbacks are provided for a variety of property use scenarios. For proposed Appendix A systems with below grade tanks, reduced setbacks would be permitted. The proposed reduction in setback is related to the land use of subject property and neighboring properties. Properties designated as residential land use have the most stringent setback requirements while properties designated as commercial land use have the lowest setbacks. Projects that propose to use above-grade tanks and do not provide odor control would be subject to the same setback requirements as defined in the existing Appendix A standards. Likewise, properties with above grade tanks and odor control would be subject to the same reduced setback requirements as defined in the existing Appendix A standards.

Finally, the proposed setbacks for leaching structures has been reduced to be consistent with the current requirements for I/A OWTS.

### 2.1.5 Sewage Treatment Plants

New STPs and/or the expansion of existing sewer districts are also considered in the SC SWP. For the purposes of modeling the nitrogen loads and final concentration of nitrogen in groundwater under the final recommended wastewater management plan, the conventional STPs assumed to be implemented are limited to those projects with existing designs and/or sewering feasibility studies completed by Suffolk County and Towns/Villages and construction funding identified and/or procured. The nitrogen loading reduction through new STPs and/or through expansion of existing sewer districts supports the inclusion of this wastewater management strategy in the County's overall implementation plan.

An initial sewer expansion analysis was completed within the SC SWP that evaluated the cost variability of several wastewater management scenarios incorporating sewer expansion projects that were previously deemed feasible, but do not have construction funding identified. The evaluation was completed for information purposes to assess the relative environmental benefit and implications on needs for a stable recurring revenue source. A list of the presumptive sewered area projects is included as Table 6-1 in this Draft GEIS. It is important to note that individual sewer and/or sewer expansion projects would require project-specific Feasibility Study and environmental review (e.g. SEQRA).

### 2.1.6 Advanced Wastewater Treatment Pilot Areas

Pilot studies considering a variety of geographic, land use, and demographic conditions are on-going to consider the effectiveness of the proposed wastewater management nitrogen reduction approaches described in the SC SWP. The information gathered from the continuing piloting efforts will help to frame the County's approach to implementing nitrogen reduction treatment systems based on geographic location of and current land use within the pilot areas and will be used by the County to support future revisions to the Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences and for Single-Family Residence. Any future code change would be the subject of its own review under SEQRA.

The following pilot areas are being evaluated as part of the SC SWP:

- Downtown Mattituck – to demonstrate the ability of a cluster system to treat wastewater from commercial properties with small lots in a downtown hamlet setting (including evaluation of reduced setbacks and revisions to Appendix A standards);
- Shinnecock Shores – to demonstrate clustering of an existing residential development with a homeowner's association (HOA);
- Fire Island – to demonstrate I/A OWTS for the unique situation existing on the Fire Island National Seashore (FINS), and
- Lake Ronkonkoma – evaluation of phosphorus loading (e.g., phosphorus is generally identified as the limiting nutrient for fresh water systems), potential phosphorus reduction requirements, and identify wastewater management options that could be used to address

phosphorus and pathogens. In addition, recommendations would be made on how to retrofit existing lots using I/A OWTS and alternate leaching technologies in areas with small lot size and poor soils.

### 2.1.7 Other Program Recommendations

It is important to note that the SC SWP Section 2.2 includes a wide list of strategies and existing technologies that are proven to reduce nitrogen loading from sanitary wastewater to groundwater and/or surface water. As discussed in detail in the SC SWP, the strategies identified as part of the 'Phase I' roll-out of the County's program would be re-assessed and changes or additional measures and Code changes are anticipated. In addition, as recommended in Section 8.4.11 of the SC SWP, an Adaptive Management Plan would be prepared to provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources. The need for further SEQRA review would be determined at the time the future changes (or additions) to the County's wastewater management strategy are identified. Triggers for SEQRA future review are discussed in Section 12 of this Draft GEIS.

## 2.2 Purpose and Need

The following subsections provide a description of the 'need' for County action in response to nitrogen pollution of water resources (groundwater and surface water). This is followed by a subsection addressing the proposed project's 'purpose' in terms of overall goals and benefits. Briefly stated, the need is to address the negative effects of nitrogen loading to the water resources, specifically from onsite sanitary wastewater. The overall project purpose is the reduction of nitrogen in groundwater and surface water by implementing wastewater treatment upgrades.

Sections 3.1, 3.2 and 1.1.3 of the SC SWP (Appendix B to this document) provides detail as to the predicted nitrogen concentration in groundwater throughout the County and the impairment of surface water quality as a result of nitrogen. **Figure 2-6** illustrates the groundwater model-simulated concentration of nitrogen in the shallow upper glacial aquifer if existing conditions of land use and wastewater management remained in place for 50 years. Areas shown in red on the figure are areas where nitrogen concentrations are projected to exceed the NYS drinking water standard of 10 mg/L maximum contaminant level (MCL) if no action is taken; these areas are generally located downgradient of densely developed unsewered areas. Further detail is provided in Sections 3.1 and 3.2 of the SC SWP. Groundwater discharging from the shallow aquifer to downgradient surface water bodies carries this nitrogen load to the surface waters, leading to the environmental impacts described in Section 1.1.3 of the SC SWP and summarized in Section 2.2.1 below.

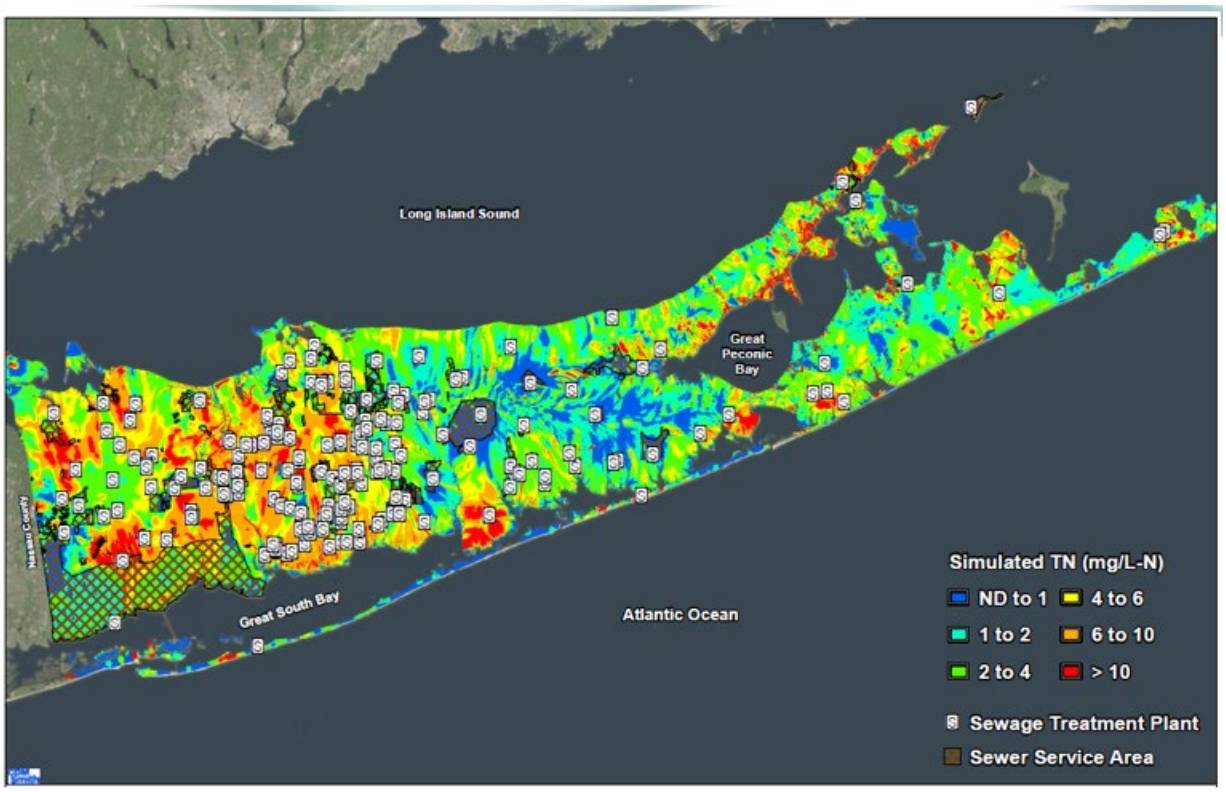



**Figure 2-6 Model-Simulated Nitrogen Concentration in the Shallow Upper Glacial Aquifer after 50 Years of Existing Land Use and Wastewater Management**

## 2.2.1 Project Need

In Suffolk County, approximately 74 percent of homes are unsewered and discharge sanitary wastewater containing nitrogen to the underlying groundwater that provides both the only source of potable supply for County residents and baseflow to surface water features in the County. Cesspools and septic systems have been identified by scientists, academic researchers and government regulatory agencies as a significant and continuing threat to water quality. (**Comp Plan, 2015**, Executive Summary, page ES-4 and Section 3) Effluent from onsite wastewater disposal systems that are not designed to remove nitrogen from wastewater, reaches groundwater that ultimately discharges to streams, bays and estuaries. Excess nitrogen is a contributing factor to harmful algal blooms (HABs) that contribute to reduced oxygen causing fish kills, degrades wetlands and impacts coastal marine habitats. Elevated levels of nitrogen have also been found in the groundwater that comprises the Island's sole source aquifer and source of drinking water supply (**Comp Plan, 2015,** Executive Summary, page ES-25 and Section 3). Sobering statistics of nutrient related impacts to Suffolk County waters (SC SWP Section 1.1.3) include, but are not limited to:

- 40.3% increase in nitrogen concentrations in untreated water from the same set of 175 upper glacial wells measured in 1987 and 2013 from 2.63 mg/L to 3.69 mg/L (well below the drinking water maximum contaminant level of 10 mg/L);
- Nitrogen traveling vertically down through the aquifer resulted in an 80 percent increase in nitrogen concentrations in untreated water from the same set of 213 Magothy wells

sampled in 1987 and 2013 from 0.95 mg/L to 1.71 mg/L(well below the drinking water maximum contaminant level of 10 mg/L);

- 10% increase in nitrogen concentrations in Suffolk County marine waters in the past 10 years, and more specifically:
  - 45.7% increase in nitrogen concentrations in Long Island Sound harbors
  - 53.8% increase in nitrogen concentrations in Peconic Estuary enclosed bays
  - 60.4% increase in nitrogen concentrations in the far eastern south shore bays
  - 30% increase in nitrogen concentrations in eastern Great South Bay;
- Increased nitrogen levels have been one of the factors contributing to the following:
  - HAB events have been documented in each of the three major estuaries every year for the past 10 years. There have been more than 180 documented individual HAB events in marine waters, and greater than 50 HAB events in freshwaters within the last 10 years alone;
  - Over half of the 124 sampled marine water bodies within Suffolk County had dissolved oxygen hypoxic events over the past 10 years;
- 13.1% of native vegetated tidal wetlands have been lost in Suffolk County since 1974;
  - Greater than 85% eelgrass beds have been lost in the Peconic Estuary since 1930: these observations are corroborated by the predicted unit nitrogen loads exceeding acceptable published values (see section 1.1.3 of the SC SWP) by one to two orders of magnitude within many water bodies in Suffolk County;
- Hard clam harvests in the Great South Bay have fallen by greater than 93% over the past 25 years (increased nitrogen concentration being one of the factors, overfishing being one of the primary causes of the hard clam harvest reduction, and HABs are preventing their recovery); and
- Up to 12,233 acres of waterways have been closed (seasonal or permanent) to shell fishing in recent years due to PSP biotoxins associated with HABs.

The impacts to the coastal communities of Suffolk County from SuperStorm Sandy in 2012 underscored the connection between nitrogen in groundwater baseflow discharging to surface water resources, loss of wetlands, and damage to ecosystem health. Reduction in nitrogen loading is anticipated to support wetlands restoration and improve storm and flood protection and coastal resiliency provided by healthy wetlands. The County, recognizing the need for immediate action, updated the draft 2011 Suffolk County Comprehensive Water Resources Management Plan to include new chapters focusing on wastewater management, estuary programs, coastal resources, and alternative management and funding mechanisms.

Nitrogen contamination associated with discharge of sanitary wastewater has been studied and documented in the ***Long Island Comprehensive Waste Treatment Management Plan*** (208 Plan, 1978), the ***1987 Suffolk County Comprehensive Water Resources Management Plan, the draft 2011 Suffolk County Comprehensive Water Resources Management Plan*** and the ***2015 Suffolk County Comprehensive Water Resources Management Plan***.

In response to the mounting water quality concerns and the findings of the Comp Water Plan, County Executive Steve Bellone tagged nitrogen pollution as environmental "public water enemy number one" and announced Suffolk County's Reclaim Our Water initiative, a multifaceted program established to arrest the mounting nitrogen crisis.

> "We are a county that will no longer allow our water quality crisis to go unaddressed, but will come together to Reclaim Our Water."
>
> - Suffolk County Executive Steve Bellone

On a parallel track, New York State appropriated five million dollars to address nitrogen pollution on Long Island, leading to the joint initiative by the NYSDEC and the Long Island Regional Planning Council (LIRPC) to develop a Long Island Nitrogen Action Plan (LINAP). Working together, NYSDEC and LIRPC established a Project Management Team and engaged a broad group of stakeholders to develop a science-based, long term plan to address a variety of sources of nitrogen, including cesspools and septic systems. The primary goals of the LINAP are to:

- Identify sources of nitrogen to surface waters and groundwater;
- Establish nitrogen reduction endpoints; and,
- Develop an implementation plan to achieve reductions.

The LINAP identified the preparation of SWPs for Nassau and Suffolk County as critical stepping stones for the overall success of the LINAP. The SWPs will identify the sources of nitrogen on Long Island, characterize the water quality and ecological sensitivity to nitrogen in all water bodies, and provide a recommended strategy of how to address nitrogen from wastewater sources. Furthermore, the SWPs will establish initial load reduction goals and, of critical importance, identify water resources where wastewater management alone may not result in sufficient nitrogen removal to protect the environment and human health. The identification of these water bodies will pave the way for future evaluations of alternate means for nitrogen mitigation to address legacy pollution such as permeable reactive barriers, in-water aquaculture/bioharvesting, hydromodification, and fertilizer management.

The purpose of the SC SWP is to develop Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources originating within the County. A critical element of the overall Reclaim Our Water initiative, and the objective of the countywide wastewater management strategy, is to significantly reduce nitrogen loading to water resources within Suffolk County. By doing so, restoration of the impacts identified in Section 2.2 can begin,

protection would be provided to existing surface water resources with good water quality so they would not suffer the same fate as those with poor water quality. In addition, protection of our vulnerable sole source drinking water aquifer would be provided. The SC SWP fulfills the recommendations set forth in the **Comp Water Plan**, serves as a critical component of the overall LINAP, and can be a decision support tool utilized by local Town/Village policymakers and individual estuary programs to support ongoing related initiatives.

## 2.2.2 Project Goals and Benefits

Suffolk County is committed to reducing nitrogen loading to surface and groundwaters. Nitrogen pollution is associated with impacts to marshlands, algal blooms, impacts to eel grass, hard clams, and concern for our drinking water quality. Sources of nitrogen loading include, in part, wastewater, atmospheric deposition, pet waste and fertilizer. These contributing factors arise throughout the County Multiple mechanisms to address this issue are being developed as part of LINAP. The outcome of this Plan will be recommended measures to best reduce nitrogen loading from sanitary wastewater to groundwater and surface water. Measures are expected to be technical, regulatory and policy based. Although the recommendations within the SC SWP are specific to the County, they support the goals and objectives stated within the LINAP. As the development of the LINAP embraces the many local activities targeting nitrogen loading and Suffolk County is an active stakeholder, it is reasonable to assume that recommendations from the SC SWP would be considered by LINAP as part of a robust nitrogen loading reduction plan for Long Island.

Section 1.1.5 of the SC SWP discusses the potential socio-economic benefits that may arise from the implementation of a Countywide upgrade wastewater treatment program.

### 2.2.2.1 Program Goals

The primary goal of the SC SWP is to provide recommendations to policymakers on how to reduce nitrogen from onsite wastewater systems in order to reverse negative water quality trends in groundwater, drinking water, and surface waters through the implementation of a phased wastewater upgrade program. The SC SWP provides the first countywide evaluation and wastewater management strategy since the 1978 208 Study and represents a historic first in Suffolk County by providing:

- Establishment of subwatershed boundaries (described in SC SWP Section 2.1.4) and nitrogen load estimates (loads from sanitary wastewater, fertilizer, atmospheric deposition and pets are described in SC SWP Section 2.1.5) for all County water resources, built off a uniform and consistent set of modeling assumptions;
- Establishment of estimated nitrogen load reduction goals for the restoration and protection of the water resources in the County (described in SC SWP Section 2.1.9);
- Quantification of the anticipated environmental benefit towards achievement of the load reduction goals through wastewater management;
- Establishment of priority areas for wastewater upgrades;
- Identify areas that might benefit from sewering versus I/A OWTS;

- Provide critical information towards the development of an integrated, island wide, nitrogen management strategy currently under development by the LINAP; and
- Provide information that can be used by local water quality initiatives (e.g., LISS, PEP, SSER, Town/Village initiatives) to support funding and resource allocations.

The potential benefits that can be achieved through implementation of the countywide wastewater upgrade program are extensive. A summary of these benefits is provided below.

### 2.2.2.2 Potential Program Benefits from Ecosystem Restoration

Suffolk County's diverse surface water ecosystems provide numerous recreational opportunities, a thriving tourist industry, a once great fin fishing and shell fishing industry, and a natural buffer from storm surges. Examples of the inter-connections between the environment and the economy is included below from the US EPA Triple Values (3VS) model (**Figure 2-7**).

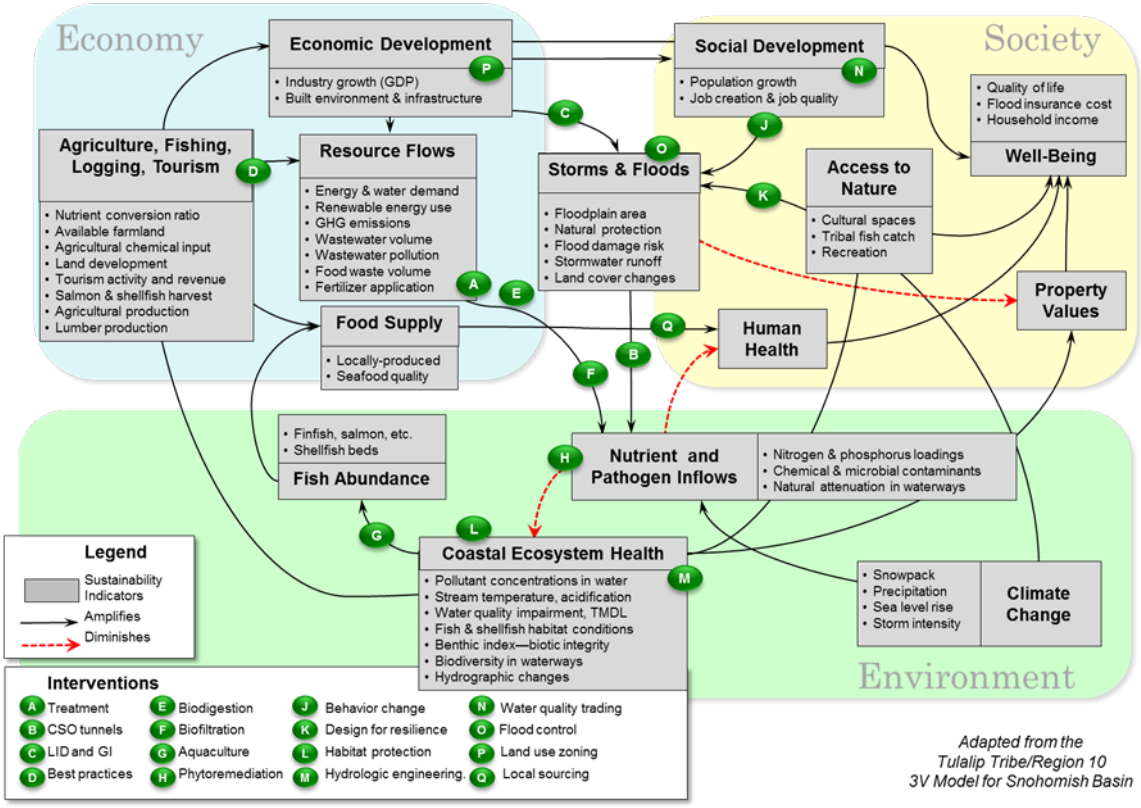



**Figure 2-7 Participatory Systems Modeling to Explore Sustainable Solutions: Triple-Value Simulation Modeling Cases Tackle Nutrient and Watershed Management from a Socio-Ecological Systems (SES) Perspective (Poster by US EPA, Buchholtz ten Brink, et. al.)**

As shown in **Figure 2-7**, coastal ecosystem health has direct and indirect impacts to almost all aspects of life in Suffolk County. This includes, but is not limited to, impacts to public health through protection of its food supply and drinking water supply and protection against life threatening storm surge. Suffolk County's economy is strongly linked to water quality including direct and indirect links to property values and property tax revenues, tourism to beaches, seafood restaurants, marinas, commercial and recreational fin fishing, shell fishing and

aquaculture, and destruction caused by storm surge. The 2015 Comprehensive Water Resources Management Plan (Section 6.2.1) states that in 1993, more than 1,100 establishments were identified as "estuarine dependent" and gross revenues for these establishments exceeded $450 million per year (equal to approximately $680 million in 2014).

In summary, implementation of the recommendations of the SC SWP would support the arresting and reversal of nutrient related ecosystem degradation observed in Suffolk County that is primarily attributable to nitrogen over-enrichment, with wastewater as the dominant nitrogen source.

Based upon the findings provided in SC SWP, it is anticipated that nitrogen load reductions from wastewater sources resulting in water quality improvement may support:

- Reduced harmful algal blooms (HAB) thereby providing for protection of human health, and shellfish, reduced risk of direct pathogen exposure, and supporting economic benefits to the shellfishing industry;
- Increased dissolved oxygen and fewer excursions below NYSDEC criteria resulting in healthy ecosystems, fewer fish kills, and increased biodiversity;
- Clearer waters and fewer beach closures due to HABs that can translate to increased property values;
- Enhanced shellfish stocks and fewer shellfish closures;
- Stronger recreation, tourism, and commercial fishing economies; and,
- Healthy submerged vegetation and wetland plants that anchor our shorelines, increase protection from storm surge events and also utilize nitrogen, providing further nitrogen load mitigation.

### 2.2.2.3 Potential Program Benefits from Groundwater/Drinking Water Protection

The 1.5 million residents of Suffolk County rely on its underlying aquifer as a USEPA designated sole source drinking water source. The sole source aquifer provides drinking water through an estimated 900 public water supply wells and an estimated 30,000 private supply wells. In addition to the expected benefits resulting from ecosystem restoration, prevention and reduction of nitrogen to less than the NYS drinking water standard of 10 mg/l in locations where wastewater represents the predominant sources of nitrogen is predicted.

### 2.2.2.4 Other Program Benefits

The findings of the SC SWP support a wide range of ongoing related initiatives in Suffolk County. As described earlier, the LINAP will use the SC SWP findings to identify water bodies where other nitrogen reduction measures might be necessary to meet targeted endpoints. LINAP is anticipated to address other mitigation measures that may include BMPs for fertilizer and stormwater as well as remediation measures such as PRBs, in-water aquaculture/bioextraction, and hydromodifications. Finally, the findings and recommendations of the SC SWP can be used to guide the use of existing water protection funding (e.g., County/NYS Septic Improvement Programs, Town Community Preservation Funds [CPF], etc.) and as a source of information that

can support other programs that focus on the protection of surface waters such as the LISS, PEP, SSER, and related Town/Village initiatives.

## 2.3 SEQR Record

The SCDHS Division of Environmental Quality (DEQ) is the project sponsor. On August 31, 2016 SCDHS DEQ notified interested and involved agencies of its intent to assume Lead Agency status and as such in accordance with Title 6 NYCRR Part 617.6(a) and (b) to classify this proposed action as a Type I Action. No objections were received within 30 days of the mailing. As a result of this SEQRA coordinated review process Suffolk County was established as SEQRA Lead Agency and is responsible for conducting the environmental review of this action.

After Suffolk County was established SEQRA Lead Agency, the Suffolk County Council on Environmental Quality (SC CEQ) reviewed this proposed project at their September 21, 2016 meeting and recommended to the Suffolk County Legislature that the action be classified as a Type I action with a Positive Declaration. The Suffolk County Legislature passed Resolution #849-2016 at their October 5, 2016 meeting, identifying the Proposed Action as a Type I action under SEQRA with a Positive Declaration requiring the preparation of a Draft Generic Environmental Impact Statement and the initiation of the scoping process.

Working together with the SCDHS, the Suffolk County Department of Economic Development and Planning (SC DEDP) and the Suffolk County Legislature, SC CEQ convened two Public Scoping Hearings to provide opportunity for public comment on the Draft Scoping Document. The first Public Scoping Hearing was held on November 29, 2016 at the Suffolk County Water Authority (SCWA) Education Center in Hauppauge, New York and the second Public Scoping Hearing was held on December 1, 2016 at the Suffolk County Community College Culinary Arts and Hospitality Center in Riverhead, New York. In addition, the Draft Scoping Document was posted on both the SC DEDP and the SCDHS websites. Written comments were accepted through December 13, 2016.

A Final Scoping Document was prepared that included the addition of relevant issues identified during the public scoping process, as well as identification of issues not included in this GEIS. At their February 15, 2017 meeting, the SC CEQ recommended that the Legislature adopt the Final Scoping Document. The Legislature passed Suffolk County Resolution 176-2017 at their March 28, 2017 meeting adopting the final scope of the Draft GEIS.

Under SEQRA, the preparation of a Generic Environmental Impact Statement is appropriate for the consideration of 'an entire program or plan having wide application or restricting the range of future alternative policies or projects, including new or significant changes to existing land use plans, development plans, zoning regulations or agency comprehensive resource management plants.' [6NYCRR Part 617.10(a)(4)]

This Draft GEIS is prepared to comprehensively address requirements of both federal and state laws and regulations (i.e. 6NYCRR Part 617). In addition, this Draft GEIS is prepared using existing available data; no field studies were conducted, or field data collected to prepare this document. It is recognized that site-specific data collection may be required to complete a Supplemental GEIS and/or a project specific, or study-area specific draft/final EIS (D/FEIS). The requirements for site specific or project specific environmental reviews as they pertain to wastewater treatment requirements are discussed in Section 12 of this document.

The requirements for establishing a public review/comment period and public hearing on the document to receive comments are detailed in 6NYCRR Part 617.9 and Part 617.12. The regulations identify a minimum 30-day public comment period. A Final GEIS would include the list of substantive comments received on the Draft GEIS and responses. The Final GEIS would also include the Draft GEIS by reference.

## 2.4 Project Stakeholders

The SC SWP was developed with the support of numerous stakeholders including NYSDEC, USEPA, County and Town government representatives, environmental organizations, and academia. Suffolk County has endeavored to develop the SC SWP in an open and transparent process, and has incorporated the information, experiences, perspectives and feedback provided by a wide variety of stakeholders engaged throughout the SC SWP development. Stakeholder participation included:

- Focus Area Work Groups, that included local and national technical experts, convened by SCDHS to provide technical oversight and guidance on specific technical issues, including, but not limited to:
    - Technical support and agreement on the modeling approach, assumptions, and data sources used to delineate groundwater contributing areas and nitrogen load estimates
    - Technical support on the development, and agreement on the approach for establishing tiered priority areas for wastewater upgrades for surface waters; and,
    - Technical support on the development, and agreement on the approach for establishing nitrogen load reduction goals for surface waters.
- A Wastewater Plan Advisory Committee (WPAC) comprised of representatives with diverse backgrounds and perspectives to provide input, feedback and guidance on SWP development, and
- Stakeholders representing a range of perspectives and interests.

In addition, SCDHS held bi-weekly project progress calls to update project partners including representatives from the LIRPC, NYSDEC, New York State Department of State (NYSDOS), State University of New York School of Marine and Atmospheric Sciences (SUNY SoMAS), SCDEDP, the Suffolk County Executive's Office, the United States Environmental Protection Agency (USEPA) and the United States Geological Survey (USGS).

Finally, SCDHS presented interim work products and solicited feedback at meetings with individual stakeholders including the Long Island Farm Bureau, NYSDEC, the Peconic Estuary Program (PEP), the Nature Conservancy (TNC), and USEPA.

A complete list of stakeholders is found in Section 1.2 of the SC SWP (Appendix B).

## 2.5 Document Organization

This Draft GEIS fulfills the regulatory requirements as stated in 6NYCRR Part 617. A list of the document sections and outline of their content follows.

**Executive Summary** – The Executive Summary provides a succinct summary of the Draft GEIS including the project description, major findings of the environmental analysis, mitigation recommendations, and topics requiring further site-specific study and assessment prior to implementation.

**Proposed Action, Purpose and Need** - A concise description of the SC SWP recommendations (adaptive management) and phased implementation for the County wastewater management strategy for the reduction of nitrogen loading is presented. The associated recommended changes to Suffolk County's Sanitary Code and Construction Standards (e.g., recommendations for "Appendix A" sewage treatment plants) are also noted. The Purpose and Need for reduction in nitrogen loading is summarized.

**Existing Environmental Setting** –The baseline environmental setting of the County is described. Current readily available data sources are used. Characterization of priority subwatersheds and groundwater quality is based on the SC SWP.

**Potential Impacts of Proposed Action** – A statement and evaluation of potential significant adverse and positive environmental impacts and the reasonable likelihood of their occurrence due to the Proposed Action is included in this section of the Draft GEIS.

**Short-term or Construction Impacts** - Construction-related impacts are described in general in this section.

**Cumulative Impacts** – A general overview of the cumulative impacts of SC SWP implementation on the environment, natural resources and cultural environment is provided. The scenarios considered in this section include;

- Water export/import to water supply,
- Potential for growth inducement within the County, and
- Energy demand.

**Unavoidable Adverse Impacts** -This section summarizes those impacts that cannot be avoided or adequately mitigated if the SC SWP strategies and Sanitary Code changes are implemented.

**Irreversible and Irretrievable Commitments of Resources** – This section discusses the nonrenewable natural resources that would be committed associated with the implementation of the Proposed Action.

**Mitigative Measures** -Where significant project related impacts are identified based on the analysis conducted in the Draft GEIS, measures to mitigate these potential impacts to the extent practicable are noted. This includes potential short-term construction as well as long-term (ex. operational) impacts.

**Alternatives Analysis** – This section of the Draft GEIS describes and evaluates reasonable alternatives to the Proposed Action that consider the goals and objectives of the County. The following alternatives are evaluated in the Draft GEIS:

- No Action Alternative: Continued use of septic systems and the patchwork of wastewater collection and treatment systems that currently exist within the County;
- Countywide centralized wastewater collection and treatment systems (expansion of existing sewer districts and/or establishment of new sewer districts) to treat wastewater from existing developed parcels;
- Increasing minimum lot sizes Countywide (to limit nitrogen loading on a parcel basis);
- County purchase of 'priority areas' using Open Space funding; and,
- Dual plumbing/dual water systems.

**Transfer of Development Rights (TDRs)** - The County's use of TDRs if included as an implementation strategy in the SC SWP is discussed in general terms.

**Project/Site-Specific D/FEIS Requirements** -There is no new development associated with the Proposed Action, however, the implementation of the Proposed Action may affect future development potential, demand for utilities, and existing land uses. Potential impacts to the natural or physical environment as well as utilities and community services due to site specific projects will be addressed by subsequent SEQRA review. This section provides a description of specific conditions or criteria under which a future action or actions would require additional review under SEQR. Example thresholds or criteria that would trigger supplemental or site-specific EISs to address site specific or municipality specific actions are provided.

# Section 3

# Existing Environmental Setting

Section 3.0 provides a description of the baseline environmental setting for Suffolk County. The study area boundaries coincide with the limits of the County. Figures provided in this section show the county 'divided' and identified as 'western' and 'eastern' Suffolk County. **Figure 3-1** depicts those Towns identified within western Suffolk County as Huntington, Babylon, Smithtown, Islip and Brookhaven. **Figure 3-2** depicts the Towns identified within eastern Suffolk County and include Riverhead, Southold, Southampton, East Hampton and Shelter Island. Additional maps that include the Priority Areas as defined in the Suffolk County Subwatershed Wastewater Plan (SC SWP) are included as Appendix B to this Draft GEIS.

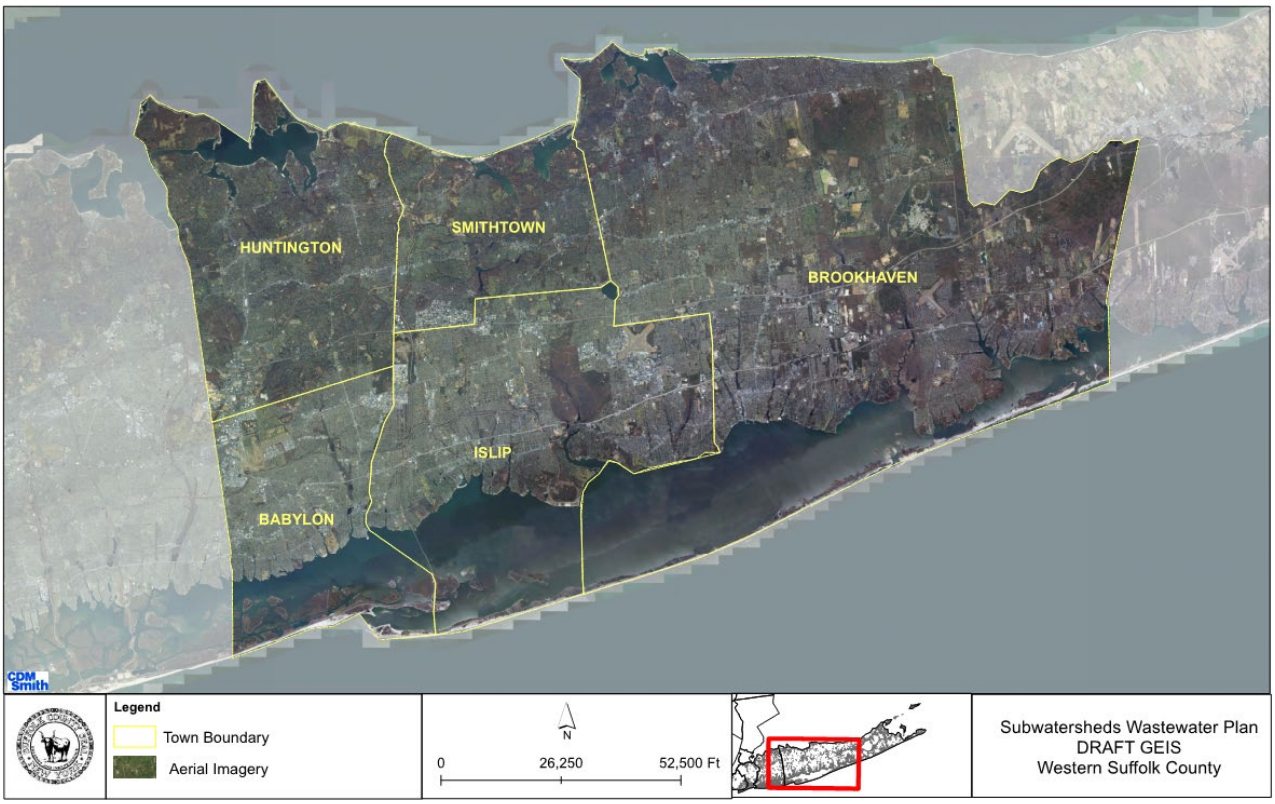



**Figure 3-1 Western Suffolk County Towns**

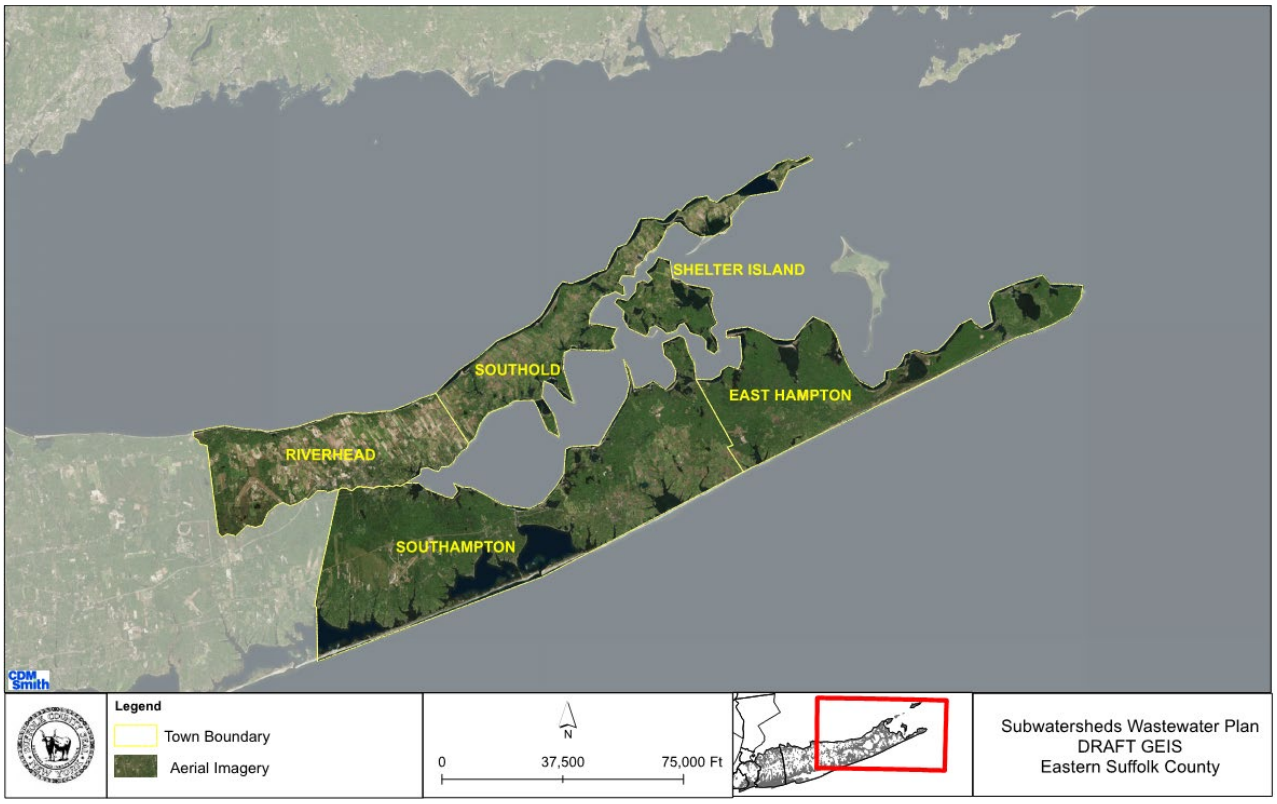



**Figure 3-2 Eastern Suffolk County Towns**

The existing environmental setting described herein includes the physical environment which includes physical features (community plans, land use and zoning) and natural features (ground and surface water, critical habitat, threatened and endangered species, wetlands and floodplains), plus historic and archeological resources; and the social environment which includes noise/odors, and human health. The term 'subwatershed' is used throughout this document. Subwatersheds are a natural feature and are discussed throughout this document. A subwatershed is an area contributing groundwater baseflow to a discrete surface water body; it includes the groundwater contributing area and the surface water body itself.

The environmental features described in this section were identified during Scoping and within the Long Environmental Assessment Form as features that have the potential to be impacted should Suffolk County implement the Proposed Action.

The baseline environmental setting of the County is described using readily available data sources. Characterization of priority subwatershed areas and groundwater/surface water quality is summarized below. Detailed information can be found in the SC SWP. Various data sources are used to detail the environmental setting and include:

- US Census Data and Suffolk County Department of Economic Development and Planning Department reports
- Town/Village Land Use maps and Zoning maps

- County/Town/Village comprehensive plans and planning documents
- Natural Resource Conservation Service Web Soil Survey
- USGS Maps and available topographic surveys
- Suffolk County Groundwater Model mappings
- NYSDEC Nature Explorer (online)
- NYSDEC Wetland Maps & National Wetland Inventory Maps (online)
- NYSDEC Sea Level Rise Projections (online and reflected in 6 NYCRR Part 490)
- US Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (online)
- NYSDEC 303(d) list and related Total Maximum Daily Load (TMDL) documentation
- Federal Emergency Management Agency (FEMA) floodplain mapping (online)
- State and National Registers of Historic Places (online)
- NYS Office of Parks, Recreation and Historic Preservation (OPRHP) database (online)
- Long Island Regional Economic Development Council's Economic Development Plan for the Long Island Region
- SCDHS databases
- Suffolk County Salt Marsh Management Revised Best Management Practices Manual (Cashin Associates, 2006)
- Aerial imagery
- Long Island Commission on Aquifer Protection (LICAP)
- Suffolk County Water Authority (SCWA) information, data, forecasts, etc. (SCWA data, etc.)
- Relevant data from related studies, including, but not limited to:
    - Watershed delineation studies
    - Nitrogen load studies
    - Hydrodynamic studies (surface water residence time)
    - Ecological endpoints and water quality studies

The following environmental criteria were identified during scoping to be included in the environmental review of the Proposed Action.

- Physical Environment
  - Community Plans and Character, Land Use and Zoning
  - Groundwater and Surface Water Resources
  - Natural Resources
  - Historic and Archaeological Resources
- Social Environment
  - Noise and Odors
  - Human Health (Contaminant Exposure/Hazardous Materials)

An assessment of the potential impacts on the existing environment should Suffolk County implement the Proposed Action is presented in Section 4.0 while the potential for construction-related impacts are presented in Section 5.0.

# 3.1 Public Policy, Community Character, Land Use & Zoning

Under this subsection a summary of County and regional plans or programs as well as public policies that address water protection is be provided. It is recognized that there are numerous plans and programs that address these topics on a more local level. The discussion that follows focuses on those plans that address the County as a whole and those plans, programs and policies that address water resources on a regional basis.

This subsection also discusses land use and zoning.

## 3.1.1 Summary of Existing Community Plans and Character

### 3.1.1.1 Suffolk County Comprehensive Master Plan 2035 - Framework for the Future

The Suffolk County Comprehensive Master Plan 2035 ("SCCMP") (Suffolk County 2015) established a roadmap for sustainable growth and resiliency of Suffolk County where environmental stewardship is encouraged, natural resources and water quality are preserved, development is strategically built in appropriate locations, and the economy is based on smart growth initiatives and planning. The SCCMP evaluates transportation, economic, natural resource, water quality, and housing conditions throughout the County, and offers specific implementation actions that ensure that County policies, programs, and initiatives are aligned with the County's long-term sustainability initiatives.

It addresses the range of issues surrounding life in the County such as traffic, public transportation, congestion issues, a changing economy, environmental concerns regarding land use and water resources, and maintaining quality of life, and provides specific study goals and recommendations that identify plans, programs, projects, studies and initiatives (Suffolk County 2015).

In terms of land use and water resources, the SCCMP states that the County's goal is to reduce sprawl and the County is undertaking efforts to promote smart growth. Examples provided

include: expanding sewer systems to serve concentrated developments to protect the aquifer; preserving open space; developing strategically to optimize the availability of water supply; improve surface water conditions; and concentrating densities in smart, transit-oriented communities to reduce overall land demand, protect land affordability, and keep the County's agricultural industry vibrant (Suffolk County 2015).

Recommendations in the SCCMP encourage the development of area-wide smart growth plans, inter-municipal agreements, and overlay districts to reallocate density. It also recommends preserving open space through the transfer of development rights (TDR), cluster developments, resource protection overlay districts, restrictive covenants, and conservation easements (Suffolk County 2015).

The SCCMP also encourages cooperation with NY State and other local, regional and federal agencies to develop action plans that address existing wastewater and septic problems to protect the aquifer. It promotes investments to upgrade wastewater treatment systems and improve collection and treatment systems for substandard septic and cesspool systems in the County (Suffolk County 2015).

The Suffolk County's Planning Commission also adopted Planning Commission's Green Methodologies for Managing Stormwater Runoff guidelines which provides guidance for implementing sustainable infrastructure to manage stormwater runoff in a more efficient manner.

The SCCMP, in its entirety, acts as a guide to ensure that Suffolk County's policies and programs create collaborative partnerships, smart growth, and sustainable planning initiatives to ensure community resiliency.

#### 3.1.1.2 Suffolk County Comprehensive Water Resources Management Plan

In 2015, Suffolk County released a new Comprehensive Water Resources Management Plan (CWRMP) (the "2015 CWRMP"). Like the previous 1987 CWRMP, the 2015 CWRMP identified Suffolk County's reliance on on-site wastewater disposal systems that discharge to groundwater, fertilizer use, industrial and commercial solvents, petroleum products, and pesticides, as contaminant sources having a profound and long-lasting impact on groundwater, fresh surface water, and coastal marine water quality.

The 2015 CWRMP made the following "critical findings" in regard to the "downward trajectory in groundwater quality":

1. Nitrogen is public water enemy #1, as nitrate contamination from unsewered housing and fertilizer use poses a threat to both drinking water supplies and coastal marine habitat and resources. Nitrogen-induced nutrient loading and eutrophication can lead to many negative impacts on estuarine environments including harmful algal blooms (HABs), hypoxia [little or…], and even anoxia [no oxygen] (It should be noted that excess nitrogen is just one of the factors leading to the observed increase in HABs events);

2. Volatile organic chemicals (VOCs), another priority contaminant group, derived from commercial, industrial, and consumer use, impacting large portions of the aquifer, public water supply and private wells;
3. Pesticides pose a threat, especially to private wells in agricultural areas; and
4. Pharmaceuticals and personal care products (PPCPs) are an emerging concern.

In addition, the 2015 CWRMP identified the following surface water impairments:

- Excess coliform bacteria and nitrogen are leading to NYSDEC designations of "impaired," including the vast majority of Long Island's 60-mile long South Shore Estuary Reserve;
- Brown tide algae invasions (excess nitrogen is just one factor) are affecting the estuaries and have obliterated a shellfish habitat that once provided one half of all hard clams for the nation; and
- There has been a significant loss (excess nitrogen is just one factor) of tidal wetlands and acres of seagrass.

The 2015 CWRMP establishes specific groundwater resources management, drinking water supply, surface water resource management, and wastewater management goals to address the critical findings, and the overarching objective to protect and improve water quality in Suffolk County. Specifically, the goals recommend adherence to the stricter New York State Ambient Groundwater standards or Maximum Contaminant Level Goals (MCLGs); reduce nitrogen loading from septic systems and fertilizers; reduce the discharge of volatile organic compounds, and other regulated and unregulated contaminants; regulate land use patterns in a manner consistent with the protection of ground and surface water resources; and enhance and promote programs to protect groundwater resources for long-term viability and of the drinking water supply and natural resources (Suffolk County 2015). In addition, the wastewater management goals recommend strategies for improving operations of on-site sewage disposal systems, and opportunities for upgrades to existing systems as discussed further below.

The 2015 CWRMP sets forth different strategies for meeting its established goals and objectives through detailed management plan frameworks. The recommendations are organized into seven separate, but inter-related and overlapping categories:

- Nitrogen
- VOCs
- Pesticides
- PPCPs
- Potable Supply
- Project Management and Data Collection

- Coastal Resiliency and Surface Water Quality

Strategies for addressing nitrogen, VOCs, pesticides, and PPCPs directly address Suffolk County's recommended approach to reduce contaminant loads to ground and surface water resources. Implementation of these recommendations would also support the County's goals to provide a safe potable water supply to all residents, as well as improving coastal resiliency and surface water quality. The 2015 CWRMP states that the impacts of nitrogen released to the groundwater has resulted in even more visible surface water impacts, contributing to hypoxia, harmful algal blooms, and degradation of the wetlands and seagrass beds that provide some protection from the impacts of storm events. The recommendations identified for control of nitrogen sources are intended to improve groundwater quality, surface water quality, potable supply and coastal resiliency (Suffolk County 2015). A fundamental basis of all wastewater management recommendations set forth in the Comp Water Plan was the recommendation for development and implementation of a Countywide wastewater management plan to limit the impacts of nitrogen from wastewater and other emerging wastewater constituents (personal care products, pharmaceuticals, etc.).

Many of the implementation recommendations center around reducing nitrogen loading through changes to the way wastewater is managed, including: improvement of onsite sewage disposal system technologies; expansion and/or creation of new Suffolk County operated sewer districts; and creation of privately-run decentralized sewer districts. The 2015 CWRMP considers demonstration programs to assess innovative wastewater technologies to provide viable alternatives. This includes developing a process to permit and standardize innovative/alternative on-site wastewater treatment systems ("I/A OWTS"), encouraging pilot programs for permeable reactive barriers, and other innovative in-situ water quality remediation techniques (Suffolk County 2015). In developing an I/A OWTS program, the 2015 CWRMP recommends identifying and prioritizing tax parcels that should be required to install an I/A OWTS to reduce nitrogen loads and simplifying the approvals process.

The 2015 CWRMP also recommends developing advanced alternative on-site wastewater treatment options that are available for residential and non-residential use in Suffolk County as a priority. It considers decentralized or virtual sewer districts, consolidating water and wastewater management processes, and a Countywide septic upgrade program. It further recommends that Suffolk County establish a long-term Water Resource Plan that lays out the infrastructure and architecture for robust water and wastewater management; and subsequently, set up an I/A OWTS program that includes a RME to oversee operations and management (Suffolk County 2015). Other nitrogen reducing strategies include working with the agricultural community and other stakeholders to incentivize farmers to implement Best Management Practices (BMPs) to reduce nitrogen release to ground and surface waters. Farmers can also employ BMPs to reduce or prevent the use of crop protectants or additional products being applied to crops. As stated in the 2015 CWRMP, the SCDHS Office of Pollution Control and Reducing Toxics Capital Program recommends inspections of high-priority facilities, compliance enforcement, and implementation of clean-up activities as necessary. The 2015 CWRMP further recommends that the County work with NYSDEC to develop a comprehensive pesticide management strategy and update the Agricultural Stewardship Program.

The 2015 CWRMP recommends strategies for estuary management, including developing a HAB Action Plan to address algae blooms, considering establishment of Watershed Improvement Districts to generate tax revenue for water quality protection, creating a nonpoint source and stormwater tracking system tool for the Long Island Sound watershed, and designing denitrifying on-site wastewater treatment systems to reduce nitrogen loads. The overall strategy is to maintain a healthy balance between protecting water quality, maintaining the ability to dispose of wastewater, and promotion of economic growth.

As a whole, the 2015 CWRMP provides innovative alternatives and targeted implementation actions designed to improve water quality and resource management.

#### 3.1.1.3 Long Island Pine Barrens Protection Act

The New York State Legislature passed the Long Island Pine Barrens (LIPB) Protection Act and Governor Mario Cuomo signed it into law in 1993 as New York State Environmental Conservation Law Article 57 (NYS ECL Article 57).

In the LIPB Protection Act, the legislature found that eastern Long Island contains a maritime region of statewide importance known as the Pine Barrens-Peconic Bay system, and that this 150,000-acre area of Suffolk County is of critical importance to the state because it overlies the largest source of pure groundwater in New York. The Pine Barrens are interconnected to the Peconic Bay system by the Peconic River, the longest groundwater-fed river in New York. The legislature further found that the Pine Barrens-Peconic Bay system contains one of the greatest concentrations and diversities of endangered, threatened and special concern species of plants and animals to be found in the state, and that protection of their habitats is in the best interest of the people of New York. Due to the importance of these resources, the legislature found that the ecologic and hydrologic integrity of this system should be protected in a comprehensive plan adopted by the state and individual local governments (NYS ECL 1993).

The overarching purpose of the LIPB Protection Action was to facilitate state and local protection, preservation, and proper management of the unique natural resources of the Pine Barrens-Peconic Bay system. Specifically, it required the preparation and implementation of a state supported regional comprehensive land use plan for the Central Pine Barrens area. This land use plan was to establish a “core preservation area,” protect the Central Pine Barrens area, and designate “compatible growth areas” to accommodate appropriate patterns of development and regional growth. The legislature recognized that the provisions of the LIBP Protection Act could restrict the beneficial use of some lands in private ownership, but these restrictions were deemed to be necessary and desirable to protect and preserve the hydrologic and ecologic integrity of the Central Pine Barrens area, as well as the public's health and welfare for future generations. To mitigate any economic impacts to private land owners, the legislature dictated that the comprehensive regional land use plan would afford private land owners an opportunity to receive benefits such as transferable development rights, conservation easements, rights and values transfers, purchase of development rights and/or fee acquisition with monetary compensation (NYS ECL 1993).

#### 3.1.1.4 Central Pine Barrens Comprehensive Land Use Plan

As required by the 1993 LIBP Protection Act, the Central Pine Barrens Comprehensive Land Use Plan (the "CPB Plan") was adopted by the Central Pine Barrens Joint Planning and Policy Commission in 1995. As discussed above, the LIBP Protection Act mandated the creation of a Comprehensive Land Use Plan for the Central Pine Barrens to guide regional land use and land management in a way that protected ecological communities in the Core Preservation Area and facilitated orderly development within the Core Growth Area (Central Pine Barrens Joint Planning and Policy Commission 2019). The LIPB Protection Act requires the CPB Plan be reviewed by the Commission at least once every five years. It has been amended several times, and the current version of the CPB Plan was adopted on November 21, 2012.

The CPB Plan (CPB Joint Planning and Policy Commission 2012) aligns with the LIBP Protection Act's vision, including environmentally conscious goals, general policies and conservation programs, design standards, and regulatory guidelines for land use within the Central Pine Barrens. As established by the LIBP Protection Act (NYS ECL Section 57-0121(2)), the CPB Plan's overall goals for the Central Pine Barrens area are designed to:

1. Protect, preserve and enhance functional integrity of the Pine Barrens ecosystem and significant natural resources;
2. Protect quality of surface water and groundwater;
3. Discourage piecemeal and scattered development;
4. Promote active and passive recreational and environmental educational uses that are consistent with the land use plan; and
5. Accommodate development in a manner that is consistent with the long-term integrity of the Pine Barrens ecosystem and to ensure that the pattern of development is compact, efficient and orderly.

The purpose of the CPB Plan is to create a regional approach to public land management in the Central Pine Barrens that focuses on land acquisition strategies for the Core Preservation Area while carefully expanding the Core Growth Area to be consistent with water resource protection and habitat preservation goals. The CPB Plan discusses several standards to address land use and groundwater quality issues within the Central Pine Barrens, and related guidelines that offer mitigation strategies.

In particular, the CPB Plan includes nitrate-nitrogen standards that focus on compliance with Article 6 of the Suffolk County Sanitary code, sewage treatment plant discharge locations outside of the Central Pine Barrens, and denitrification systems in lieu of treatment plants (CPB Joint Planning and Policy Commission 2012). The nitrate-nitrogen guideline suggests implementing conservative residential densities through clustering or other mechanisms to protect surface water quality for projects in the vicinity of ponds and wetlands. When addressing other contaminant standards, the CPB Plan requires compliance with Articles 7 and 12 of the Suffolk County Sanitary Code, in order to ensure that water resource and wastewater management

infrastructure are in place prior to the commencement of construction (CPB Joint Planning and Policy Commission 2012).

The CPB Plan's wetlands and surface waters standards focus on non-disturbance buffer areas, buffer delineations, covenants, and conservation easements to separate and protect freshwater, tidal wetlands, or surface waters from development proposals and associated impacts. According to the CPB Plan, developments are required to comply with the Wild, Scenic and Recreational Rivers Act where applicable to ensure buffer standards are met. The guideline in the CPB Plan suggests that additional stricter non-disturbance buffers may be established for wetlands, as appropriate, in order to protect the natural resources as deemed necessary (CPB Joint Planning and Policy Commission 2012).

The CPB Plan's stormwater runoff standards focus on the requirement for onsite stormwater recharge as a necessary criterion for development projects. It states that all stormwater runoff originating from the development shall be recharged on site unless surplus capacity exists in an offsite drainage system (CPB Joint Planning and Policy Commission 2012). CPB Plan guidelines recommend using natural recharge and drainage system designs that cause minimal disturbance; stormwater ponds, natural swales and depressions instead of recharge basins; and standards and guidelines to prevent soil erosion and control stormwater runoff (CPB Joint Planning and Policy Commission 2012). The purpose of all the guidelines in the CPB Plan is to create sustainable methods of stormwater treatment that cause minimal damage to the natural environment within the Central Pine Barrens.

The CPB Plan also expands on the Pine Barrens Credit Program which is designed to redirect development for residentially zoned lands within the Core Preservation Area. The CPB Plan uses the Town of Brookhaven Pine Barrens Credit Program as an example of how it was implemented through two approaches: (1) The transfer of development rights through Residential Overlay Districts (RODs) and, (2) Use of Planned Development Districts (PDDs), Planned Retirement Communities (PRCs) and other zoning incentives (CPB Joint Planning and Policy Commission 2012). The CPB Plan states that Incentive Zoning Districts such as additional overlay districts, special permit uses or special exemption uses may also be adopted for the redemption of Pine Barrens Credits. Since there are no park districts in the Pine Barrens area, the Pine Barrens Credit yield aids in preserving large areas of the Pine Barrens.

The CPB Plan also states that the location and control of development can be implemented by enacting specific zoning requirements and subdivision ordinances that protect open space and surface water areas (CPB Joint Planning and Policy Commission 2012). The CPB Plan uses examples such as urban growth boundaries that are able to integrate areas with intense development with areas for preservation; and overlay resource protection districts that can be enacted where the underlying zoning remains the same, but natural resources that require special protection are identified (CPB Joint Planning and Policy Commission 2012). Recommended zoning measures in the CPB Plan include performance zoning, cluster zoning, and Planned Unit Developments (PUDs) for managing development growth. Alternatively, the CPB Plan suggests that infrastructure growth can also be maintained with capital improvement programs and/or a public facilities ordinance. At a larger scale, the CPB Plan suggests developing growth management programs that provide a timeline for municipal planning objectives.

The CPB Plan summarizes specific town laws, that identify key land use strategies used in those areas. The Cluster Ordinance in Brookhaven Town, Transfer of Development Rights program in the Town of Riverhead, and an Aquifer Protection District in Southampton Town, are a few examples of land use measures that the CPB Plan cites (CPB Joint Planning and Policy Commission 2012). Each of these measures strives to protect and preserve the Pine Barrens ecosystem, utilizes zoning that encourages alternative land use patterns, encourages sustainable development growth, and promotes better water quality through efficient planning.

#### 3.1.1.5 Special Groundwater Protection Area Plan

In 1988, a Special Groundwater Protection Area ("SGPA") Advisory Council was established by the Long Island Regional Planning Board to evaluate the groundwater quality of Long Island's aquifers within the SGPA. Volunteers from municipalities, local agencies, and major environmental groups were invited to review the draft of the special groundwater protection area plan (the "SGPA Plan") (Long Island Regional Planning Board 1992). The final SGPA Plan was adopted by the Long Island Regional Planning Board in 1992. This plan helped to build several significant actions and led the Environmental Protection Agency (EPA) to designate Nassau and Suffolk County's groundwater as a Sole Source Aquifer pursuant to the Safe Drinking Water Act (Long Island Regional Planning Board 1992). The primary purpose of the SGPA Plan was to ensure the preservation of existing water quality and continued recharge of uncontaminated water to the aquifer.

The SGPA Plan examined various issues and approaches that could be taken to maximize groundwater quality and wellhead protection. The following five planning goals were recommended (Long Island Regional Planning Board 1992):

1. Establish special groundwater standards or goals to ensure the protection of groundwater quality within SGPAs and wellhead protection zones in the upper glacial aquifer
2. Define the types of activities that are compatible and/or incompatible for areas of protection within the SGPA.
3. Emphasize the importance of non-point pollution controls in the SGPAs and wellhead protection zones
4. Integrate, support, and augment the existing statutes, codes and regulations designed to regulate contaminating activities and protect groundwater quality
5. Define zones of management and protection around wells within or proximate to SGPAs in order to ensure groundwater quality protection by the wells.

The SGPA Plan included a variety of land use and development recommendations to improve and protect groundwater. These included restrictions on new commercial or industrial land in the SGPA, groundwater monitoring where necessary, and open space preservation to protect recharge areas. It also recommended land use mechanisms to limit new sources of potential toxins, and to amend zoning ordinances for water protection efforts. Recommendations included: reducing the amount of vacant land zoned for industrial and commercial use; limiting residential

density to five acres or more per dwelling unit; clustering units to preserve contiguous open space parcels for clean recharge; and restricting multifamily to sites served by a sewage treatment plant. The SPGA Plan further recommends that protected open space within clustered subdivisions could be dedicated to the County for water supply and watershed protection purposes.

In addition, the SGPA Plan proposed to amend the Sanitary Code to require pump-out of septic tanks and chemical analysis of waste at non-industrial specific sites or require soil sampling at industrial and commercial facilities where septic shows toxic contamination (Long Island Regional Planning Board 1992). It recommended that the Suffolk County Legislature adopt a policy supporting expansions of existing sewer treatment plants (STPs) with effluent discharge to surface waters, if such expansion allows extension of service to SGPA areas, where onsite unsewered development threatens to impair groundwater quality (Long Island Regional Planning Board 1992). The SGPA Plan states that if the County establishes a consolidated sewer district that encompasses the SGPA and adjacent areas, it could facilitate the reorganization of sewage collection and treatment.

The SGPA Plan also promoted outreach programs to reduce pesticide usage and sanitation practices to improve pest management strategies.

The SGPA Plan's implementation measures focused on upgrading existing sewage treatment plants, eliminating commercial or industrial practices that pollute groundwater, and returning turfed areas to natural vegetation (Long Island Regional Planning Board 1992). In particular, the SGPA Plan recommended best management practices to reduce reliance on onsite septic systems to lessen threats to groundwater quality.

#### 3.1.1.6 Long Island Sound Study

In 1985, the EPA, New York and Connecticut formed the Long Island Sound Study (LISS), a bi-state partnership consisting of a coalition of environmentalists and conservation organizations that were dedicated to restoring and protecting the health of the Long Island Sound (LISS 2019a). A Total Maximum Daily Load (TMDL) was established for nitrogen, to reduce the area and duration of hypoxic zones (e.g., areas where dissolved oxygen is less than 3 mg/L) that primarily existed in the western Sound. Today, controlling nitrogen remains the top priority (LISS 2019b). While nitrogen reduction targets for wastewater treatment facilities, atmospheric deposition and agricultural sources have been achieved, nitrogen loads from on-site wastewater treatment systems and residential fertilization are now being considered in an adaptive management fashion.

In 1994, the LISS partners developed the first Comprehensive Conservation and Management Plan ("1994 CCMP") to improve the quality and health of the waters and habitats of the Long Island Sound. Since that time, federal, state and local partners have reduced annual nitrogen loading by 40 million pounds and restored nearly 1,625 acres of habitat (LISS 2019b). In 2015, the LISS issued the Long Island Sound Comprehensive Conservation and Management Plan 2015: Returning the Urban Sea to Abundance ("2015 CCMP"). The 2015 CCMP establishes the approach for the next 20 years, recommending new approaches to (LISS 2015):

- Re-energize and broaden the current Management Conference around updated shared goals and cross-jurisdictional management;
- Set measurable ecosystem targets and management outcomes;
- Use strong science, ecosystem service concepts, and environmental indicators to adapt and refine management;
- Incorporate new areas such as sustainability, climate change resiliency, and environmental justice; and
- Expand public engagement and collaboration.

The LISS's vision is intrinsically based on promoting sustainable development by nourishing and protecting coastal wetlands, promoting stormwater management and other sustainable development methods (e.g. rain gardens, green roofs, and rainwater harvesting) (LISS 2015). The 2015 CCMP is centered on four themes: clean waters and healthy watersheds, thriving habitats and wildlife, sustainable and resilient communities, and sound science and inclusive management (LISS 2015). The plan sets 20 targets for these goals and identifies specific outcomes, objectives, detailed strategies and actions to drive progress to attain them.

Many of the *Clean Waters and Healthy Watersheds* objectives, strategies, and outcomes explore stormwater management and pollution control methods to ensure contaminant and nutrient loads from land-based sources in the watershed of the Long Island Sound are reduced. Ecosystem targets in this section focus on the extent of hypoxia, nitrogen loading limits, water clarity improvement, impervious cover (through green infrastructure, low impact development and stormwater disconnections), riparian buffer extents, and sediment quality improvements (LISS 2015).

Important strategies include continued mitigation of Combined Sewer Overflows (CSOs) and Municipal Separate Storm Sewer Systems; improving clean water infrastructure for wastewater treatment facilities; implementing low impact development and green infrastructure to mitigate pollution from commercial and industrial sources; and developing watershed and subwatershed plans in Long Island Sound communities (LISS 2015). These strategies are further subdivided into implementation actions that carry out the overall theme. Initiatives include: exploring the expansion of point source and nonpoint source nutrient trading programs for the Long Island Sound watershed; pursuing low-cost retrofits throughout the watershed area; improving sewage collection infrastructure and initiation of sustainable asset management programs; developing a nonpoint source and stormwater tracking system took for the Long Island Sound watershed; improved policies for decentralized and on-site wastewater treatment systems; protecting riparian corridors and wetland buffers at the local ordinances and permanent land protection; developing a Long Island Sound-specific marine debris reduction plan; and implementing a water quality monitoring strategy along with coastal habitat restoration projects (LISS 2015).

The LISS provides a roadmap by which plan goals, ecosystem targets, and implementation actions can be achieved. These implementation actions presented by theme, are revisited and revised every five years, to allow for adaptive and effective management.

### 3.1.1.7 Peconic Estuary Program

The Peconic Estuary is home to unique habitats, including: submerged aquatic vegetation (SAV), tidal wetlands, shorelines, robust marine species assemblages and freshwater diadromous fish habitat (Hornstein 2017). However, excess nitrogen, low dissolved oxygen, pathogens and toxic contaminants all threaten the water quality of the Estuary. The Peconic Estuary Program (PEP) is a partnership of local governments, environmental groups, businesses, industries, institutions and concerned citizens (Hornstein 2017). It is the mission and vision of the Peconic Estuary Program to protect and restore the Peconic Estuary system. In 2001, the Peconic Estuary Program published their Comprehensive Conservation Management Plan (CCMP); a guiding document which provides a blueprint to restore and protect the waters of the Peconic Estuary. This plan provides actions and detailed information for who is responsible for carrying out these steps. In 2018, PEP began the process of updating their CCMP to reflect, in part, changes to water quality threats to the watershed of the Peconic Estuary and the actions which will be necessary to address those concerns; the final document will be available in January 2020. In 2017, the PEP published a guiding document entitled: the Peconic Estuary Program Habitat Restoration Plan (the PEP Habitat Plan) aimed at identifying the unique habitats, major threats to these habitats, and habitat restoration progress within the Peconic Estuary watershed. The PEP Habitat Plan establishes objectives, and implementation actions to guide restoration and protection efforts within the Peconic Estuary watershed over the next decade. The Plan identifies priority habitat restoration projects that PEP will work with our partners to implement that will not only restore priority habitats that have declined but address the underlying cause of habitat decline and will consider the success of projects under future conditions due to climate change and sea level rise.

Additionally, it states that increased development, navigational channel dredging, wetland filling, and shoreline hardening has fragmented, altered, and in some areas destroyed the estuary habitat (Hornstein 2017). Excess nutrients and toxic substances reach the Peconic Estuary through sewage treatment plants, on-site waste systems, fertilizers, and stormwater runoff. For these reasons, the PEP has developed a Critical Lands Protection Strategy to preserve unique species and natural communities, control nutrient and pollution loads to the estuary and increasing recreational opportunities within the watershed (Hornstein 2017).

Habitat restoration objectives include maintaining existing high value wetland areas, restoring degraded areas, and using best management practices and adaptive management. The PEP Habitat Plan encourages living shorelines for its numerous benefits including habitat creation, erosion control, stormwater runoff filtration, and resiliency to sea level rise due to climate change (Hornstein 2017).

The list of projects includes an array of new projects and strategies for wetland construction and restoration, diadromous fish habitat restoration, submerged aquatic Vegetation protection/ restoration, and natural shoreline restoration. Projects such as Peconic River Shoreline and Wetland Restoration sought to restore the southerly shoreline and wetlands. Much of the southern shoreline consists of berms, impoundments and dredge spoil fill that creates an unnatural embankment which adversely impacted the water quality in the area (Hornstein 2017). Restoration would consist of a Wetland and Habitat Restoration Plan that would help re-establish formerly connected wetlands and ponds.

The PEP Habitat Plan also discusses the Pussy's Pond Phragmites Control and Shoreline Restoration project. A previous subwatershed management plan for Accabonac Harbor had documented this as a high priority site threatened by water quality (Hornstein 2017). After colonization by Phragmites, an invasive grass species, the eastern bank had become more vulnerable to erosion and runoff. To address these issues, a phragmites management plan along with a living shoreline project was designed and implemented on the eastern bank of Pussy's Pond. The project included native plantings, bioswales, and the natural slope and edge of the western pond bank was restored. Project benefits included an increase in riparian habitat, filtration of runoff pollutants and implementation of best waterfront practices (Hornstein 2017).

#### 3.1.1.8 Long Island South Shore Estuary Reserve

The Long Island South Shore Estuary Reserve (the SSER) is a 326 square mile watershed in Nassau and Suffolk Counties. The SSER extends east from the Queens/Nassau County line approximately 75 miles to the Village of Southampton in Suffolk County (NYSDEC 2019). Due to concerns about the future health of the South Shore Estuary, in 1993 the New York State Legislature passed the Long Island South Shore Estuary Reserve Act to provide protection.

In 1993, the SSER Act also created the South Shore Estuary Reserve Council, a group of representatives from Nassau and Suffolk counties, the City of Long Beach and environmentalists, to prepare a comprehensive management plan for the SSER (NYSDEC 2019). The Long Island SSER Comprehensive Management Plan (CMP) was adopted and signed by Governor George Pataki in April 2001.

According to the New York State Department of State, the SSER has more impaired surface waters due to nitrogen than any other region in New York, and nitrogen contamination is a priority (New York State Department of State, n.d.). The degraded water quality negatively impacts the ecosystem, resulting in impacts to the SSER's shellfish and finfish.

The SSER CMP sets forth goals and implementation measures to improve the SSER's water quality, restore its living resources, protect its maritime history, and expand its estuary-related economy. The SSER CMP's framework includes chapters of action items related to wastewater management and pollution control and provides recommendations to create more ecosystem-centric values within estuarine resource management.

The SSER CMP identifies nonpoint source pollution as the primary water quality concern in the South Shore Estuary Reserve (South Shore Estuary Reserve Council 2001). Polluted stormwater runoff is identified as the principal source of nonpoint pollution in the majority of waterbody segments in the SSER with use impairments. The SSER CMP suggests several actions to reduce nonpoint source pollution such as focusing on stormwater abatement projects in significant nonpoint source contributing areas, on-site wastewater treatment septic system maintenance and upgrades, implementing agricultural environmental management plans, assessing municipal nonpoint pollution management practices, preparing watershed action plans, and exploring the viability of stormwater management districts (South Shore Estuary Reserve Council 2001).

To carry out these action items, the SSER CMP recommends that municipalities use satellite imagery and spatial analysis to determine the distribution and magnitude of nonpoint source pollution in their communities (South Shore Estuary Reserve Council 2001). It suggests preparing

watershed action plans, targeted water quality monitoring programs, stormwater remediation projects and retrofit improvement designs for cost-effective nonpoint source pollution control projects.

In addition, the SSER CMP recommends developing management plans to guide shoreline development and the use of underwater lands. As part of municipal comprehensive land use plans and zoning regulations, municipal redevelopment plans and revitalization programs would establish and expand water-dependent businesses. As stated in the SSER CMP, zoning regulations could promote maritime centers as areas for concentrations of water-dependent uses and discourage non-water dependent uses from displacing them (South Shore Estuary Reserve Council 2001). Planning for waterfront development and water-dependent businesses could potentially redevelop deteriorating or underutilized waterfront properties and brownfields sites along the shoreline.

Overall, the recommendations provide strategies for management of polluted stormwater runoff in areas where the most significant reductions can be gained.

### 3.1.2 Land Use

Suffolk County occupies approximately two-thirds of the total land area of Long Island. As one might expect, more than half of the County's land area is water. Suffolk County is comprised of 10 towns. In addition, there are 32 individual incorporated villages that are situated throughout the County. Land Use is often governed on the local Town or Village level through a Town or Village Master Plan or zoning code and site plan application review process.

**Table 3-1** below, reflects county land use based on 2016 data assembled by Suffolk County Department of Economic Development and Planning (SCDEDP). The total number of parcels and acreage by land use category is shown on the table. The numbers of unsewered parcels by land use category are listed along with unsewered areas by land use type within the County. The vast majority of the County land use based on parcel count (84%) is classified as residential. This includes the combined total of low, medium and high-density residential parcels. The residential land use category parcel count is dominated by medium density residential uses (52.34%), but there is also a substantial amount of high density residential (25.2%), and a lesser amount (parcel count) of low density residential (6.9%) land. The majority of unsewered parcels based on parcel count (82.6%) is also classified as residential. While 56.9% of the unsewered parcels in the County are medium density residential and 9% are low density residential, only 16.7% of the unsewered parcels are high density residential (high density residential parcels are more likely to be sewered).

Land area or acreage within the County is dominated by the following land use categories; Recreation and Open Space (150,124 acres), Surface Water (673,583 acres) and Medium density Residential (126,129 acres) as summarized by columns 4 and 5 of **Table 3-1**. The last two columns on **Table 3-1** summarize the unsewered acreage of each land use type, and the percentage of each land use type based on unsewered acreage. As can be seen from **Table 3-1**, there are 365,525 residential parcels (Low Density + Medium Density + High Density) that are unsewered in Suffolk County.

**Table 3-1 Suffolk County Land Use by Parcel, Area and Unsewered**

| Land Use Category | Total Parcel Count | % of Total Parcels | Total Area (Acres) | % Total Area | Unsewered Parcel Count | % Unsewered Parcels | Unsewered Area (Acres) | % Unsewered Area |
|---|---|---|---|---|---|---|---|---|
| Agricultural | 3,425 | 0.6 | 37,879 | 3.2 | 3,412 | 0.8 | 37,578 | 3.3 |
| Commercial | 18,151 | 3.1 | 17,642 | 1.5 | 11,798 | 2.7 | 12,397 | 1.1 |
| Industrial | 6,343 | 1.1 | 13,486 | 1.1 | 4,074 | 0.9 | 9,537 | 0.8 |
| Institutional | 3,526 | 0.6 | 25,600 | 2.1 | 2,497 | 0.6 | 12,980 | 1.2 |
| Low Density Residential | 40,679 | 6.9 | 72,862 | 6.1 | 40,006 | 9.0 | 71,837 | 6.4 |
| Medium Density Residential | 305,321 | 52.0 | 126,129 | 10.5 | 251,855 | 56.9 | 108,475 | 9.6 |
| High Density Residential | 148,113 | 25.2 | 23,268 | 1.9 | 73,664 | 16.7 | 12,233 | 1.1 |
| Recreation and Open Space | 23,464 | 4.0 | 150,124 | 12.5 | 20,807 | 4.7 | 137,692 | 12.2 |
| Surface Water | 1,690 | 0.3 | 673,583 | 56.1 | 1,390 | 0.3 | 672,624 | 59.8 |
| Transportation | 7,306 | 1.2 | 19,721 | 1.6 | 6,105 | 1.4 | 11,830 | 1.1 |
| Utilities | 1,619 | 0.3 | 5,002 | 0.4 | 1,428 | 0.3 | 4,562 | 0.4 |
| Vacant | 27,139 | 4.6 | 33,738 | 2.8 | 24,877 | 5.6 | 31,368 | 2.8 |
| Waste Handling | 581 | 0.1 | 1,756 | 0.1 | 412 | 0.1 | 1,316 | 0.1 |
| **Totals** | 587,357 | 100 | 1,200,790 | 100 | 442,325 | 100 | 1,124,429 | 100 |

Source: SC GIS Land Use database 2016.

Land use is shown graphically on **Figures 3-3** and **3-4. Figure 3-3** depicts the western portion of the County while **Figure 3-4** represents the land use across the eastern portion of the County. As shown on **Figure 3-3,** high and medium density residential, and limited industrial land uses are concentrated in the western portion of the County, whereas the eastern portion of the County **Figure 3-4** is characterized predominantly by agriculture and lower density residential land uses. Commercial areas are concentrated along major thoroughfares, including the Long Island Expressway, Sunrise Highway and Montauk Highway. Recreation and open space opportunities are scattered throughout the western and eastern portion of the County. The barrier island is dominated by State parkland and National Sea Shore (Federal).

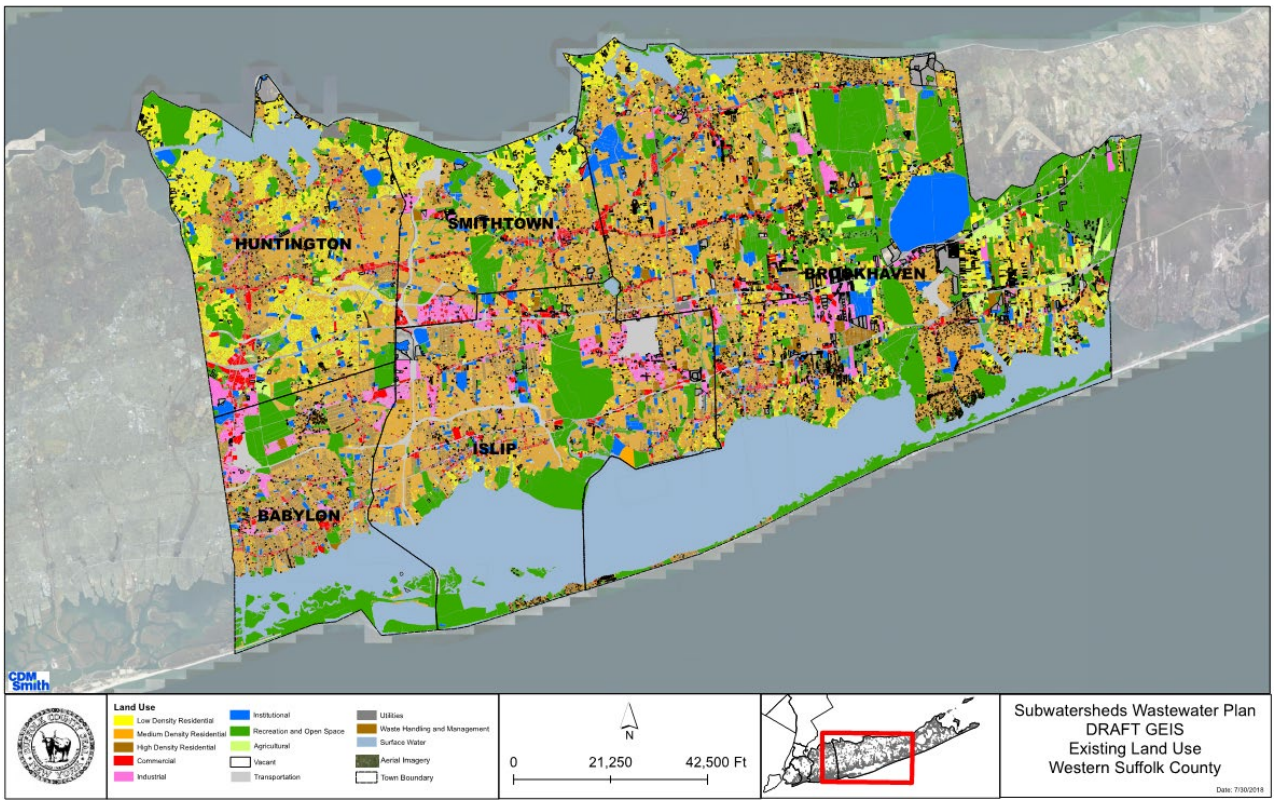



**Figure 3-3 Western Suffolk County Map**

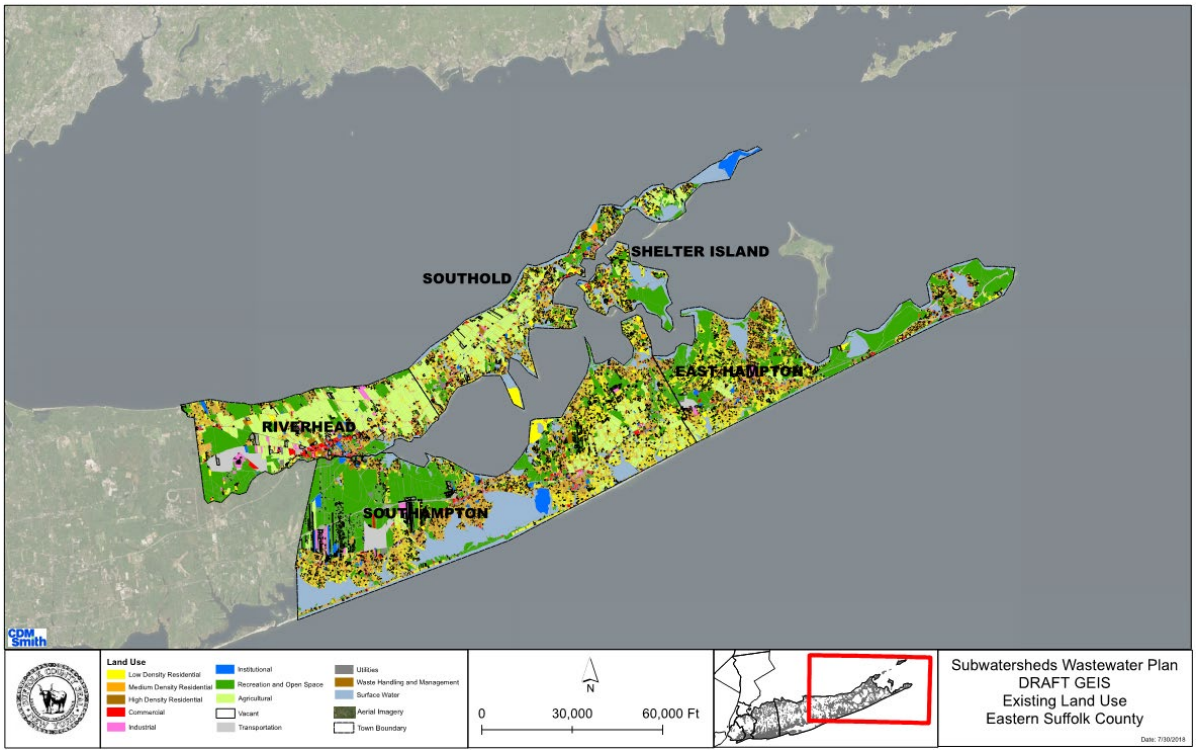



**Figure 3-4 Eastern Suffolk County Map**

### 3.1.3 Zoning

Land use and development within each Suffolk County municipality are governed by local zoning and subdivision regulations that are established by the local municipality (e.g., Towns and Villages). The authority to establish zoning is vested with the local municipality and not the County. Municipalities are responsible for designating uses (i.e. residential, commercial, industrial, etc.), density, and dimensional regulations (i.e. height, setbacks, lot coverage) appropriate for each mapped zoning district.

Each municipality designates a reviewing agency, typically a Planning Board, to review site-specific development applications and the subdivision of land. Certain development applications, such as improvements to a single-family home on an existing lot, may only require administrative review from the local Building Inspector or Code Enforcement Officer. Commercial development, multi-family homes, and planned unit developments would typically require discretionary review by one or more local reviewing agencies. Improvements or modifications to existing development is also subject to local review and approvals.

While the regulations and review process vary by municipality, all development within Suffolk County is subject to the Suffolk County Sanitary Code. Suffolk County has responded to the need to protect the sole source aquifer from nitrogen contamination for current and future generations through Article 6 of the County Sanitary Code that sets forth minimum lot size requirements. The County Sanitary Code established "Groundwater Management Zones" (GMZs) to establish maximum allowable density per acre for new developments that do not include wastewater treatment and disposal facilities. The GMZs establish the minimum developable lot size within each groundwater recharge area and the local municipal regulations refer to these requirements as described further in Section 3.2.1.3. Nitrogen discharge from onsite wastewater treatment systems is currently regulated by lot size through the implementation of Article 6 of the Suffolk County Sanitary Code. Based on differences in regional hydrogeological and groundwater quality conditions, Article 6 delineated boundaries of eight Groundwater Management Zones (GMZ) for protection of groundwater quality. The goal of creating the GWMZs was to limit groundwater nitrogen from new development to 4 mg/l in GMZ III, V, and VI and to 6 mg/l in the remaining zones, as shown on **Figure 3-5**. The primary focus of keeping groundwater nitrogen concentrations at these levels was for the protection of public health due to reliance on groundwater as a drinking water supply; however, the protection of surface waters was also considered in the establishment of GMZ VI. While these management efforts have generally been effective in protecting our water supply, it has been widely documented that surface waters and tidal wetlands plant species have a much lower tolerance to excessive nitrogen concentrations (NYSDEC, 2014) Nitrogen Pollution and Adverse Impacts on Resilient Tidal Marshlands, NYSDEC Technical Briefing Summary, 2014), with existing guidance values recommending concentrations a full order of magnitude lower for the protection of surface water ecology.

In general, Article 6 of the Sanitary Code permits individual on-site systems only on parcels in excess of 40,000 square feet in GMZs III, V and VI. For residential developments, Article 6 of the Suffolk County Sanitary Code (760-605) allows individual sewerage systems on parcels > 40,000 square feet within GMZs III, V or VI, and on parcels > 20,000 square feet outside of GMZs III, V or VI. For other than residential developments, Article 6 of the Suffolk County Sanitary Code (760-607) allows individual sewerage systems on parcels where the Population Density Equivalent is <

40,000 square feet within GMZs III, V or VI, and the Population Density Equivalent is < 20,000 square feet outside of GMZs III, V or VI. The "Population Density Equivalent" means the maximum density load, or quantity of sewage, permitted to be discharged from a parcel utilizing an Individual Sewerage System in the absence of a Community Sewerage System, a Sewage Treatment System or a Modified Subsurface Sewage Disposal System, based on the calculated population per unit area expressed in gallons per day.

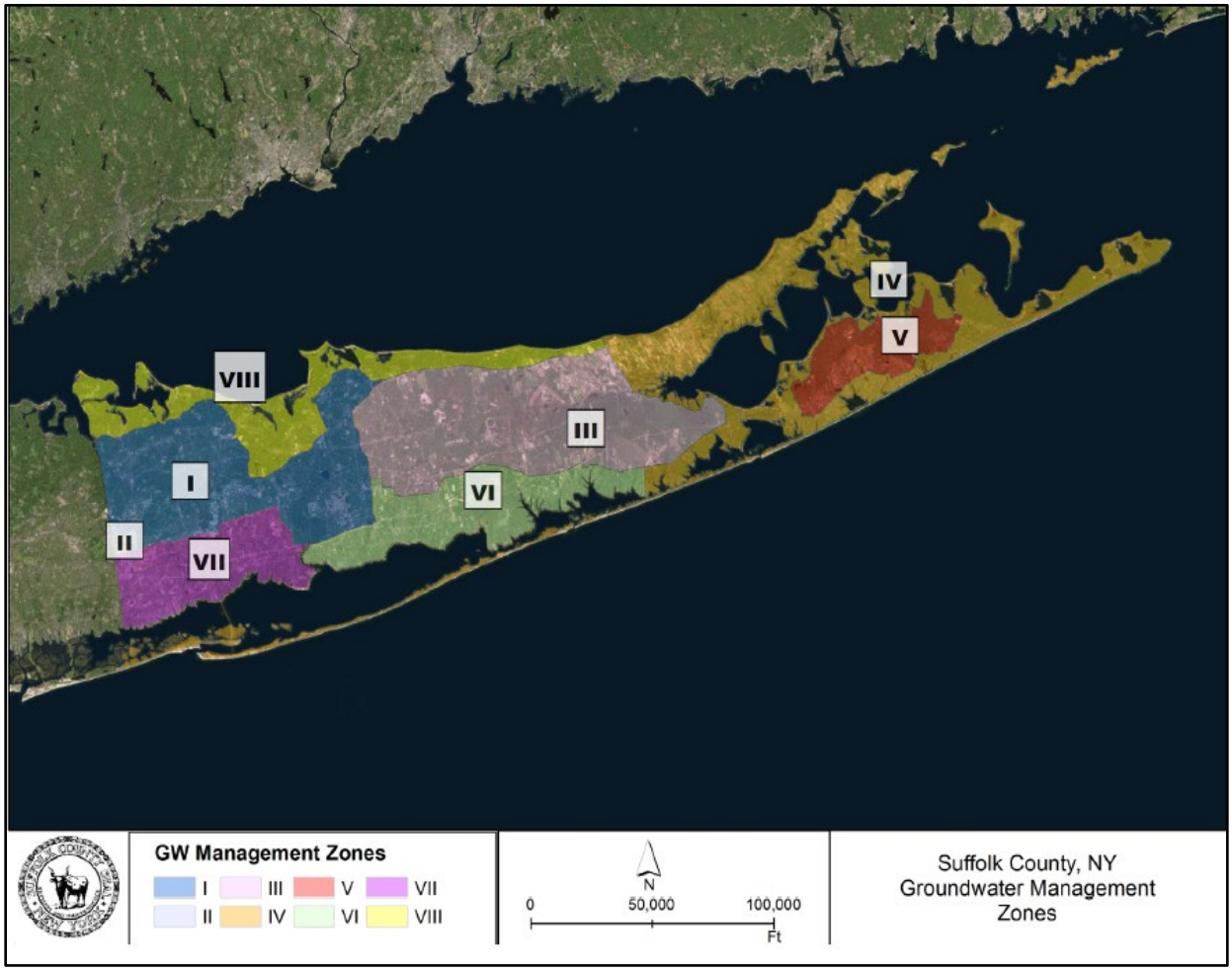



**Figure 3-5 Groundwater Management Zones**

# 3.2 Groundwater, Drinking Water, and Surface Water Resources

The primary purpose of the SC SWP is to restore and protect the groundwater and surface water resources in the County from the impacts of nitrogen introduced by sanitary wastewater. This section describes the groundwater, drinking water, and surface water resources in the County. The County's groundwater provides the sole source of potable supply, or drinking water, for the County. Nitrogen concentrations described in this Draft GEIS refer to concentrations in the untreated water within the aquifer system. In fact, drinking water delivered to Suffolk County residents by community water suppliers such as the Suffolk County Water Authority (SCWA) complies with all drinking water quality criteria. Drinking water delivered by the SCWA is tested more often and for more potential contaminants than required by local, state and federal regulations and water is treated, when necessary before delivery to residents.

## 3.2.1 Groundwater and Drinking Water Resources

Groundwater provides the sole source of potable supply to 1.5 million Suffolk County residents (with the exception of Fishers Island). Protection of groundwater resources has long been of concern in Suffolk County, both because groundwater provides the sole source of potable water supply to County residents, and because it provides baseflow to the surface waters in the County. Many previous documents, most notably the 1987 CWRMP provided extensive documentation of the aquifer system, groundwater quantity, and groundwater quality that is not repeated here. Developed over 30 years ago, the 1987 CWRMP identifies nitrogen as a contaminant of concern for the water resources within the County. As described above in Section 3.1.2.2, the 2015 Comp Plan confirmed that nitrogen continued to be a contaminant of concern, documented continued increasing trends in nitrogen concentrations and identified the need to address nitrogen loading to restore and protect both groundwater and surface water resources.

### 3.2.1.1 Groundwater Quantity

Suffolk County and other water resource managers have studied and documented the ability to maintain an adequate quantity of groundwater for potable supply, irrigation needs and to maintain wetland areas and stream baseflows for decades.

**Figures 3-6** and **3-7** show the elevation of the water table in the upper glacial aquifer on the Main Body of the island and on the North and South forks and Shelter Island, based on measurements obtained by the United States Geological Survey during the spring of 2013. Recharging precipitation generally travels vertically down through the aquifer to the water table, and then north of the groundwater divide, travels northward towards surface water discharge to the Long Island Sound and its rivers, streams and harbors, and south of the divide, travels south to south shore streams and bays that discharge to the South Shore Estuary Reserve, unless it is intercepted by a supply or irrigation well. In a similar fashion, precipitation on the North Fork also travels vertically down through the aquifer to the water table, and then north of the local groundwater divide, generally travels northward to discharge to the Long Island Sound and its streams and embayments, and south of the divide, travels southward to discharge to the Peconic Estuary and its streams, harbors and embayments unless it is intercepted by a supply or irrigation well. Precipitation falling on the South Fork travels vertically down to the water table, and north of the local groundwater divide travels northward to discharge to the Peconic Estuary and its streams,

harbors and embayments and south of the local divide, travels southward to discharge to streams, embayments and the Atlantic Ocean unless it is intercepted by a supply or irrigation well. Precipitation falling on Shelter Island travels down to the water table and then discharges to surrounding coastal waters, in accordance with the water table mapping shown on **Figure 3-7.** Precipitation falling on Fire Island travels down through the sandy aquifer and then, based on the Analysis of the Shallow Groundwater Flow System at Fire Island National Seashore (Schubert, 2009), primarily travels north to discharge to the SSER and embayments. Based on the detailed evaluation documented, nearly 80 percent of the precipitation discharges to the SSER and only 20 percent falling along the southern part of the barrier island discharges to the ocean discharge.

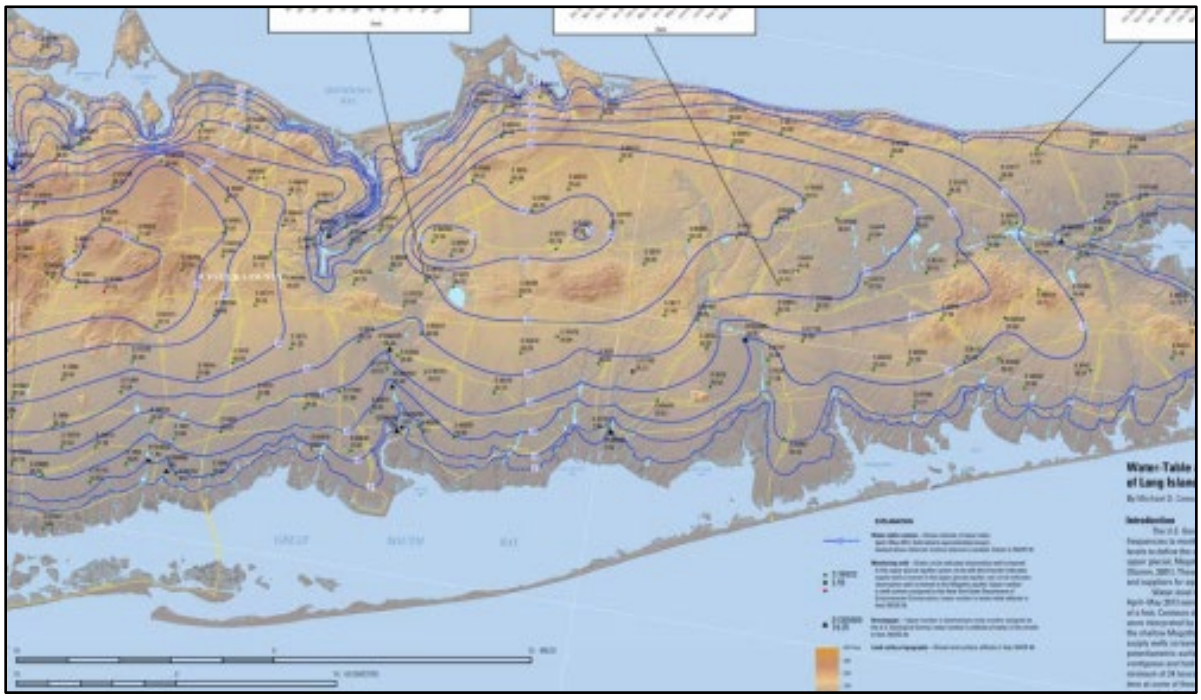


**Figure 3-6 USGS Mapping of the Water Table in Spring, 2013 (Source, Como, et al, 2015)**

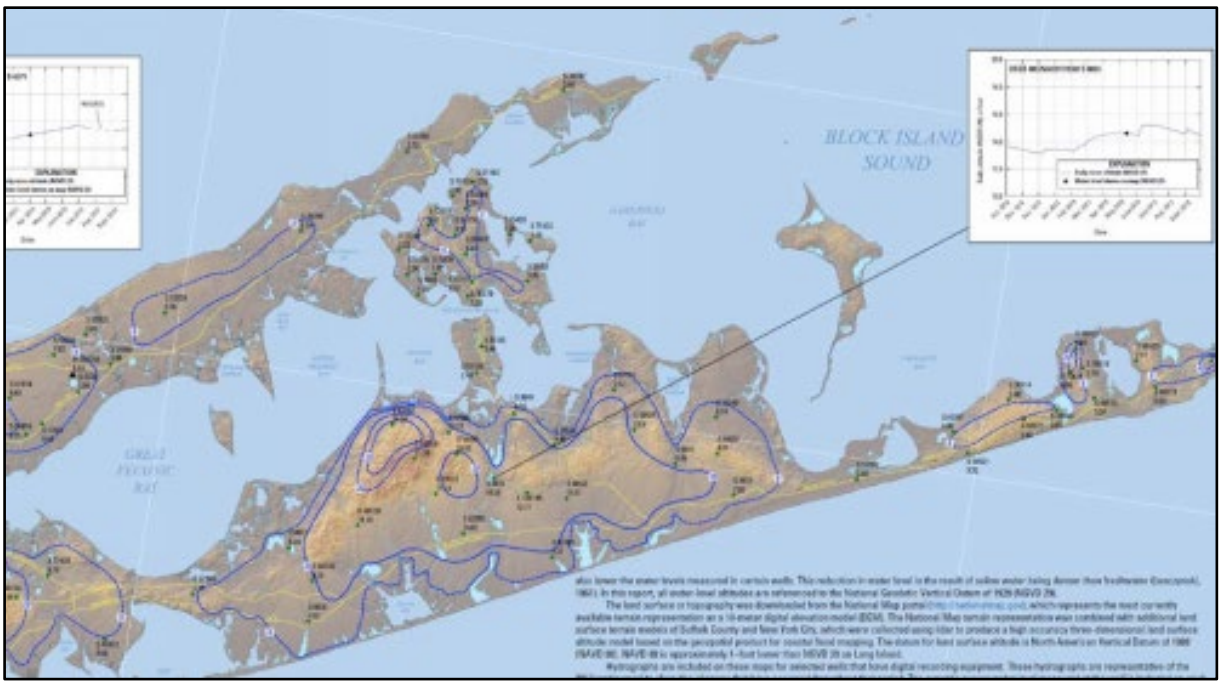



**Figure 3-7 USGS Mapping of the Water Table in East End Towns during Spring, 2013 (Source, Como, et al, 2015)**

In 1996, Suffolk County embarked on the development of groundwater and salt water intrusion models to assist water resource managers in understanding the factors that affected the water supply to enable more informed management and protection of the groundwater quantity and quality. Suffolk County Department of Health Services and Suffolk County Water Authority staff were trained in the development, calibration and application of the models which are installed on County computers. The first model application conducted was the evaluation of the impact of the County's Southwest Sewer District (SWSD) in southwestern Suffolk County on area stream baseflow, pond levels and wetlands.

Additional evaluations of groundwater quantity followed. One evaluations was documented in the 2015 Suffolk County Comprehensive Water Resources Management Plan. The Plan documented use of the County's groundwater flow models to develop water balances characterizing recent conditions, and also projected future water consumption demands. Suffolk County's calibrated Main Body, North Fork, South Fork, and Shelter Island groundwater models were used to develop water balances to characterize aquifer conditions under average annual conditions based on recent levels of public water supply pumping and the presence of existing stormwater and wastewater collection and management facilities. Levels of public water supply pumping assigned in the model simulations were based on those used for the Long Island Source Water Assessment Program evaluations (SWAP, 2003).

Geographically, four water balances were developed to characterize each of the shallow flow fields and to better understand localized conditions. The Main Body flow model was used to develop a water balance for the main part of Suffolk County, from the Nassau-Suffolk border on the west, to Shinnecock Inlet (on the South Fork) and Mattituck Creek (on the North Fork) on the

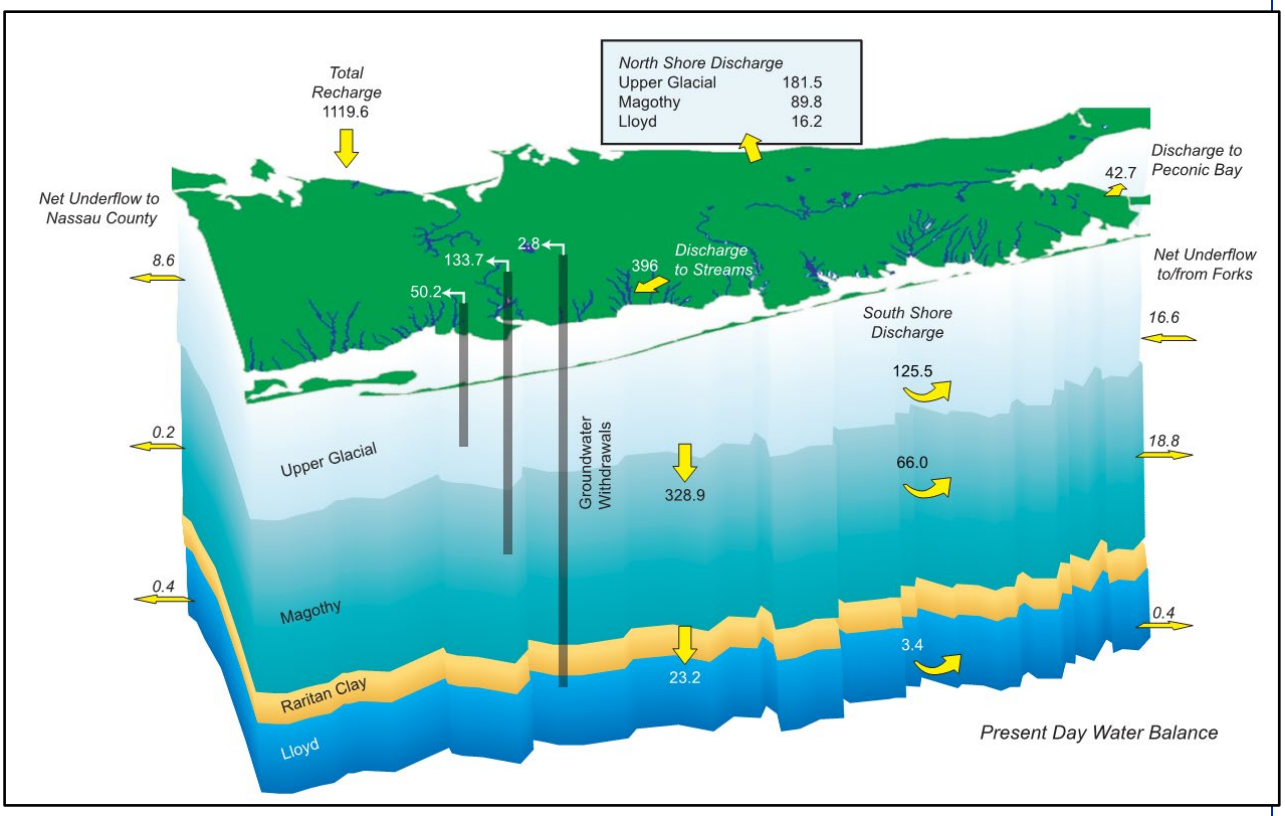
east. The North Fork, South Fork, and Shelter Island freshwater/saltwater interface models were used as the basis for development of separate water balances for the North Fork east of Mattituck Creek, the South Fork east of Shinnecock Inlet and for all of Shelter Island.

Long term average recharge rates were based on precipitation records obtained from one of four climate weather stations. Data from the Mineola and Brookhaven National Laboratory (BNL) stations were used for the Main Body water balance, data from the Riverhead station was used for the Shelter Island and North Fork water balances; and data from the Bridgehampton station was used for the South Fork water balance. The Mineola station was used to assign recharge for the Nassau portion of the Main Body flow model and was not a significant factor in the development of the water budget for the Suffolk County portion of the Main Body model.

The Countywide water balance combining the results of all four models (shown on **Figures 3-8a, b, c** and **d**) is shown on **Table 3-2**. The figures and **Table 3-2** summarize the recharge, pumpage, and groundwater discharge to streams, bays, harbors and coastal waters.

**Table 3-2 Countywide Water Balance**

| | Inflow (MGD) | Outflow (MGD) | Outflow as a Percentage of Total Recharge |
|---|---|---|---|
| Total Recharge | 1367.3 | | |
| Water Supply Withdrawals: | | | |
| Upper Glacial | | 59.4 | 4% |
| Magothy | | 134.5 | 10% |
| Lloyd | | 2.8 | <1% |
| Streams | | 506.2 | 37% |
| North Shore | | 304.6 | 22% |
| South Shore | | 233.5 | 17% |
| Peconic Bay | | 117.1 | 9% |
| Nassau County | | 9.2 | <1% |
| **Total:** | **1367.3** | **1367.3** | |




NOTE: The stratigraphic depictions do not represent actual thicknesses or depths

**Figure 3-8a Suffolk County Water Balance – Main Body**

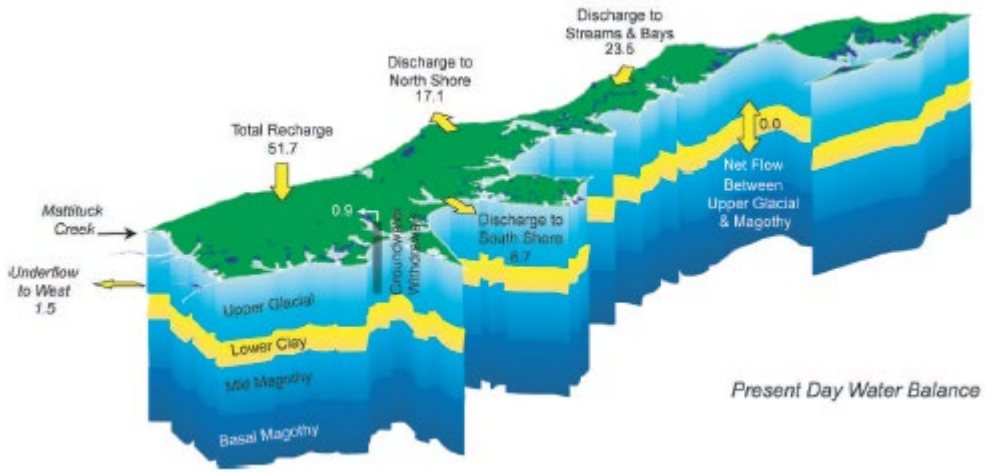



**Figure 3-8b Suffolk County Water Balance – North Fork**

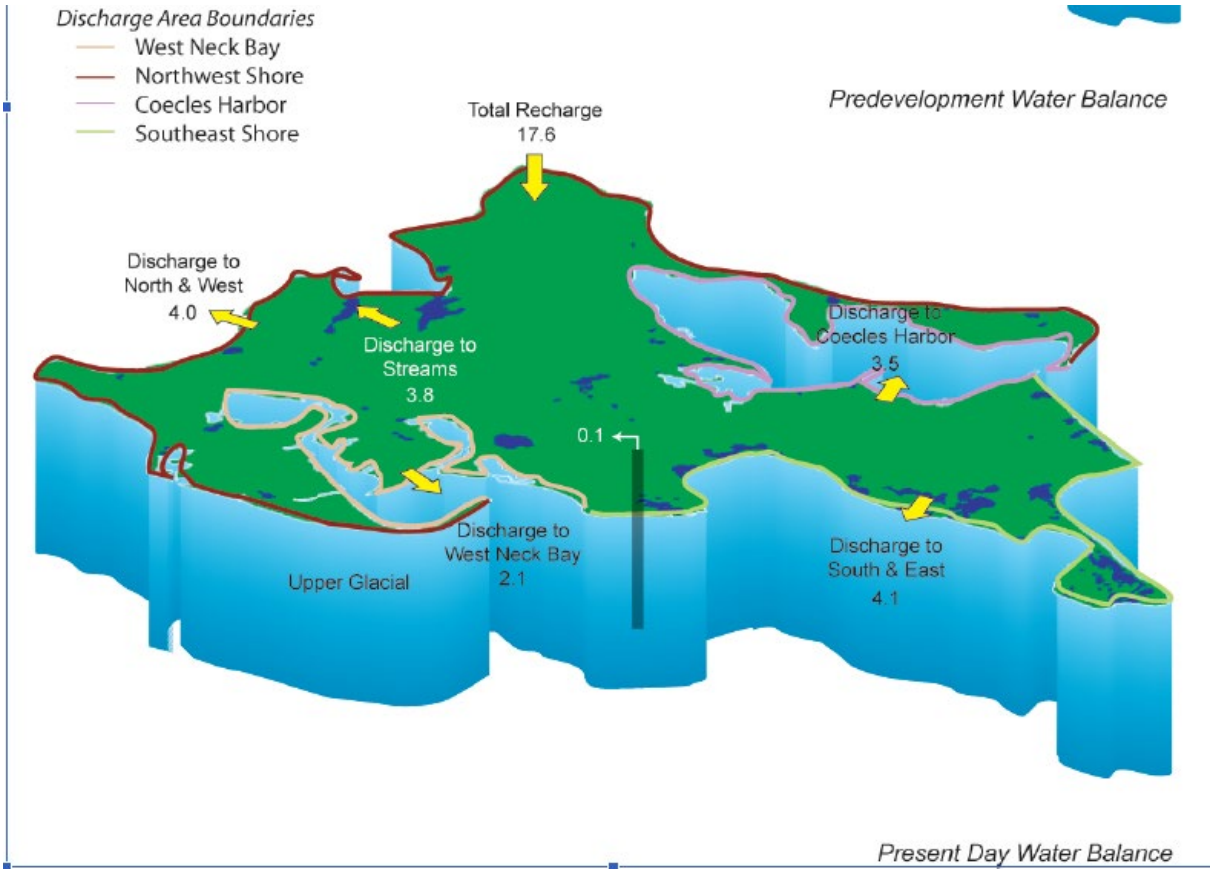



**Figure 3-8c Suffolk County Water Balance – Shelter Island**

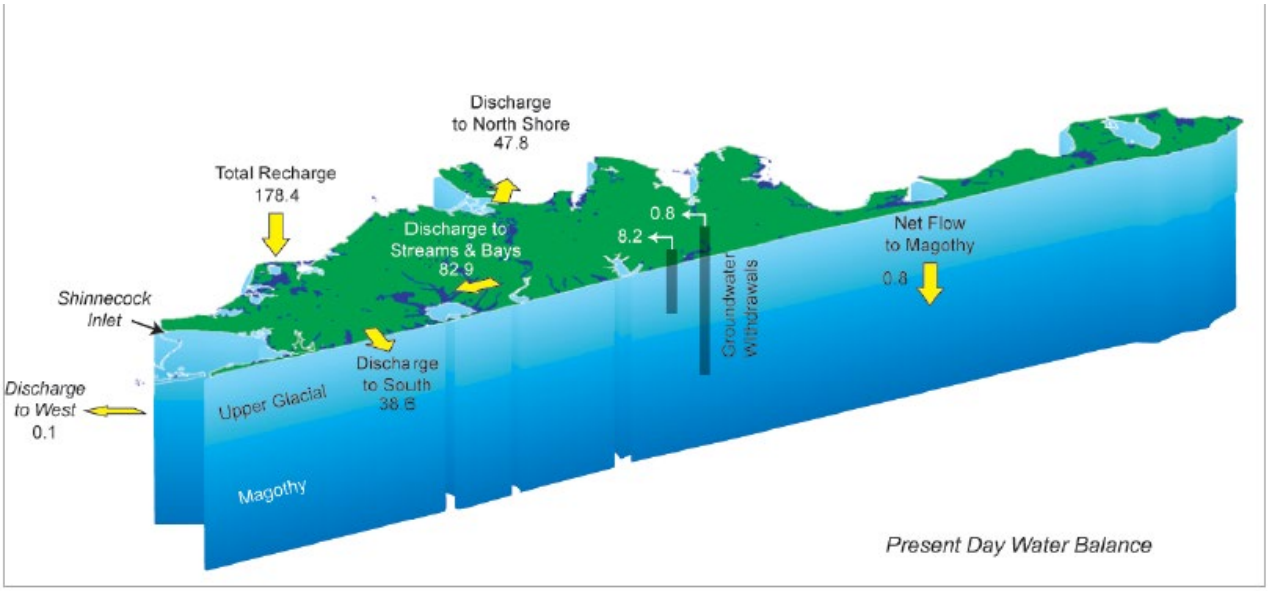



**Figure 3-8d Suffolk County Water Balance – South Fork**

On a Countywide basis, groundwater withdrawals for water supply totaled 197 million gallons per day (MGD) or 14 percent of total recharge. Stream baseflow was estimated at 506 MGD or 37 percent of the recharged precipitation while baseflow and underflow to the surrounding saltwater bodies as a percentage of total recharge was 48 percent of total recharged precipitation. Seasonal water supply pumpage has increased, largely due to the use of automatic lawn sprinkling systems; the recent annual average pumpage used for the SC SWP modeling evaluations was approximately 245 MGD, supplied by over 750 community supply wells. Water supply pumpage is still significantly lower than annual aquifer recharge.

The water balances confirmed earlier assessments that on a Countywide basis, the aquifer system can sustain current and projected rates of water supply pumping. The water balances show that average water supply pumping is less than 15 percent of the average recharge rate. In fact, much of the water withdrawn in the County is returned to the aquifer system via on-site wastewater disposal systems. Consequently, throughout much of the County, the stream baseflow declines experienced in Nassau County to the west have not been observed. Construction and operation of sanitary sewering systems that discharge to surface waters results in a net loss of groundwater from the aquifer system, and a potential reduction in the local water table elevation. Because groundwater provides the baseflow for the fresh surface water features in the County, sanitary sewering with surface water discharge can also result in a loss of stream baseflow. Consideration of these impacts requires site-specific evaluation. The water balances did identify the net loss of baseflow to area streams and to coastal areas that occurs in those parts of the County where water supply pumping is not returned to the aquifer via on-site septic systems or small sewage treatment plants discharging to recharge beds. The impacts of sanitary sewering in the County's largest sewer district, Sewer District No. 3, Southwest (SWSD) on groundwater elevations and stream baseflow have been previously documented (CDM, 1995, 2002).

**Figures 8-a, 8-b, 8-c** and **8-d** illustrate average annual water balances for the Main Body, the forks and Shelter Island. Recharged precipitation constantly travels through the aquifer system towards the shoreline (State of the Aquifer, 2016, Long Island Commission for Aquifer Protection) unless it is intercepted by a well. The water balances shown may be modified by changes in precipitation and changes in water supply pumping. The aquifer system can respond to reduced precipitation or increased water supply pumping by a decline in the water table (e.g., less water is stored in the aquifer), reduction in stream baseflow or groundwater discharge to coastal waters, or salt water intrusion. The aquifer system in different parts of the County will respond differently to these changes. For example, a reduction in groundwater recharge may result in a reduced length of flowing stream or reduced baseflow in the southwestern part of the County where the aquifers are thick; that same reduction in recharge may result in salt water intrusion in coastal areas on the East End where the aquifer thickness is limited.

The construction of recharge basins in many parts of the island has increased recharge during the growing season (Ku, et al), so that on an annual basis, recharge to the aquifer is actually slightly higher than during pre-development conditions. Suffolk County has evaluated the impacts of sanitary sewering in the SWSD on streams and wetlands areas within that district. The post-sewering reduction in baseflow in the Carlls River is shown on **Figure 3-9**, as compared to baseflow during the same time frame in the Carmans River, just to the east of the study area, shown on **Figure 3-10**. Potential impacts of development on streams, ponds, wetlands and inter-

tidal areas are best considered on a localized basis, considering area water supply pumping, development and stormwater management approaches, and sanitary wastewater management. Suffolk County considers these potential impacts of sanitary sewering on groundwater levels – whether it be an increase in the water table resulting from recharge of treated effluent, or a decline in the water table that results when treated effluent is discharged to a surface water body – as part of their evaluations of sewering feasibility.

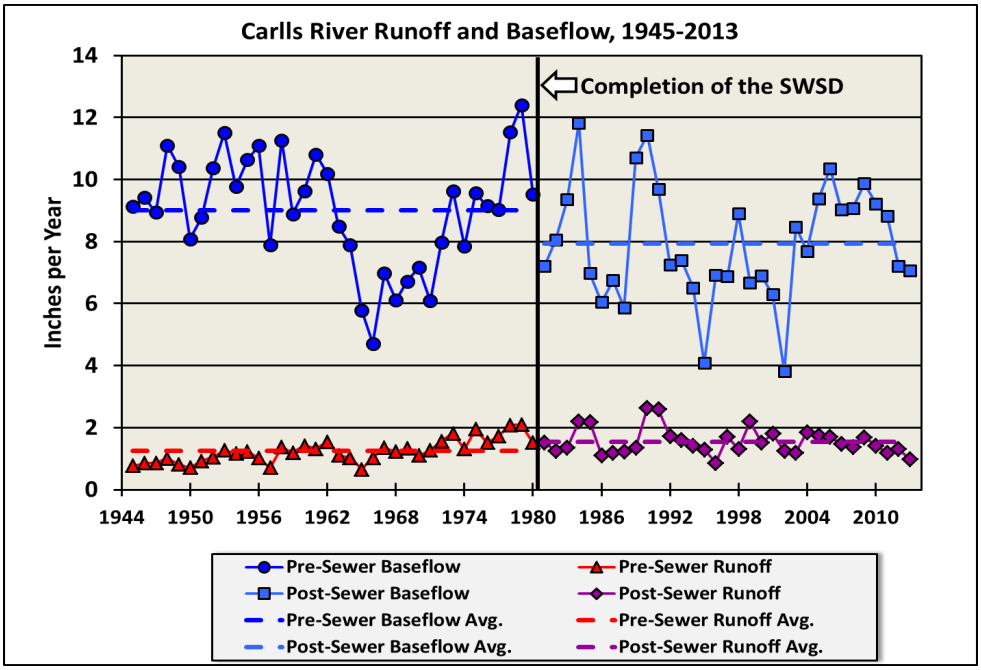



**Figure 3-9 Carlls River Runoff and Baseflow**

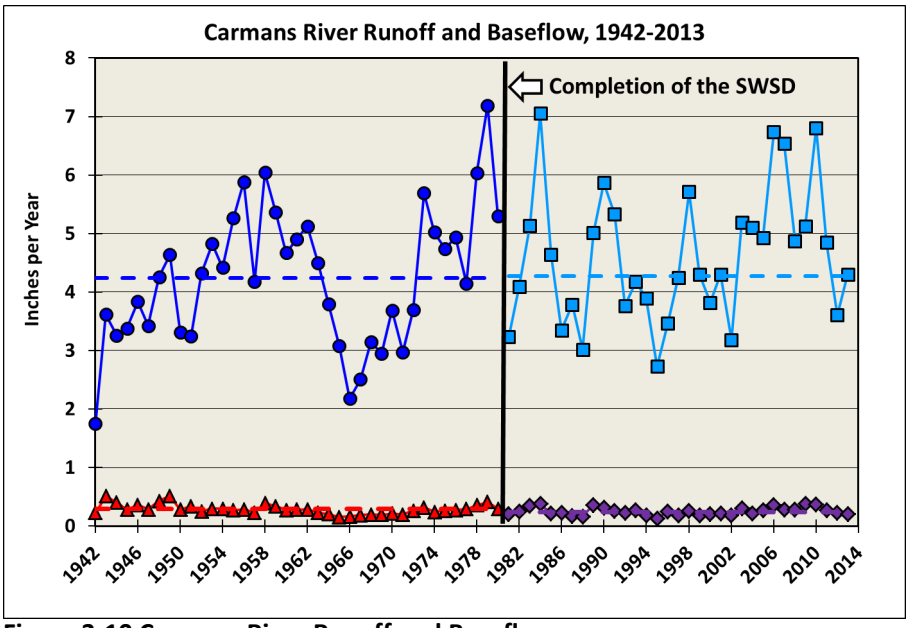



**Figure 3-10 Carmans River Runoff and Baseflow**

In summary, water balances developed using the Main Body and East End groundwater flow models confirm that recharge greatly exceeds water supply pumping rates, and the aquifer system can continue to meet current and projected rates of water supply pumping on a Countywide basis. Nevertheless, fresh supplies are limited in some coastal areas, including Shelter Island. It should also be noted that an initial evaluation of potential impacts to the groundwater table resulting from a fictitious Countywide sewering scenario is provided in Section 10.2 of this Draft GEIS.

### 3.2.1.2 Impacts of Climate Change on Groundwater Quantity

While it is beyond the scope of this GEIS to document all potential impacts of climate change on groundwater quantity, some aspects are worth noting. One projected aspect of climate change is the anticipated future increase in precipitation in the northeastern part of the United States (Spierre and Wake 2010). The potential impacts of increased precipitation have not been quantified but would result in an increase in aquifer recharge, a higher water table, and an increase in fresh water availability for potable supply. The increase in precipitation may also increase groundwater baseflow to streams. This potential would have to be considered in conjunction with projected sea level rise. It is projected that the higher annual precipitation would primarily be driven by more frequent intense storm events. It is also recognized that projected sea level rise and more frequent intense storm events can impact tidal wetlands (ex. inundated).

A second aspect of climate change with the potential to affect groundwater quantity was explored as part of the County's 2015 CWRMP. In the past, sea level had been rising along the East Coast at a reported rate of between 0.34 and 0.43 inches per decade (Gehrels, et al., 2005; Donnelly et al., 2004**)**. Over the past century, the rate of sea level rise has been increasing, with average sea level rise since 1900 now at 1.2 inches/decade. Global warming is predicted to further accelerate the rate of rising sea level, both as a result of the expansion of the warming oceans, and as a result of ice melt.

Recent sea level rise projections have concluded that the pace of sea level rise is greater than anticipated just a few short years ago and the groundwater model simulations incorporating seal level rise projections were implemented to assess the potential impacts on the water table and salt water interfaces. The mean sea-level rise projection under the "business as usual" case as presented in Zhang et al. (2014) was utilized, projecting an increase in sea level of 34 inches by the year 2099. These simulation results were also used to assess the potential impact to on-site sewage disposal systems.

#### *3.2.1.2.1 West End Towns*

**Figure 3-11** shows the predicted increase in upper glacial water levels on the Main Body of the island, assuming a 34-inch rise in sea level. The change in water level varies from 2.8 feet to less than 0.25 feet, with most of the model area showing an increase of 1 foot or less. The predicted increase in the water table elevation is much lower along the south shore, compared to the north shore, because increases in stream baseflow limit the water level rise in the vicinity of the non-tidal portion of the south shore streams. Total baseflow in the non-tidal portion of the south shore streams (based on present day configuration of the tidal portion) is simulated to increase by approximately 48 percent in response to a 34-inch rise in sea level. Baseflows in the Peconic

River and Nissequogue River are simulated to increase by approximately 11 percent and 2 percent respectively.

**Table 3-3 Projected Increases in Stream Baseflow Resulting from Projected Sea Level Rise**

| Water Body | Projected Increase in Baseflow Resulting from Projected Sea Level Rise | | |
|---|---|---|---|
| | 2035 | 2050 | 2100 |
| All Non-Tidal (South Shore) | 10% | 19% | 48% |
| Nissequogue River & Tributaries | 1% | 1% | 2% |
| Peconic River & Tributaries | 2% | 4% | 11% |

*3.2.1.2.2 East End Towns*

**Figures 3-12, 3-13 and 3-14** show the predicted change in upper glacial water levels on the North Fork, assuming a 34-inch rise in sea level. Over most of the North and South Forks, the water table elevation is predicted to increase by from 1 to 2 feet; predicted increases in water table elevation on Shelter Island range from 1.5 to 2 feet. Short, non-tidal segments of streams along the southern shore of the North Fork locally limit the water level increase because of increases in stream baseflow. The relative extent of the water table impacts in the North Fork is markedly more extensive than that simulated by the Main Body flow model. This is to be expected given that the distance between water bodies (Long Island Sound and the Great South Bay) is four times greater for the Main Body compared to the North Fork (Long Island Sound and Peconic Bay). (It should be noted that the increase in water level beyond 3 feet around some of the tidal creeks is an anomaly resulting from the use of the regional model; detailed representations of the increased lengths of the tidal portion of the tributary creeks to the inlet that would occur as a result of the increased sea level were not incorporated in the regional model evaluation. This would allow correct simulation of the increased groundwater baseflow to the creeks, rather than the mounding currently depicted.)

There are many uncertainties associated with the impacts of climate change, but much work has been documented by the Intergovernmental Panel on Climate Change (IPCC) and others. Recent studies and Global Climate Models indicate that sea level will continue to rise at an accelerated pace. Sea level rise may have profound impacts on low lying coastal areas, particularly along the south shore, and on the forks.

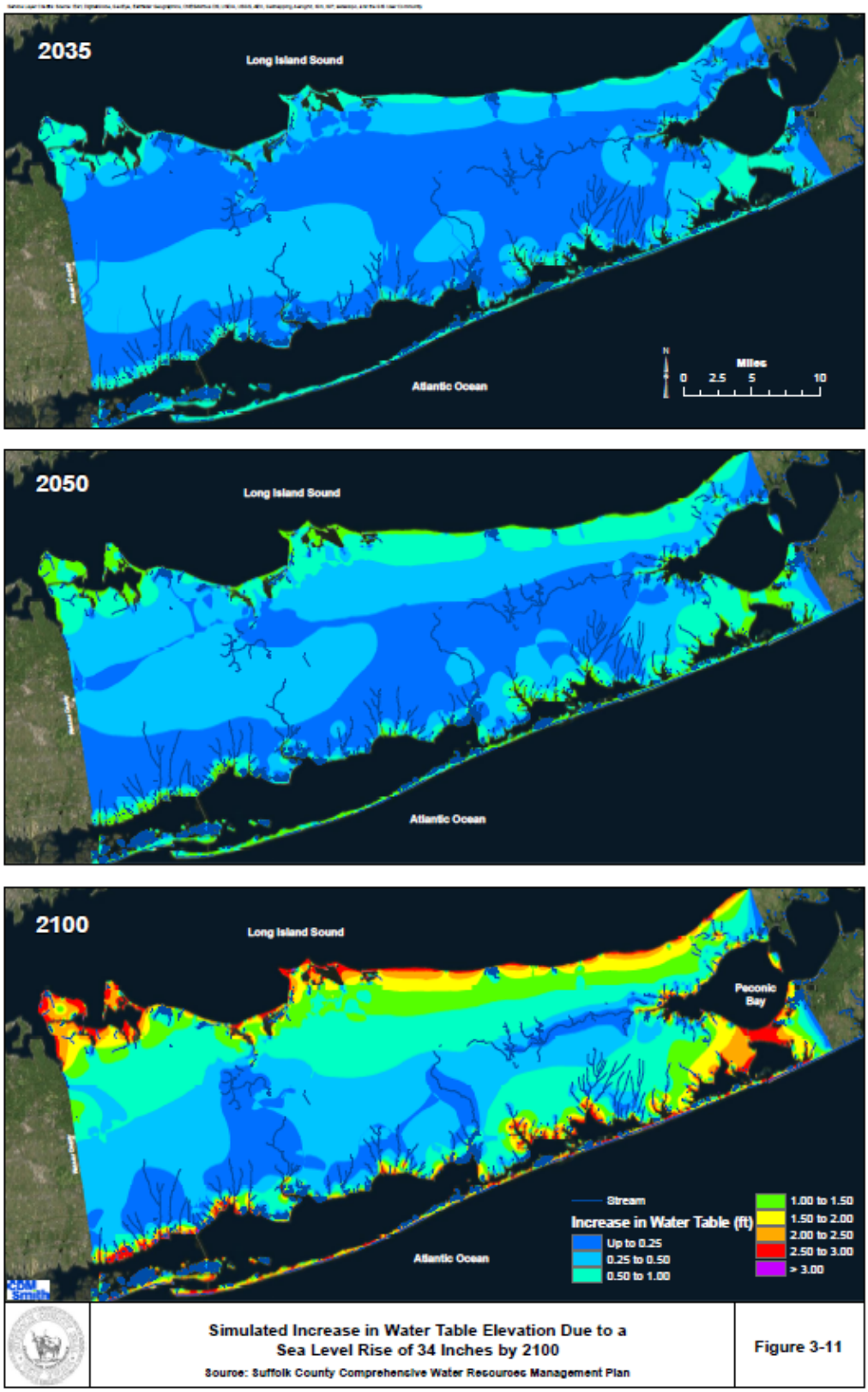



**Figure 3-11 Simulated Increase in Water Table Elevation Due to a Sea Level Rise of 34 Inches by 2100**

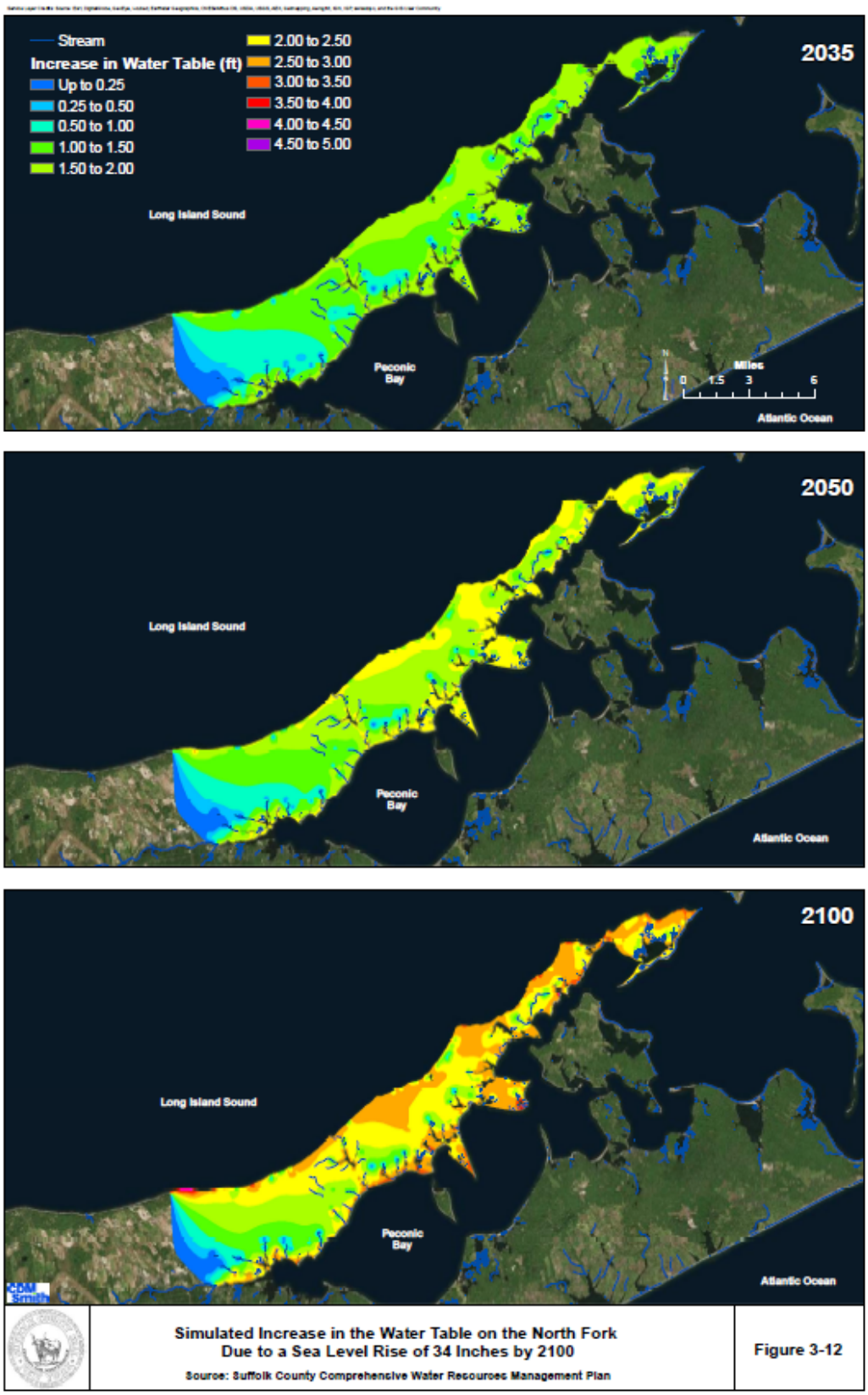



**Figure 3-12 Simulated Increase in the Water Table of the North Fork Due to a Sea Level Rise of 34 Inches by 2100**

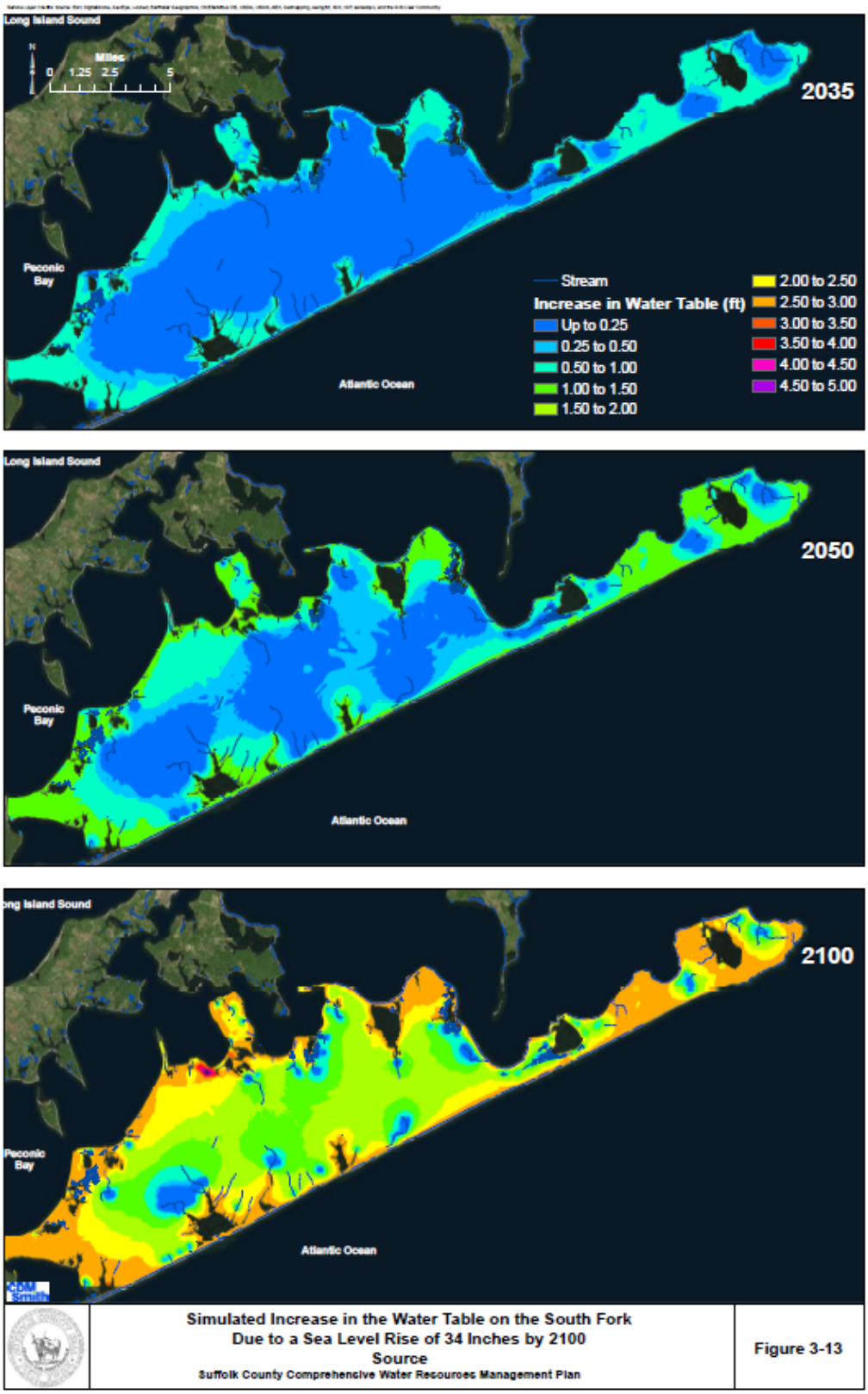



**Figure 3-13 Simulated Increase in the Water Table on the South Fork Due to a Sea Level Rise of 34 Inches by 2100 Source**

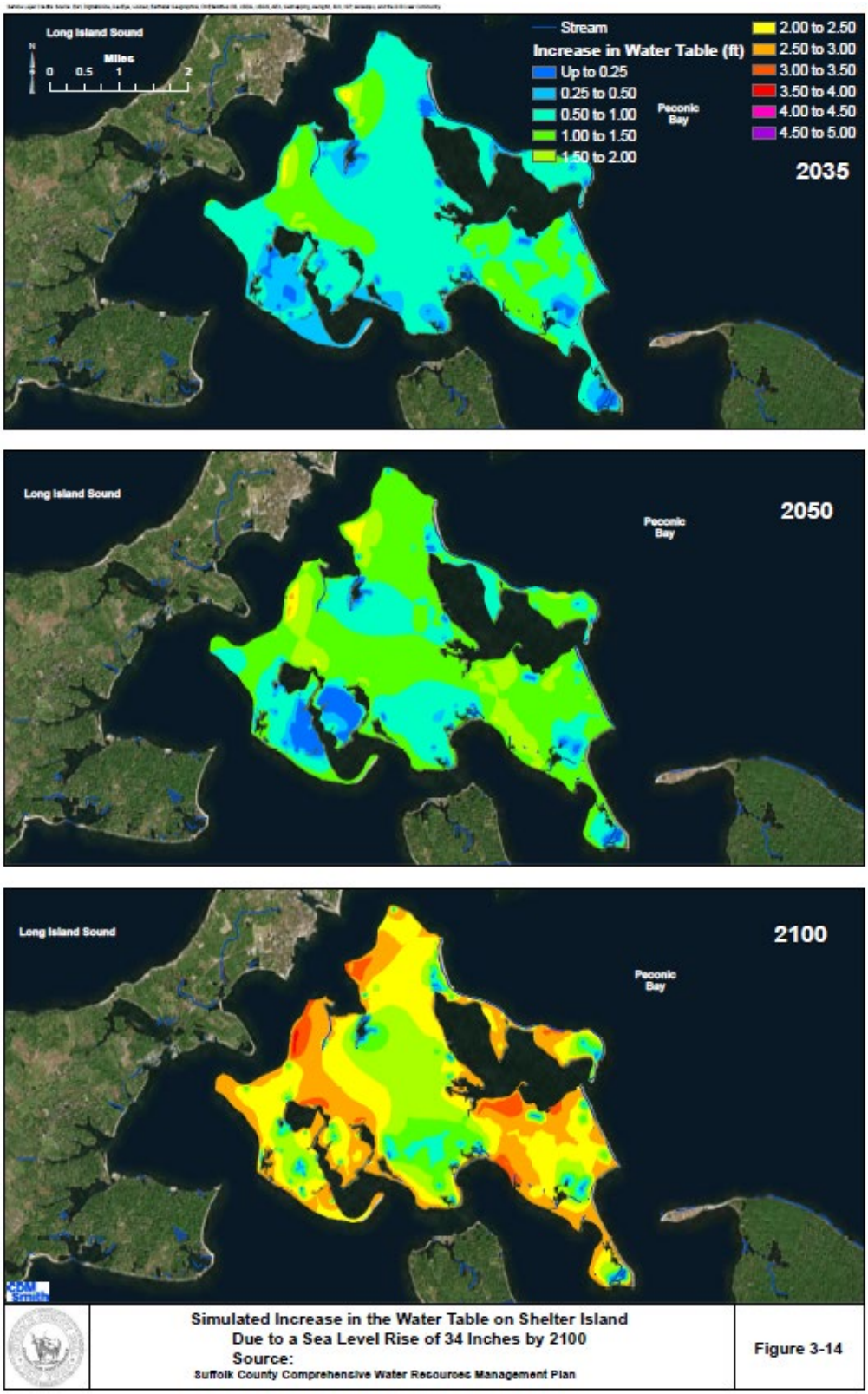



**Figure 3-14 Simulated Increase in the Water Table on Shelter Island Due to a Sea Level Rise of 34 Inches by 2100**

In the coming decades, Suffolk County will need to address the impacts of projected increases in sea level elevation. The impacts of rising sea level could be very significant in coastal areas and along the forks, with significant implications for water supply, storm water and sanitary waste management, as well as more widespread flooding. The impacts of sea level rise on the location of the saltwater interfaces must also be monitored and addressed from a water supply perspective. The impacts of both sea level rise and more frequent extreme precipitation events should also be monitored so that wastewater and stormwater runoff management strategies can be developed and implemented. New data should be considered and evaluated as part of the overall adaptive management strategy discussed in Section 8 of the SC SWP.

### 3.2.1.3 Groundwater Quality

Suffolk County's 1.5 million residents live directly on top of their water supply. It is not surprising that the impacts of human activities above ground are observed in the groundwater below. Although delivered potable water supplied by community water systems in Suffolk County meets all drinking water quality standards, review of groundwater quality data reveals that concentrations of groundwater contaminants such as nitrogen continue to increase in some areas.

Nitrate has long been identified as the inorganic parameter causing the most widespread concern in Suffolk County; increased levels of nitrates resulting from overlying land uses have been documented in Suffolk County for many years. Pre-development nitrate (nitrate as nitrogen, referred to as "nitrate" in this GEIS) concentrations in the upper glacial aquifer were less than 1 milligram per liter (mg/L), and pre-development nitrate levels in the deeper Magothy and Lloyd aquifers were less than 0.05 mg/L (Suffolk County 1987). In undeveloped areas of the County, nitrate concentrations generally remain less than 1 mg/L, but in densely developed unsewered areas, data shows that nitrate concentrations in groundwater can exceed the 10 mg/L Maximum Contaminant Level (MCL) drinking water standard for nitrate. In some agricultural areas, nitrate levels in private wells can still exceed 20 mg/L.

The impacts of anthropogenic sources of nitrogen on groundwater quality are much greater than the impact of natural sources of nitrate in the environment, such as precipitation and decaying biological matter. Anthropogenic sources of nitrogen include on-site sanitary wastewater disposal in unsewered areas, sewage treatment plant discharges to groundwater, application of fertilizer to agricultural land, and use of turf care products on lawns and golf courses. Excess nitrogen in the environment can contaminate groundwater and the drinking water supplies. In addition, because the groundwater discharges to surface waters, high nitrogen levels can negatively impact marine and fresh water ecological resources by contributing to algal blooms that can reduce dissolved oxygen levels and result in fish kills.

Nitrogen contamination resulting from disposal of sanitary wastewater and fertilization (associated with both residential and agricultural land uses) has been studied extensively and documented in the past (e.g., **Long Island Comprehensive Waste Treatment Management Plan,** hereinafter identified as the **208 Plan,** the **1987 CWRMP,** the 2015 Comp Water Plan and various research projects at Stony Brook University and Cornell Cooperative Extension [CCE]). The continuing upwards trends in groundwater nitrogen concentrations has prompted development of the SC SWP to reduce anthropogenic nitrogen loading to halt – and reverse the trend of increasing nitrogen levels.

#### *3.2.1.3.1 Current Nitrate Levels in Suffolk County Groundwater*

Nitrate concentrations in each of the County's underlying three aquifers were characterized based upon untreated water (groundwater) collected at supply wells and were further characterized based upon model simulations described below in Section 3.2.1.2.2. First, data for untreated water from SCDHS's community and non-community well databases were used, because they provide consistent long-term records of water quality at the same depths and geographic locations from year to year. This data was supplemented by data that SCDHS collected from private wells from 2007 through 2013 and from monitoring wells installed during focused investigations of the impacts of land uses such as agriculture and golf courses.

Average nitrate concentrations observed in untreated water from community and non-community supply wells in 2013 are shown on **Figures 3-15a** through **3-15c** and **Table 3-4** for the upper glacial, Magothy, and Lloyd aquifers respectively. Less than 1 mg/L of nitrate was reported in supply wells shown in blue, indicating very high-quality groundwater. Nitrate concentrations are between 1 and 6 mg/L in wells shown in green, indicating some impact from development.

Wells shown in yellow have reported nitrate concentrations between 6 and 10 mg/L; water from these wells is in compliance with the drinking water MCL of 10 mg/L, but has been clearly impacted by human activity. Samples collected from wells shown in red exceeded the drinking water MCL for nitrate - these wells have either been removed from service, or the water is treated to achieve drinking water standards before it is delivered to County residents. More recently, untreated water exceeding 10 mg/L in 2018 was identified in 17 wells located in 14 wellfields. As part of the SC SWP; contributing areas to these wells were carefully considered as priority areas for nitrogen load reductions were developed as described later in this section.

To protect human health, Article 6 of the Suffolk County Sanitary Code established GMZs which seek to limit groundwater nitrogen concentrations to 4 mg/L in GMZs III, V, and VI and to 6 mg/L elsewhere, as shown on **Figure 3-5**.

**Figure 3-15a** shows that while nitrate levels in over 80 percent of the upper glacial supply wells are less than or equal to 6 mg/L, wells impacted by nitrate contamination are present throughout the County. Nitrate levels exceeding 6 mg/L were found in upper glacial supply wells located on the North Fork, an unsewered agricultural area, as well as the northwest and central parts of the County. **Figures 3-15b** and **3-15c** show that in general, nitrate concentrations in the Magothy and Lloyd aquifers remain lower than in the upper glacial aquifer; ambient levels of less than 1 mg/L continue to be observed throughout the Magothy aquifer in the southern part of the County.

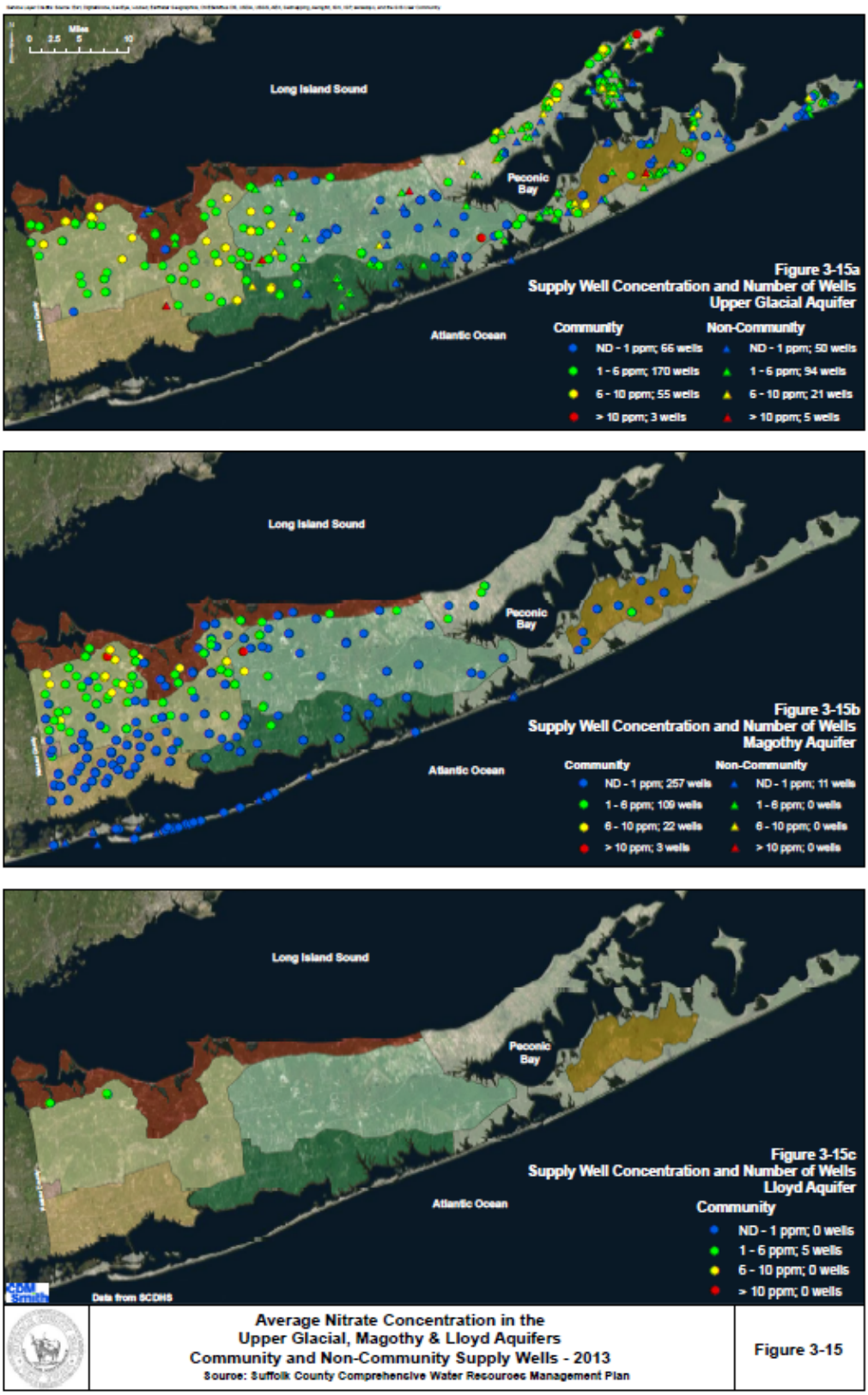



**Figure 3-15a, b, c Average Nitrate Concentration in the Upper Glacial, Magothy & Lloyd Aquifers Community and Non-Community Supply Wells – 2013**

**Table 3-4 Measured Nitrate Concentrations in Untreated Water from Community and Non-Community Supply Wells**

| Aquifer | 2013 Nitrogen Concentrations |
|---|---|
| **Upper Glacial Aquifer** [(1)] | |
| n (wells) | 477 |
| Minimum (mg/L) | ND |
| Maximum (mg/L) | 15.4 |
| Average (mg/L) | 3.44 |
| 10th Percentile (mg/L) | ND |
| 50th Percentile (mg/L) | 3.10 |
| 90th Percentile (mg/L) | 7.32 |
| No. of Wells > 6 mg/L | 86 |
| **Magothy Aquifer** [(2)] | |
| n (wells) | 402 |
| Minimum (mg/L) | ND |
| Maximum (mg/L) | 10.2 |
| Average (mg/L) | 1.41 |
| 10th Percentile (mg/L) | ND |
| 50th Percentile (mg/L) | ND |
| 90th Percentile (mg/L) | 4.80 |
| No. of Wells > 6 mg/L | 29 / 26 |
| **Lloyd Aquifer** | |
| n (wells) | 5 |
| Minimum (mg/L) | 2.1 |
| Maximum (mg/L) | 4.2 |
| Average (mg/L) | 3.18 |
| 10th Percentile (mg/L) | 2.3 |
| 50th Percentile (mg/L) | 3.50 |
| 90th Percentile (mg/L) | 3.92 |
| No. of Wells > 6 mg/L | 0 / 0 |

[(1)] Nitrogen concentrations > 10 mg/L were identified in untreated water from 6 upper glacial wells in 2018.
[(2)] Nitrogen concentrations > 10 mg/L were identified in untreated water from 11 Magothy wells in 2018.

Additional nitrate data was available from the private well testing program that SCDHS has implemented for five decades. **Figure 3-16**, a summary of nitrate levels measured in private wells by SCDHS from 1997 through 2013 respectively, provides additional information to characterize conditions within the upper glacial aquifer, where the vast majority of private wells are screened. While this large recent data set provides extensive information on the state of the upper glacial aquifer and contaminant occurrence in the County; there are several limitations associated with its use. Geographically, the monitoring is generally skewed to the eastern portions of the County where the majority of private wells exist. The data set is not random, as private wells are sampled by request and during surveys initiated by SCDHS in response to unusual or significant contaminant detections. In addition, repeat sampling of some wells may occur. Private well sample results showed that almost a third of the private wells approached native groundwater quality, with nitrate levels less than 1 mg/L; nitrate concentrations in approximately 75 percent of the private wells sampled were less than or equal to 6 mg/L during both sampling periods. Private wells impacted by nitrate contamination are located throughout the County, but most are found in agricultural areas of the North and South Forks and in pockets of the more densely developed unsewered areas of the north and south shores.

#### *3.2.1.3.2 Nitrate and Land Use*

Through the years, studies have investigated the impacts that various land use types have had on nitrate levels in Suffolk County groundwater. The **1987 CWRMP** evaluated water quality from 25 shallow monitoring wells that were installed downgradient of specific land use types. **Table 3-5** summarizes the nitrate concentrations observed downgradient from the land uses studied. Results from the **1987 CWRMP** study are shown graphically on **Figure 3-17** along with results from the **208 Study** (1978), based on nitrate data from wells in unsewered areas of Nassau County, and results from the WALRAS model developed by Cornell University (Dvirka and Bartilucci, 1987). This work was updated during the 2015 CWRMP and the SC SWP to consider more detailed assessments of land surface areas contributing recharge to public supply wells, historical land uses within the contributing or source water areas and estimated travel times from the water table to the supply well screen, as described below.

**Table 3-5 Water Quality Summary for Nitrate (as Nitrogen), Ammonia and Total Nitrogen from the 1987 Comprehensive Water Resources Management Plan (Dvirka and Bartilucci, 1987)**

| Land Use Type | Nitrate (as N) mg/L | | | Ammonia mg/L | | | Total Nitrogen mg/L | | |
|---|---|---|---|---|---|---|---|---|---|
| | Avg. | Min | Max | Avg. | Min | Max | Avg. | Min | Max |
| Low Density Residential | 3.35 | 2.97 | 3.70 | 0.36 | 0.06 | 0.68 | 3.88 | 3.02 | 4.75 |
| Medium Density Residential | 5.82 | 4.40 | 7.94 | 0.12 | 0.06 | 0.21 | 5.94 | 4.48 | 8.00 |
| High Density Residential | 2.60 | 0.34 | 8.03 | 5.32 | 2.94 | 9.55 | 7.92 | 3.59 | 11.50 |
| Commercial | 1.74 | 0.08 | 4.05 | 6.11 | 0.06 | 17.50 | 8.04 | 1.11 | 17.50 |
| Industrial | 4.25 | 1.13 | 6.99 | 2.96 | 0.06 | 5.12 | 7.13 | 1.18 | 10.80 |
| Institutional | 8.20 | 7.87 | 8.53 | 0.06 | 0.06 | 0.06 | 8.27 | 7.93 | 8.60 |
| Recreation / Open Space | 3.91 | 2.40 | 6.07 | 0.72 | 0.06 | 1.64 | 4.63 | 2.46 | 6.18 |
| Agriculture | 7.83 | 5.62 | 10.00 | 0.06 | 0.05 | 0.06 | 7.89 | 5.68 | 10.10 |
| Vacant | 1.15 | 1.00 | 1.30 | 0.05 | 0.05 | 0.06 | 1.21 | 1.05 | 1.35 |
| Transportation | 2.39 | 0.59 | 4.54 | 0.07 | 0.06 | 0.08 | 2.46 | 0.66 | 4.61 |

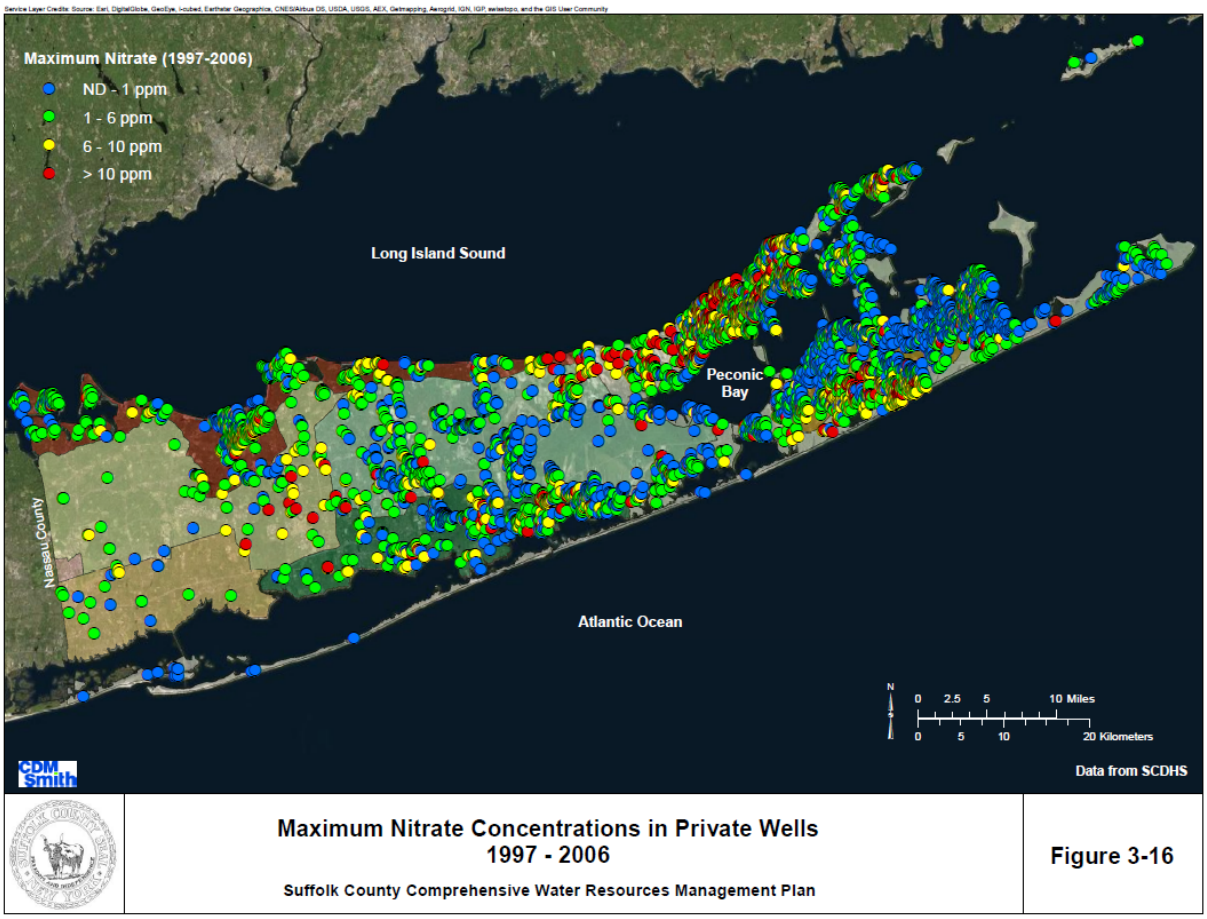



**Figure 3-16 Maximum Nitrate Concentrations in Private Wells 1997-2006**

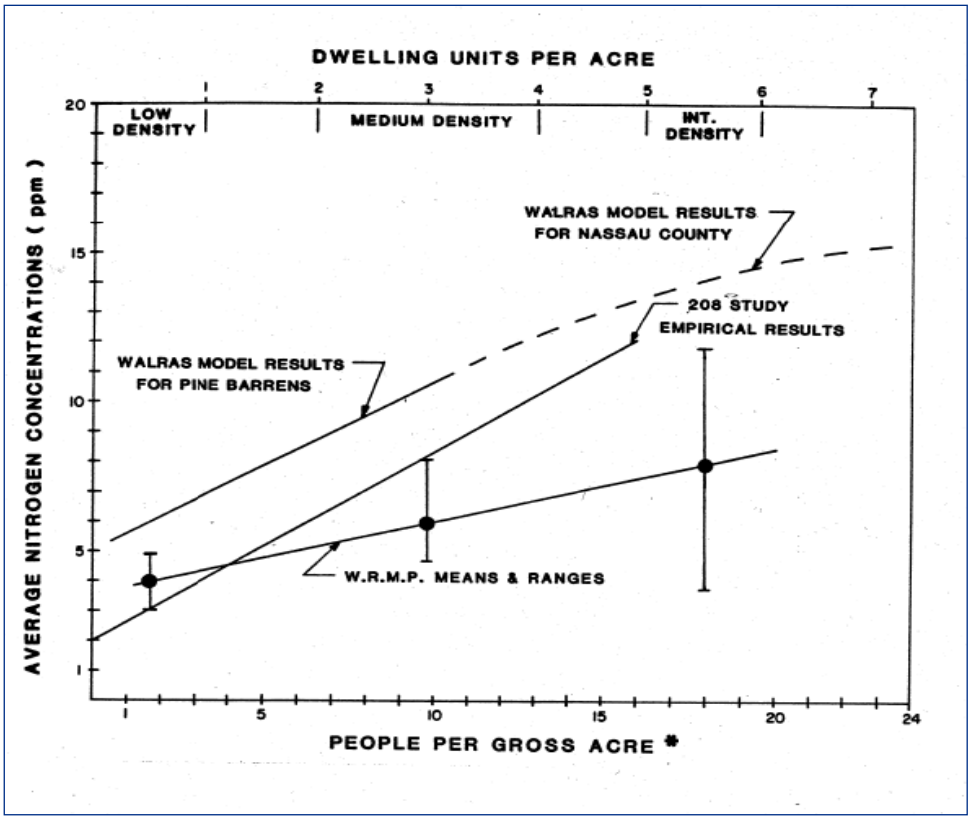



**Figure 3-17 Density & Nitrogen Concentrations in Groundwater** (Dvirka and Bartilucci, 1987)

Wellfield-specific evaluations of the impacts of historical land uses on nitrate levels documented in the 2015 CWRMP yielded the following conclusions:

- Nitrate levels were lowest in wells with contributing areas comprised primarily of open space.
- In general, nitrate levels in wells with sewered contributing areas were lower than nitrate levels in unsewered areas.
- Groundwater nitrogen levels increase in unsewered areas as housing density increases.
- Wellfields with contributing areas that comply with the population density goals established by Article 6 all meet the target nitrate concentrations.
- Agriculture remained a significant source of nitrogen contamination of the aquifer, particularly on the North Fork. The type of agriculture present within the contributing area affects the resulting groundwater nitrate level, since nitrogen loading can vary considerably depending on crop-specific fertilization requirements. The data showed average nitrogen concentrations in groundwater for row crops at 13.4 mg/L and average nitrogen concentrations in groundwater for vineyards at 5.1 mg/L.
- A limited set of wells screened in the Magothy aquifer with unsewered contributing areas was evaluated; the data shows an increasing trend in nitrate concentrations. In general,

wells screened in the Magothy aquifer had lower nitrate concentrations than those screened in the upper glacial aquifer.

A more comprehensive evaluation of land use impacts upon nitrate concentrations in the shallow upper glacial aquifer was completed as part of the SC SWP. As described in Section 2.1.5 of the SC SWP, estimates of parcel-specific loading were developed for every parcel in Suffolk County, considering:

- Land use, using a GIS coverage of 2016 land use developed by SCDEDP; and,
- Nitrogen loading introduced to groundwater from:
  - Sanitary wastewater,
  - Fertilizer,
  - Atmospheric Deposition and
  - Pet Waste.

The migration of these parcel-specific nitrogen loads through the aquifer system was simulated for a period of 200 years using the County's groundwater models. The resulting projected nitrate concentrations in the shallow upper glacial aquifer are shown by **Figure 3-18**. This figure represents the predicted nitrate concentrations that would be observed in the shallow water table aquifer if current land use and wastewater management remained constant for 200 years. In some areas of the County where the aquifer system is shallow and land use has not changed in recent decades, it represents a reasonable characterization of existing conditions. In other areas of the County where land use has changed substantially over recent decades, the simulated concentrations may not represent actual measured concentrations in groundwater due to the impacts of the legacy land use.

Study of **Figure 3-18** shows the impact of land use on simulated nitrogen concentrations. Areas shown in red are where simulated shallow upper glacial concentrations are projected to be greater than the maximum contaminant level of 10 mg/L, areas shown in orange are where simulated nitrogen concentrations are projected to be between 6 and 8 mg/L and nitrogen concentrations in areas shown in yellow are projected to be between 4 and 6 mg/L. The figure shows that the areas of red and orange, representing the highest simulated nitrogen concentrations, are found in unsewered, densely developed areas of the County. Areas shown in green on **Figure 3-18** represent areas where the simulated nitrogen concentration is projected to be between 1 and 4 mg/L, while nitrogen concentrations in areas shown in blue are less than 1 mg/L. The Pine Barrens in Brookhaven and Mashomack Preserve in Shelter Island are two prominent examples of undeveloped land where the simulated nitrogen concentration is less than 1 mg/L. These simulated nitrogen concentrations and impacts on downgradient groundwater and surface water quality are discussed throughout the SC SWP.

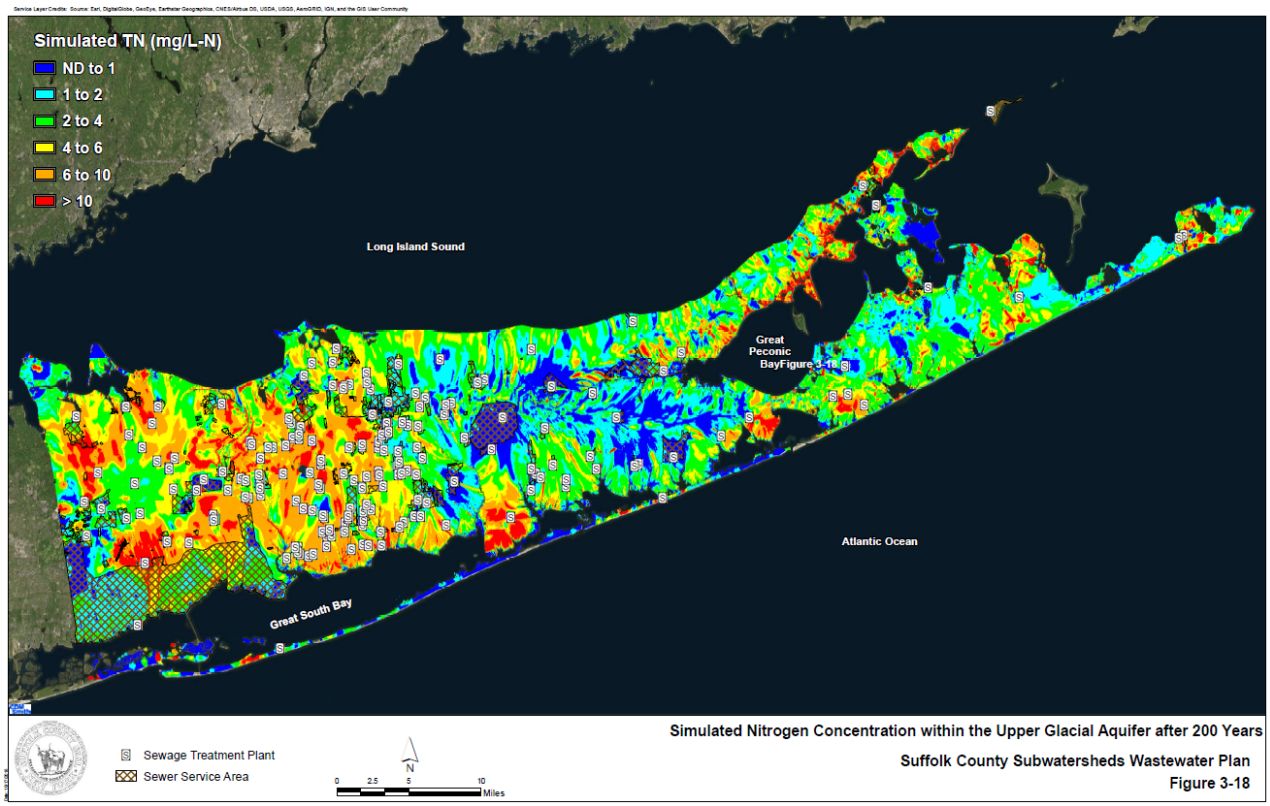



**Figure 3-18 Simulated Projected Nitrogen Concentrations in the Shallow Upper Glacial Aquifer**

### *3.2.1.3.3 Effectiveness of Existing Nitrate Management Programs*

Since the 1970s, a wide variety of regulatory programs have been developed and implemented to control the amount of nitrate that is introduced to the aquifer system. Discharge of sanitary wastewater and fertilization have been identified as the two most significant sources of

anthropogenic nitrogen to groundwater. Sanitary sewering that has been implemented in southwest Suffolk County and other densely developed parts of Suffolk County has been effective in reducing groundwater contamination from sanitary, commercial, and industrial wastewaters. Implementation of land use restrictions, the purchase of large tracts of open space for preservation and groundwater protection, and limiting fertilization have also helped to protect groundwater quality in targeted areas. Nevertheless, Suffolk County remains largely unsewered, and contamination of the groundwater resource remains a concern, particularly in the unsewered parts of the County.

Sanitary wastewater management is the most important factor affecting nitrate levels in groundwater throughout most of the County. Due to the significant contribution of groundwater baseflow to surface waters in the County, improved sanitary wastewater management practices can also have a positive impact on nitrate levels in surface waters. Sanitary wastewater management options were implemented to protect the groundwater resource, as indicated by compliance with the 10 mg/L drinking water standard for nitrogen. In 1980, Suffolk County amended Article 6 of the Suffolk County Sanitary Code to specifically address the impacts of

sanitary wastewater on groundwater. Since 1980, in accordance with Article 6, on-site wastewater disposal is permitted for residential parcels greater than or equal to one acre in the deep recharge zone (GMZs III, V and VI), and on-site wastewater disposal is permitted for residential parcels greater than or equal to one half acre in all other GMZs. Residential development on lot sizes smaller than one acre within the deep recharge zone and one-half acre outside of the deep recharge zone require a use of a community sewage system for wastewater treatment and disposal.

There are generally four sanitary wastewater management options currently utilized in Suffolk County:

- Discharge to a centralized sewage collection and treatment system, such as the County's SWSD No. 3 in the densely developed southwest part of the County;
- Discharge to an alternative treatment system (e.g. Appendix A systems), in accordance with Article 6 requirements;
- Discharge on-site via septic systems/cesspools/leaching fields in accordance with Article 6 density requirements; and,
- More recently, discharge via nitrogen-reducing I/A OWTS in accordance with Article 6 density requirements and Article 19 implementation/maintenance requirements.

Centralized sewage treatment and collection systems such as the SWSD were established to reduce levels of wastewater contaminants in groundwater located beneath densely developed areas. Provision of a centralized sanitary wastewater collection and treatment system is an effective way to reduce the impacts of development on ground and surface water resources; conventional treatment schemes remove suspended solids, organic material, and deactivate pathogens via disinfection. More advanced treatment processes can be used to remove nutrients such as nitrogen to protect drinking water and prevent eutrophication and degradation of ecological communities. Nitrogen levels in sanitary wastewater vary considerably; typical secondary wastewater treatment processes reduce influent total nitrogen concentrations by 50 percent or less. Additional treatment processes utilized at biological nutrient removal (BNR) facilities can further reduce nitrogen levels to less than 10 mg/L, and sometimes to less than 5 mg/L.

Suffolk County and NYSDEC also permit the use of alternative treatment systems (e.g., Appendix A systems) for flows up to 15,000 gpd; these systems are required to meet groundwater discharge requirements limiting effluent nitrogen of 10 mg/L.

There are 200 sewage treatment plants operating in Suffolk County today. When successfully operated and maintained, these systems are, in many cases, capable of significantly reducing the nitrogen load to groundwater. However, they do require considerable operator attention to consistently and successfully operate, they require SCDHS oversight, and they do not necessarily remove all organics and PPCPs that may be contained in the effluent. As of 2017, 200 sewage treatment plants were located in Suffolk County, fourteen of which discharged to surface waters. SCDHS records indicate that 161 of the sewage treatment plants are privately owned and inspected by SCDHS on a quarterly basis; the 39 municipal plants are inspected by NYSDEC. All of

the sewage treatment plants are required to operate in compliance with a State Pollutant Discharge Elimination System (SPDES) permit and Suffolk County Article 7 requirements. As of 2017, 183 of the sewage treatment plants were designed to remove nitrogen from the wastewater to comply with SPDES permit discharge limits of 10 mg/L. The 2017 average effluent total nitrogen for the all tertiary plants in steady-state was 6.3 mg/l, less than the permitted 10 mg/l. Monitoring wells are sited at the plants discharging to groundwater to monitor the impacts of the treated effluent upon groundwater quality; samples are collected and analyzed on a quarterly basis from these wells. While operators of these community wastewater treatment systems are required to be certified New York State operators, effluent quality varies widely.

Approximately 74 percent of County residents dispose of sanitary wastewater through on-site wastewater disposal systems, typically consisting of a cesspool or a septic tank and leaching pools. Septic systems are widely used throughout the world; they are passive systems that successfully reduce organic loading to the environment. However, reported nitrogen removal rates within household systems vary widely and are not always easy to assess. Reported nitrogen removal rates in the literature vary from six to fifty percent. Based on recent studies, the SC SWP includes six percent removal of nitrogen in the septic tank (consistent with Valiela, 1997, Lloyd, 2016, Vaudrey, 2016, and Stinnette, 2014) and ten percent removal of nitrogen as wastewater is recharged to the unsaturated zone. An additional 15 percent removal in the aquifer was added for parcels located above morainal deposits with a greater percentage of organic carbon that can support denitrification (SC SWP Section 2.1.5.1).

When properly sited, designed and maintained, the four options described above are capable of enabling the groundwater resource to achieve the 10 mg/L groundwater standard for nitrate on a regional basis. However, because much of the County was developed at a higher density prior to the implementation of the GMZs, nitrogen concentrations in the aquifer system may exceed 10 mg/L in these areas as shown by **Figure 3-18**. In addition, it should be noted that they may be insufficient to protect surface water resources and tidal wetlands vegetation, which have a much lower sensitivity to water quality impacts from nitrogen loading as described further within the SC SWP and in Section 3.2.2 Surface Water Resources below.

Marking a historic first for wastewater management in Suffolk County, the Suffolk County legislature enacted Article 19 of the Suffolk County Sanitary Code in 2016. For the first time, Article 19 permitted the use of I/A OWTS in Suffolk County as a means to reduction nitrogen from OSDS without the need to install new sewers in areas outside the designated sewer areas.

In addition, it set forth the requirements for:

- Testing and approval requirements for new I/A OWTS in Suffolk County;
- Operations and Maintenance (O&M) requirements for I/A OWTS;
- Establishment of a Responsible Management Entity (RME) to provide regulatory oversight of system design, installation, and long-term O&M of I/A OWTS; and,
- Annual reporting requirements.

Select individual Towns and Villages have also taken proactive measures to reduce nitrogen from OSDS within their respective jurisdictions by setting forth local laws requiring the installation of I/A OWTS and/or by offering I/A OWTS rebate program using Community Preservation Funds. A summary of the individual rebate programs is provided below in **Table 3-6.** A summary of individual Town/Village I/A OWTS mandates is provided in **Table 3-7**.

**Table 3-6 Summary of Individual Rebates Programs for I/A OWTS**

| Town of Southampton, CPF Rebate | Town of East Hampton, CPF Rebate | Town of Shelter Island, CPF Rebate |
|---|---|---|
| ▪ Rebates up to $20,000<br>▪ Residential & Non-residential in high and medium priority areas are eligible<br>▪ No restrictions on ownership<br>▪ Seasonal properties, rental properties & second homes ARE eligible<br>▪ New construction is eligible<br>▪ Income eligibility requirements in place<br>▪ No restrictions related to home occupations<br>▪ No covenants required | ▪ Rebates up to $16,000 in the Water Protection District or for homeowners who qualify for affordable housing<br>▪ Rebates up to $10,000 for all other eligible applicants<br>▪ Residential and commercial property owners eligible<br>▪ No restriction on ownership<br>▪ Second homeowners and rental properties are eligible<br>▪ New construction not eligible<br>▪ Income eligibility for residential owners based on NYS STAR Program | ▪ Rebates of up to $15,000 to residential property owners<br>▪ No restrictions on ownership<br>▪ Seasonal properties, rental properties, & second homes are eligible<br>▪ No covenants required |

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**Table 3-7 Summary of Existing I/A OWTS Mandates in the Towns and Villages of Suffolk County**

| Jurisdiction | Description of I/A OWTS Upgrade & Install Mandates | Effective Date |
|---|---|---|
| Town of East Hampton | An I/A OWTS shall be required for the following projects:<br>- All new residential and commericial construction;<br>- Any voluntary replacement of an existing system;<br>- Any substantial expansion (50% increase in GFA or value) of existing residential and commercial buildings; or<br>- All nonresidential properties that require site plan review. | 1/1/2018 |
| Village of East Hampton | An I/A OWTS shall be required for the following residential projects:<br>- All new construction or reconstruction of new single-family or multiple family residences or buildings capable of being used as a residence,<br>- Any substantial expansion (25% increase in GFA) of existing residential buildings; or<br>- Any construction that increases the number of bedrooms beyond the number authorized in previous SCDHS permits. | 2/7/2019 |
| Town of Southampton | The following residential projects located within the High Priority Area require an I/A OWTS:<br>- All new residential construction;<br>- Any substantial sanitary system upgrade required by the SCDHS;<br>- An increase in 25% of the floor area of a residential building; or<br>- When required by the Town Conservation Board or the Environment Division. | 10/1/2017 |
| Village of Sag Harbor | An I/A OWTS shall be required for the following projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade (cost of upgrade equals or exceeds 50% of the cost of the current system) or replacement of a residential septic system required by SCDHS;<br>- An increase of 25% or more in the floor area of a residential building;<br>- Any new residential septic system or substantial upgrade required by the Harbor Committee; or<br>- All nonresidential properties that require site plan review. | *Expected* 3/12/2019 |
| Village of Southampton | An I/A OWTS approved by the SCDHS shall be required for the following residential projects located within the high-priority area and medium-priority area as identified in the Town of Southampton Community Preservation Fund Water Quality Improvement Project Plan:<br>- All new residential construction;<br>- Any substantial septic system upgrade required by the SCDHS or the Village Zoning Board of Appeals pursuant to a wetlands (natural resource) special permit under Article IIIA of the Zoning Code; or<br>- Any increase in the number of bedrooms in an existing residence. | 12/1/2017 |
| Village of Quogue | An I/A OWTS shall be required for the following residential projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade in a high-priority area or a medium-priority area;<br>- An addition or renovation to an existing residence that results in an increase of 25% or more in the gross floor area (as defined in § 196-49) of such residence; or<br>- A substantial renovation to an existing residence (whether or not the gross floor area is increased), the cost of which, as determined in connection with the granting of a building permit, exceeds $500,000. | 3/18/2018 |
| Town of Shelter Island | An I/A OWTS approved by the SCDHS shall be required for the following projects:<br>- Any new residential construction with greater than 1500 square foot living areas; or<br>- Any residential or commercial septic system upgrade required by the SCDHS. | 3/23/2018 |
| Town of Brookhaven | An I/A OWTS shall be required for the following residential projects for properties located in the Nitrogen Protection Zone (500' from a body of water):<br>- New construction of a residential dwelling; or<br>- Major addition that increases the amount of bedrooms or bathrooms. | 1/1/2017 |

As shown in **Table 3-7**, four (4) towns and four (4) villages in Suffolk County have adopted laws mandating the installation of I/A OWTS under certain circumstances. Mandates requiring I/A OWTS for all new construction have already been adopted by the Town of East Hampton, Town of Shelter Island, Village of East Hampton, Village of Sag Harbor, and Village of Quogue. The jurisdictions requiring I/A OWTS at new construction, generally, also require upgrades to I/A OWTS for any major building expansion. The remaining jurisdictions identified in **Table 3-7** have

similar I/A OWTS mandates, but have limited their current mandates to projects located within high priority areas (e.g., typically within close proximity to surface waters). While most mandates are focused on I/A OWTS at residential properties, the Town of East Hampton has extended the mandate to commercial projects as well.

*Effectiveness of Article 6*

As noted above, Article 6 of the Suffolk County Sanitary Code allows on-site wastewater disposal systems for new residential subdivisions with lot sizes greater than or equal to one acre in GMZs III, V and VI and greater than or equal to one half acre in all other zones (please refer to **Figure 3-15**); undersized lots existing prior to 1981 are exempt.

New residential development on lot sizes smaller than one acre within the deep recharge zone and one-half acre outside of the deep recharge zone requires use of a community sewage system for wastewater treatment and disposal. As nitrogen levels in groundwater (as characterized by measured concentrations in public supply wells) have continued to increase, the relationship between unsewered residential development density and nitrogen levels and the adequacy of the Article 6 density restrictions in protecting groundwater quality was evaluated during the 2015 CWRMP.

By the time that Article 6 was enacted in 1980, a number of existing residences with on-site wastewater disposal systems had already been constructed on parcels smaller than ½ acre and 1 acre as specified in Article 6. While sufficient information to quantify the number of residential parcels that were developed with on-site sanitary wastewater disposal prior to enactment of Article 6 was not available, the number of parcels less than or equal to one half acre and zoned for residential use was identified. Data provided by the SCDEDP showed that almost 53 percent of unsewered residential parcels in the County are less than or equal to one half acre. Because the populations of the west end towns have not increased significantly since 1970, it is evident that a large portion of the smaller parcels do rely upon on-site septic systems for wastewater disposal, and nitrate levels in groundwater reflect these conditions. Residential parcels that are less than or equal to ½ acre are illustrated on **Figure 3-19** and summarized by Town on **Table 3-8**.

In fact, residentially zoned properties in the western towns are even smaller; the locations of residential properties less than or equal to one quarter acre are shown on **Figure 3-20** and summarized by Town on **Table 3-9**.

**Table 3-8 Residential Parcels Smaller than or Equal to ½ Acre**

| Town | Number of Residential Parcels Less than or Equal 1/2 Acre | Number of Unsewered Residential Parcels Less than or Equal to ½ Acre | Total Residential Parcels | % of Unsewered Parcels Less than or Equal to 1/2 Acre |
|---|---|---|---|---|
| Babylon | 58,377 | 15,291 | 59,485 | 25.7% |
| Brookhaven | 119,535 | 92,253 | 151,672 | 60.8% |
| East Hampton | 9,452 | 9,157 | 19,342 | 47.3% |
| Huntington | 44,952 | 39,566 | 64,747 | 61.1% |
| Islip | 78,796 | 47,143 | 88,138 | 53.5% |
| Riverhead | 6,996 | 5,276 | 11,957 | 44.1% |
| Shelter Island | 491 | 384 | 2,498 | 15.4% |
| Smithtown | 28,181 | 24,985 | 37,643 | 66.4% |
| Southampton | 17,776 | 17,114 | 37,365 | 45.8% |
| Southold | 7,462 | 6,457 | 14,235 | 45.4% |
| | | | | |
| **Totals** | **372,018** | **257,626** | **487,082** | **52.9%** |

Source: Suffolk County Department of Economic Development and Planning

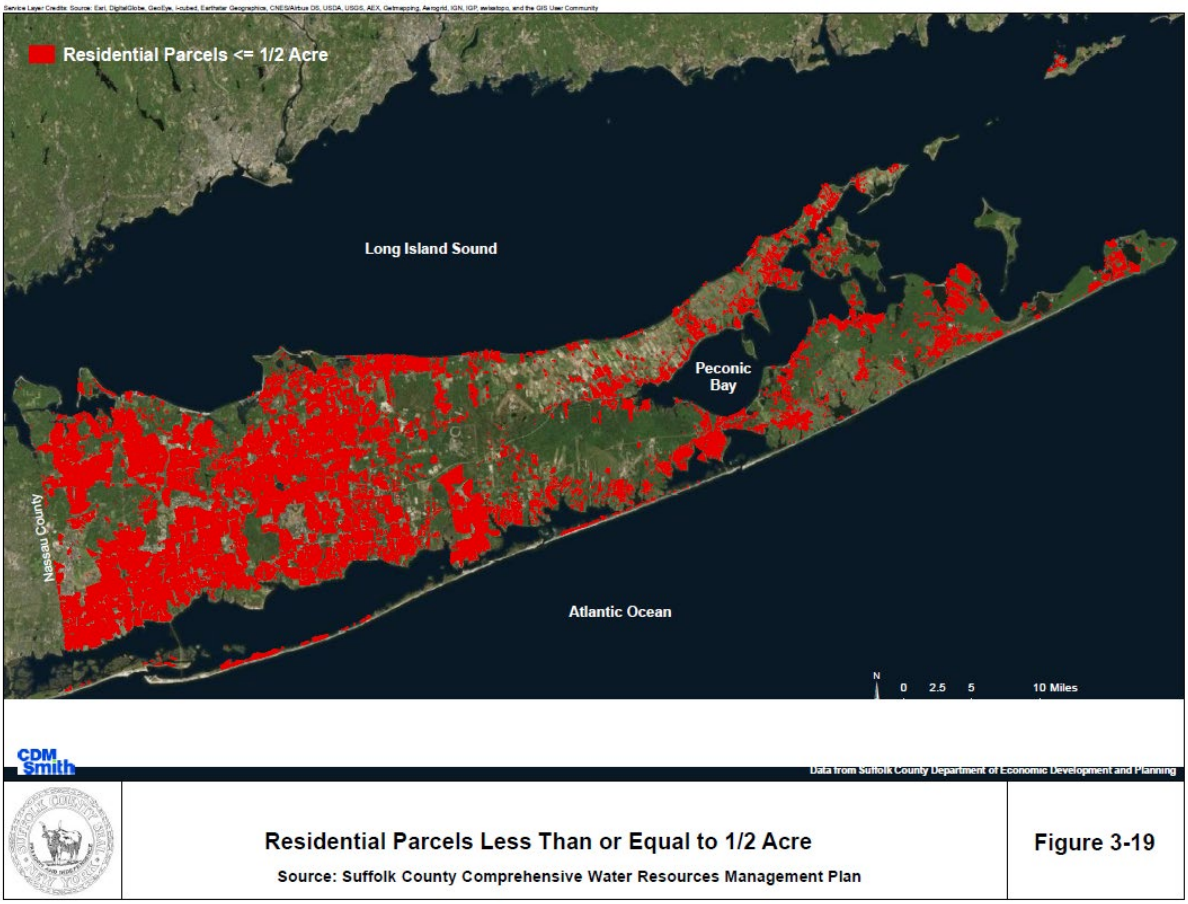



**Figure 3-19 Residential Parcels Less Than or Equal to ½ Acre**

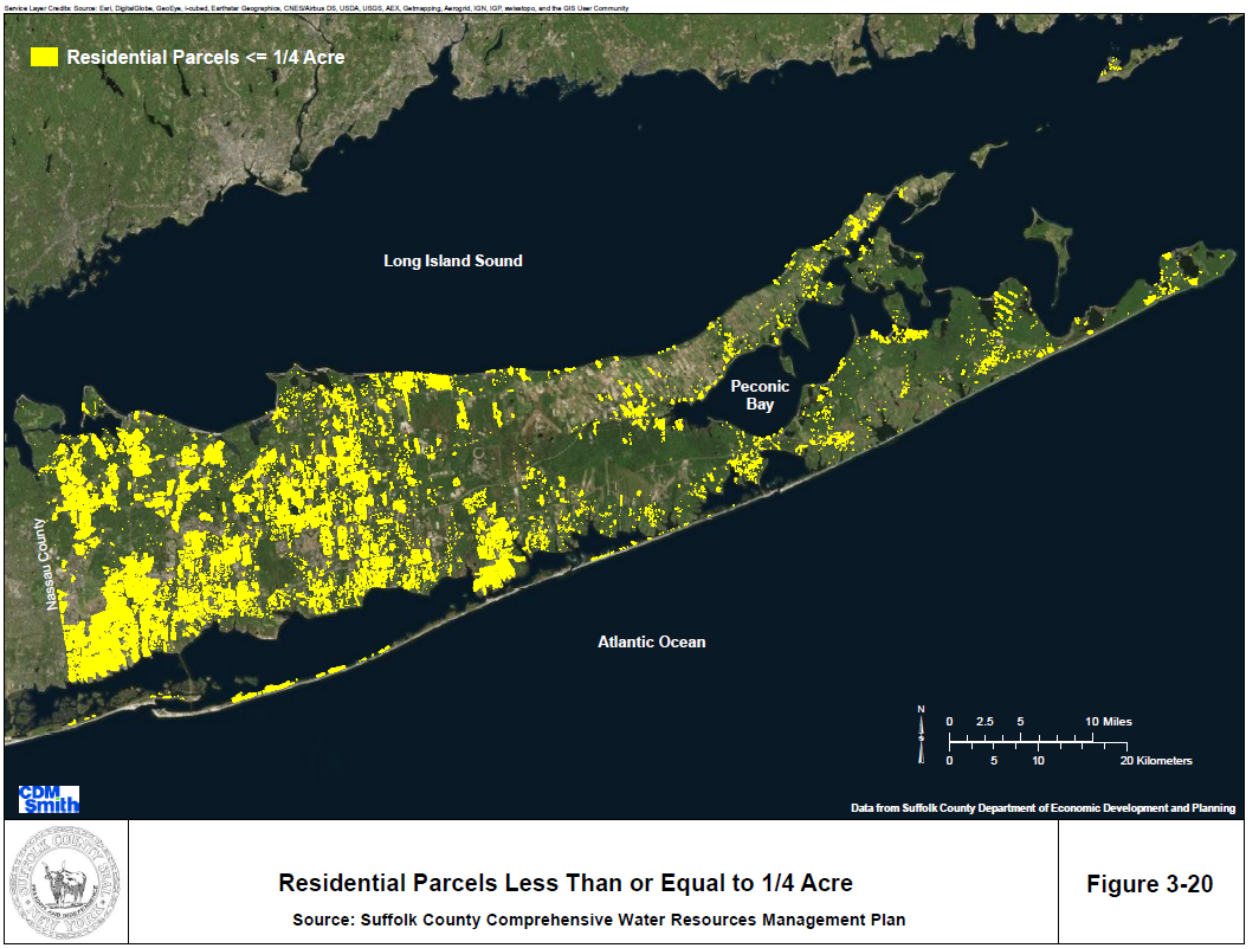



**Figure 3-20 Residential Parcels Less Than or Equal to ¼ Acre**

Over one third of the unsewered residential properties in Brookhaven and Huntington are less than or equal to one quarter acre. Approximately one quarter of the unsewered residential properties in Riverhead and Smithtown are less than or equal to one quarter acre, and over fifteen percent of unsewered residential properties in the east end towns of East Hampton and Southampton are also less than or equal to one quarter acre. Over eighty percent of the total residential properties in Babylon are less than or equal to one quarter acre; groundwater contamination resulting from the on-site septic systems prompted the implementation of the Southwest Sewer District in the 1970s.

**Table 3-9 Residential Parcels Smaller than or Equal to ¼ Acre**

| Town | Number of Residential Parcels Less than or Equal ¼ Acre | Number of Unsewered Residential Parcels Less than or Equal to ¼ Acre | Total Residential Parcels | % of Unsewered Parcels Less than or Equal to ¼ Acre |
|---|---|---|---|---|
| Babylon | 50,094 | 12,381 | 59,485 | 20.8% |
| Brookhaven | 67,423 | 50,334 | 151,672 | 33.2% |
| East Hampton | 3,479 | 3,186 | 19,342 | 16.5% |
| Huntington | 27,373 | 22,608 | 64,747 | 34.9% |
| Islip | 38,994 | 19,577 | 88,138 | 22.2% |
| Riverhead | 4,064 | 2,926 | 11,957 | 24.5% |
| Shelter Island | 128 | 53 | 2,498 | 2.12% |
| Smithtown | 13,766 | 10,823 | 37,643 | 28.8% |
| Southampton | 6,791 | 6,132 | 37,365 | 16.4% |
| Southold | 2,791 | 1,927 | 14,235 | 13.5% |
| | | | | |
| **Totals** | **214,903** | **129,947** | **487,082** | **26.7%** |

Source: Suffolk County Department of Economic Development and Planning

While the exact number of on-site sanitary wastewater disposal systems that had been constructed prior to Article 6 could not be verified, it is evident that a significant number of smaller parcels do rely upon on-site septic systems for wastewater disposal, and nitrate levels in groundwater reflect these conditions. This is further corroborated by census data provided by SCDHS documenting the presence of over 340,000 on-site septic systems in Suffolk County in 1990. More recent evaluations conducted as part of the SC SWP identified over 380,000 unsewered developed residential and commercial parcels in the County, where wastewater disposal is provided by individual on-site sanitary systems consisting either of septic tanks or septic tanks and/or leaching pools.

The data shows that a significant number of on-site sanitary wastewater disposal systems do serve properties that are less than the minimum lot sizes designated in Article 6; observed nitrogen levels in Suffolk County groundwater result from a combination of the Article 6-compliant and the older non-compliant parcels. In general, GMZ target nitrogen levels are achieved in areas where unsewered residential density is compliant with Article 6 density requirements; GMZ target nitrogen levels are exceeded in unsewered areas developed at higher densities prior to enactment of Article 6. Regulation of residential density in areas relying upon on-site wastewater disposal is widely implemented across the country to manage impacts on groundwater quality. In order to provide further perspective on the adequacy of the residential density limits included in the Suffolk County Sanitary Code, housing density limits in similar unsewered areas relying upon groundwater for potable supply elsewhere throughout the country were reviewed. Information available to characterize residential density restrictions based upon nitrogen loadings across the country identified a minimum lot size of one-half acre for unsewered areas, although minimum lot size requirements in some areas of the country were larger. The half-acre minimum lot size is consistent with Article 6 requirements.

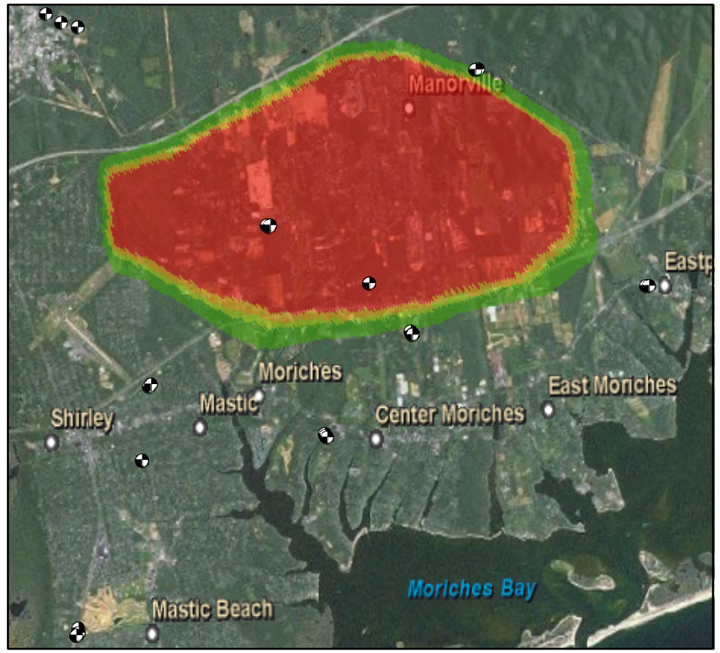
Given the variation in land use, density, household size and nitrogen loading in any particular area of interest, it is not always straightforward to interpret the impacts of land use on downgradient water quality. Therefore, as part of the 2015 CWRMP, an assessment of the impacts of hypothetical unsewered areas of various densities on nitrogen levels in groundwater was performed for an area in southern Brookhaven, The modeling assessment was a hypothetical exercise, in that it assumed that the study area was comprised completely of developments of uniform lot sizes of ¼ acre, ½ acre, 1 acre and 2 acres.

A pilot area covering approximately 8,000 acres was selected to examine the effects of nitrogen loading resulting from various uniform residential densities on groundwater quality. This pilot area was chosen to be within the relatively undeveloped Pine Barrens Region and beyond the influence of streams. The pilot area contains five public supply wells screened in the upper glacial aquifer. A series of model simulations was performed to assess the groundwater nitrogen levels associated with ***hypothetical*** unsewered residential developments of uniform densities of 2 acres, 1 acre, ½ acre and ¼ acre, respectively. The household nitrogen loading rate was assumed to be based upon a 3.1 person household, with each person discharging 10 pounds of nitrogen each year to the septic system; furthermore thirty-five percent of the discharged nitrogen load was assumed to be removed within the septic system. (Note that these septic system removals are higher than those ultimately selected for the SC SWP simulations but have been presented herein for demonstration purposes using an existing readily available dataset.) In addition, for the purposes of this exercise, all of the simulated nitrogen was assumed to be nitrate as nitrogen.

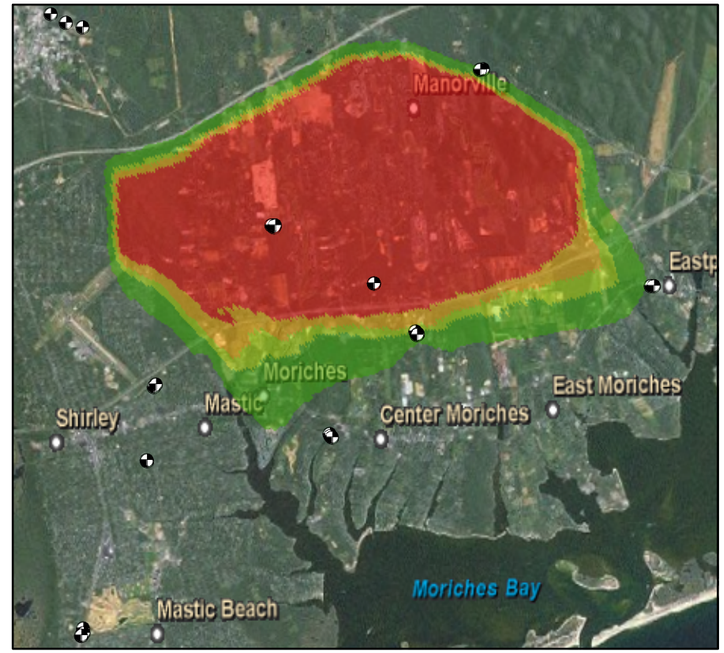
A second set of model simulations was used to assess the effects of nitrate released from fertilizer on nitrate levels in unsewered areas of various densities; in all cases, this assessment assumed that 2.5 pounds of nitrogen is applied each year for each 1,000 $ft^2$, that 23 percent of each parcel is fertilized, and that 20 percent of the applied nitrate reaches the water table.

The simulated nodal concentrations representing nitrate concentrations averaged over the top 40 feet of saturated aquifer thickness throughout the pilot area are shown for 4, 10, and 20-year intervals for each of the development densities considered on **Figures 3-21** through **3-24**. Consistent with observed data throughout the County, **Figure 3-21** shows that nitrate concentrations resulting from discharge of sanitary wastewater via on-site septic systems in areas with ¼ acre zoning exceed the drinking water standard of 10 mg/L in the shallow aquifer. **Figure 3-22** shows that ½ acre lots are successful in maintaining groundwater nitrate levels at less than 10 mg/L. Nitrate levels resulting from on-site wastewater disposal on 1 acre and 2-acre properties remain less than 4 mg/L in downgradient groundwater as shown by **Figures 3-23** and **3-24**.

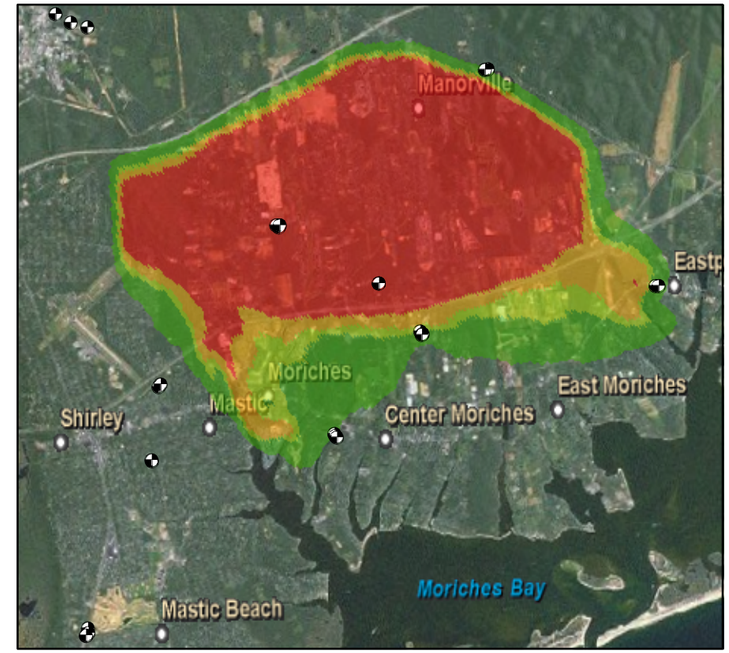
Quarter Acre Density 4 yr No Fertilizer



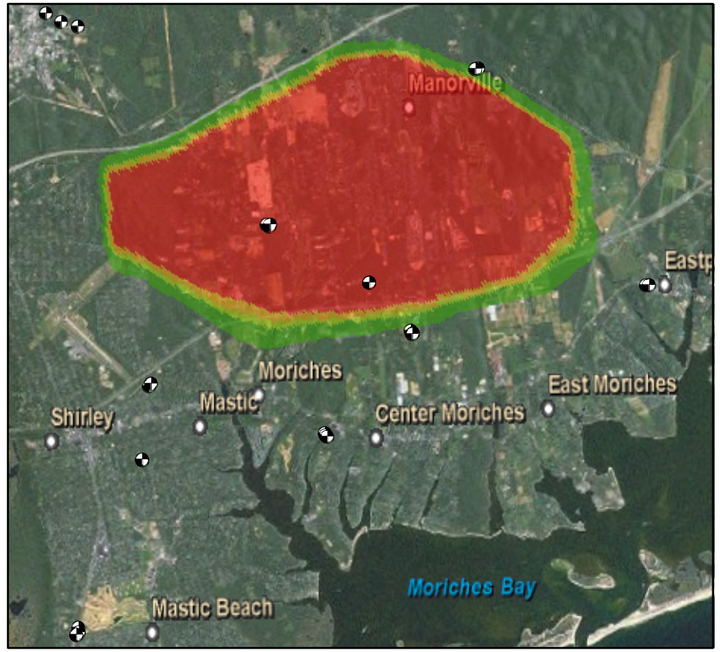

Quarter Acre Density 10 yr No Fertilizer



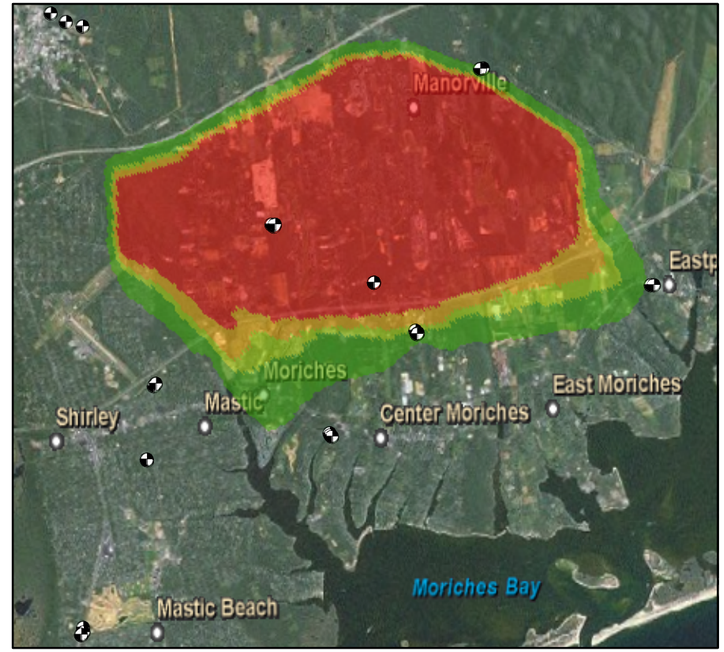

Quarter Acre Density 20 yr No Fertilizer



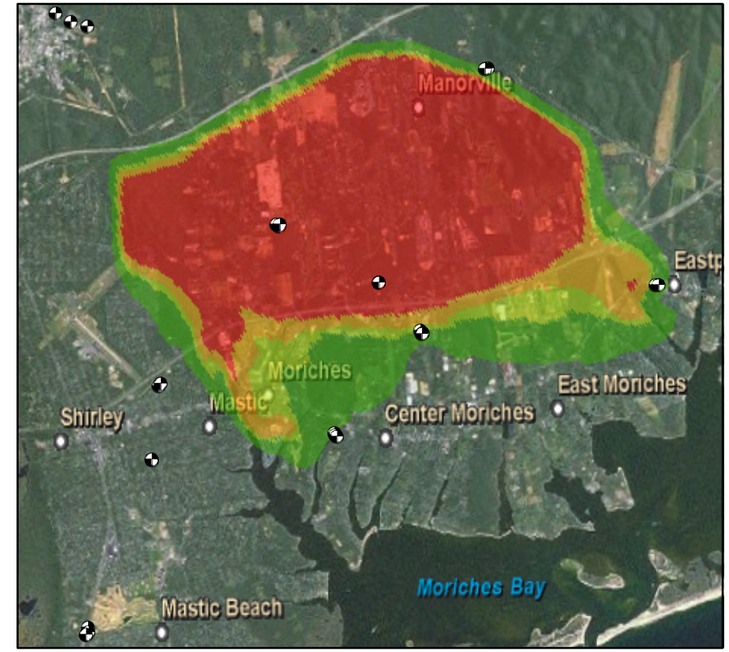

Quarter Acre Density 4 yr Fertilizer




Quarter Acre Density 10 yr Fertilizer




Quarter Acre Density 20 yr Fertilizer




CDM

**Nitrogen (mg/l)**
- 0.5 - 4
- 4 - 6
- 6 - 10
- > 10

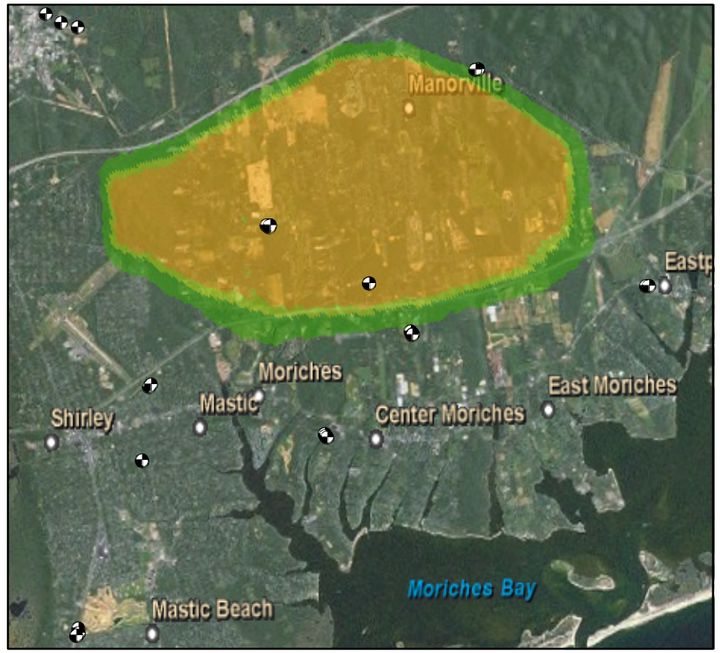
Supply Well

**Hypothetical Nitrogen Loading Simulation - 1/4 Acre Density**

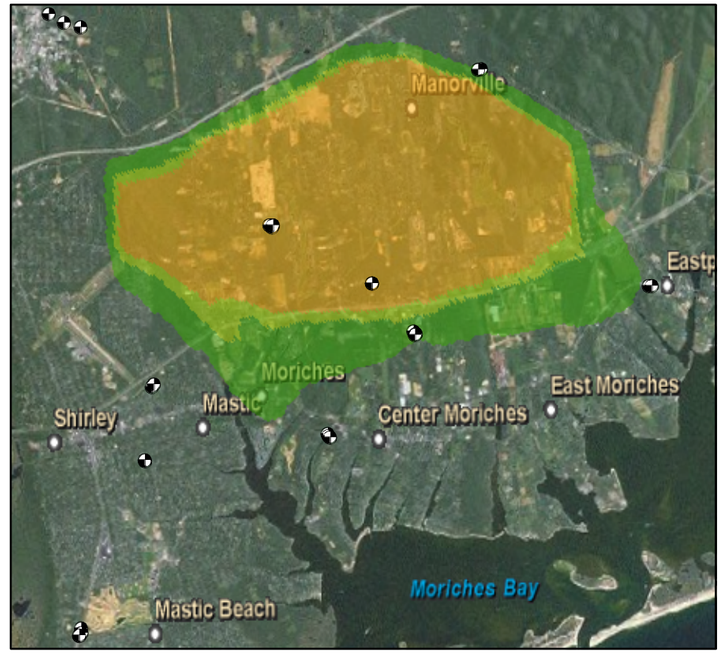
**Source: Suffolk County Comprehensive Water Resources Management Plan**

**Figure 3-21**

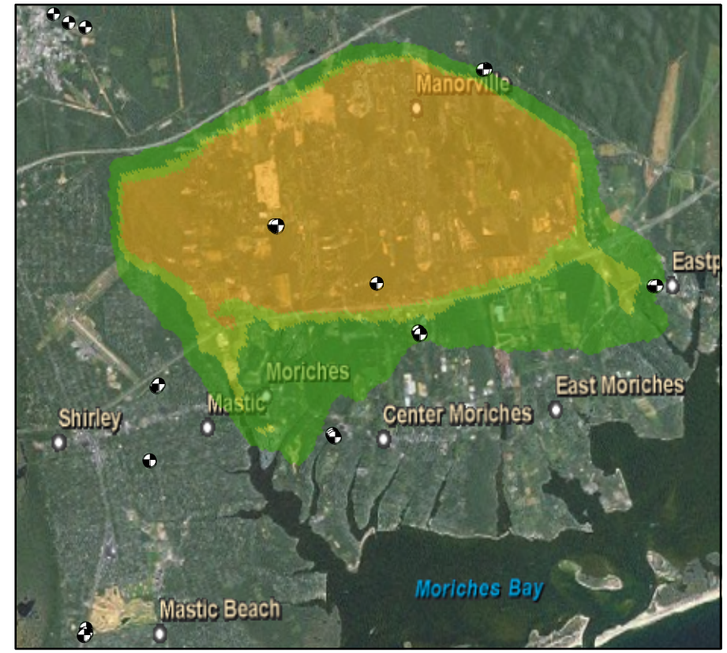
**Half Acre Density 4 yr No Fertilizer**



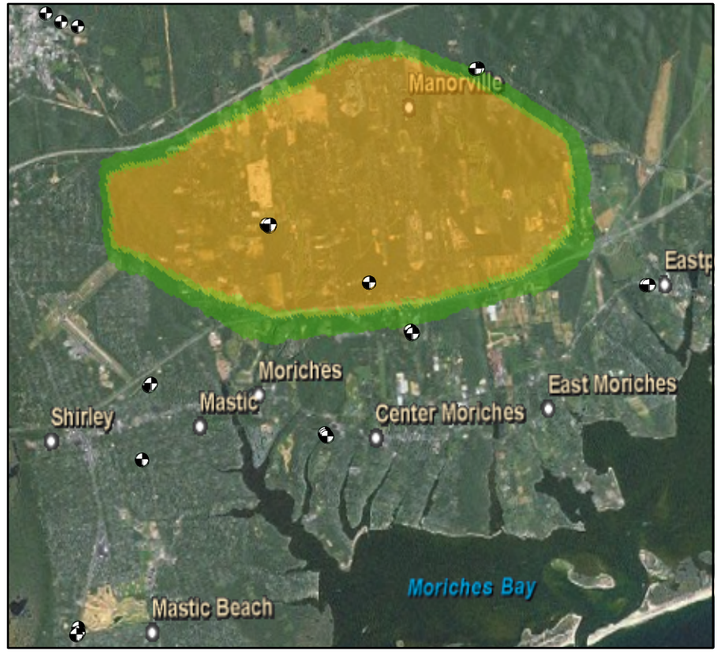

**Half Acre Density 10 yr No Fertilizer**



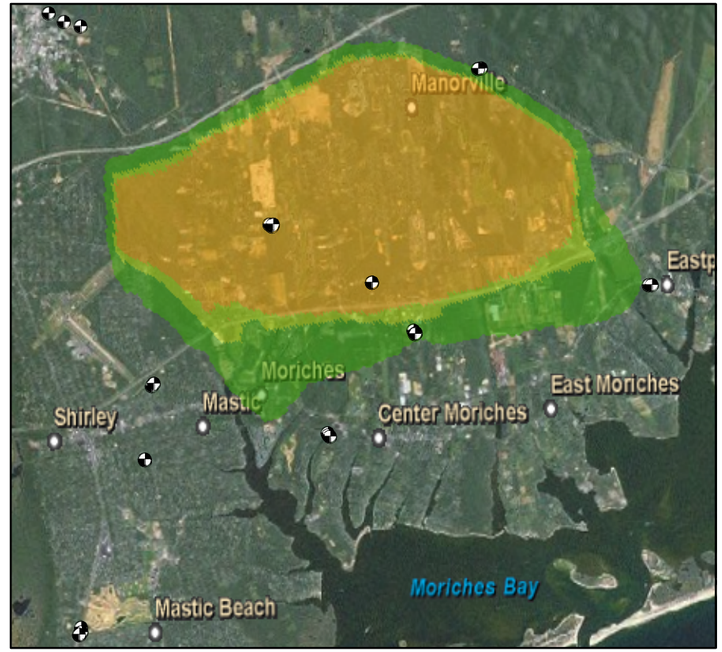

**Half Acre Density 20 yr No Fertilizer**



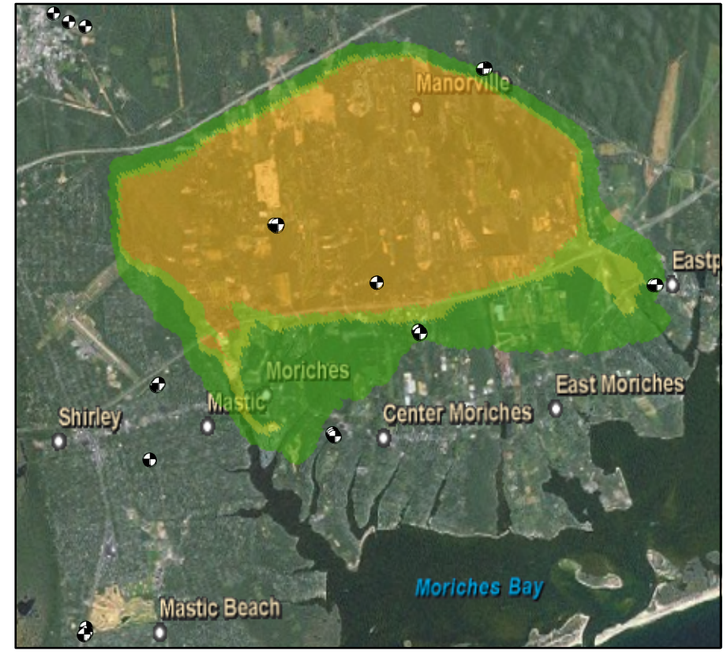

**Half Acre Density 4 yr Fertilizer**




**Half Acre Density 10 yr Fertilizer**




**Half Acre Density 20 yr Fertilizer**




CDM

**Nitrogen (mg/l)**
- 0.5 - 4
- 4 - 6
- 6 - 10
- > 10

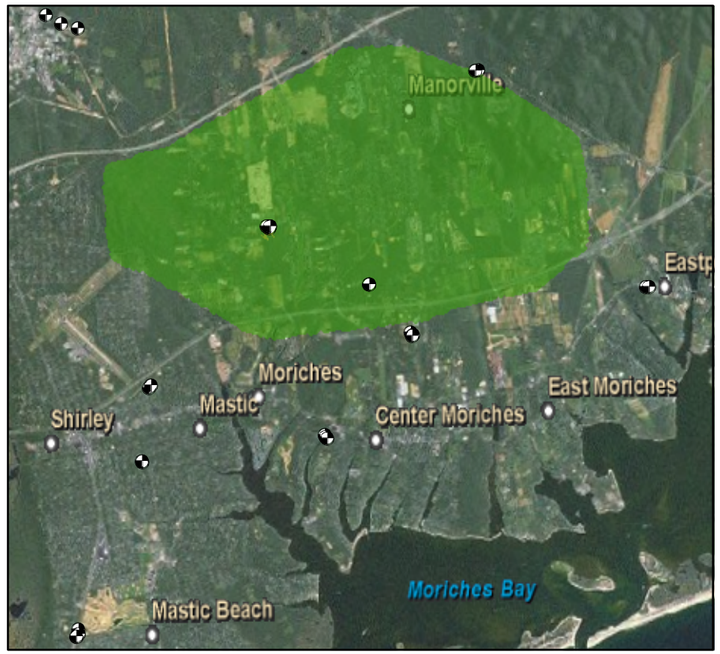
Supply Well

**Hypothetical Nitrogen Loading Simulation - 1/2 Acre Density**

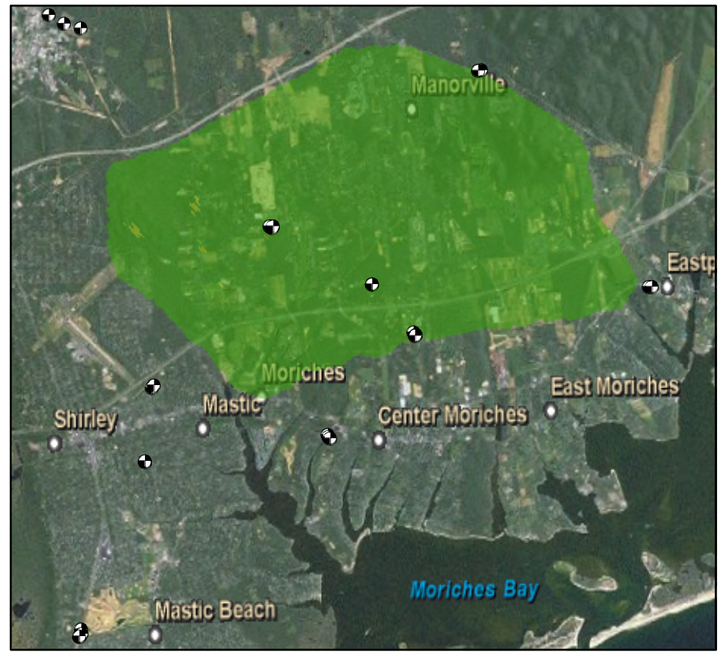
**Source: Suffolk County Comprehensive Water Resources Management Plan**

**Figure 3-22**

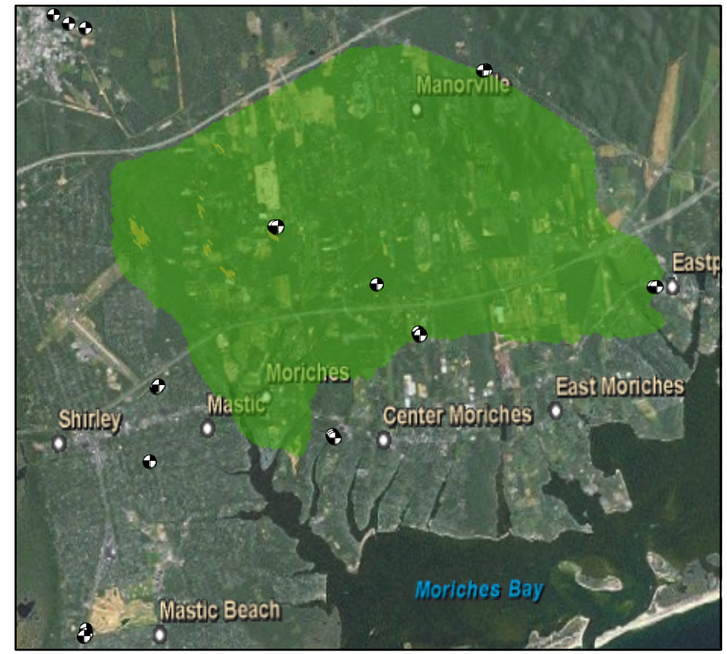
1 Acre Density 4 yr No Fertilizer



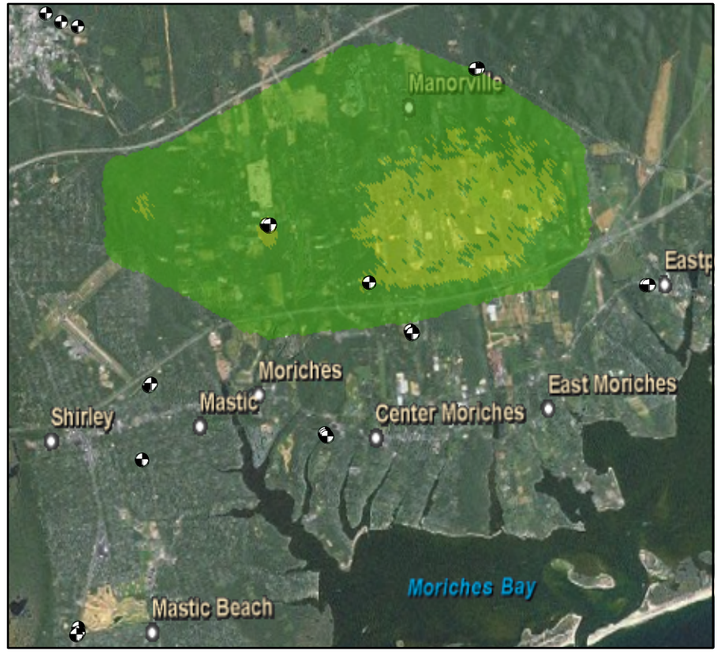

1 Acre Density 10 yr No Fertilizer



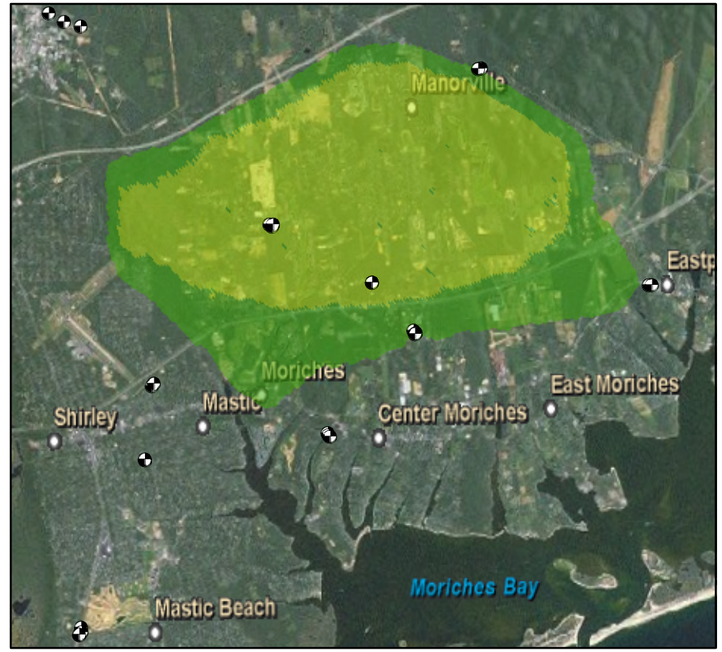

1 Acre Density 20 yr No Fertilizer



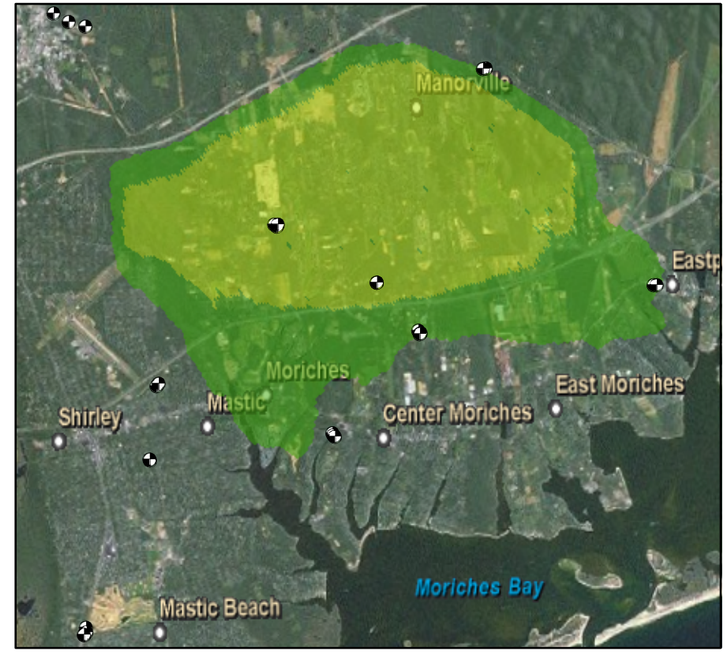

1 Acre Density 4 yr Fertilizer




1 Acre Density 10 yr Fertilizer




1 Acre Density 20 yr Fertilizer




CDM

**Nitrogen (mg/l)**
- 0.5 - 4
- 4 - 6
- 6 - 10
- > 10

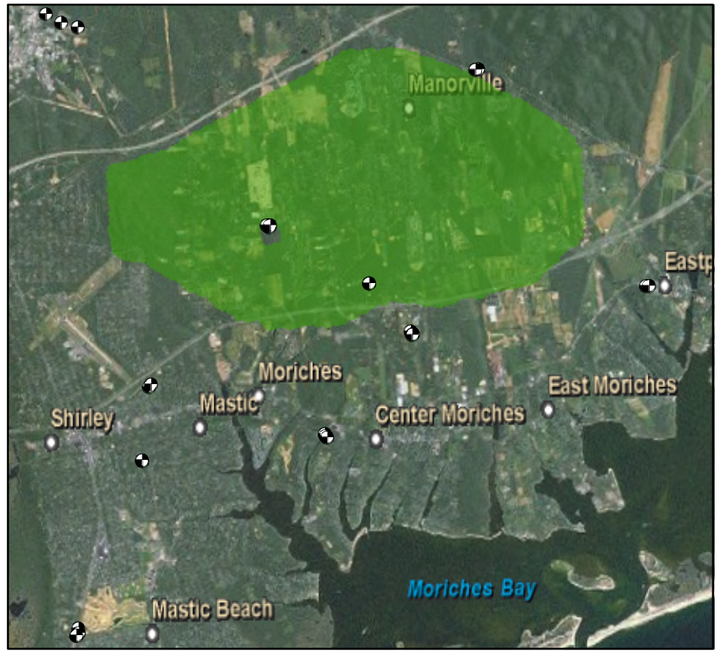
Supply Well

**Hypothetical Nitrogen Loading Simulation - 1 Acre Density**

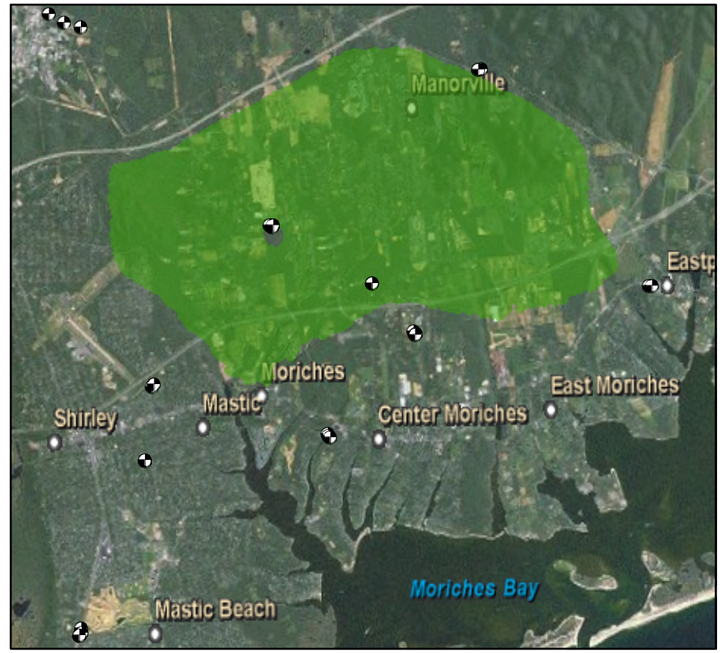
**Source: Suffolk County Comprehensive Water Resources Management Plan**

**Figure 3-23**

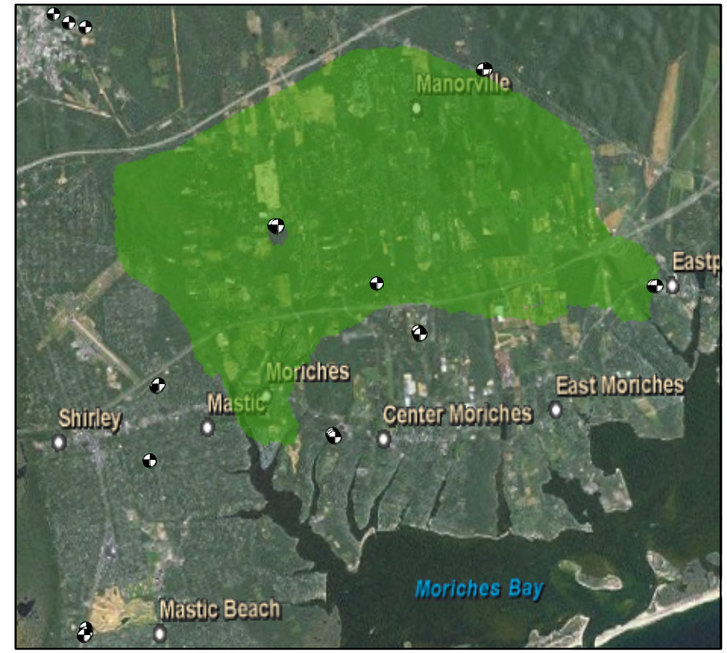
2 Acre Density 4 yr No Fertilizer



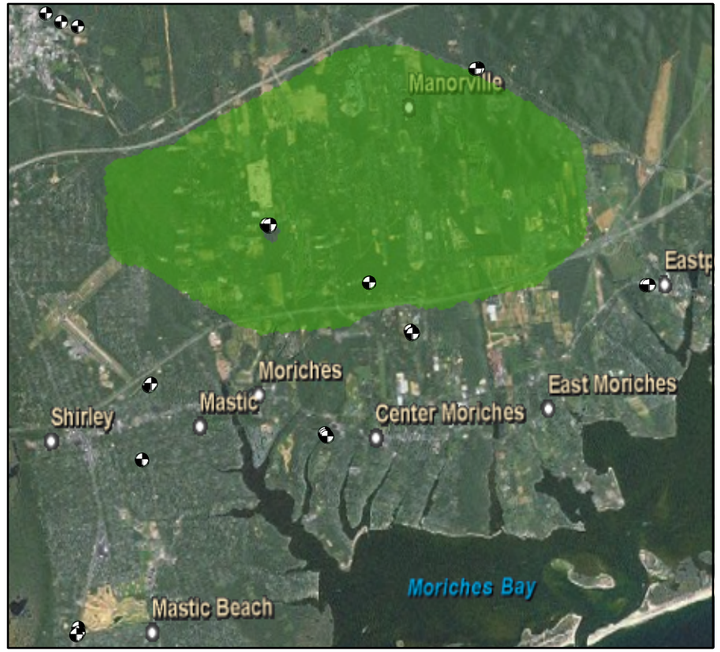

2 Acre Density 10 yr No Fertilizer



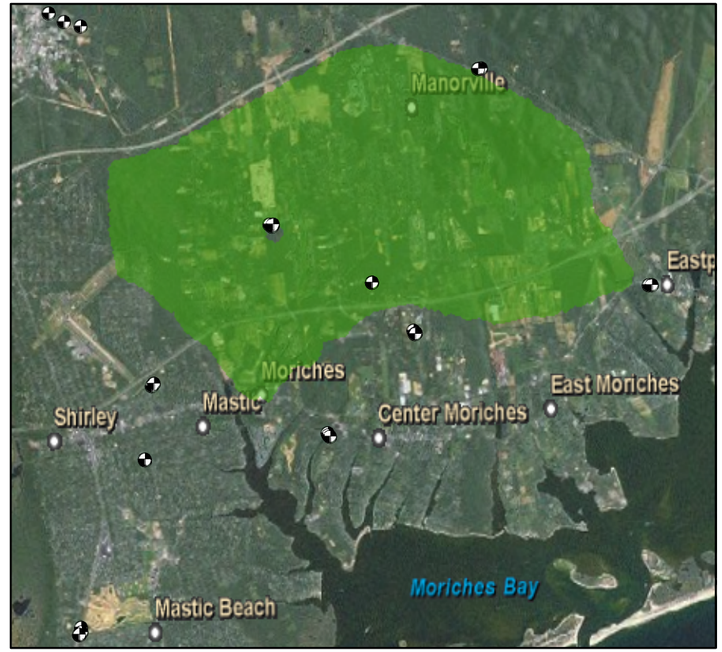

2 Acre Density 20 yr No Fertilizer



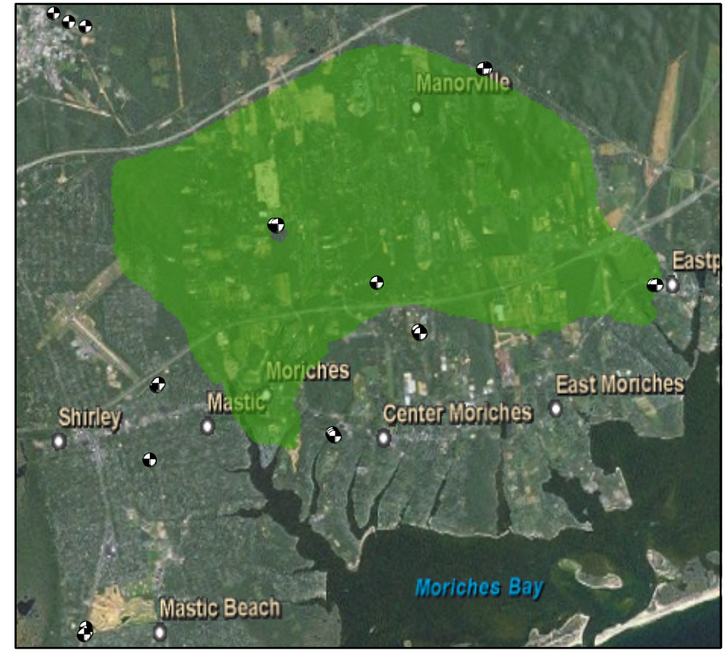

2 Acre Density 4 yr Fertilizer




2 Acre Density 10 yr Fertilizer




2 Acre Density 20 yr Fertilizer




CDM

**Nitrogen (mg/l)**
- 0.5 - 4
- 4 - 6
- 6 - 10
- > 10

Supply Well

**Hypothetical Nitrogen Loading Simulation - 2 Acre Density**

**Source: Suffolk County Comprehensive Water Resources Management Plan**

**Figure 3-24**

Time histories of simulated nitrate concentrations pumped out of three centrally located public supply wells within the pilot area were also evaluated. The simulated pumped nitrate concentrations for each of the eight scenarios simulated are shown in **Figure 3-25**. The results, which assumed an initial background nitrate concentration of zero, illustrate that it can take years for the impacts of a development to be manifested at a downgradient wellfield. Shallow supply wells with contributing areas within the developed zone will show increased nitrate levels more quickly, while it may take many years for deeper supply wells located miles downgradient of their contributing areas to reach equilibrium nitrate concentrations.

This hypothetical evaluation (2015 Comp Plan, Section 3.1.1.3) did not include allowance for streets; incorporation of roadway areas within a development would tend to reduce the simulated concentrations that are shown here. However, the evaluation was also based upon a background nitrate concentration of zero. In actuality, depending upon the previous land use, background nitrate levels could range from 0.5 mg/L (undeveloped) to over 10 mg/L (historical agricultural use as per SCDHS, 2014), Nitrogen Inputs to Groundwater Associated with Agricultural Land Uses which shows that nitrogen concentrations can vary considerably based on crop type). Incorporation of background concentrations would increase the final nitrate levels shown.

While nitrate concentrations resulting from an area of uniform ½ acre density are simulated to be close to 6 mg/L, new development occurs within the framework of properties that have already been developed; many pre-1980 developments include parcels that are less than ½ acre or even ¼ acre in size.

In summary, review of existing groundwater data combined with predictive model outputs indicate:

- GMZ target nitrogen levels are achieved in areas where the unsewered residential density is compliant with Article 6 density requirements and are exceeded in areas developed at higher density prior to enactment of Article 6 and therefore rely on on-site septic systems.
- Article 6 is successful in maintaining groundwater concentrations below targeted thresholds in locations without significant grandfathered density;
- It takes many years for deep supply wells to reach equilibrium nitrate concentrations.

*Other Nitrogen Sources and Nitrogen Reduction Approaches*

Although residential development can have an adverse impact on groundwater quality, particularly with regard to nitrate, land use impacts to groundwater are not limited to residential development. Agricultural practices in the eastern part of the County also adversely impact groundwater by introducing nitrate to underlying groundwater supplies. Fertilizer use is a second significant source of nitrate to the aquifer system. Suffolk County has implemented a plan to reduce the impacts of fertilizer on ground and surface water features. Recognizing the impacts of fertilizer on our water resources, in 2007 Suffolk County passed Local Law 41-2007 to reduce the impacts of improper lawn fertilization on nitrogen loading to ground and surface waters. The law, which went into effect in 2009, includes a variety of components, including prohibition of fertilization from November 1st to April 1st, a requirement that licensed landscapers

(approximately 1,200 in Suffolk County in 2010) complete a turf management course, and allows imposition of fines of up to $1,000 for violations. Land used in farm operations is specifically exempted from Local Law 41-2007.

Signs and brochures publicizing the prohibition of fertilization between November 1st and April 1st, describing appropriate fertilization techniques and explaining the impacts of nitrogen on water resources were updated, translated into Spanish and redistributed to all retail locations in Suffolk County where fertilizer is sold.

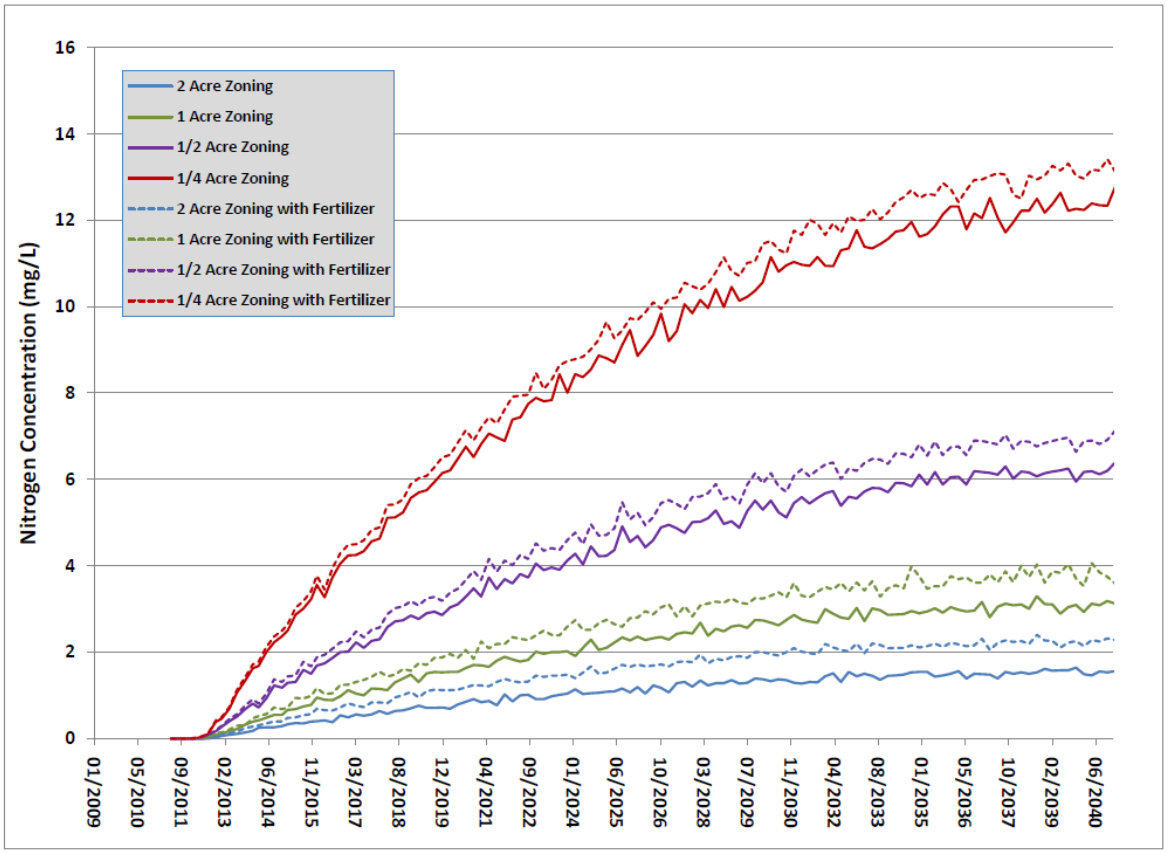



Figure 3-25
Simulated Hypothetical Nitrogen Concentrations at SCWA Country Club Drive Wellfield

**Figure 3-25 Simulated Hypothetical Nitrogen Concentrations at SCWA Country Club Drive Wellfield**

**Figure 3-18** (provided earlier) illustrates the effectiveness of open space programs implemented under the jurisdiction of the Long Island Pine Barrens Protection Act, the County, the Towns and non-profit organizations such as the Nature Conservancy. Nitrogen concentrations in the shallow upper glacial aquifer in preserved open space areas are less than 4 mg/L. In large tracts of preserved lands in the Pine Barrens in Brookhaven and Riverhead, and the Nature Conservancy's Mashomack Preserve on Shelter Island, nitrogen concentrations have remained less than 1 mg/L.

Shallow upper glacial nitrogen concentrations in the shallow upper glacial aquifer in the larger sewer districts (e.g., the County's Southwest Sewer District in the southwest area of the County and the Town of Riverhead's Sewer District at the mouth of the Peconic River) also are typically less than 4 mg/L, reflecting the reduced nitrogen loading in these areas.

In contrast, densely developed unsewered areas of the County, including Mastic/Shirley and parts of Babylon north of the Southwest Sewer District the observed trends in elevated nitrogen concentrations will continue based on the simulated nitrogen concentrations approaching or exceeding 10 mg/L in the shallow upper glacial aquifer unless further actions to reduce nitrogen loading are implemented.

*Current Suffolk County Agricultural Stewardship*

Comprehensive agricultural stewardship requires the responsible planning and management of natural resources including water, plants, soils and wildlife on farmland. The agriculture industry in Suffolk County sees an opportunity to decrease nitrogen and pesticide levels found in Suffolk County ground and surface waters further by strengthening existing Agricultural Stewardship programs, supporting new research and pilot projects, and expanding on-going monitoring efforts. The purpose of the 2016 Suffolk County Agricultural Stewardship Plan (incorporated by reference, https://www.peconicestuary.org/wpcontent/uploads/2017/06/AgriculturalStewardshipPlan.pdf) is to provide a framework, series of recommendations, and an associated budget to promote the long-term responsible management of farmland in Suffolk County, consistent with Suffolk County's Comprehensive Water Resources Management Plan and the County Executive's Reclaim Our Water initiative.

The mission of the Suffolk County Agricultural Stewardship Program is to cooperatively develop a strategy to lower nutrient and pesticide loading associated with farming to the groundwater and surface waters of Suffolk County while maintaining a strong, viable agricultural industry. The individual goals of the program including increased enrollment in the Agricultural Environmental Management (AEM) program and best management practice implementation, accessing additional funding for Management Plans, and research and education to improve, share and document improved BMPs.

Subsequent to plan development, the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) awarded Suffolk County $1.2 million over the next five years for farmers to implement best management practices on their farmland. Falling within Suffolk County's broader "Reclaim Our Water" initiatives, this grant will help the County implement recommendations made in the unanimously approved "2016 Agricultural Stewardship Plan". This Regional Conservation Partnership Program (RCPP) funding provided by the NRCS has enabled Suffolk County to hire an agronomist in the Suffolk County Soil and Water Conservation District to write certified nutrient and pest management plans for local farmers that are tailored to Suffolk County's unique agricultural commodities and resource concerns to help farmers protect surface and ground waters and protect and restore soil quality within the Peconic Estuary Watershed. The funding will facilitate the development of 51 nutrient and integrated pest management plans to encourage adoption of NRCS-approved best management practices on Suffolk County farms.

### 3.2.1.4 Groundwater and Drinking Water Priority Areas

The SWP identified priority areas for groundwater and drinking water restoration and protection established through this SWP as shown on **Figure 3-26**. The groundwater and drinking water priority areas combine both aquifer restoration and protection objectives. Priority area identification considered:

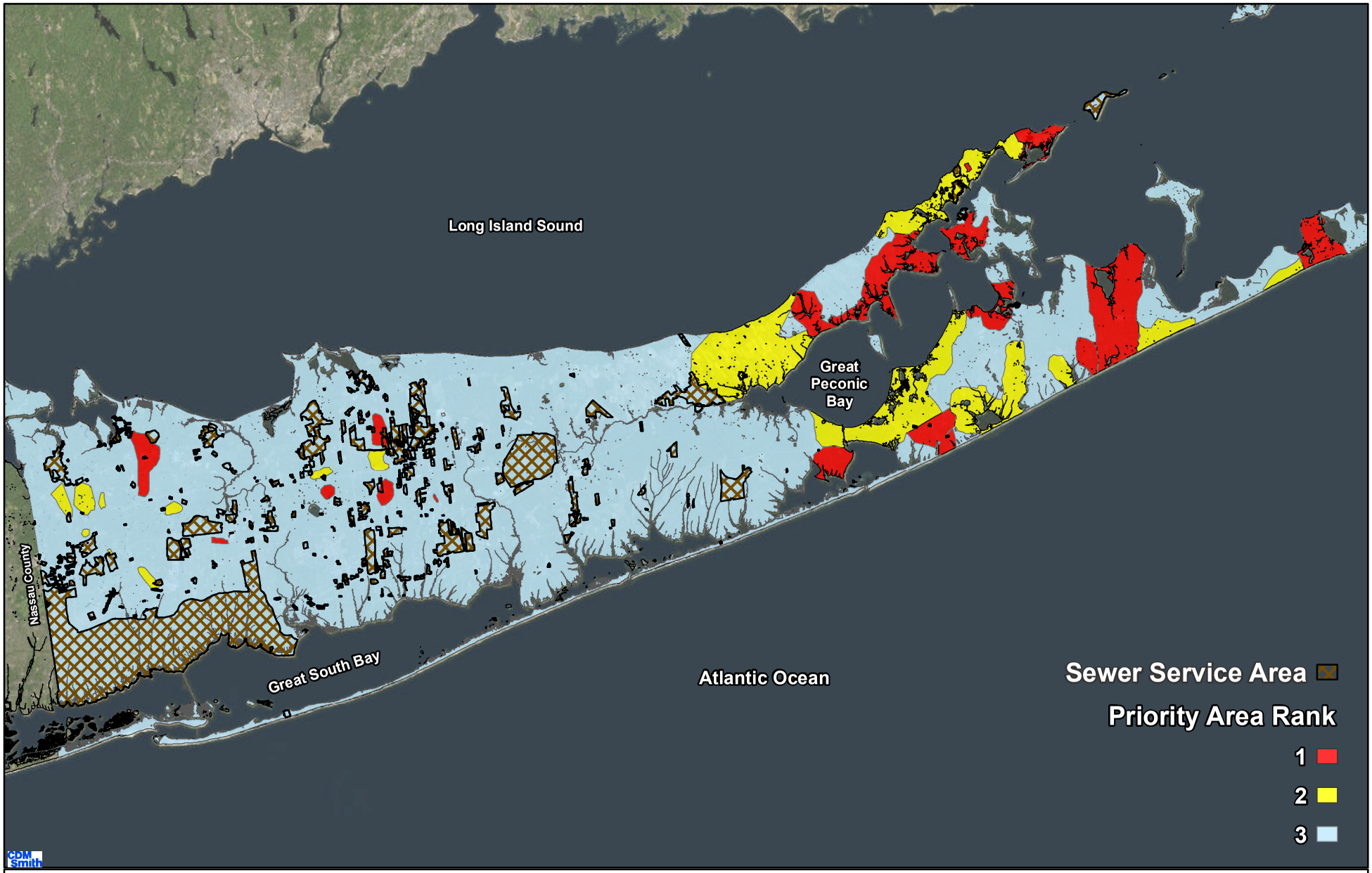
- Groundwater model-simulated upper glacial nitrogen concentrations resulting from both existing and projected future build-out land use (and existing wastewater management),
- Model-predicted community supply wellfield nitrogen concentrations and
- Actual observed nitrogen concentrations in individual community supply wells.

Current residential development density was also considered as the priority areas were delineated. Priority areas in the five East End towns (East Hampton, Riverhead, Shelter Island, Southampton, Southold) were identified with a slightly different approach than for the five West End Towns (Babylon, Brookhaven, Islip, Huntington, Smithtown), based upon consideration of the 10 mg/L MCL for nitrogen and the type of potable supply available.

Areas shown in light red on **Figure 3-26** are Priority Rank 1 for groundwater restoration. The areas shown in light red in the five West End towns are the contributing areas to public supply wells where nitrogen concentrations in raw (untreated) water either currently exceed the drinking water MCL of 10 mg/L or are projected to exceed 10 mg/L based on current conditions of land use and wastewater management as documented in Section 3 of the SC SWP.

SCDHS has estimated that over 90 percent of the County's approximately 30,000 private potable supply wells are located within the five East End towns. Because these private wells are primarily screened within the upper glacial aquifer, the areas where groundwater modeling simulated shallow upper glacial nitrogen concentrations to exceed 10 mg/L and the contributing areas where simulated or actual nitrate concentrations in community supply wells exceed 10 mg/L are identified as Priority Rank 1 for wastewater management for groundwater protection. As the East End Priority Rank 1 areas were delineated, the existing residential development density was also used to help to identify the area requiring protection of potable supply.

In a similar fashion, contributing areas to existing community supply wellfields where nitrogen concentrations are simulated to be between 6 and 10 mg/L in raw water withdrawn from the wells are shown in yellow for the five West End towns; these areas are Priority Rank 2 for groundwater restoration and protection. In the five East End towns, the areas where the model-simulated nitrate concentrations are between 6 and 10 mg/L that are shown in yellow are Priority Rank 2 for groundwater restoration and protection. The remainder of the County, shown in light blue, is groundwater protection Priority Rank 3. It should be noted that areas shaded blue include areas where parcel sizes typically exceed 1 acre as well as protected/preserved areas (e.g., Central Pine Barrens) where nitrogen loading is low and/or where the majority of existing parcels are connected to public water supply. Finally, the Priority Rank 3 areas located in central Suffolk County have extremely long travel times, on the order of centuries, to potential receptors.




N

0 2.5 5 10 Miles

Date: 5/29/2019

**Figure 3-26**
**Groundwater Priority Areas**
**Suffolk County Subwatersheds Wastewater Plan**

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## 3.2.2 Surface Water Resources

### 3.2.2.1 Overview

Suffolk County's abundant fresh and marine surface water resources largely define the County's identity as a desirable location to live, work and play. The 980-mile coastline defines the County's boundaries to the north, east and south. The coastal waters to the north and east, Long Island Sound and the Peconic Estuary respectively, have been designated as estuaries of national significance. The South Shore Estuary reserve on the south is the largest shallow estuarine bay in New York State.

Fresh surface water resources in Suffolk County are abundant and generally of sufficient quality to support multiple uses. Within the County, New York State has classified more than 200 freshwater streams and ponds and regulates over 1,050 freshwater wetlands covering nearly 24,000 acres. Many of the significant freshwater streams in the County are located along the County's south shore discharging to the Great South Bay, however two of the largest freshwater streams, the Nissequogue and Peconic Rivers discharge to the Long Island Sound and Peconic Estuary respectively.

The quality of the County's fresh and coastal waters has been characterized using data collected by SCDHS from over 200 monitoring stations. Surface waters in the County are impacted to varying degrees by contaminants introduced by point and nonpoint sources. The Long Island Sound, Peconic Estuary and South Shore Estuary Reserve programs have demonstrated that nutrients (particularly nitrogen) and pathogens are primarily responsible for use impairments and for stressing the living marine resources. As of 2014, almost 30,000 acres were closed to shellfishing year-round, and approximately 9,000 acres are closed on a seasonal basis (NYSDEC, personal communication). Of these, over 12,000 acres were closed due to biotoxins associated with HABs which are fueled by nitrogen. Toxic contaminants also play a role in imparting stress on the living resources of Suffolk County's coastal waters. The cumulative impacts of these stresses on the overall health of the aquatic ecosystem are not well understood.

The NYSDEC Priority Waterbody List (PWL) is "a statewide inventory of the waters of New York State that NYSDEC uses to track support (or impairment) of water uses, overall assessment water quality, causes and sources of water quality impact/impairment, and the status of restoration, protection and other water quality activities and efforts." As such, the PWL provides a logical organizational framework that is carried through to the SC SWP, consistent with other state regulatory efforts. It should be noted that while the NYSDEC PWL list was used as the basis for selection and identification of the surface waters studied in the SC SWP, the administrative boundaries for select waterbodies were modified to accommodate the needs of the SC SWP as discussed in Section 3.2.2.3 (e.g., some individual PWLs were aggregated, some individual PWLs were further disaggregated, and some of the spatial boundaries were adjusted).

**Table 3-10** lists the Suffolk County water bodies identified on New York State draft 2018 303(d) list of impaired waters**,** along with the presumed cause(s) of the use impairments identified. In general, NYSDEC has identified pathogens, nitrogen, including ammonia, metals, dissolved oxygen, phosphorus, pesticides and silt/sediment as the primary contaminants causing impairment of the fresh surface waters, and storm water runoff as the source of these contaminants. Part 1 of the list identifies individual water body segments with impairments

requiring TMDL development. The water bodies identified include lakes (with oxygen demand or phosphorus from urban and stormwater runoff identified as the causes of impairment) and pathogens from urban/stormwater runoff and nitrogen from agricultural lands and onsite wastewater treatment for the estuary segments.

Part 2 of the list identifies multiple water body segments and categorical water body impairments requiring TMDL development. Sediment contaminated with chlordane and cadmium is identified as the issue of concern for the south shore lakes identified in this category. Water bodies with uses impaired by fish consumption advisories (category 2c) are identified in the Long Island Sound, Peconic and south shore estuaries. Pathogens attributed to urban and stormwater runoff have been identified as the water quality concern.

Part 3 of the 303(d) list identifies water bodies for which TMDLs may be deferred pending verification of the impairment, verification of the cause of the impairment or contaminant source, and water bodies awaiting development or evaluation of other restoration measures. Phosphorus from urban/stormwater runoff is identified as the presumed source of impairments to be documented in two lakes.

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## 2018 Section 303(d) List of Impaired Waters

Segments and/or pollutants listed in **Bold Type** are new listings; i.e., they were not included in the previous (2016) Section 303(d) List.
*/+ Denotes Priority Waters for TMDL/restoration strategy scheduled for development in 2018 (*) and over longer term, through 2022 (+).

### Part 1 - Individual Waterbody Segments with Impairment Requiring TMDL Development

### Part 1 - Individual Waterbody Segments with Impairment Requiring TMDL Development

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|
| (MW5.3) LIS-62-P296 | Millers Pond (1702-0013) | Suffolk | Lake | C | Phosphorus/Low D.O. [2] | Urban/Storm Runoff | 2002 |
| (MW5.4c) LIS (portion 5) | Long Island Sound, Suffolk Co, Central (1702-0265) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |
| (MW6.1d) GB..GPB-P495 | Mattituck/Marratooka Pond (1701-0129) | Suffolk | Lake | A | Phosphorus/Low D.O. [2] | Other (in-lake recycling) | 2002 |
| (MW7.1b) AO-P815 | Agawam Lake (1701-0117) | Suffolk | Lake | C | Phosphorus/Low D.O. [2] | Onsite WTS, Urb Runoff | 2008 |
| | Atlantic Ocean/Long Island Sound Drainage Basin (con't) | | | | | | |
| (MW7.1b) AO-SB | Shinnecock Bay and Inlet (1701 0033) | Suffolk | Estuary | SA | Nitrogen | Onsite WTS, Urb Runoff | 2010 |
| (MW7.1c) AO-QB | Quantuck Bay (1701-0042) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.2a) AO-MB (portion 1) | Moriches Bay, East (1701-0305) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.2a) AO-MB (portion 2) | Moriches Bay, West (1701-0038) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.2a) AO-MB-168a thru 175 | Tidal Tribs to West Moriches Bay (1701-0312) | Suffolk | Estuary | SC | Pathogens | Urban/Storm, Agric,OWTS | 2006 |
| (MW7.2a) AO-MB-168a thru 175 | * Tidal Tribs to West Moriches Bay (1701-0312) | Suffolk | Estuary | SC | Nitrogen/Low D.O. [2] | Urban/Storm, Agric,OWTS | 2006 |
| (MW7.3) AO GSB (portion 1) | + Great South Bay, East (1701-0039) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.3) AO GSB (portion 2) | + Great South Bay, Middle (1701-0040) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.3) AO GSB (portion 3) | + Great South Bay, West (1701-0173) | Suffolk | Estuary | SA | Nitrogen/Low D.O. [2] | Onsite WTS, Urb Runoff | 2010 |
| (MW7.5) AO-GSB-185-P889 | Canaan Lake (1701-0018) | Suffolk | Lake | B(T) | Phosphorus | Urban/Storm Runoff | 2002 |
| (MW7.5) AO-GSB-185-P889 | Canaan Lake (1701-0018) | Suffolk | Lake | B(T) | Silt/Sediment | Urban/Storm Runoff | 2002 |
| (MW7.7) AO-GSB-193..P304 | + Lake Ronkonkoma (1701-0020) | Suffolk | Lake | B | Pathogens | Urban/Storm Runoff | 2002 |
| (MW7.7) AO-GSB-193..P304 | + Lake Ronkonkoma (1701-0020) | Suffolk | Lake | B | Phosphorus | Urban/Storm Runoff | 2002 |
| (MW7.8) AO-GSB-194 | Champlin Creek, Upper, and tribs (1701-0019) | Suffolk | River | C(TS) | Thermal Changes | Urban/Storm Runoff | 2002 |

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|

## Part 2b - Multiple Segment/Categorical Waterbody Segments Impaired due to Fish Consumption Advisories

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (MW7.8) AO-GSB-205-P934 | Lake Capri (1701-0175) | Suffolk | Lake | C | Cadmium | Cont.Sed, Land.Disp. | 1998 |
| (MW7.8) AO-GSB-205-P934 | Lake Capri (1701-0175) | Suffolk | Lake | C | Chlordane | Cont.Sed, Land.Disp. | 2002 |

## Part 2c - Multiple Segment/Categorical Waterbody Segments Impaired due to Shellfishing Restrictions

Might be addressed by a waterbody specific TMDL or a pollutant/source specific TMDL or other strategy to attain water quality standards.

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|
| **(MW5.2a) LIS-HB-HH** | **Huntington Harbor (1702-0228) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.2a) LIS-HB-NB-CH** | **Centerport Harbor (1702-0229) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.2a) LIS-HB-NB-NH** | **Northport Harbor (1702-0230) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.4a) LIS-SB-SBH** | **Stony Br. Harbor and W. Meadow Cr. (1702-0047) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW5.4b) LIS-P339 | Flax Pond (1702-0240) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |
| **(MW5.4c) LIS-PJH (portion 1)** | **Port Jefferson Harbor, North, and tribs (1702-0015) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.4c) LIS-PJH-CB** | **Conscience Bay and tidal tribs (1702-0091) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.4c) LIS-PJH-SH** | **Setauket Harbor (1702-0242) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW5.4d) LIS- MSH** | **Mt Sinai Harbor and tidal tribs (1702-0019) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW5.4e) LIS- 71** | **Mattituck Inlet/Cr, Low, and tidal tribs (1702-0020) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW5.4e) LIS- 72** | **Goldsmith Inlet (1702-0026) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW5.4g) LIS-FI-WH** | **West Harbor, Fishers Island (1702-0046) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS- 77-P400** | **Gull Pond** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS- 78** | **Stirling Creek and Basin (1701-0049) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS- 80c-P418a** | **Budds Pond (1701-0234) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS- 83a,83b** | **Town/Jockey Creeks and tidal tribs (1701-0235) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS- 84-P423** | **Goose Creek (1701-0236) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS(-DH)** | **Dering Harbor (1701-0050) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1b) GB-SIS-P420** | **Hashamomuck Pond (1701-0162) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.1c) GB..LPB- 90** | **Richmond Creek and tidal tribs (1701-0245) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW6.1c) GB..LPB-CH-93, P420 | Mud/East Creeks and tribs (1701-0377) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |
| (MW6.1c) GB..LPB-CH-94 | Wickham Creek and tribs (1701-0378) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |
| **(MW6.1d) GB..GPB- 97 thru 104** | **Tidal Tribs to Gr Peconic Bay, Northshr (1701-0247) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW6.1d) GB..LPB-CH-96 | West Creek and tidal tribs (1701-0246) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |

**[10] This waterbody/pollutant combination is being moved from IR Category 4a to List Part 2c to reflect that implementation of the existing TMDLs are not expected to achieve the water quality goals.**

## Part 2c - Multiple Segment/Categorical Waterbody Segments Impaired due to Shellfishing Restrictions (con=t)

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|
| | Atlantic Ocean/Long Island Sound Drainage Basin (con't) | | | | | | |
| **(MW6.1e) FB** | **Flanders Bay, East/Center, and tribs (1701-0030) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW6.3a) GB..FB-RB** | **Reeves Bay and tidal tribs (1701-0272) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Municipl,Urb/Storm** | **2018** |
| **(MW6.3b) GB..GPB-122a-P651** | **Little Sebonac Creek (1701-0253) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW6.3b) GB..GPB-122a-P652 | Scallop Pond (1701-0354) | Suffolk | Estuary | SA | Pathogens | Unknown/Multiple Sources | 2002 |
| **(MW6.3b) GB..GPB-122-P648** | **Sebonac Cr/Bullhead Bay and tidal tribs (1701-0051) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3c) GB..LPB-123-P659** | **North Sea Harbor and tribs (1701-0037) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3c) GB..LPB-124-P665** | **Wooley Pond (1701-0048) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3d) GB-SIS-126** | **Noyack Creek and tidal tribs (1701-0237) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3e) GB-SIS-SHB,SHC** | **Sag Harbor and Sag Harbor Cove (1701-0035) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3f) GB-AH** | **Acabonack Harbor (1701-0047) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW6.3f) GB-SIS-NH-136** | **Northwest Creek and tidal tribs (1701-0046) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW6.3g) BIS..P764 | Oyster Pond/Lake Munchogue (1701-0169) | Suffolk | Estuary | SA | Pathogens | Unknown/Multiple Sources | 1998 |
| (MW6.3g) GB-140/P729 | Hog Creek and tidal tribs (1701-0277) | Suffolk | Estuary | SA | Pathogens | Unknown/Multiple Sources | 2016 |
| **(MW6.3h) BIS..P761** | **Lake Montauk (1701-0031) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW6.3i) AO-SB-155 | Phillips Creek, Lower, and tidal tribs (1701-0299) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2002 |
| (MW6.3i) AO-SB-QgC | Quogue Canal (1701-0301) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2002 |
| **(MW7.1a) AO-P780** | **Georgica Pond (1701-0145) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Agriculture** | **2018** |
| **(MW7.1a) AO-P786** | **Sagaponack Pond (1701-0146) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Agriculture** | **2018** |
| **(MW7.1b) AO-P790** | **Mecox Bay and tribs (1701-0034) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Agriculture** | **2018** |
| **(MW7.1b) AO-SB-143,144** | **Heady and Taylor Creeks and tribs (1701-0294) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1b) AO-SB-148 thru 150** | **Penny Pond, Wells and Smith Creeks (1701-0298) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1b) AO-SB-153** | **Weesuck Creek and tidal tribs (1701-0111) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1b) AO-SB-156** | **Penniman Creek and tidal tribs (1701-0300) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1b) AO-SB-QgC-P834** | **Ogden Pond (1701-0302) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1c) AO-QB** | **Quantuck Bay (1701-0042) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.1c) AO-SB-QB-QtC** | **Quantuck Canal/Moneybogue Bay (1701-0371) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.2a) AO-MB (portion 3)** | **Tuthill, Harts, Seatuck Coves (1701-0309) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm, Agric** | **2018** |
| (MW7.2a) AO-MB (portion 4) | Forge River, Lower and Cove (1701-0316) | Suffolk | Estuary | SA | Pathogens | Urban/Storm, Agric. | 2002 |
| **(MW7.2b) AO-MB-NB** | **Narrow Bay (1701-0318) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm, Agric** | **2018** |
| **(MW7.3) AO-GSB (portion 4)** | **Bellport Bay (1701-0320) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| **(MW7.3) AO-GSB (portion 5)** | **Patchogue Bay (1701-0326) [10]** | **Suffolk** | **Estuary** | **SA** | **Pathogens** | **Urban/Storm Runoff** | **2018** |
| (MW7.6) AO-GSB (portion 6) | Nicoll Bay (1701-0375) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2002 |
| (MW7.8) AO-GSB (portion 7) | Great Cove (1701-0376) | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2002 |

## Part 3a - Waterbodies for which TMDL Development May be Deferred (Requiring Verification of Impairment)

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|
| | Oswego River (Finger Lakes) Drainage Basin (con't) | | | | | | |
| | Atlantic Ocean/Long Island Sound Drainage Basin | | | | | | |
| (MW6.3c) GB..LPB-123..P661,P662 | Big/Little Fresh Ponds (1701-125) | Suffolk | Lake | B | Phosphorus | Urban/Storm Runoff | 2012 |
| (MW6.3d) GS-SIS-SI-WNH-P458 | Fresh Pond (1701-0241) | Suffolk | Lake | C | Phosphorus | Urban/Storm Runoff | 2012 |
| (MW7.1b) AO-P790- 2- 2P793,P794 | Mill and Seven Ponds (1701-0113) | Suffolk | Lake | B | Phosphorus | Urban/Storm Runoff | 2012 |
| (MW8.4a) HB-233-P1005- | Tribs to Smith Pond/Halls Pond (1701-0221) | Nassau | Lake | C | Phosphorus | Urban/Storm Runoff | 2012 |

## Part 3b - Waterbodies for which TMDL Development May be Deferred (Requiring Verification of Cause/Pollutant/Source) (con=t)

| Water Index Number | Waterbody Name (WI/PWL ID) | County | Type | Class | Cause/Pollutant | Suspected Source | Year |
|---|---|---|---|---|---|---|---|
| | Atlantic Ocean/Long Island Sound Drainage Basin | | | | | | |
| (MW7.2a) AO-MB-170 | Terrell River, Upper, and tribs (1701-0103) | Suffolk | River | C(TS) | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |
| (MW7.5) AO-GSB-178 | Beaverdam Creek and tribs (1701-0104) | Suffolk | River | C(TS) | Ammonia | Urban/Storm Runoff | 2010 |
| (MW7.5) AO-GSB-179 | Motts Creek, Upper, and tribs (1701-0325) | Suffolk | River | C | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |
| (MW7.8) AO-GSB-196 | Orowoc Creek, Upper, and tribs (1701-0094) | Suffolk | River | C | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |
| (MW7.8) AO-GSB-197 | Awixa Creek, Upper, and tribs (1701-0093) | Suffolk | River | C | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |
| (MW7.8) AO-GSB-198 | Penataquit Creek, Upper, and tribs (1701-0092) | Suffolk | River | C | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |
| (MW7.8) AO-GSB-207 | Sampawams Creek, Upper, and tribs (1701-0090) | Suffolk | River | C | Unknown (biol impacts) | Urban/Storm Runoff | 2010 |

## Part 3c - Waterbodies for which TMDLs Are Deferred (Pending Development/Implementation/Evaluation of Other Restoration Measures)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Atlantic Ocean/Long Island Sound Drainage Basin | | | | | | |
| (MW5.4g) LIS-FI-P1101,P1102 | Beach/Island Ponds, Fishers Island (1701-0283) [23] | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2002 |
| (MW6.1a) GB-P397 | Spring Pond (1701-0230) [23] | Suffolk | Estuary | SA | Pathogens | Urban/Storm Runoff | 2012 |
| (MW6.1d) GB..GPB P495 | Mattituck/Marratooka Pond (1701-0129) [24] | Suffolk | Lake | A | Pathogens | Wildlife Sources | 2002 |

[11] Shellfishing restrictions are based on shoreline survey assessments and documentation of potential sources (discharger outfalls, boat traffic) rather than actual sampling data. The development of a TMDL to reduce pathogen loads may not result in restoration (certification for shellfishing use) while the potential sources remain.

[12] Impairments to Mattituck/Marratooka Pond are largely the result of wildlife (waterfowl) sources that cannot be resolved by a TMDL approach.

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### 3.2.2.2 Historical Water Quality

Section 2.1.3 of the SC SWP describes how all available surface water quality data characterizing the surface waters in the County was compiled into an excel database that included the following parameters:

- Water Clarity indicated as Secchi Depth
- Nitrogen species – Ammonia, Nitrite, Nitrate, Organic-N, and Urea
- Phosphorus species – Total/Dissolved Phosphorus, Phosphate, and Ortho-Phosphate
- Chlorophyll-*a*
- Dissolved oxygen
- Fecal coliform (pathogen indicator)
- Temperature
- Salinity
- Conductivity
- pH
- Carbon Dioxide
- Organic Carbon
- Total Suspended Solids

While water quality in many of the marine waters is well characterized by samples collected mainly during daylight hours, in general, water quality in the fresh water bodies was not. In fact, **Table 3-11** shows that only one of the fresh water bodies (e.g., Lake Ronkonkoma) was characterized by at least ten water quality samples over the past ten years. Mixed (e.g., water bodies that have both fresh and marine segments) also were poorly characterized. More historical data was available to characterize water quality trends in the marine waters as shown. This is also illustrated by **Figure 3-27** which illustrates the subwatersheds evaluated in the SWP that were not well characterized. Surface water contributing areas shown in orange and red were not characterized by ten samples over the past ten years for one or more water quality parameters that were considered in the SWP.

**Table 3-11 Water Quality Data Availability**
**(Classifications are based on having ten or more water quality samples over the past ten years)**

| Water Body Classification | Poorly Characterized (Number) | Well Characterized (Number) |
|---|---|---|
| Fresh | 18 | 1 |
| Mixed | 45 | 6 |
| Marine | 43 | 78 |

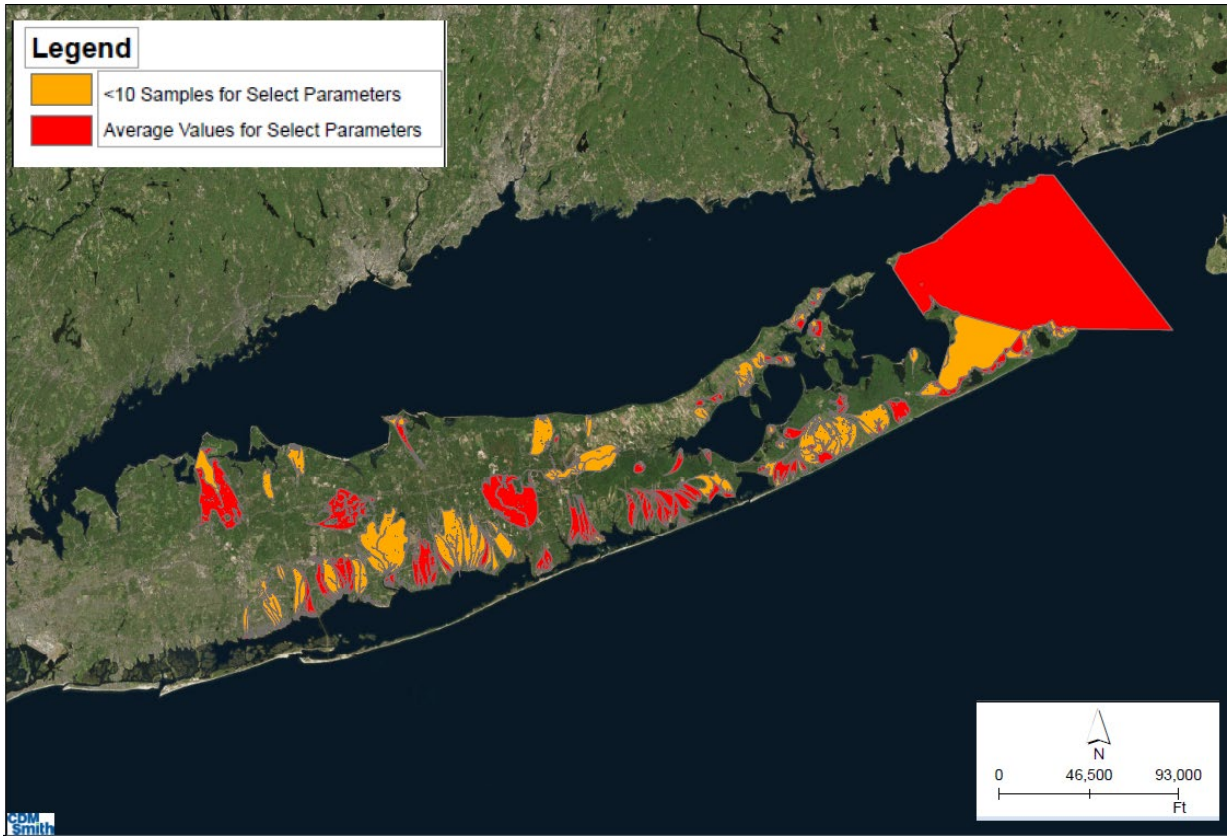



**Figure 3-27 Subwatersheds with Less than 10 Data Points to Characterize One or More Parameters and Subwatersheds with One or More Parameters Characterized by an Average Value (Source: SC SWP)**

### *3.2.2.2.1 Fresh Surface Waters*

While Suffolk County has a robust dataset for marine waters, there is comparatively little data available to characterize historic trends and current water quality in fresh surface waters. As shown above, there was insufficient water quality data to characterize fresh water ponds and lakes except for Lake Ronkonkoma.

Five Suffolk County lakes/ponds, including Lake Ronkonkoma, are identified on **Table 3-10** as requiring TMDLs for phosphorus and/or low dissolved oxygen; the source of the impairment for one, Lake Agawam, is identified as on-site wastewater systems. Water quality data existed to characterize Lake Ronkonkoma where water quality is generally poor to fair with occasional HABs, elevated chlorophyll 'a', and pathogen impacts. TMDLs are deferred for seven additional ponds and streams pending confirmation of impairment by phosphorus from urban/storm runoff.

NYSDEC has, however, identified fresh water bodies with aquatic invasive species and algal/plant growth as part of their Priority Waterbody List (PWL) Individual Assessment Fact Sheets. Water bodies with identified macroalgae problems include:

- Belmont Lake,
- Upper and Lower Yaphank Lakes,
- Upper Connetquot River,
- Lake Ronkonkoma,
- Upper Nissequogue River, including Philips Mill Pond, Willow Pond, Millers Pond and New Mill Pond,
- Peconic River, including Peconic Lake and Swan Pond,
- Sans Souci and Lotus Lakes,
- Carlls River, including Southards Pond and Elda Lake,
- Patchogue River, including Patchogue Lake and Canaan Lake,
- West Lake (Tuthills Creek),
- Amityville Creek and
- Georgica Pond.

#### *3.2.2.2.2 Marine Waters*

Increasing nitrogen concentrations and resulting water quality impairments including low dissolved oxygen levels, harmful algal blooms (HABs), declining finfish and shellfish populations, and loss of wetlands have been documented, including throughout the 2015 Comp Plan and Section 1 of the SWP. The water quality impairments documented by Stony Brook University School of Marine and Atmospheric Sciences (SoMAS) on **Figure 3-28** are attributed largely to increasing concentrations of nitrogen. SCDHS's evaluation of nitrogen concentrations in all Suffolk County marine water bodies, shown on **Figure 3-29**, shows an increase of more than 10 percent over the past 10 years (2007-2016). Combined analysis of the data shows increasing trends in nitrogen concentrations across the County. The greatest increases appear to be in locations with short groundwater travel times where the highest population growth has been observed over the past 10 years (e.g., East End Towns).

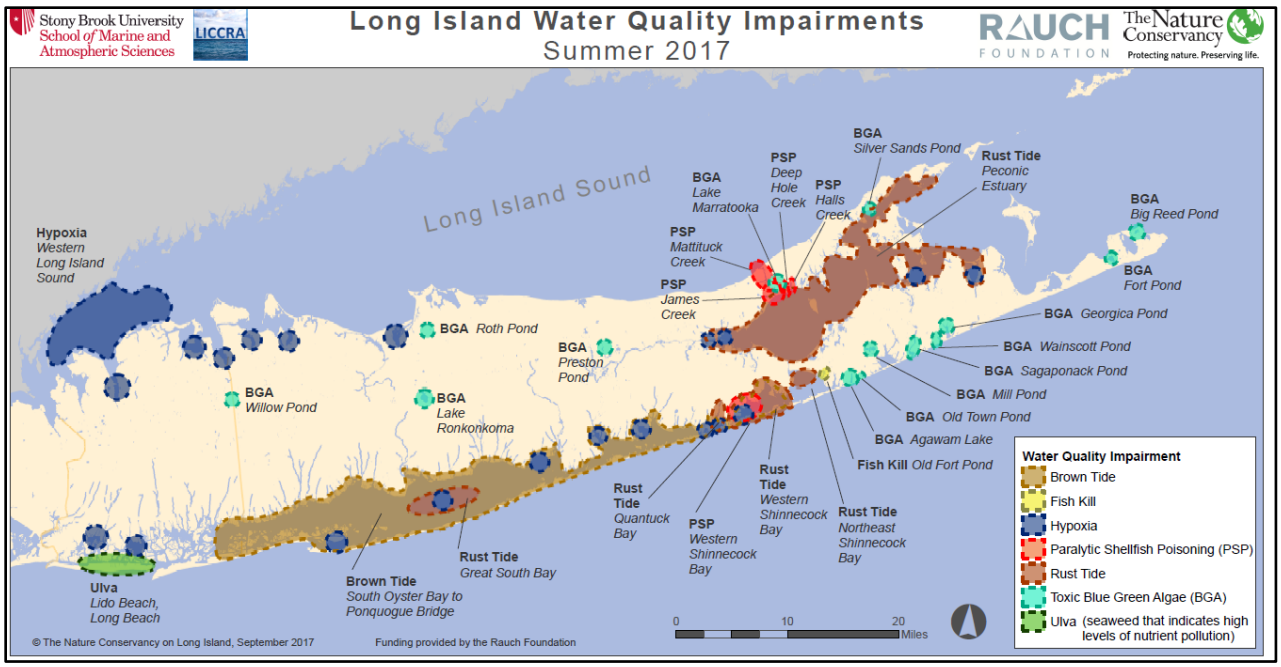
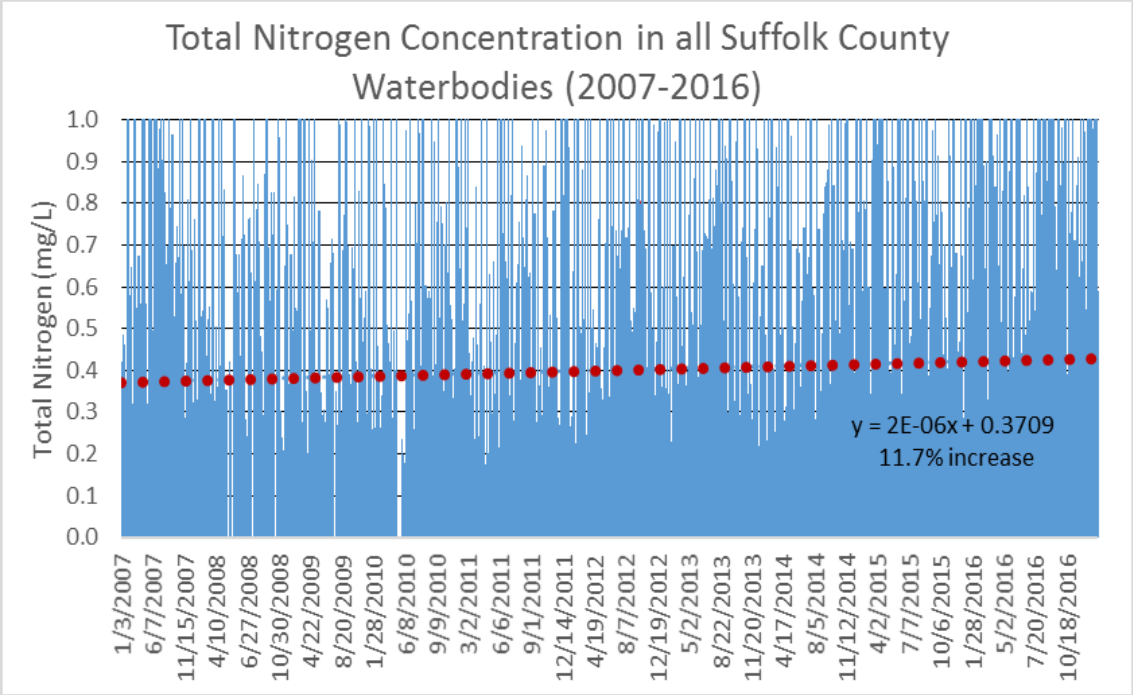



**Figure 3-28 Summary of Documented Water Quality Impairments in 2017 Source: SUNY Stony Brook SoMAS**




**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc..**

**Figure 3-29 Nitrogen Trends in All Suffolk County Water Bodies from 2007 through 2016**

### *Long Island Sound*

Twenty-seven surface water bodies evaluated during SWP development are located within the Long Island Sound watershed. The LISS was initiated in 1985 as a partnership between the EPA and the states of New York and Connecticut. In 1987, the Long Island Sound was designated as an "Estuary of National Significance" under the National Estuary Program (NEP), which is implemented according to Section 320 of the Clean Water Act to protect nationally significant estuaries from pollution, development and overuse.

The LISS CCMP developed in 1994 and updated in 2015 identified strategies to address:

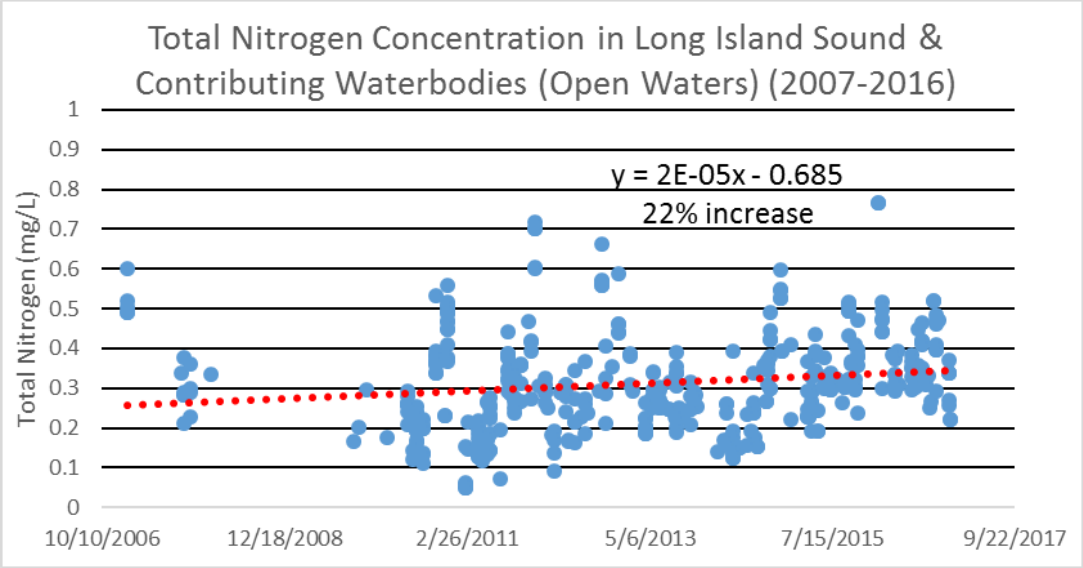
- Low dissolved oxygen (DO);
- Toxic Contamination;
- Pathogen Contamination;
- Floatable debris;
- The impact of these water quality problems and habitat degradation and loss on the health of the living resource, and
- Land use and development resulting in habitat loss and degradation of water quality.

Nitrogen has been identified as the primary pollutant contributing to low dissolved oxygen levels and hypoxia in the Long Island Sound, which results in the subsequent loss of designated uses. Low levels of oxygen threaten many forms of aquatic life in portions of the Sound's bottom waters, typically between July and September when water temperatures are high. Because of the numerous and significant impacts, management efforts have focused on reducing major nitrogen inputs to the Sound. The LISS adopted a TMDL for nitrogen to improve dissolved oxygen levels. However, the TMDL did not quantify the nitrogen contribution from on-site wastewater systems.

In accordance with the LIS TMDL, point source nitrogen load reduction goals, atmospheric nitrogen load reduction goals and agricultural nitrogen load reduction goals have all been achieved (http://longislandsoundstudy.net/); however, nitrogen levels from other non-point sources such as on-site wastewater systems continue unabated.

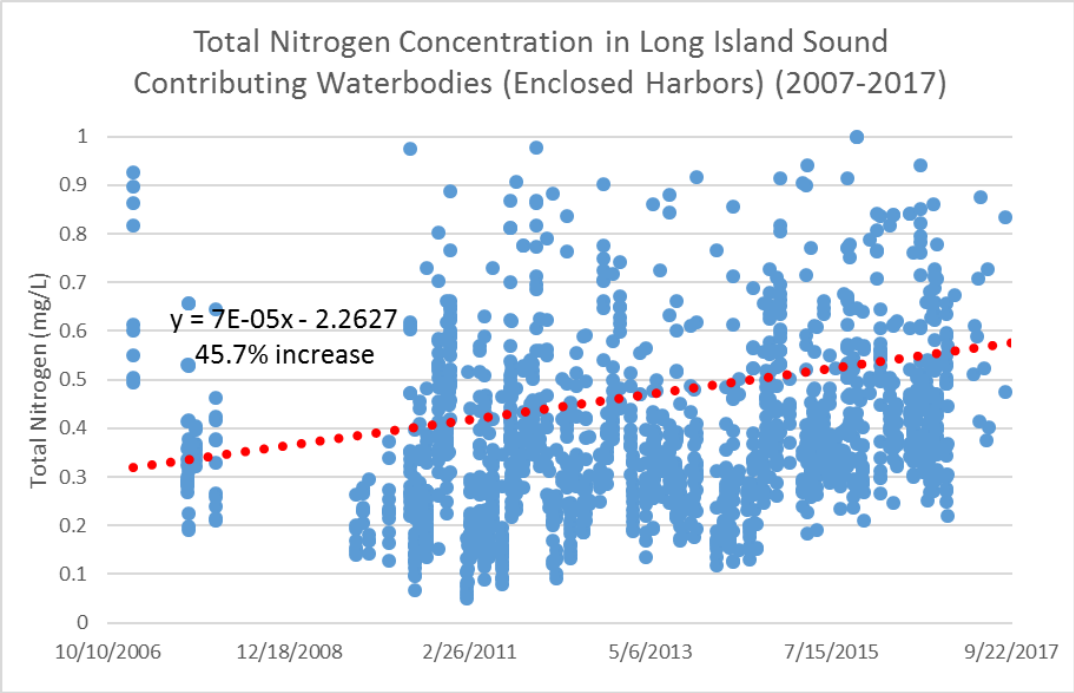
SCDHS has determined that:

- Nitrogen concentrations in Suffolk County marine monitoring stations located within the open waters of Long Island Sound have increased 22 percent over the past 10 years (please see **Figure 3-30**) and
- Nitrogen concentrations in Suffolk County marine monitoring stations located within the enclosed harbors of Long Island Sound have increased 45.7 percent over the past 10 years (shown on **Figure 3-31**).




**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc..**

**Figure 3-30 Nitrogen Trends at Open Water Sampling Stations in Long Island Sound**




**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc..**

**Figure 3-31 Nitrogen Trends at Sampling Stations in Long Island Sound Harbors**

Total nitrogen concentrations from 2007 to 2016 at select north shore embayment sampling stations are shown on **Figure 3-32**. Review of historical nitrogen trends within individual embayments highlights the variability in temporal trends over the past ten years. The figures depict nitrogen concentrations at sampling stations closer to shore (blue bars) and moving northward to mid-water body samples (red bars) and closer to the open waters of the Long Island Sound (black bars). Trends in some harbors (e.g., Stony Brook Harbor and Port Jefferson Harbor) show that nitrogen concentrations are reduced from south to north, suggesting that nitrogen loads found in groundwater baseflow are contributing to the observed increases.

Additional information describing the surface waters located within the Long Island Sound watershed may be found in Section 5 of the SWP, and water body-specific characterizations may be found in Appendix D of the SWP.

### *Peconic Estuary*

The Peconic Estuary includes 120 classified bays, harbors, embayments, and tributaries encompassing 158,000 acres of surface waters; 75 of these water bodies were evaluated during the SWP. The Peconic Estuary CCMP was developed in 2001 and is currently being updated. The Peconic Estuary CCMP contained 340 management actions, organized around priority topics including “brown tide”, nutrients, habitat and living resources, pathogens, toxic pollutants, and critical lands protection. The CCMP also addressed management and financing for CCMP Implementation and public education and outreach.

New York State and the PEP established a nitrogen TMDL in 2007 to identify the nitrogen loading reductions needed to comply with dissolved oxygen criteria, and pathogen TMDLs were also established for 20 water bodies within the Estuary to address coliform levels.

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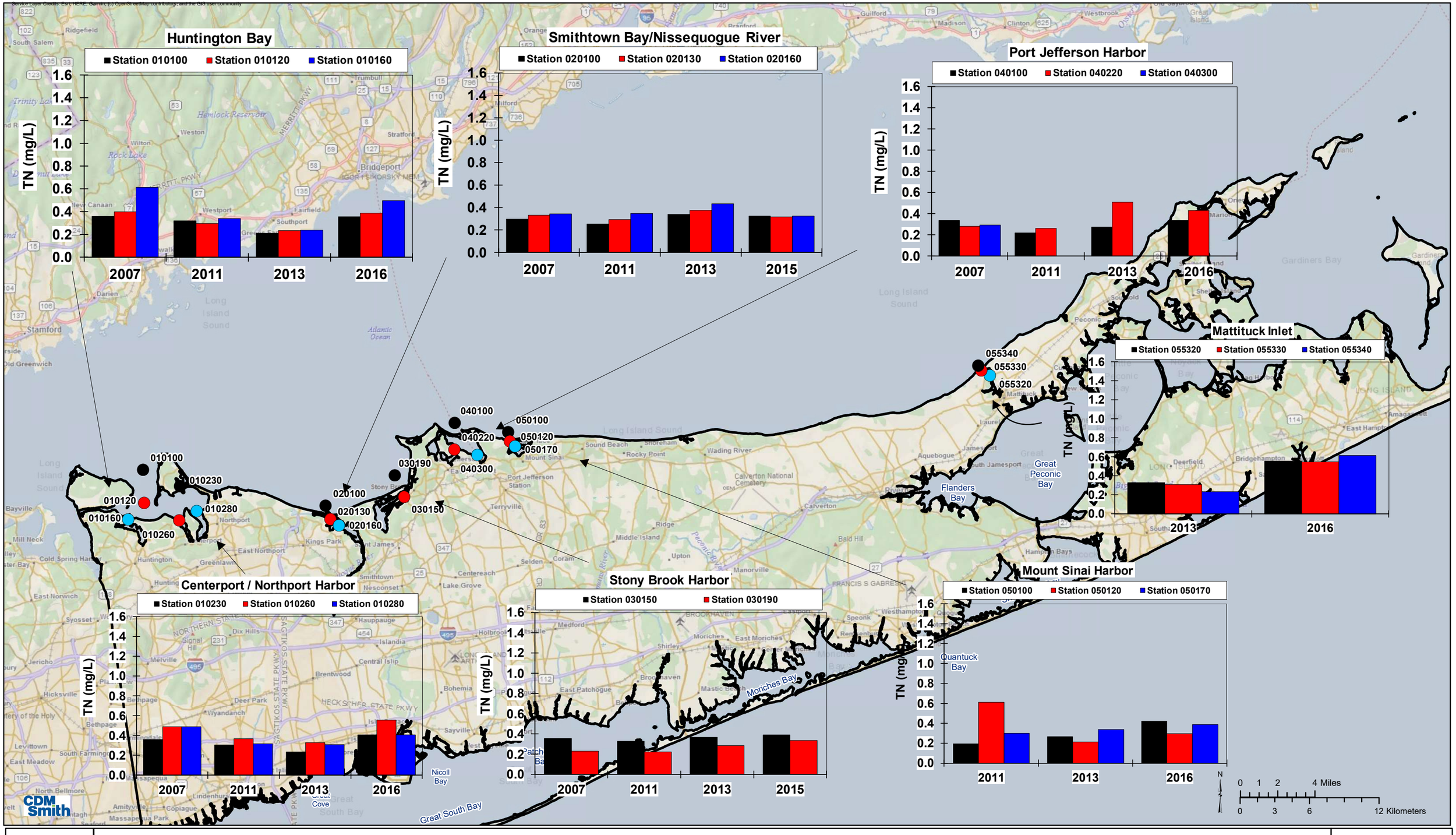


**Average Annual Total Nitrogen Concentrations (mg/L) by Year at Selected Sampling Locations within North Shore Embayments**

**Figure 3-32**

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The brown tide blooms in the mid-1980s and 1990s are one of the factors causing significant reductions in the once abundant bay scallop population (over-fishing is another important cause) and the number of eelgrass beds, an important estuarine nursery habitat for finfish and shellfish. Dredging and filling are two of the other significant causes of the observed declines. Eelgrass beds are now limited to waters near Shelter Island and to the east. Eelgrass beds, at about 1,550 acres as of 2010, are not expanding, despite generally good water quality. Because of the decline in bay scallops, commercial shellfishing operations have turned to the hard clams; however, there is some evidence of a decline in the hard clam population as well.

Some of the declines in the finfish population of the Peconic Estuary are attributed to over-harvesting and habitat degradation. Habitat degradation (feeding and spawning areas) has been attributed to shoreline hardening, fertilizer and pesticide use, commercial trawling, recreational boating, historic oyster harvesting, and dredging.

Reductions to point source nitrogen loading as a result of TMDL implementation progress as well as reductions in non-point source nitrogen loading have resulted in reduced algal blooms and chlorophyll 'a' levels. The reduction in algal blooms and increased dissolved oxygen concentrations have benefited both the benthic and pelagic organisms.

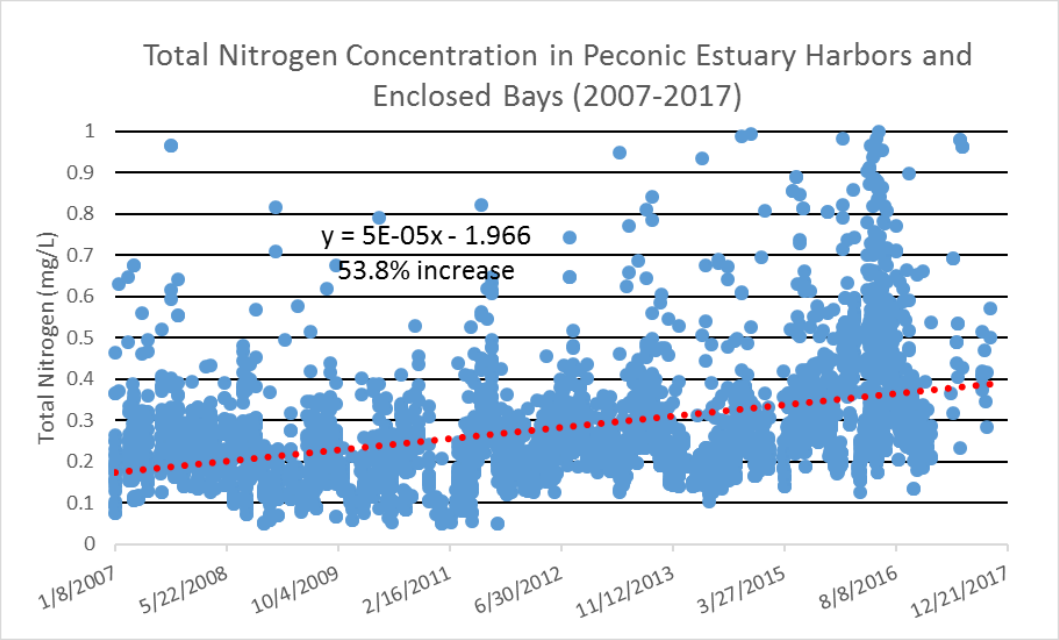
Trends in Peconic Estuary water quality have been documented in **Peconic Estuary Water Quality Status and Trends** (Cameron Engineering & Associates, LLP, 2012). **Table 3-12** summarizes water quality since the CCMP was adopted, indicating improvement in many water quality indicators.

**Table 3-12 Changes in Water Quality Post CCMP**

| Parameter | Result | Trend |
|---|---|---|
| A. Anophagefferens | Consistently lower | Improved |
| Chlorophyll a | Generally lower | Improved |
| Dissolved oxygen | Generally higher or much higher | Improved |
| Fecal coliform | Generally decreasing | Improved |
| Nitrate and Nitrite | Generally higher | Declined |
| Total nitrogen | Generally lower | Improved in some areas, but some areas are higher post-CCMP |
| Organic nitrogen | Similar or slightly lower | Slightly improved |
| Total phosphorus | Generally much lower | Improved |
| Dissolved organic nitrogen | Similar or slightly lower | Slightly improved |

Note: Peconic Estuary Water Quality Status and Trends, 2012, Cameron Engineering and Associates, LLP

However, SCDHS's updated evaluation of nitrogen concentrations at Suffolk County marine monitoring stations located in Peconic Estuary enclosed bays and harbors concluded that nitrogen levels have increased by 53.8 percent over the past ten years as shown by **Figure 3-33**. Combined, analysis of the data shows increasing trends in nitrogen concentrations across the County, especially in locations with short groundwater travel times where the highest population growth has been observed over the past 10 years (e.g., East End Towns).




**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc..**

**Figure 3-33 Nitrogen Trend at Peconic Estuary Sampling Stations**

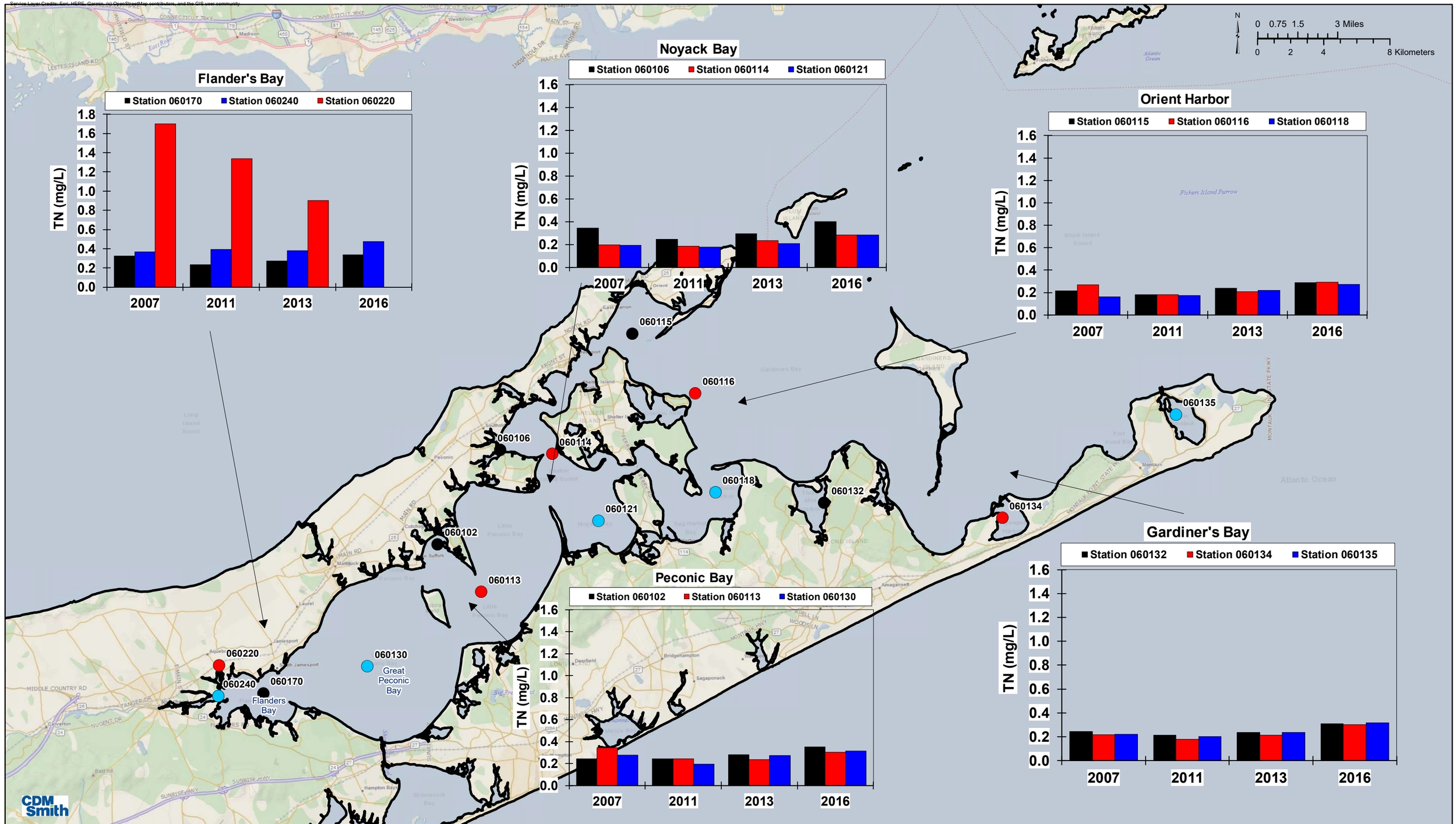
Nitrogen trends at SCDHS sampling stations in the Peconic Estuary are shown on **Figure 3-34.**

The three easternmost Peconic stations indicate a slight increasing trend in nitrogen concentrations, while nitrogen concentrations at the most upstream station in Flanders Bay have declined dramatically since 2007 (no data for this station was available to characterize nitrogen in 2016). Overall, concentrations in the eastern Peconic are low, but the increasing trend is of concern.

Additional information on the surface waters located within the Peconic Estuary watershed may be found in Section 6 of the SWP and water body specific data is contained in Appendix D of the SWP.

### *South Shore Estuary Reserve and Southern Coastal Waters*

Seventy-four of the water bodies evaluated during SWP development were located along Suffolk County's southern coast, including those that are part of the South Shore Estuary Reserve watershed. New York State's 303 (d) list (**Table 3-10**) identifies the need for TMDL development for eight of these water bodies to address nitrogen and dissolved oxygen impairments attributed in part to on-site wastewater treatment systems.




**Average Annual Total Nitrogen Concentrations (mg/L) by Year at Selected Sampling Locations within Peconic Bay**

Figure 3-34

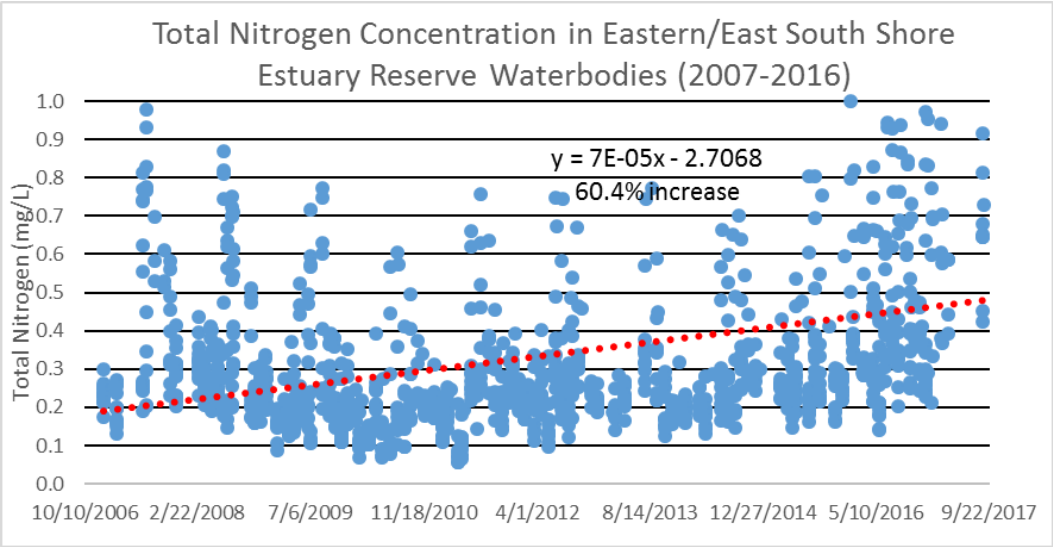
Impairments of the south shore waters result from pathogens from urban/stormwater runoff, and nitrogen from on-site wastewater treatment systems and urban/stormwater runoff. Although the shallow bays of the SSER are generally well mixed, which enables reaeration and reduces oxygen depletion, low oxygen levels are typical along the northern margins of the bays and in the tributary mouths. Excess nutrients, in particular nitrogen, are responsible for eutrophication that triggers algal blooms that create low dissolved oxygen levels. The lack of oxygen threatens many forms of aquatic life in the Reserve. Fish kills have been noted in the Forge River, in response to hypoxic events believed to be triggered by excess nutrients.

The hard clam harvest in Great South Bay has fallen by more than 93 percent in the last 25 years. Shellfish, particularly the hard clams, provide important nutrient cycling and water filtration functions, and offer substantial recreational and commercial value as well.

The loss of salt marshes and other coastal habitats has reduced estuarine productivity and eliminated critical feeding and nursery habitat for finfish, shellfish, shorebirds, and water fowl colonies. The loss of wetlands and eel grass beds has also reduced the resiliency of the south shore to wave action during storm events.

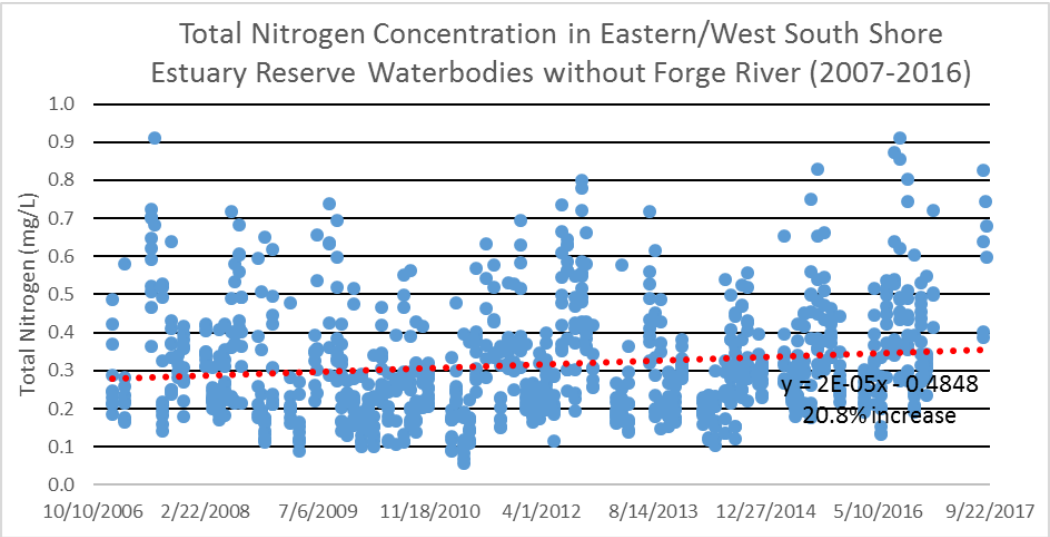
SCDHS evaluated trends in nitrogen concentrations in South Shore waters and found increasing trends in all parts of the system, including:

- Nitrogen concentrations in Suffolk County marine monitoring stations located within the far eastern south shore bays and contributing water bodies (Quantuck Canal to Shinnecock Bay) have increased 60.4 percent over the past 10 years (Figure 3-35);
- Nitrogen concentrations in Suffolk County marine monitoring stations located from Narrow Bay to Moriches Bay East in the SSER have increased 20.8 percent over the past 10 years (Figure 3-36);
- Nitrogen concentrations in Suffolk County marine monitoring stations located within the Great South Bay have increased as follows:
    - Great South Bay East (Connetquot River to boundary of Narrow Bay) have increased 30 percent over the past 10 years. This includes four years with the new breach in the Fire Island National Seashore property that provides increased flushing of the Bay with water from the Atlantic Ocean (Figure 3-37).
    - Great South Bay Middle (Great Cove area, representing partially sewered area) have increased 26.7 percent over the past 10 years (Figure 3-38), and
    - Great South Bay West (open water samples representing sewered area) have increased 23.7 percent over the past 10 years (**Figure 3-39**).



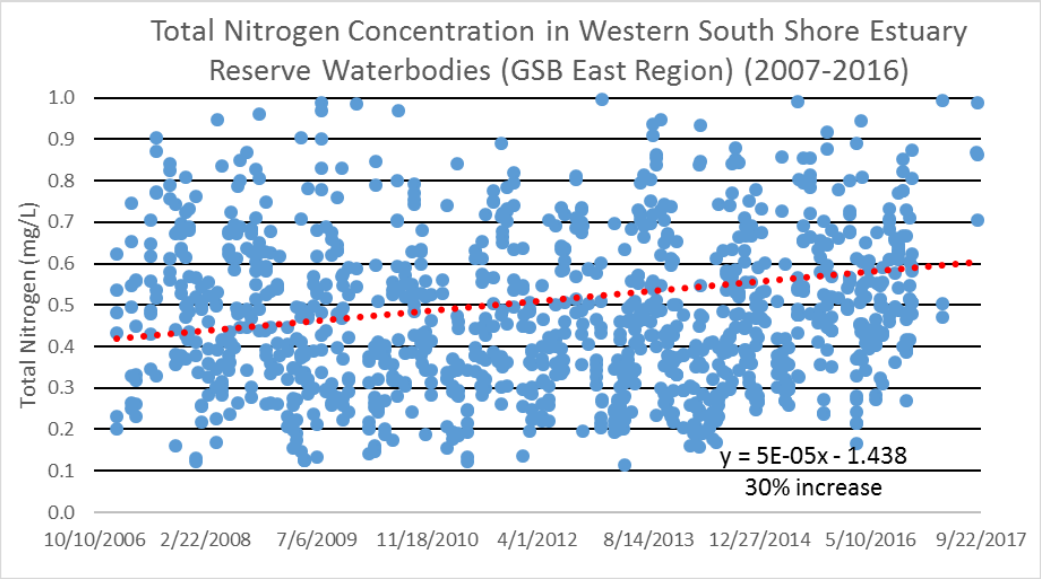

**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc.**

**Figure 3-35 Nitrogen Trends in Eastern South Shore Estuary Reserve from 2007 through 2016**



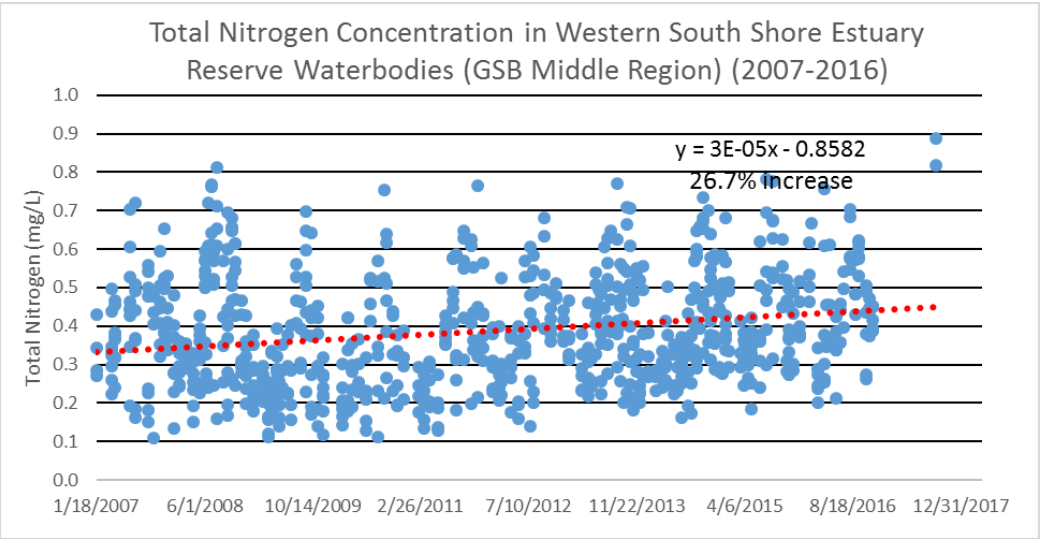

**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc.**

**Figure 3-36 Eastern/West South Shore Estuary Reserve Water Bodies from 2007 through 2016**



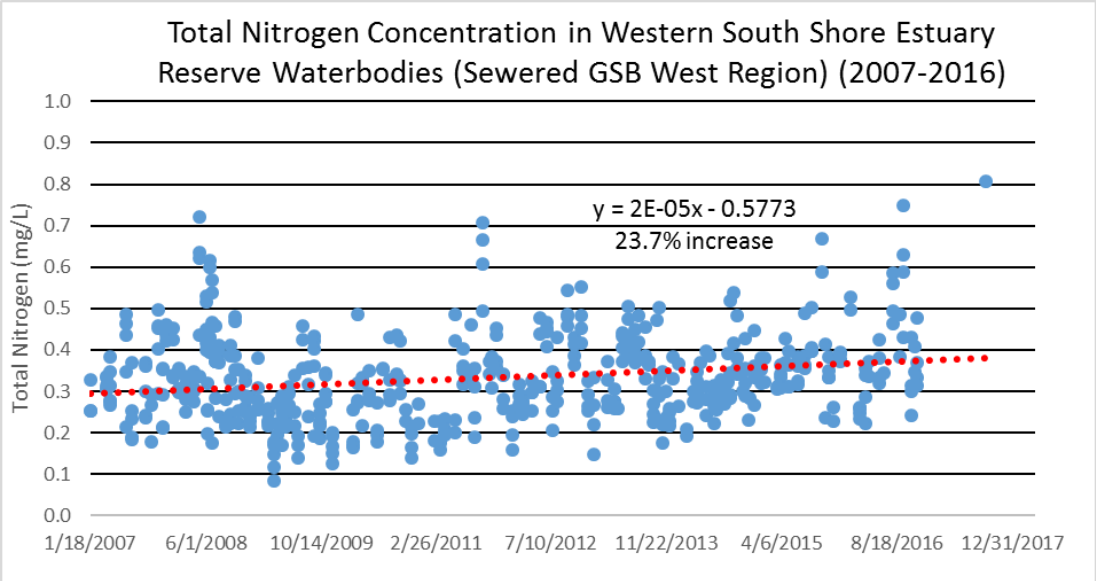

**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc.**

**Figure 3-37 Nitrogen Trends in Great South Bay East Water Bodies from 2007 through 2016**




**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc.**

**Figure 3-38 Nitrogen Trends in Great South Bay Middle Water Bodies from 2007 through 2016**

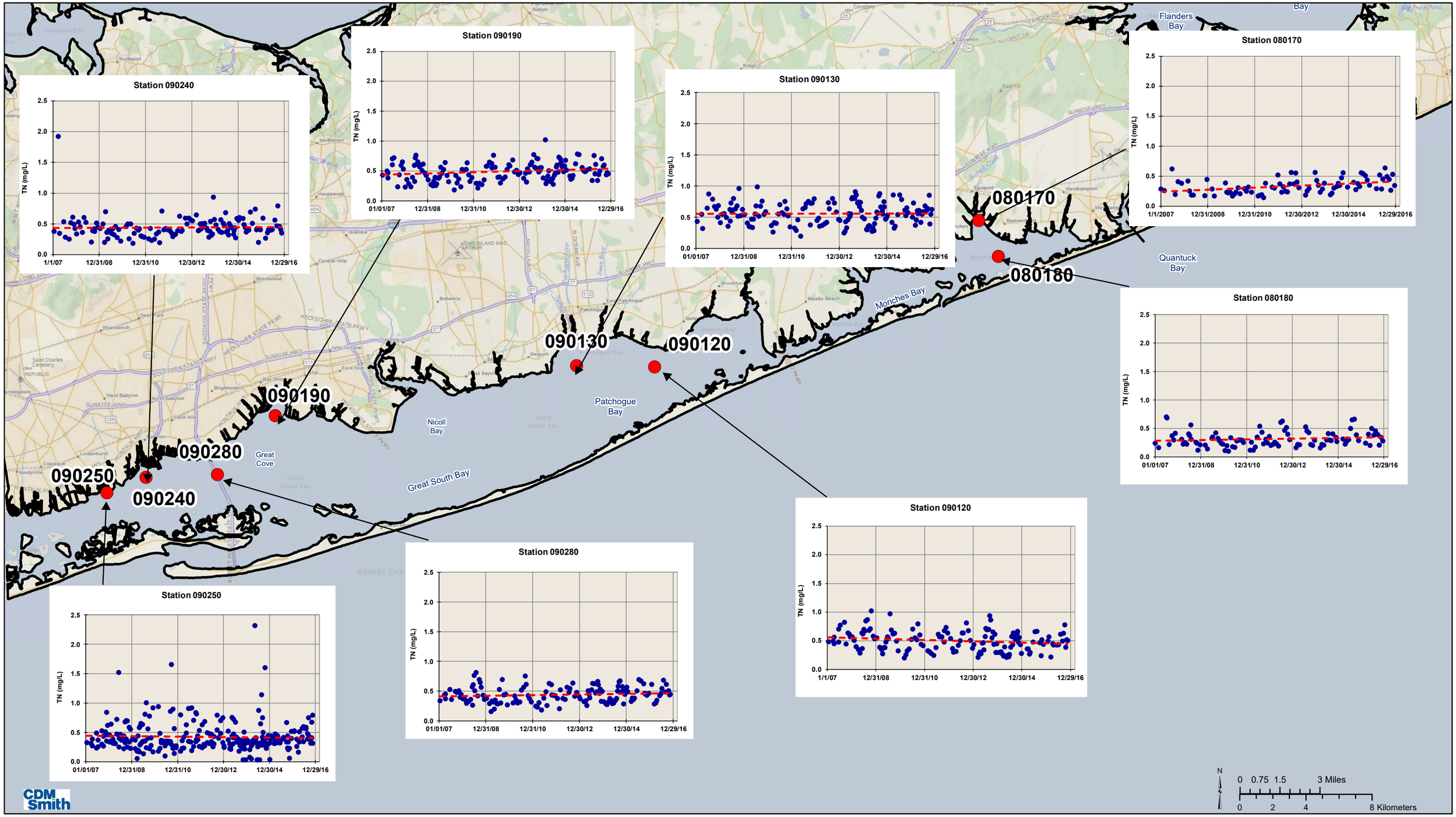



**Note: The dataset is illustrative of the available data during the referenced time period. The data noise is a result of multiple variables including the number of stations sampled, number of samples collected, changes in sampling procedures and analytical techniques, variations in tidal cycle and weather conditions, etc.**

**Figure 3-39 Nitrogen Trends in Great South Bay West (Sewered) Water Bodies from 2007 through 2016**

**Figure 3-40** shows trends in nitrogen concentrations at individual sampling locations throughout the SSER from 2007 through 2016. Nitrogen trends at stations within the SSER are variable with relatively constant or declining nitrogen levels at the westernmost stations downgradient of the SWSD, a decline in nitrogen concentrations at a Patchogue Bay station and gradually increasing concentrations over the past ten years at the easternmost stations. Nitrogen concentrations at several of the stations exhibit consistent seasonal variability of up to about 0.5 mg/L, with the lowest concentrations observed in the winter months and the highest annual levels observed later in the year during warmer weather.

**Figures 3-41**, **3-42** and **3-43** illustrate ammonia concentrations in three streams located within the Southwest Sewer District (SWSD) and discharging to Great South Bay, Santapogue Creek, Penataquit Creek and Champlin Creek, respectively. From west to east within the SWSD, the streams all show the beneficial result of sewering as ammonia levels began to decline circa 1980, shortly after the Bergen Point WWTP began to operate. Nitrogen in wastewater that previously discharged to groundwater via OSDS, discharged to streams and was conveyed to the Great South Bay was diverted to the Bergen Point WWTP which ultimately discharges treated effluent off-shore via an ocean outfall. The figures each show significant changes in pre-sewering and post-sewering ammonia concentrations, with the largest and western-most stream showing the most dramatic declines of over 2 mg/L.




# Total Nitrogen Concentrations & Trends in South Shore Estuary Sampling Stations, 2007 - 2016

Figure 3-40

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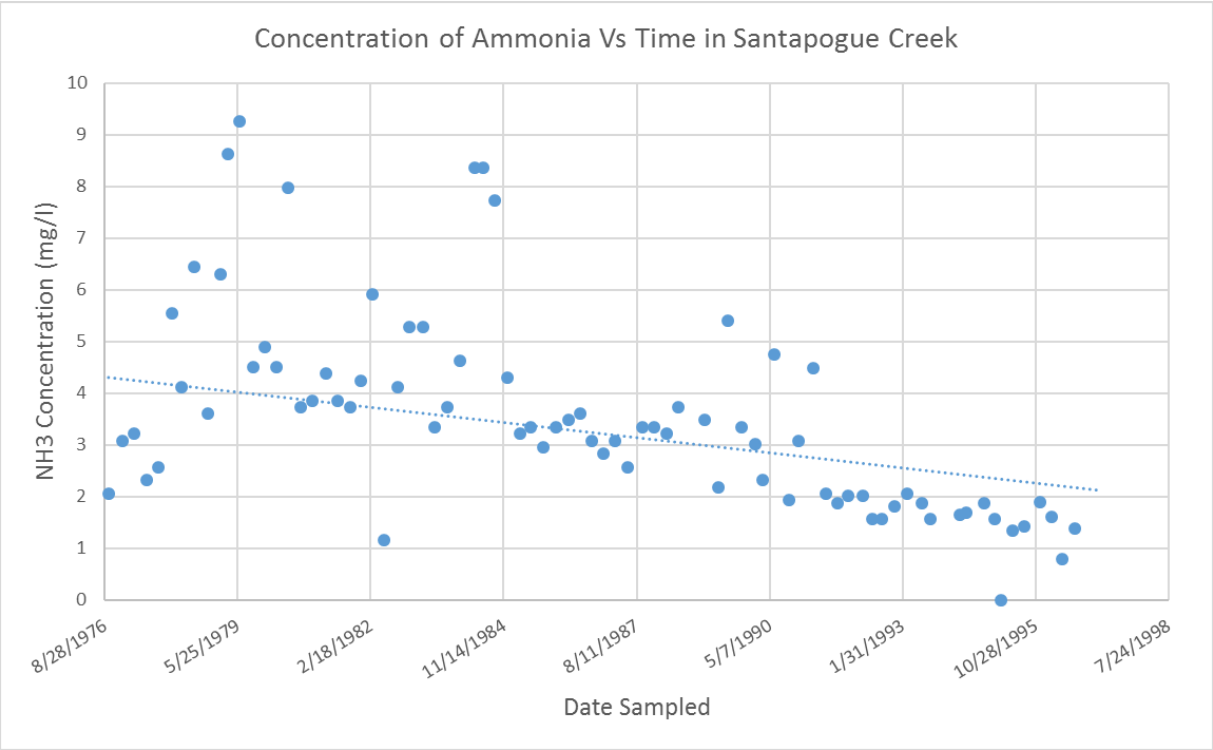


**Figure 3-41 Declining Ammonia Concentrations in Santapogue Creek**

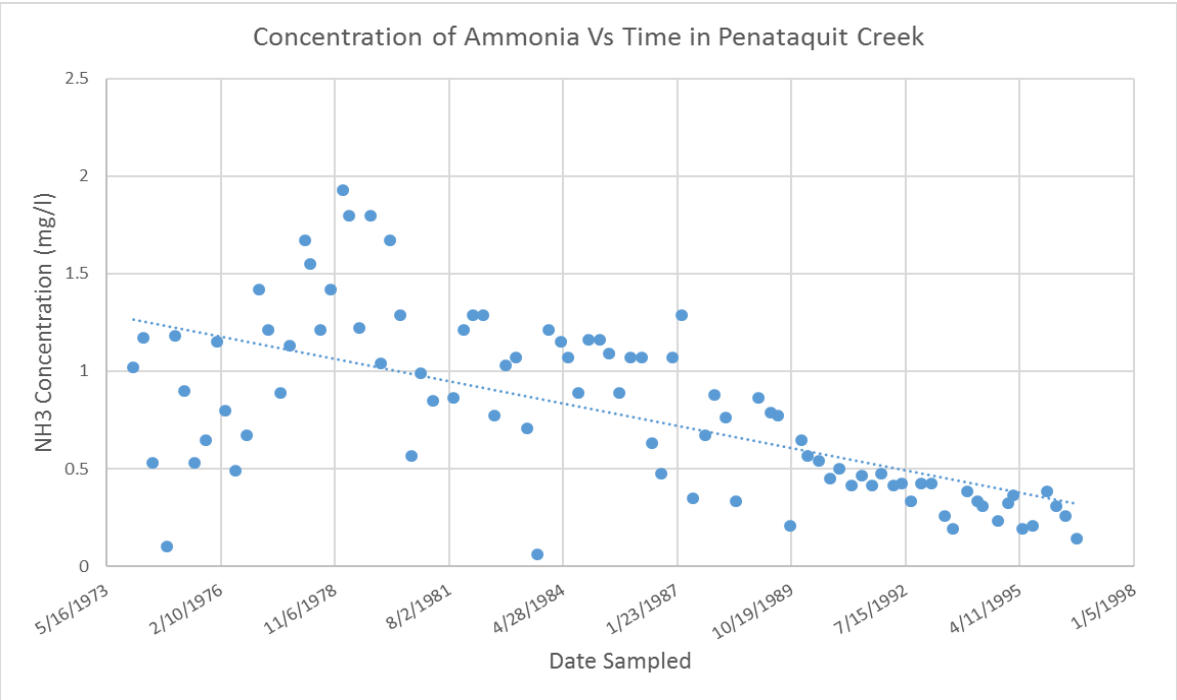


**Figure 3-42 Declining Ammonia Concentrations in Penataquit Creek**

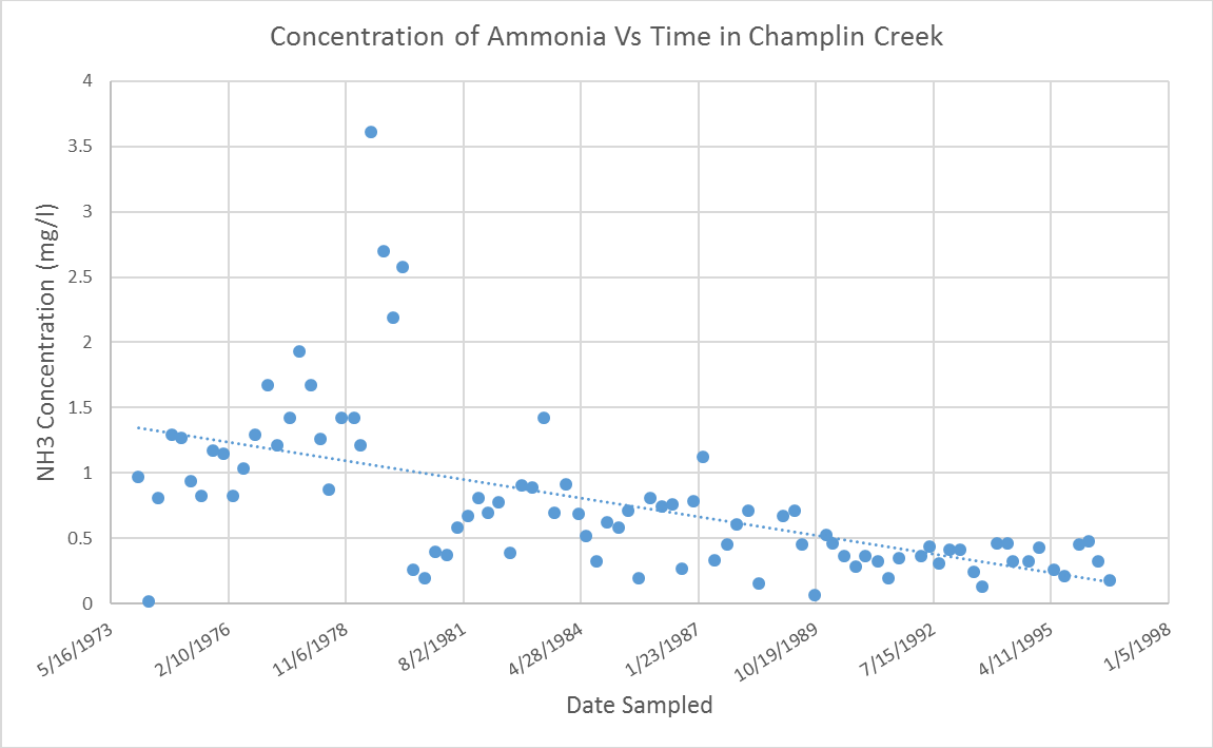


**Figure 3-43 Declining Ammonia Concentrations in Champlin Creek**

Additional information on the surface waters and located within the South Shore Estuary watershed may be found in Section 7 of the SWP and water body specific characterizations may be found in Appendix D of the SC SWP.

In summary, the management plans that are in place for the coastal waters bordering the County have identified many common issues and share management strategies. Nitrogen and pathogens were identified as the parameters with the greatest impacts in terms of limiting uses and stressing the living marine resources. Throughout most Suffolk County watersheds, nonpoint sources including on-site wastewater systems are the major contributors of nutrients and pathogens, and recommendations identified within each of the estuary programs focus on reducing nitrogen loading from sanitary wastewater and fertilization, as well as best management practices (BMPs) to improve stormwater quality, and open space preservation. In the Peconic Estuary watershed, the nitrogen load from fertilizer does approach the nitrogen loading from on-site wastewater systems as explained in Section 6 of the SC SWP.

### 3.2.2.3 Suffolk County Subwatersheds

The SC SWP identified 191 individual subwatersheds that were evaluated to establish initial priority rank for wastewater upgrades, initial load reduction goals, and initial recommendations for wastewater management. Because groundwater continues to provide the majority of County stream baseflow, and as the link between groundwater and surface water quality has been established, the County's groundwater models were used to delineate the land surface area contributing groundwater recharge to each of the individual subwatersheds and for the open waters of the Atlantic Ocean. Understanding the land use types within the groundwater

contributing areas to a stream can help to identify the sources of observed contamination, and to help guide identification and evaluation of management options developed to improve water quality. Existing discretization was added to the model grid in the area of the stream corridors, and the models were used to delineate groundwater contributing areas to each stream at time of travel intervals ranging from less than one year to 200 years. These travel time estimates consider advective movement only, and do not consider retardation, decay or other factors that could affect the migration of a specific contaminant.

The area contributing groundwater baseflow to surface waters is shown (along with the land surface area contributing recharge to supply wells) on **Figure 3-44**. The figure shows:

- The area where recharging precipitation travels from the water table to surface water discharge within two years in red,
- Areas where recharging precipitation travels from the water table to surface water discharge is between two and ten years in orange,
- Areas where recharging precipitation travels the travel time from the water table to surface water discharge is between ten and 25 years in yellow,
- Areas where recharging precipitation travels from the water table to surface water discharge is between 25 and 50 years in green,
- Areas where recharging precipitation travels from the water table to surface water discharge is between 50 and 100 years in light blue, and
- Areas where recharging precipitation travels from the water table to surface water discharge is between 100 and 200 years in dark blue.

The 191 discrete surface waters and their subwatersheds evaluated in the SC SWP were selected through guidance of the Wastewater Plan Advisory Committee using the NYSDEC PWL as a starting point. In some cases, the original PWL boundary condition and identification number remained consistent with NYSDEC's description while in other cases, the original PWL numbers were modified depending on whether the subwatershed was disaggregated from the larger water body or aggregated with an adjacent subwatershed. In addition, the administration boundaries defining the outer boundary of individual PWLs were adjusted in some cases. The subwatershed numbers referred to in the SC SWP are identified as SWP PWL numbers. Groundwater modeling was used to delineate the area contributing groundwater baseflow to each of these surface water bodies; together the groundwater contributing area and the surface water body itself are referred to as subwatersheds. The 191 subwatersheds were than evaluated for nitrogen loading and resulting water quality to establish priority areas for wastewater upgrades and to establish first-order nitrogen reduction requirements.

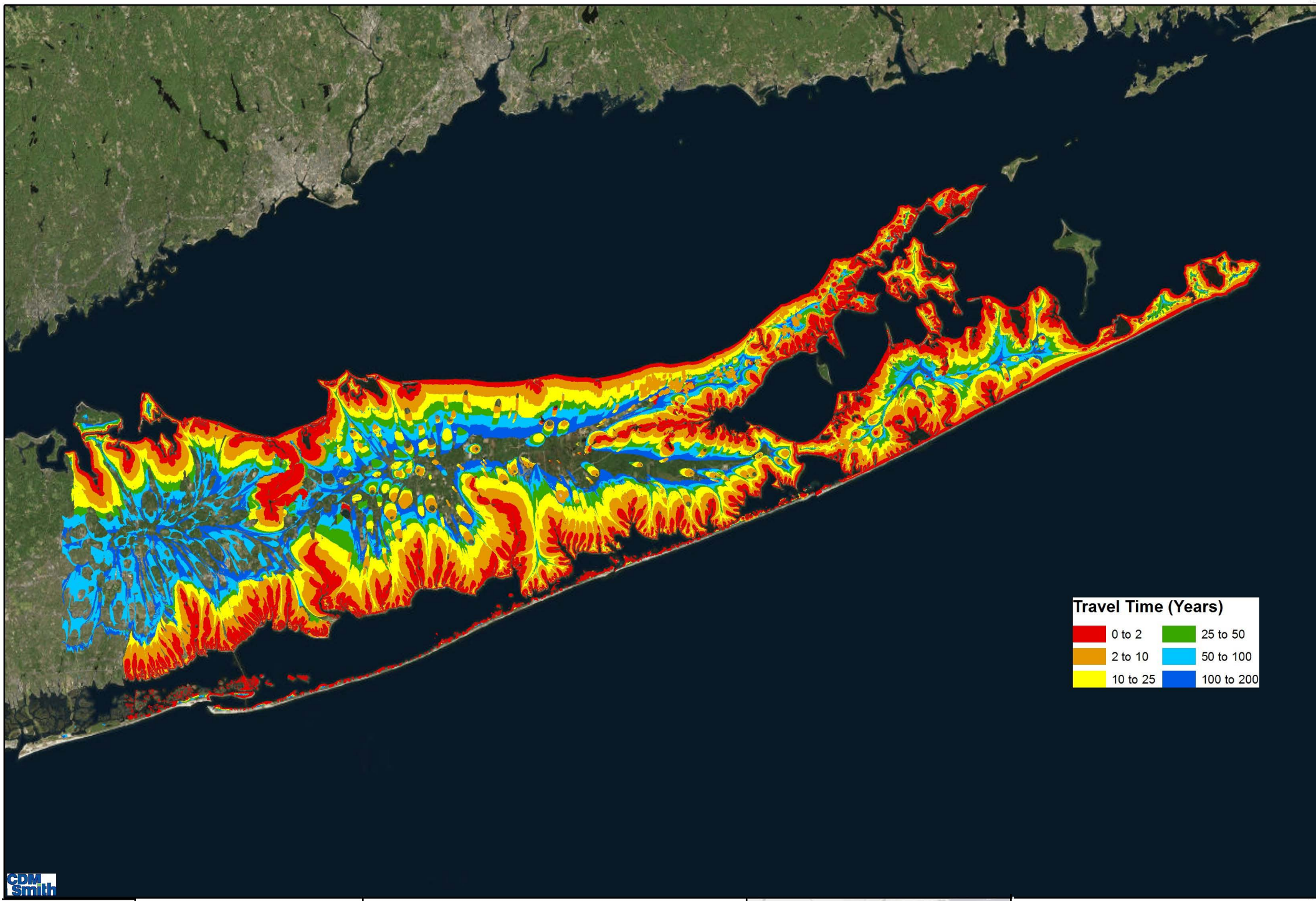


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Figure **3-44** Groundwater Contributing Areas to Surface Waters and Community Supply Wells Subwatersheds Wastewater Plan

The final list of the 191 subwatersheds that were simulated and evaluated as part of the SWP is included in **Tables 3-13, 3-14,** and **3-15** below. The area contributing groundwater baseflow to each, the land use within the groundwater contributing area, surface water sampling stations and water quality may be found in the SC SWP.

An example subwatershed delineation for Hallock/Long Beach Bay and Tidal Tributaries is shown by **Figure 3-45**. The figure shows that most of the area contributing groundwater baseflow to this water body travels from the water table through the shallow aquifer to discharge to the Bay in within two years as shown by the red shading. Subwatershed delineations for the remaining 190 subwatersheds may be found in Appendix D of the SC SWP.

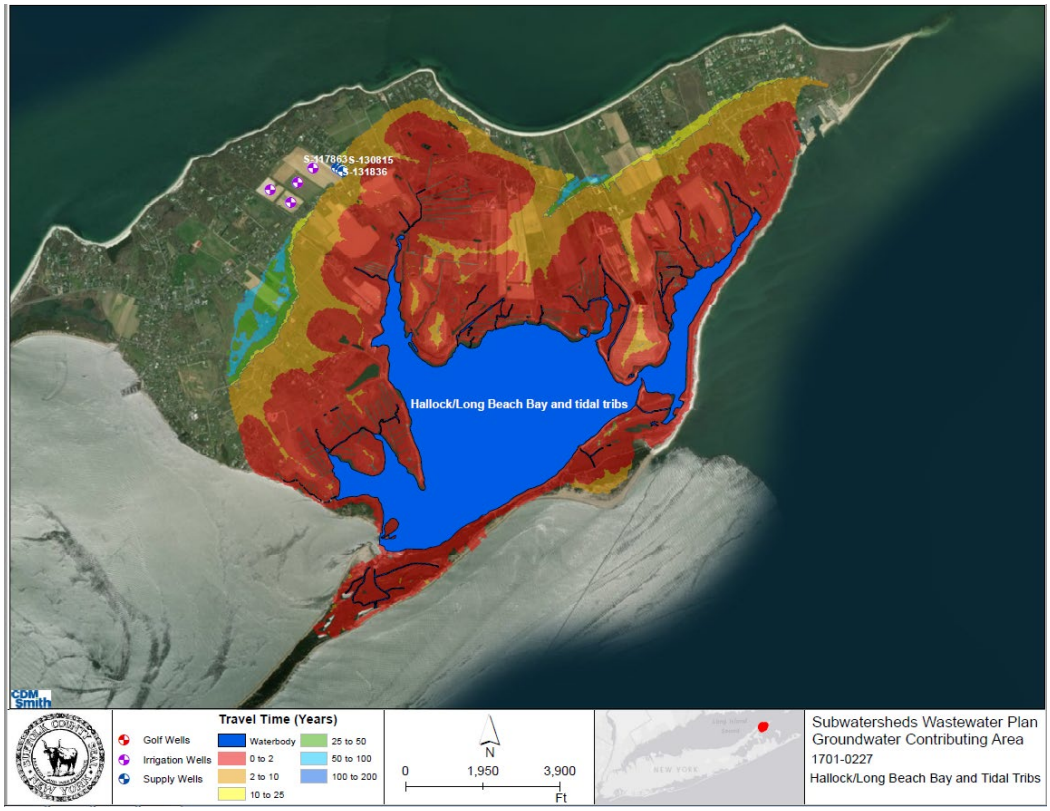


**Figure 3-45 Example Subwatershed Contributing Area for Hallock/Long Beach Bay and Tidal Tributaries**

Recognizing that fresh and marine systems may respond differently to nitrogen loading, SCDHS grouped the subwatersheds into three categories: marine, fresh and mixed water bodies. Of the 191 subwatersheds, 126 were identified as marine, 19 of them were characterized as fresh and 46 were characterized as mixed. Marine subwatersheds, fresh subwatersheds and those that SCDHS identified as mixed subwatersheds are listed on **Tables 3-12, 3-13** and **3-14** respectively.

**Table 3-13 Marine Water Bodies**

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Acabonack Harbor | 1701-0047 | Moriches Bay East | 1701-0305-rev+0306 |
| Bellport Bay | 1701-0320+0325 | Moriches Bay West | 1701-0038-rev |
| Block Island Sound | 1701-0278 | Mt Sinai Harbor and Tidal Tribs | 1702-0019 |
| Carmans River Lower, and Tribs | 1701-0321-rev | Mud and Senix Creeks | 1701-0312-MSC |
| Cedar Beach Creek and Tidal Tribs | 1701-0243 | Napeague Bay | 1701-0369 |
| Centerport Harbor | 1702-0229 | Napeague Harbor and Tidal Tribs | 1701-0166 |
| Coecles Harbor | 1701-0163 | Narrow Bay | 1701-0318+0319 |
| Cold Spring Harbor, and Tidal Tribs | 1702-0018+0156 | Nicoll Bay | 1701-0375+0333 |
| Cold Spring Pond and Tribs | 1701-0127 | Nissequogue River Lower/Sunken Meadow Creek | 1702-0025+0234+0232 |
| Connetquot River, Lower, and Tribs | 1701-0337 | North Sea Harbor and Tribs | 1701-0037 |
| Conscience Bay and Tidal Tribs | 1702-0091 | Northport Bay | 1702-0256 |
| Corey Creek and Tidal Tribs | 1701-0244 | Northport Harbor | 1702-0230 |
| Cutchogue Harbor | 1701-0045-CH | Northwest Creek and Tidal Tribs | 1701-0046 |
| Cutchogue Harbor - East Creek | 1701-0045-EC | Northwest Harbor | 1701-0368+0275+0276 |
| Cutchogue Harbor - Mud Creek | 1701-0045-MC | Noyack Bay | 1701-0167-rev |
| Cutchogue Harbor - Wickham Creek | 1701-0045-WC | Noyack Creek and Tidal Tribs | 1701-0237 |
| Dam Pond | 1701-0228 | Ogden Pond | 1701-0302 |
| Deep Hole Creek | 1701-0247-DHC+0249 | Old Fort Pond | 1701-0295-OFP |
| Dering Harbor | 1701-0050+ | Orchard Neck Creek | 1701-0312-ONC |
| Dickerson Creek | 1701-0242-DC | Orient Harbor and minor Tidal Tribs | 1701-0168 |
| Duck Island Harbor | 1702-0262 | Patchogue Bay | 1701-0326 |
| Far Pond | 1701-0295-FP | Pattersquash Creek | 1701-0319-PC |
| Fish Cove | 1701-0037-FC | Penniman Creek and Tidal Tribs | 1701-0300 |
| Flanders Bay, East/Center, and Tribs | 1701-0030+0255+0273 | Penny Pond, Wells, Smith, and Gilbert Creeks | 1701-0298-rev+0033 |
| Flanders Bay, West/Lower Sawmill Creek | 1701-0254+0257 | Phillips Creek, Lower, and Tidal Tribs | 1701-0299 |
| Flax Pond | 1702-0240 | Pipes Cove | 1701-0366 |
| Forge River and Tidal Tribs | 1701-0316-FR+0312+0026 | Port Jefferson Harbor, North, and Tribs | 1702-0015 |

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Forge River Cove and Tidal Tribs | 1701-0316-FRC+0312 | Port Jefferson Harbor, South, and Tribs | 1702-0241 |
| Fort Pond Bay | 1701-0370 | Quantuck Bay | 1701-0042+0303 |
| Fresh Pond | 1701-0279 | Quantuck Canal/Moneybogue Bay | 1701-0371 |
| Gardiners Bay and minor Tidal Tribs | 1701-0164 | Quogue Canal | 1701-0301 |
| Goldsmith Inlet | 1702-0026 | Red Creek Pond and Tidal Tribs | 1701-0250 |
| Goose Creek | 1701-0236 | Reeves Bay and Tidal Tribs | 1701-0272-RB |
| Goose Neck Creek | 1701-0272-GNC | Richmond Creek and Tidal Tribs | 1701-0245 |
| Grand Canal | 1701-0337-GC | Sag Harbor | 1701-0035-SH+0239 |
| Great Cove | 1701-0376+0338 | Sag Harbor Cove and Tribs | 1701-0035-SHC |
| Great Peconic Bay and minor coves | 1701-0165+0247+0249+0251 | Scallop Pond | 1701-0354 |
| Great South Bay, East | 1701-0039-rev+0333 | Seatuck Cove and Tidal Tribs | 1701-0309-SC+0306+0311 |
| Great South Bay, Middle | 1701-0040-rev | Sebonac Cr/Bullhead Bay and Tidal Tribs | 1701-0051 |
| Great South Bay, West | 1701-0173+0372 | Setauket Harbor | 1702-0242 |
| Gull Pond | 1701-0231 | Sheepan Creek | 1701-0319-SC |
| Hallock/Long Beach Bay and Tidal Tribs | 1701-0227 | Shelter Island Sound, North, and Tribs | 1701-0170 |
| Harts Cove | 1701-0309-HC | Shelter Island Sound, South, and Tribs | 1701-0365-rev+0240 |
| Hashamomuck Pond/Long Creek and Budds Pond | 1701-0162+0234 | Shinnecock Bay - Bennet Cove (Cormorant Cove) | 1701-0033-BC+0252+0296 |
| Heady and Taylor Creeks and Tribs | 1701-0294 | Shinnecock Bay Central | 1701-0033-C |
| Hog Creek and Tidal Tribs | 1701-0277 | Shinnecock Bay East | 1701-0033-E |
| Howell's Creek | 1701-0327-HC | Shinnecock Bay West | 1701-0033-W |
| Huntington Bay | 1702-0014 | Smithtown Bay | 1702-0023+0233+0234 |
| Huntington Harbor | 1702-0228+0231 | Southold Bay | 1701-0044 |
| James Creek | 1701-0247-JC+0249 | Spring Pond | 1701-0230 |
| Lake Montauk | 1701-0031 | Stirling Creek and Basin | 1701-0049 |
| Little Peconic Bay | 1701-0126+0172 | Stony Brook Harbor and West Meadow Creek | 1702-0047+0239 |
| Little Sebonac Creek | 1701-0253 | Terry's Creek and Tribs | 1701-0256-TC |

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Lloyd Harbor | 1702-0227 | Three Mile Harbor | 1701-0036 |
| Long Island Sound, Suffolk Co, Central | 1702-0265 | Tiana Bay and Tidal Tribs | 1701-0112 |
| Long Island Sound, Suffolk County, East | 1702-0266 | Town/Jockey Creeks and Tidal Tribs | 1701-0235 |
| Long Island Sound, Suffolk County, West | 1702-0098+0232 | Tuthill Cove | 1701-0309-TC |
| Mattituck Inlet/Cr, Low, and Tidal Tribs | 1702-0020+0245 | Unchachogue/Johns Neck Creeks | 1701-0319-UC |
| Meetinghouse Creek and Tribs | 1701-0256-MC | Weesuck Creek and Tidal Tribs | 1701-0111-rev |
| Menantic Creek | 1701-0242-MC | West Creek and Tidal Tribs | 1701-0246 |
| Middle Pond | 1701-0295-MP | West Neck Bay and Creek | 1701-0242-WB |
| Mill Creek and Tidal Tribs | 1701-0238+ | West Neck Harbor | 1701-0132-rev |
| Mill Pond | 1702-0261 | Wooley Pond | 1701-0048+ |

**Table 3-14 Fresh Water Bodies**

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Belmont Lake | 1701-0021+0089 | Ligonee Brook and Tribs | 1701-0352+0353 |
| Big/Little Fresh Ponds | 1701-0125 | Little Long, Long, and Shorts Pond | 1701-0291 |
| Carmans River Upper, and Tribs | 1701-0102-rev+0322+0323 | Mattituck (Marratooka) Pond | 1701-0129 |
| Connetquot River, Upper, and Tribs | 1701-0095+0339 | Mill Pond and Sevens Ponds | 1701-0113+0289 |
| Deep Pond | 1701-0270 | Nissequogue River Upper, and Tribs | 1702-0235 +0013+0238+0237+0236 |
| Fresh Pond Creek and Tribs | 1702-0244 | Peconic River Middle, and Tribs | 1701-0261+0262+0269 |
| Kellis Pond | 1701-0290 | Peconic River Upper, and Tribs | 1701-0108+0265+0266+0269 |
| Lake Panamoka (Long Pond) | 1701-0134 | Sans Souci Lakes | 1701-0336+0335 |
| Lake Ronkonkoma | 1701-0020 | Wildwood Lake (Great Pond) | 1701-0264 |
| Laurel Pond | 1701-0128 | | |

**Table 3-15 Mixed Water Bodies**

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Abets Creek | 1701-0327-AC | Mecox Bay and Tribs | 1701-0034+0289+0292 |
| Agawam Lake | 1701-0117 | Mud Creek, Robinson Pond, and Tidal Tribs | 1701-0101+0331+0327 |
| Amityville Creek | 1701-0087+0372 | Neguntatogue Creek | 1701-0088+0372 |
| Aspatuck Creek and River | 1701-0303-AC | Old Town Pond | 1701-0118 |

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Awixa Creek | 1701-0093+0338 | Oyster Pond/Lake Munchogue | 1701-0169 |
| Beaverdam Pond | 1701-0307+0306 | Pardees, Orowoc Lakes, Creek, and Tidal Tribs | 1701-0094+0341+0338 |
| Beaverdam | 1701-0324+0104 | Patchogue River | 1701-0099+0018+0055+0327 |
| Big Reed Pond | 1701-0281 | Peconic River, Lower, and Tidal Tribs | 1701-0259+0263 |
| Brightwaters Canal, Nosreka, Mirror, and Cascade Lakes | 1701-0338-BC+0342 | Penataquit Creek | 1701-0092+0338 |
| Brown Creek | 1701-0097+0333 | Quantuck Creek and Old Ice Pond | 1701-0303-QC+0304 |
| Brushes Creek | 1701-0247-BC+0249 | Sagaponack Pond and Poxabogue Pond | 1701-0146+0286 |
| Carlls River | 1701-0089+0346+0345+0344+0372 | Sampawams Creek | 1701-0090+0372+0343 |
| Champlin Creek | 1701-0019+0338+0340 | Santapogue Creek | 1701-0016+0372 |
| Corey Lake and Creek, and Tribs | 1701-0329+0327-CL | SI Sound Trib/Moores Drain, Lower, Tribs | 1701-0232+0233 |
| Crab Meadow Creek | 1702-0232-CMC+0234 | Speonk River | 1701-0306-SR |
| Dunton Lake, Upper, and Tribs and Hedges Creek | 1701-0330-HC+0327 | Stillman Creek | 1701-0329-SC |
| Fort Pond | 1701-0122 | Swan River, Swan Lake, and Tidal Tribs | 1701-0100+0332+0329+0327 |
| Georgica Pond | 1701-0145 | Terrell River | 1701-0103+0313+0314 |
| Green Creek, Upper, and Tribs | 1701-0096+0333 | Tuthills Creek | 1701-0098+0327+0329+0334 |
| Halsey Neck Pond | 1701-0355 | Wading River | 1702-0099+0243 |
| Hook Pond | 1701-0131 | Wainscott Pond/Fairfield Pond | 1701-0144 |
| Lawrence Creek, O-co-nee and Lawrence Lakes | 1701-0338-LC | Wickapogue Pond | 1701-0119 |
| Marion Lake | 1701-0229 | Willets Creek | 1701-0091+0175+0372 |

The 191 subwatersheds include 27 subwatersheds contributing to Long Island Sound, 76 contributing to the Peconic Estuary, 74 contributing to the SSER, and 14 other fresh or Coastal Ponds. Five of the 14 fresh water ponds were located within the Peconic Estuary or SSER watershed.

### 3.2.2.4 Subwatershed Priority Ranking for Nitrogen Load Reduction

Each of the 191 subwatersheds identified for this project was characterized to assess its priority for wastewater management upgrades based on:

- Nitrogen load,

- Receiving water residence/flushing time and
- Receiving water body quality.

Calculation of nitrogen loads and receiving water residence times are explained in detail in the SC SWP (Appendix B). The water quality database used to characterize the surface water bodies and the water quality parameters used to prioritize the subwatersheds for nitrogen load reductions.

*Evaluation Criteria*

The subwatersheds were ranked with respect to the priority for wastewater upgrades and nitrogen load reduction based upon a variety of criteria. The evaluation used a decision support tool to help guide the process of comparing each subwatershed to the other subwatersheds in the County to establish priorities for nitrogen reduction. The criteria listed in **Table 3-16** were used to characterize the subwatersheds for ranking purposes, as described in detail in the SC SWP (Appendix B).

**Table 3-16 Evaluation Criteria Selected for Priority Ranking**

| Marine | Fresh | Criteria Characterization Approach |
|---|---|---|
| Predicted Unit Nitrogen Load | Estimated Unit Nitrogen Load | 25/50 Year Onsite WW N-Load - (Aggregated lbs.-N/aggregated-$m^3$/year)[1] (load selection based on sensitivity variation combination of percentage of baseflows by contributing area and historical population trends in specific geographic areas) |
| Residence Time | Residence Time | 10% flushing time |
| Total Nitrogen Concentration | Total Nitrogen Concentration | 90$^{th}$ Percentile of subwatershed specific TN (mg/L) |
| Total Phosphorus Concentration | Total Phosphorus Concentration | 90$^{th}$ Percentile of subwatershed specific TP (mg/L) |
| Dissolved Oxygen | Dissolved Oxygen | 10$^{th}$ Percentile of subwatershed specific D.O. (mg/L) |
| HAB – Human Health | HAB – Human Health | Count of years in which Human Health HAB occurred from 2007-2017 |
| HAB - Environmental | HAB - Environmental | Count of years in which Environmental HAB occurred from 2007-2017 |
| Total Chlorophyll-A | Total Chlorophyll-A | 90$^{th}$ Percentile of subwatershed specific T-Chl-a (μg/L) |
| Clarity | Clarity | Average of subwatershed specific Secchi Depth (ft) |
| | Plant and/or Macroalgae Overgrowth | The presence of aquatic invasive species and algal/plant growth was identified from the NYSDEC PWL assessment fact sheets |

In addition to the predicted unit nitrogen load and residence time, water quality data (total nitrogen concentration, total phosphorus concentration, dissolved oxygen concentration), and measures of ecological responses to water quality were characterized. Ecological responses included chlorophyll-a, water clarity as described by secchi depth and the presence or absence of HABs with primarily health impacts and HABs with primarily environmental impacts, and plant and macroalgae overgrowth. HABs occur when specific species of algae or phytoplankton grow excessively and produce toxins or cause other harmful effects on people, fish, shellfish, marine mammals or birds. Suffolk County's Harmful Algal Bloom Action Plan (2017) reports that while

HABs have been documented in Suffolk County waters since at least the mid-1930s, their frequency and diversity appear to be increasing. The increased HABs have disrupted local coastal food webs and caused aesthetic impairments. Some HABs produce toxins that pose health risks to humans and/or animals.

The subwatersheds were divided into two groups for separate ranking using the decision support tool, recognizing that marine waters may respond differently to nitrogen loading than fresh waters. One matrix was used to evaluate the marine/mixed subwatersheds and one to evaluate the fresh/mixed subwatersheds. The mixed subwatersheds were ranked using both the marine criteria and criteria weights and the fresh criteria and criteria weights. Watersheds were ranked, and then grouped into quartiles, as follows:

- Priority Rank 1 = generally moderate to severe water quality impacts, highest nitrogen loads and/or poorly flushed.
- Priority Rank 2 = generally minor to moderate water quality impacts and may have moderate to high nitrogen loads and/or be poorly flushed.
- Priority Rank 3 = generally minor water quality impacts, minor to moderate nitrogen loads, and/or be poorly flushed; and,
- Priority Rank 4 = generally no known or minor water quality impacts, low nitrogen loads, and/or well flushed.

The evaluation criteria were weighted based on expected importance, based on input from a panel of technical experts convened by Suffolk County. Further information on the subwatershed evaluation and ranking process may be found in Section 2.1.7 of the SC SWP.

### 3.2.2.5 Subwatershed Priority Ranks

The final subwatershed rankings based upon the final subwatershed characterizations, weighting criteria, and the updates based on the methodology described in the SC SWP are shown on **Figure 3-46.** The subwatersheds shown in red are Priority 1 for nitrogen load reduction, those in yellow are Priority 2, those in green are Priority 3 and those shown in blue are Priority 4 for nitrogen load reduction. Areas already served by sanitary wastewater collection and treatment systems are delineated in white.

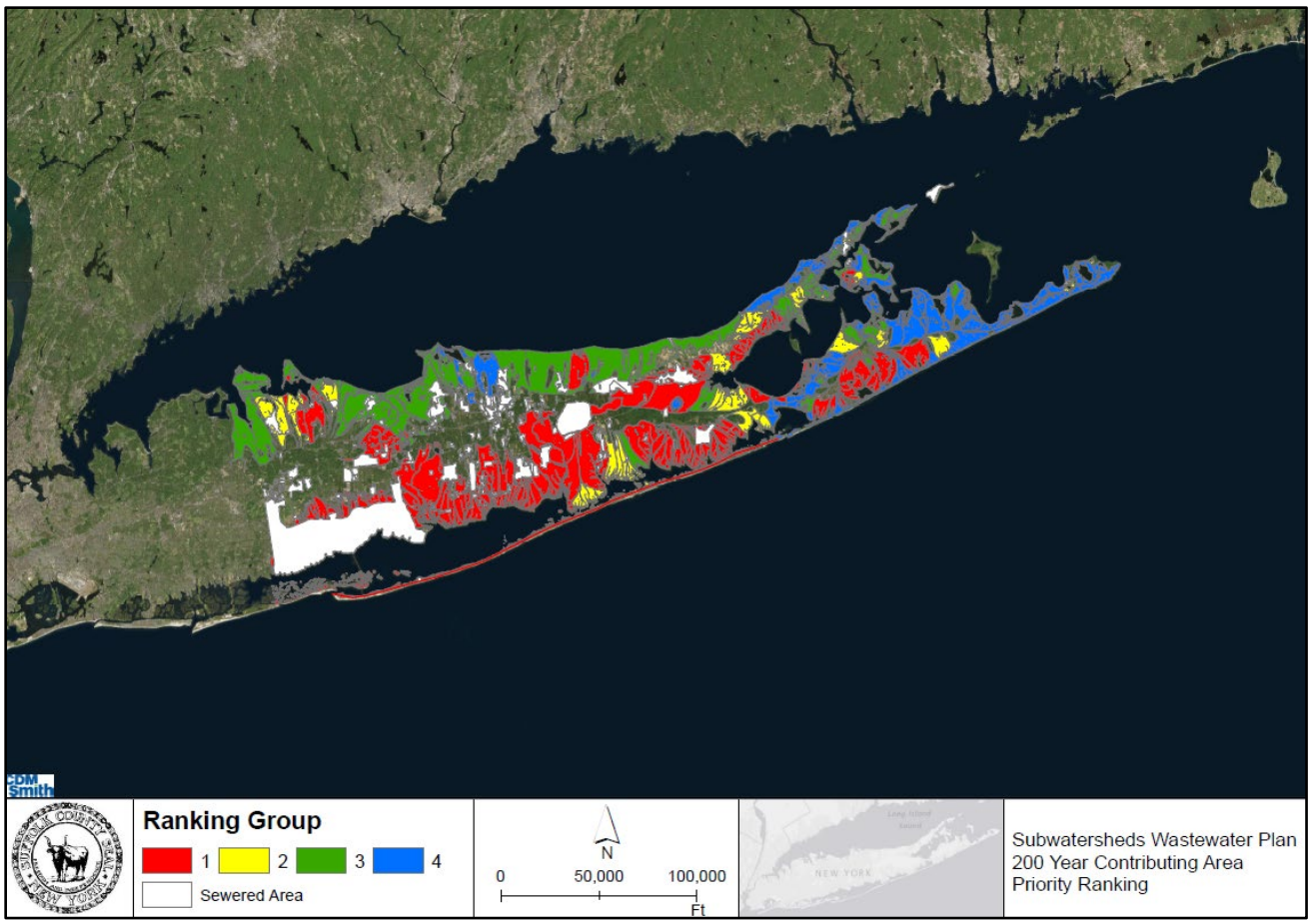


**Figure 3-46 Subwatershed Priorities for Nitrogen Load Reduction**

**Table 3-17** lists each subwatershed within the four categories, in alphabetical order. Note: Block Island Sound residence time was not modeled and it was not ranked. Nitrogen reductions in the upstream subwatersheds are expected to result in improved water quality.

**Table 3-17 Subwatershed Priorities for Nitrogen Load Reduction**

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| Block Island Sound | 1701-0278 | ----- |
| **Priority Rank 1** | | |
| Abets Creek | 1701-0327-AC | 1 |
| Agawam Lake | 1701-0117 | 1 |
| Amityville Creek | 1701-0087+0372 | 1 |
| Aspatuck Creek and River | 1701-0303-AC | 1 |
| Awixa Creek | 1701-0093+0338 | 1 |
| Beaverdam Creek | 1701-0324+0104 | 1 |
| Beaverdam Pond | 1701-0307+0306 | 1 |
| Bellport Bay | 1701-0320+0325 | 1 |
| Belmont Lake | 1701-0021+0089 | 1 |
| Brightwaters Canal | 1701-0338-BC+0342 | 1 |

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| Brown Creek | 1701-0097+0333 | 1 |
| Brushes Creek | 1701-0247-BC+0249 | 1 |
| Carlls River | 1701-0089+0346+0345+0344+0372 | 1 |
| Carmans River Lower, and Tribs | 1701-0321-rev | 1 |
| Carmans River Upper, and Tribs | 1701-0102-rev+0322+0323 | 1 |
| Champlin Creek | 1701-0019+0338+0340 | 1 |
| Connetquot River, Lower, and Tribs | 1701-0337 | 1 |
| Connetquot River, Upper, and Tribs | 1701-0095+0339 | 1 |
| Corey Lake and Creek, and Tribs | 1701-0329+0327-CL | 1 |
| Deep Hole Creek | 1701-0247-DHC+0249 | 1 |
| Dunton Lake, Upper, and Tribs | 1701-0330-HC+0327 | 1 |
| Flanders Bay, West/Lower Sawmill Creek | 1701-0254+0257 | 1 |
| Forge River and Tidal Tribs | 1701-0316-FR+0312+0026 | 1 |
| Georgica Pond | 1701-0145 | 1 |
| Goldsmith Inlet (with inlet closed) | 1702-0026 | 3 |
| Grand Canal | 1701-0337-GC | 1 |
| Great Cove | 1701-0376+0338 | 1 |
| Great Peconic Bay and minor coves | 1701-0165+0247+0249+0251 | 1 |
| Great South Bay, East | 1701-0039-rev+0333 | 1 |
| Great South Bay, Middle | 1701-0040-rev | 1 |
| Great South Bay, West | 1701-0173+0372 | 1 |
| Green Creek, Upper, and Tribs | 1701-0096+0333 | 1 |
| Halsey Neck Pond | 1701-0355 | 1 |
| Heady and Taylor Creeks and Tribs | 1701-0294 | 1 |
| Howell's Creek | 1701-0327-HC | 1 |
| James Creek | 1701-0247-JC+0249 | 1 |
| Kellis Pond | 1701-0290 | 1 |
| Lake Ronkonkoma | 1701-0020 | 1 |
| Lawrence Creek/Lakes, O-co-nee | 1701-0338-LC | 1 |
| Mattituck (Marratooka) Pond | 1701-0129 | 1 |
| Mecox Bay and Tribs | 1701-0034+0289+0292 | 1 |
| Meetinghouse Creek and Tribs | 1701-0256-MC | 1 |
| Mill Pond | 1702-0261 | 1 |
| Mill Pond and Sevens Ponds | 1701-0113+0289 | 1 |
| Moriches Bay East | 1701-0305-rev+0306 | 1 |
| Mud Creek, Robinson Pond, and Tribs | 1701-0101+0331+0327 | 1 |
| Neguntatogue Creek | 1701-0088+0372 | 1 |
| Nicoll Bay | 1701-0375+0333 | 1 |
| Nissequogue River Upper | 1702-0235+0013+0238+0237+0236 | 1 |
| Northport Bay | 1702-0256 | 1 |
| Northport Harbor | 1702-0230 | 1 |
| Ogden Pond | 1701-0302 | 1 |

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| Old Town Pond | 1701-0118 | 1 |
| Pardees, Orowoc Lakes, Creek, & Tribs | 1701-0094+0341+0338 | 1 |
| Patchogue Bay | 1701-0326 | 1 |
| Patchogue River | 1701-0099+0018+0055+0327 | 1 |
| Peconic River Middle, and Tribs | 1701-0261+0262+0269 | 1 |
| Peconic River Upper, and Tribs | 1701-0108+0265+0266+0269 | 1 |
| Peconic River, Lower, and Tidal Tribs | 1701-0259+0263 | 1 |
| Penataquit Creek | 1701-0092+0338 | 1 |
| Penniman Creek and Tidal Tribs | 1701-0300 | 1 |
| Phillips Creek, Lower, and Tidal Tribs | 1701-0299 | 1 |
| Quantuck Bay | 1701-0042+0303 | 1 |
| Quantuck Canal/Moneybogue Bay | 1701-0371 | 1 |
| Quantuck Creek and Old Ice Pond | 1701-0303-QC+0304 | 1 |
| Quogue Canal | 1701-0301 | 1 |
| Red Creek Pond and Tidal Tribs | 1701-0250 | 1 |
| Sagaponack Pond | 1701-0146+0286 | 1 |
| Sampawams Creek | 1701-0090+0372+0343 | 1 |
| Sans Souci Lakes | 1701-0336+0335 | 1 |
| Santapogue Creek | 1701-0016+0372 | 1 |
| Scallop Pond | 1701-0354 | 1 |
| Seatuck Cove and Tidal Tribs | 1701-0309-SC+0306+0311 | 1 |
| Shinnecock Bay West | 1701-0033-W | 1 |
| Speonk River | 1701-0306-SR | 1 |
| Stillman Creek | 1701-0329-SC | 1 |
| Swan River, Swan Lake, and Tidal Tribs | 1701-0100+0332+0329+0327 | 1 |
| Terry's Creek and Tribs | 1701-0256-TC | 1 |
| Tuthills Creek | 1701-0098+0327+0329+0334 | 1 |
| Wading River | 1702-0099+0243 | 1 |
| Wainscott Pond/Fairfield Pond | 1701-0144 | 1 |
| Weesuck Creek and Tidal Tribs | 1701-0111-rev | 1 |
| West Creek and Tidal Tribs | 1701-0246 | 1 |
| West Neck Bay and Creek | 1701-0242-WB | 1 |
| Wickapogue Pond | 1701-0119 | 1 |
| Willets Creek | 1701-0091+0175+0372 | 1 |
| **Priority Rank 2** | | |
| Big Reed Pond | 1701-0281 | 2 |
| Centerport Harbor | 1702-0229 | 2 |
| Crab Meadow Creek | 1702-0232-CMC+0234 | 2 |
| Flanders Bay, East/Center, and Tribs | 1701-0030+0255+0273 | 2 |
| Forge River Cove and Tidal Tribs | 1701-0316-FRC+0312 | 2 |
| Fort Pond | 1701-0122 | 2 |
| Goose Neck Creek | 1701-0272-GNC | 2 |

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| Hook Pond | 1701-0131 | 2 |
| Huntington Bay | 1702-0014 | 2 |
| Huntington Harbor | 1702-0228+0231 | 2 |
| Laurel Pond | 1701-0128 | 2 |
| Ligonee Brook and Tribs | 1701-0352+0353 | 2 |
| Little Peconic Bay | 1701-0126+0172 | 2 |
| Mattituck Inlet/Cr, Low, and Tidal Tribs | 1702-0020+0245 | 2 |
| Menantic Creek | 1701-0242-MC | 2 |
| Moriches Bay West | 1701-0038-rev | 2 |
| Mud and Senix Creeks | 1701-0312-MSC | 2 |
| Narrow Bay | 1701-0318+0319 | 2 |
| Orchard Neck Creek | 1701-0312-ONC | 2 |
| Pattersquash Creek | 1701-0319-PC | 2 |
| Penny Pond, Wells, Smith, and Gilbert Creeks | 1701-0298-rev+0033 | 2 |
| Richmond Creek and Tidal Tribs | 1701-0245 | 2 |
| Sheepen Creek | 1701-0319-SC | 2 |
| Shinnecock Bay Central | 1701-0033-C | 2 |
| Stirling Creek and Basin | 1701-0049 | 2 |
| Terrell River | 1701-0103+0313+0314 | 2 |
| Tiana Bay and Tidal Tribs | 1701-0112 | 2 |
| Tuthill Cove | 1701-0309-TC | 2 |
| Unchachogue/Johns Neck Creeks | 1701-0319-UC | 2 |
| **Priority Rank 3** | | |
| Big/Little Fresh Ponds | 1701-0125 | 3 |
| Cedar Beach Creek and Tidal Tribs | 1701-0243 | 3 |
| Coecles Harbor | 1701-0163 | 3 |
| Cold Spring Harbor, and Tidal Tribs | 1702-0018+0156 | 3 |
| Conscience Bay and Tidal Tribs | 1702-0091 | 3 |
| Corey Creek and Tidal Tribs | 1701-0244 | 3 |
| Cutchogue Harbor | 1701-0045-CH | 3 |
| Cutchogue Harbor - East Creek | 1701-0045-EC | 3 |
| Cutchogue Harbor - Mud Creek | 1701-0045-MC | 3 |
| Cutchogue Harbor - Wickham Creek | 1701-0045-WC | 3 |
| Dam Pond | 1701-0228 | 3 |
| Duck Island Harbor | 1702-0262 | 3 |
| Flax Pond | 1702-0240 | 3 |
| Fresh Pond Creek and Tribs | 1702-0244 | 3 |
| Goose Creek | 1701-0236 | 3 |
| Gull Pond | 1701-0231 | 3 |
| Hallock/Long Beach Bay and Tidal Tribs | 1701-0227 | 3 |
| Harts Cove | 1701-0309-HC | 3 |
| Hog Creek and Tidal Tribs | 1701-0277 | 3 |

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| Little Long, and Shorts Pond | 1701-0291 | 3 |
| Lloyd Harbor | 1702-0227 | 3 |
| Long Island Sound, Suffolk Co, Central | 1702-0265 | 3 |
| Long Island Sound, Suffolk County, West | 1702-0098+0232 | 3 |
| Marion Lake | 1701-0229 | 3 |
| Middle Pond | 1701-0295-MP | 3 |
| Nissequogue River Lower/Sunken Meadow Creek | 1702-0025+0234+0232 | 3 |
| Noyack Creek and Tidal Tribs | 1701-0237 | 3 |
| Old Fort Pond | 1701-0295-OFP | 3 |
| Pipes Cove | 1701-0366 | 3 |
| Port Jefferson Harbor, South, and Tribs | 1702-0241 | 3 |
| Reeves Bay and Tidal Tribs | 1701-0272-RB | 3 |
| Sag Harbor Cove and Tribs | 1701-0035-SHC | 3 |
| Setauket Harbor | 1702-0242 | 3 |
| Shelter Island Sound, North, and Tribs | 1701-0170 | 3 |
| SI Sound Trib/Moores Drain, Lower, Tribs | 1701-0232+0233 | 3 |
| Smithtown Bay | 1702-0023+0233+0234 | 3 |
| Spring Pond | 1701-0230 | 3 |
| Stony Brook Harbor and West Meadow Creek | 1702-0047+0239 | 3 |
| Town/Jockey Creeks and Tidal Tribs | 1701-0235 | 3 |
| **Priority Rank 4** | | |
| Acabonack Harbor | 1701-0047 | 4 |
| Cold Spring Pond and Tribs | 1701-0127 | 4 |
| Deep Pond | 1701-0270 | 4 |
| Dering Harbor | 1701-0050+ | 4 |
| Dickerson Creek | 1701-0242-DC | 4 |
| Far Pond | 1701-0295-FP | 4 |
| Fish Cove | 1701-0037-FC | 4 |
| Fort Pond Bay | 1701-0370 | 4 |
| Fresh Pond | 1701-0279 | 4 |
| Gardiners Bay and minor Tidal Tribs | 1701-0164 | 4 |
| Hashamomuck Pond/Long Creek and Budd's Pond | 1701-0162+0234 | 4 |
| Lake Montauk | 1701-0031 | 4 |
| Lake Panamoka (Long Pond) | 1701-0134 | 4 |
| Little Sebonac Creek | 1701-0253 | 4 |
| Long Island Sound, Suffolk County, East | 1702-0266 | 4 |
| Mill Creek and Tidal Tribs | 1701-0238+ | 4 |
| Mt Sinai Harbor and Tidal Tribs | 1702-0019 | 4 |
| Napeague Bay | 1701-0369 | 4 |
| Napeague Harbor and Tidal Tribs | 1701-0166 | 4 |

| Subwatershed Name | PWL_ID | Rank |
|---|---|---|
| North Sea Harbor and Tribs | 1701-0037 | 4 |
| Northwest Creek and Tidal Tribs | 1701-0046 | 4 |
| Northwest Harbor | 1701-0368+0275+0276 | 4 |
| Noyack Bay | 1701-0167-rev | 4 |
| Orient Harbor and minor Tidal Tribs | 1701-0168 | 4 |
| Oyster Pond/Lake Munchogue | 1701-0169 | 4 |
| Port Jefferson Harbor, North, and Tribs | 1702-0015 | 4 |
| Sag Harbor | 1701-0035-SH+0239 | 4 |
| Sebonac Cr/Bullhead Bay and Tidal Tribs | 1701-0051 | 4 |
| Shelter Island Sound, South, and Tribs | 1701-0365-rev+0240 | 4 |
| Shinnecock Bay - Bennet Cove (Cormorant Cove) | 1701-0033-BC+0252+0296 | 4 |
| Shinnecock Bay East | 1701-0033-E | 4 |
| Southold Bay | 1701-0044 | 4 |
| Three Mile Harbor | 1701-0036 | 4 |
| West Neck Harbor | 1701-0132-rev | 4 |
| Wildwood Lake (Great Pond) | 1701-0264 | 4 |
| Wooley Pond | 1701-0048+ | 4 |

**Table 3-18** provides a summary of the subwatersheds that fall within each category for each of the estuary programs. The highest percentage of subwatersheds that were ranked as Priority 1 for nitrogen load reduction are located within the SSER, where less than ten percent of the SSER subwatersheds are ranked as Priority 3 and 4. This is consistent with the high population density within the SSER watershed and the long residence times in receiving surface water bodies such as the Great South Bay.

**Table 3-18 Number of Subwatersheds within each Priority Category**

| Subwatershed Location | Priority Rank 1 (Red) | Priority Rank 2 (Yellow) | Priority Rank 3 (Green) | Priority Rank 4 (Blue) | Total |
|---|---|---|---|---|---|
| **Long Island Sound** | 6 (22%) | 5 (19%) | 13 (48%) | 3 (11%) | 27 |
| **Peconic Estuary** | 16 (21%) | 10 (13%) | 21 (28%) | 28 (37%) | 75 |
| **South Shore Estuary Reserve** | 55 (74%) | 13 (18%) | 3 (4%) | 3 (4%) | 74 |
| **Other (Fresh and Coastal Ponds)** | 9 (64%) | 1 (7%) | 2 (14%) | 2 (14%) | 14 |
| **Total** | 86 (45%) | 29 (15%) | 39 (21%) | 36 (19%) | 190 |

Note: Block Island Sound residence time was not modeled and it was not ranked. Nitrogen reductions in the upstream subwatersheds are expected to result in improved water quality.

The highest percentage of subwatersheds with Priority rank 4 are located within the Peconic Estuary. Most of the Priority rank 4 subwatersheds are located in the eastern part of the estuary where the nitrogen load from sanitary wastewater is low, consistent with the lower residential population and the surface waters benefit from flushing due to the close proximity of the open

waters of Block Island Sound and the ocean. Nearly a quarter of the Peconic Estuary subwatersheds were ranked Priority 1; these subwatersheds are located in the more densely populated and more poorly flushed western areas of the Estuary. Priority rankings for subwatersheds contributing to Long Island Sound also reflect the contributing land uses, population density and flushing. Only six subwatersheds were ranked Priority 1, five of these are in the western part of the watershed in the poorly flushed Nissequogue River/Northport Bay area. The majority of the Long Island Sound subwatersheds (48%) were ranked Priority 3 as a result of shorter residence times and flushing with the Sound. Further details of the subwatershed characterizations used to establish the rankings and need for nitrogen load reduction may be found in Section 2 of the SC SWP.

## 3.3 Natural Environment

Prior to heavy settlement and rapid population growth following World War II, Long Island was dominated by five major plant cover types. These included 1) Red Oak forest 2) Pine-oak and Pine-dune forest 3) Scarlet-Black oak forest 4) Hempstead Plains and 5) downs grassland and dune heath. The extensive Red Oak forest of the western third of Long Island has virtually disappeared and very little remains in western Suffolk County (Huntington). The Hempstead Plains have been almost totally removed; splinter fragments remain only in the vicinity of Eisenhower Park (Nassau County). The Pine-oak and Pine-dune forest and the Scarlet-Black oak forest still survive in large tracts in Suffolk County (see Pine Barrens below). The downs grassland (Montauk, East Hampton) and dune heath (barrier beaches) are under constant threat from coastal processes and human development. There are plant associations forming subdivisions within these general vegetation types depending on forest moisture or depth to the water table.

Many other tree and plant species are found scattered or in local abundance in Suffolk County and many areas have been denuded of their vegetative cover. Generally, as noted in Section 3.1, the western section of the County is developed which provides little opportunity for continuous unique or natural habitat. Lawn, ornamental landscaping and unmanaged vegetation are common throughout this area. The eastern portion of the County is less developed and there are larger tracts of undeveloped land. Farms and vineyards are more common to the east.

Federal parkland and reserves, State parks and managed land, County parks and open space and local parks are located throughout the County and provide natural habitat to wildlife and residents with opportunity for interaction with nature. Privately held land by organizations including The Nature Conservancy and the Pine Barrens Commission is maintained or preserved as natural environmental areas.

### 3.3.1 Ecology

Suffolk County has approximately 33,738 acres of undeveloped (vacant) land, which accounts for 2.8% of the County. Land identified by the County as 'Recreational and Open Space' totals approximately 150,124 acres or 12.5% of the County's acreage. Land that falls within this category, including the Central Pine Barrens and other designated critical environmental areas provides unique ecological opportunities. These are described below.

### 3.3.1.1 Central Pine Barrens

The Central Pine Barrens is located in central and eastern Suffolk County and encompasses portions of the towns of Brookhaven, Riverhead and Southampton. The Central Pine Barrens covers an area of over 100,000 acres with 55,000 acres dedicated as the Core Area. Approximately 47,500 acres are designated as the compatible growth area which is a subarea of the Pine Barrens Maritime Reserve. (https://pb.state.ny.us/central-pine-barrens/overview/) (Central Pine Barrens Joint Planning & Policy Commission. 2019).

The Central Pine Barrens is a unique and ecologically important area. It is home to a variety of oak and pine, including the endangered Virginia Pine. Some vegetation and wildlife found within the Central Pine Barrens are dependent on fire to release the nutrients from the earth, allow for seed germination and remove invasive or competing vegetative species. The Central Pine Barrens are also home to a large number of wetlands and include coastal plain ponds, which are considered rare. Wildlife such as Bald eagle, osprey, white-tailed deer and the endangered Tiger Salamander are known to inhabit this area. The Central Pine Barrens are also used by various migratory bird species for both resting and breeding habitats. Many bird species migrate from Central and South America in the spring and return in the fall.

Activities are regulated in the Central Pine Barrens by the Long Island Pine Barrens Protection Act, contained in Article 57 of the New York State Environmental Conservation Law. The Core Area includes land where no new construction can take place and the Compatible Growth Area includes land where new development can occur subject to the provisions of the Central Pine Barrens Comprehensive Land Use Plan.

### 3.3.1.2 Critical Environmental Areas

Based on a review of NYSDEC's online resources there are areas within the County designated as 'Critical Environmental Areas' (CEA), important resources of the State. A CEA is a geographical area that is designated by either a local agency or state agency. According to the NYSDEC [Source: https://www.dec.ny.gov/permits/6184.html ] , in order to be designed as a CEA, an area must have 'an exceptional or unique character' with respect to one or more of the following:

- A benefit or threat to human health;
- A natural setting, such as a fish and wildlife habitat;
- Agricultural, social, cultural, historic, archaeological, recreational, or educational values; or
- An inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change.

The County and Towns have acquired and successfully designated areas as CEAs. The County and/or Town designated CEAs include lands identified as Special Groundwater Protection Areas, Fishers Island, Peconic Bay, tidal wetland areas and coastal areas of the County. A list of CEAs within Suffolk County, their designatory agency, recorded and effective dates and reasons for designation are is provided in **Table 3-19**. **Figure 3-47** and **Figure 3-48** provide this information graphically.

**Table 3-19 Critical Environmental Areas within Suffolk County**

| Designating Agency | Critical Environmental Area | Recorded Date | Effective Date | Reason for Designation |
|---|---|---|---|---|
| **Suffolk, County of** | Lands contemplated for acquisition by the county, known as:<br>Crab Meadow addition, Huntington<br>Little Plains, Huntington<br>Carlls River, Babylon<br>Nissequogue River addition, Smithtown<br>Fresh Pond Greenbelt, Huntington and Smithtown<br>Bergen Point addition (Bulks Nursery), Babylon<br>San Sousi Lakes addition, Islip<br>Port Jefferson Headlands addition, Islip<br>South Seatauket Woods, Brookhaven<br>Camp Barstown - Brookhaven<br>Carman's River addition, Brookhaven<br>Southhaven Park addition, Brookhaven<br>Harborview<br>Terrels River, Brookhaven<br>Peconic River addition, Brookhaven<br>Robins Island, Southold<br>Inlet Pond addition, Southold<br>Orient Point, Southold<br>Pine Barrens adjacent to County Center, Southampton<br>Maple Swamp, Southampton<br>Sears Bellow Red Creek addition, Southampton<br>Dwarf Pine Forest, Southampton<br>Long Pond, Southampton<br>Montauk addition, East Hampton<br>Hither Woods, East Hampton | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |
| | Central Suffolk Pine Barrens | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |
| | South Setauket Woods | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |
| | Oak Brush Plains | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |
| | Scallop Pond | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |
| | Accabonac Harbor | January 11, 1988 | February 10, 1988 | Benefit to human health and protect drinking water |

| Designating Agency | Critical Environmental Area | Recorded Date | Effective Date | Reason for Designation |
|---|---|---|---|---|
| | Peconic Bay and Environs | October 14, 1988 | November 13, 1988 | Benefit to human health and protect drinking water |
| | Fishers Island | February 13, 1990 | March 16, 1990 | Benefit to human health and protect drinking water |
| | Special Groundwater Protection Areas [As required by Article 55 of ECL filed by Long Island Regional Planning Board]<br>North Hills Map #1<br>Central Suffolk Map #2<br>Southold Map #3<br>Oak Brush Plains Map #4<br>Hither Hills Map #5<br>South Fork Map #6<br>South Setauket Woods Map #7<br>Oyster Bay Map #8<br>West Hills – Melville Map #9 | March 19, 1993 | April 18, 1993 | Protect groundwater |
| Towns of Babylon and Brookhaven | | | | |
| **Babylon, Town of** | Ketcham's Creek Freshwater Wetlands | September 30, 1988 | October 30, 1988 | Protect creek bed and wildlife habitat |
| | Santrapoque Creek Freshwater Wetlands | September 30, 1988 | October 30, 1988 | Protect freshwater wetland floodplain |
| | Santrapoque Creek Tidal Wetlands | September 30, 1988 | October 30, 1988 | Protect tidal wetland |
| | Wheaty Heights Freshwater Wetlands | September 30, 1988 | October 30, 1988 | Protect a red maple swamp |
| | Carlls River Freshwater Wetlands | September 30, 1988 | October 30, 1988 | Protect freshwater wetland |
| | Mud creek Tributary Freshwater Wetlands | September 30, 1988 | October 30, 1988 | Protect freshwater wetland |
| | Supwams Creek | September 30, 1988 | October 30, 1988 | Protect former and remaining wetland |
| **Brookhaven, Town of** | Route 25A Corridor | February 11, 1986 | March 13, 1986 | Protect public health, open space, wetlands |
| | Middle Island - Yaphank | February 11, 1986 | March 13, 1986 | Protect public health, open space, wetlands |
| | Coastal Zone Area South | May 18, 1987 | June 17, 1987 | Protect public health, open space, wetlands |
| East Hampton - Southold including Towns of Huntington, and Southampton and the Villages of Lloyd Harbor and Quoque | | | | |
| **East Hampton, Town of** | Water Recharge Overlay District | January 13, 1988 | February 12, 1988 | Protect groundwater and drinking water |

| Designating Agency | Critical Environmental Area | Recorded Date | Effective Date | Reason for Designation |
|---|---|---|---|---|
| **Huntington, Town of** | Great Edgewood Tract | February 11, 1986 | March 13, 1986 | Significant and sensitive water recharge area |
| **Lloyd Harbor, Village of** | Tidal Wetlands | March 28, 1986 | April 27, 1986 | Protection of tidal wetlands |
| **Village of Quoque** | Tidal Wetlands | January 17, 1985 | February 16, 1985 | Natural scenic beauty |
| **Southampton, Town of** | Aquifer Protection Overlay District | April 23, 1984 | June 20, 1984 | Preserve pure water quality |
| | Shinnecock Indian Contact Period Village Fort | October 17, 1990 | November 15, 1990 | Protect cultural, historic and archaeological area |
| | Sugar Loaf Hill Shinnecock Indian Burial Ground | October 17, 1990 | November 15, 1990 | Protect cultural, historic and archaeological area |
| **Southold, Town of** | Cutchoque Harbor Wetlands | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | Hallock's Bay | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | Dam Pond | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | Downs Creek | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | Orient Creek | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | West Creek | February 22, 1988 | March 24, 1988 | Significant coastal fish and wildlife habitat |
| | Richmond Creek and Beach | September 20, 1988 | October 20, 1988 | Significant coastal fish and wildlife habitat |
| | Brush's Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Cedar Beach Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Corey Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Deep Hole Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |

| Designating Agency | Critical Environmental Area | Recorded Date | Effective Date | Reason for Designation |
|---|---|---|---|---|
| | Goldsmith Inlet | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Halls Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Goose Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Little Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Mill Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |
| | Pipes Cove Creek | February 6, 1990 | March 9, 1990 | Significant coastal fish and wildlife habitat |

**Figure 3-47 Western Suffolk County Critical Environmental Areas**

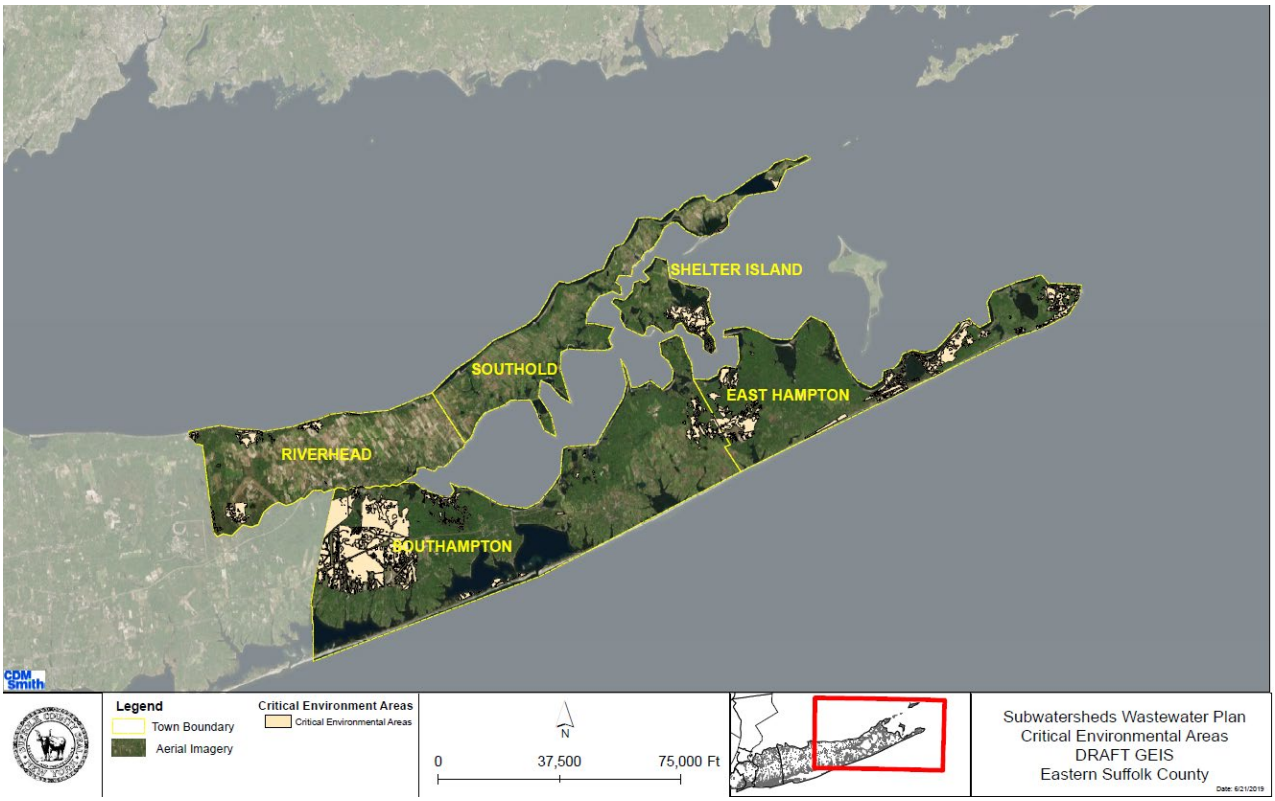


**Figure 3-48 Eastern Suffolk County Critical Environmental Areas**

### 3.3.1.3 Threatened and Endangered Species

Suffolk County is home to federal and state designated threatened and/or endangered species. Listings of species that are so designated are maintained by USFWS and the NY Natural Heritage Program.

The USFWS Information for Planning and Consultation website (IPaC) was accessed to generate a listing of Federally designated threatened and endangered species known to occur or the area is the species expected range. For the purposes of this Draft GEIS, the entire County was identified as the project area, therefore the species listing spans all ten Towns. The IPaC Report is provided in Appendix D and is summarized as follows;

- Six threatened or endangered species are reported to occur within the County;
- 75 migratory birds of conservation concern are reported to inhabit the County, and
- Six US FWS facilities that are protected under the National Wildlife Refuge System Administration Act are located within the County.

Critical habitat for the six threatened or endangered species or the 75 migratory birds was not identified by US FWS in the IPaC tool as located within the County. The six federally-listed threatened and endangered species are listed below in **Table 3-20**.

**Table 3-20 Federally-Listed Threatened and Endangered Species Known or Expected Range includes Suffolk County**

| Common Name | Scientific Name | Group | Federal Listing |
|---|---|---|---|
| **Northern Long-eared Bat** | *Myotis septentrionalis* | Mammal | Threatened |
| **Piping Plover** | *Charadrius melodus* | Bird | Threatened |
| **Red Knot** | *Calidris canutus rufa* | Bird | Threatened |
| **Roseate Tern** | *Sterna dougallii dougallii* | Bird | Endangered |
| **Sandplain Geradia** | *Agalinis acuta* | Flowering Plants | Endangered |
| **Seabeach Amaranth** | *Amaranthus pumilu* | Flowering Plants | Threatened |

Using the NYSDEC online tool, NY Nature Explorer that accesses the NY Natural Heritage Program databases, a table of recorded sightings of endangered and threatened species within the County can be accessed. The NY Nature Explorer provides listings of species with State and/or Federal protection status. This includes species of special concern, rare, endangered and threatened status. Fauna and flora as well as important natural communities are included on the list. State and Federal protected status is provided and the year the species was last documented.

See **Table 3-21** for a summary listing of the animal species included in the Nature Explorer data base with recorded sightings in Suffolk County. For the listing of the 238-plant species whose status is threatened and endangered see Appendix D. All tables were generated December 5, 2018.

**Table 3-21 NYS Designated Threatened and Endangered Species (Recorded Sightings)**

| Common Name | Scientific Name | Group (or Subgroup) | NY State Protection Status |
|---|---|---|---|
| **Northern Long-eared Bat** | *Myotis septentrionalis* | Mammals | Threatened |
| **Bald Eagle** | *Haliaeetus leucocephalus* | Birds | Threatened |
| **Black Rail** | *Laterallus jamaicensis* | Birds | Endangered |
| **Common Tern** | *Sterna hirundo* | Birds | Threatened |
| **Least Bittern** | *Ixobrychus exilis* | Birds | Threatened |
| **Least Tern** | *Sternula antillarum* | Birds | Threatened |
| **Northern Harrier** | *Circus cyaneus* | Birds | Threatened |
| **Peregrine Falcon** | *Falco peregrinus* | Birds | Endangered |
| **Pied-billed Grebe** | *Podilymbus podiceps* | Birds | Threatened |
| **Piping Plover** | *Charadrius melodus* | Birds | Endangered |
| **Roseate Tern** | *Sterna dougallii* | Birds | Endangered |
| **Sedge Wren** | *Cistothorus platensis* | Birds | Threatened |
| **Short-eared Owl** | *Asio flammeus* | Birds | Endangered |
| **Upland Sandpiper** | *Bartramia longicauda* | Birds | Threatened |
| **Eastern Mud Turtle** | *Kinosternon subrubrum* | Reptiles | Endangered |
| **Northern Cricket Frog** | *Acris crepitans* | Amphibians | Endangered |
| **Tiger Salamander** | *Ambystoma tigrinum* | Amphibians | Endangered |

| Common Name | Scientific Name | Group (or Subgroup) | NY State Protection Status |
|---|---|---|---|
| **Banded Sunfish** | *Enneacanthus obesus* | Fish | Threatened |
| **Swamp Darter** | *Etheostoma fusiforme* | Fish | Threatened |
| **Frosted Elfin** | *Callophrys irus* | Butterflies and Moths | Threatened |
| **Hessel's Hairstreak** | *Callophrys hesseli* | Butterflies and Moths | Endangered |
| **Persius Duskywing** | *Erynnis persius persius* | Butterflies and Moths | Endangered |
| **Regal Fritillary** | *Speyeria idalia* | Butterflies and Moths | Endangered |
| **Little Bluet** | *Enallagma minusculum* | Dragonflies and Damselflies | Threatened |
| **Pine Barrens Bluet** | *Enallagma recurvatum* | Dragonflies and Damselflies | Threatened |
| **Scarlet Bluet** | *Enallagma pictum* | Dragonflies and Damselflies | Threatened |
| **American Burying Beetle** | *Nicrophorus americanus* | Beetles | Endangered |
| **Northeastern Beach Tiger Beetle** | *Cicindela dorsalis dorsalis* | Beetles | Threatened |

### 3.3.1.4 Wetlands Resources

Federally regulated estuarine and freshwater wetlands and NYS regulated freshwater wetlands within Suffolk County are depicted on **Figures 3-49** through **3-52**. The areas designated are based on data from the National Wetland Inventory (NWI) and NYSDEC online data bases (http://www.dec.ny.gov/gis/erm/). **Table 3-22** below lists the total acreage of wetlands within Suffolk County using the data from these sources.

**Table 3-22 Wetlands within Suffolk County**

| Wetlands by Agency | Area |
|---|---|
| **NYS Wetlands** | 16,331 Acres |
| **NWI Wetlands (estuarine and freshwater under Federal jurisdiction)** | 195,162 Acres |
| **Overlapping Wetlands Jurisdiction** | 9,581 Acres |
| **Total NYS and NWI Wetlands** | 201,912 Acres |

The NWI-designated wetlands (https://www.fws.gov/wetlands/data/mapper.html) included in the acreage above include surface water bodies such as the Peconic Bay, which is located in eastern Suffolk County and the Great South Bay, which is located in southwest Suffolk County. The larger single NYSDEC-designated wetlands included in the acreage above include Lake Ronkonkoma, which is located in Islip and Long Pond in the eastern portion of Southampton.

Wetlands provide habitat to many species. Wetlands filter impurities from water and provide stream bank stabilization and coastal resiliency. Wetland health is often one indicator used to document water quality.

Nitrogen contamination associated with discharge of sanitary wastewater has been studied and documented in the Long Island Comprehensive Waste Treatment Management Plan (Nassau-

Suffolk Regional Planning Board 1978), the 1987 Suffolk County Comprehensive Water Resources Management Plan (Suffolk County 1987), and the 2015 Suffolk County Comprehensive Water Resources Management Plan (Suffolk County 2015).

LINAP has identified nitrogen as the leading cause of water quality deterioration in Long Island's estuaries. Effluent from onsite wastewater disposal systems (cesspools and septic systems) reaches groundwater, which ultimately reaches the bays and estuaries. Excess nitrogen has been linked with HABs events (algal blooms) that lead to low oxygen conditions, fish kills, and degraded wetlands and marine habitats.

In Suffolk County, approximately 74 percent of homes are unsewered and discharge sanitary wastewater containing nitrogen to the underlying groundwater that provides both the only source of potable supply for County residents and baseflow to surface water features in the County. Cesspools and septic systems have been identified by scientists, academic researchers and government regulatory agencies as a significant and continuing threat to water quality. (Suffolk County 2015 Executive Summary, page ES-4 and Section 3) Effluent from onsite wastewater disposal systems that are not designed to remove nitrogen from wastewater, reaches groundwater that ultimately discharges to streams, bays and estuaries. Excess nitrogen is a contributing factor to harmful algal blooms (HABs) that contribute to reduced oxygen causing fish kills, degrades wetlands and impacts coastal marine habitats. Elevated levels of nitrogen have also been found in the groundwater that comprises the Island's sole source aquifer and source of drinking water supply (Suffolk County 2015 Executive Summary, page ES-25 and Section 3). Sobering statistics of nutrient related impacts to Suffolk County coastal waters (SC SWP Section 1.1.3) include, but are not limited to:

- 40.3% increase in nitrogen concentrations in untreated water from the same set of 175 upper glacial wells measured in 1987 and 2013 from 2.63 mg/L to 3.69 mg/L (well below the drinking water maximum contaminant level of 10 mg/L);
- Nitrogen traveling vertically down through the aquifer resulted in an 80 percent increase in nitrogen concentrations in untreated water from the same set of 213 Magothy wells sampled in 1987 and 2013 from 0.95 mg/L to 1.71 mg/L (well below the drinking water maximum contaminant level of 10 mg/L);
- 10% increase in nitrogen concentrations in marine waters in Suffolk County over the past 10 years, and more specifically:
    - 45.7% increase in nitrogen concentrations in Long Island Sound harbors
    - 53.8% increase in nitrogen concentrations in Peconic Estuary enclosed bays
    - 60.4% increase in nitrogen concentrations in the far eastern south shore bays
    - 30% increase in nitrogen concentrations in eastern Great South Bay;
- Increased nitrogen levels have been one of the factors contributing to the following:

- HAB events have been documented in each of the three major estuaries every year for the past 10 years. There have been more than 180 documented individual HAB events in marine waters, and greater than 50 HAB events in freshwaters within the last 10 years alone;
- Over half of the 124 sampled marine water bodies within Suffolk County had dissolved oxygen hypoxic events over the past 10 years;

- 13.1% of native vegetated tidal wetlands have been lost in Suffolk County since 1974 as a result of dredging, filling, sea level rise and nutrient enrichment;
  - Greater than 85% eelgrass beds have been lost in the Peconic Estuary since 1930: these observations are corroborated by the predicted unit nitrogen loads exceeding acceptable published values (see section 1.1.3 of the SC SWP) by one to two orders of magnitude within many water bodies in Suffolk County;
  - Hard clam harvests in the Great South Bay have fallen by greater than 93% over the past 25 years (increased nitrogen concentration being one of the factors, overfishing being one of the primary causes of the hard clam harvest reduction, and HABs are preventing their recovery); and

Up to 12,233 acres of waterways have been closed (seasonal or permanent) to shell fishing in recent years due to PSP biotoxins associated with HABs.

The impacts to the coastal communities of Suffolk County from SuperStorm Sandy in 2012 underscored the connection between nitrogen in groundwater baseflow discharging to surface water resources, loss of wetlands, and damage to ecosystem health. Reduction in nitrogen loading as a result of the implementation of the Proposed Action is anticipated to support wetlands restoration and improve storm and flood protection and coastal resiliency provided by healthy wetlands.

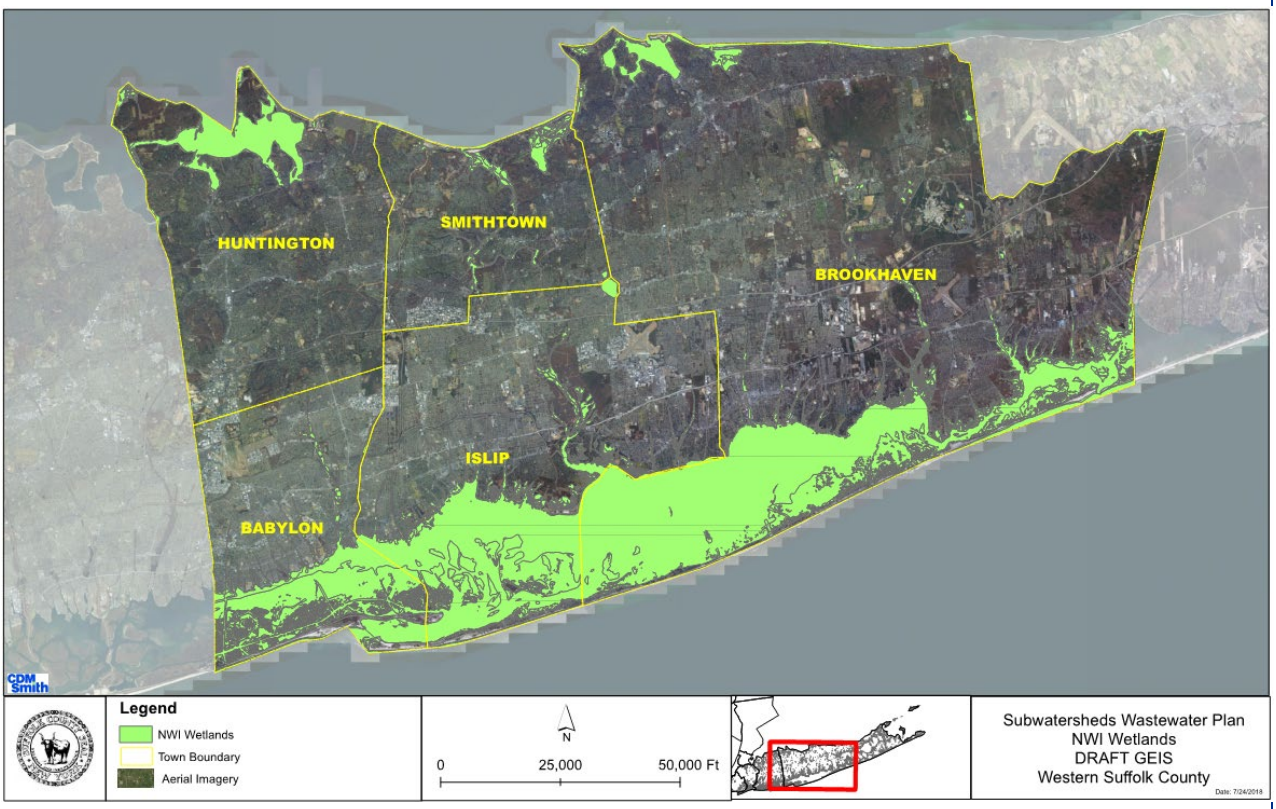


**Figure 3-49 NWI Wetlands, Western Suffolk County**

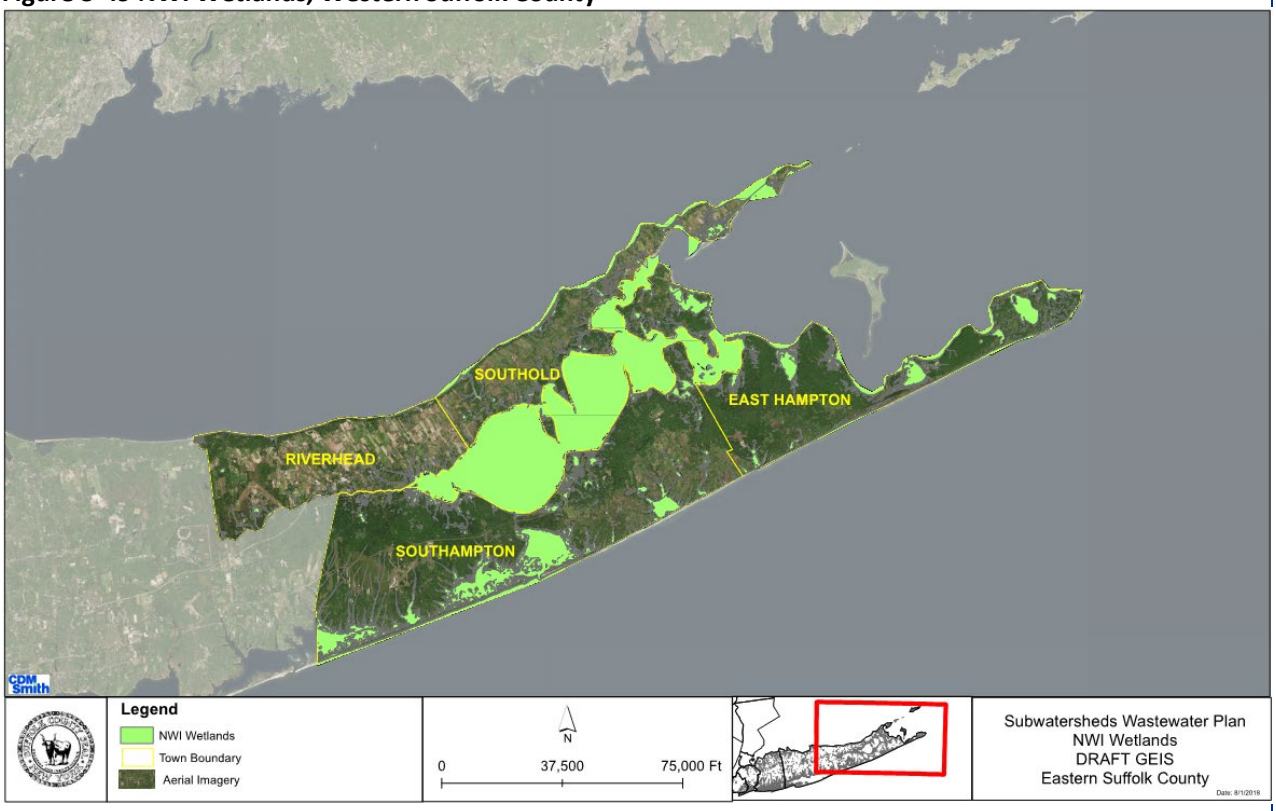


**Figure 3-50 NWI Wetlands, Eastern Suffolk County**

**Figure 3-51a NYS Freshwater Wetlands, Western Suffolk County**

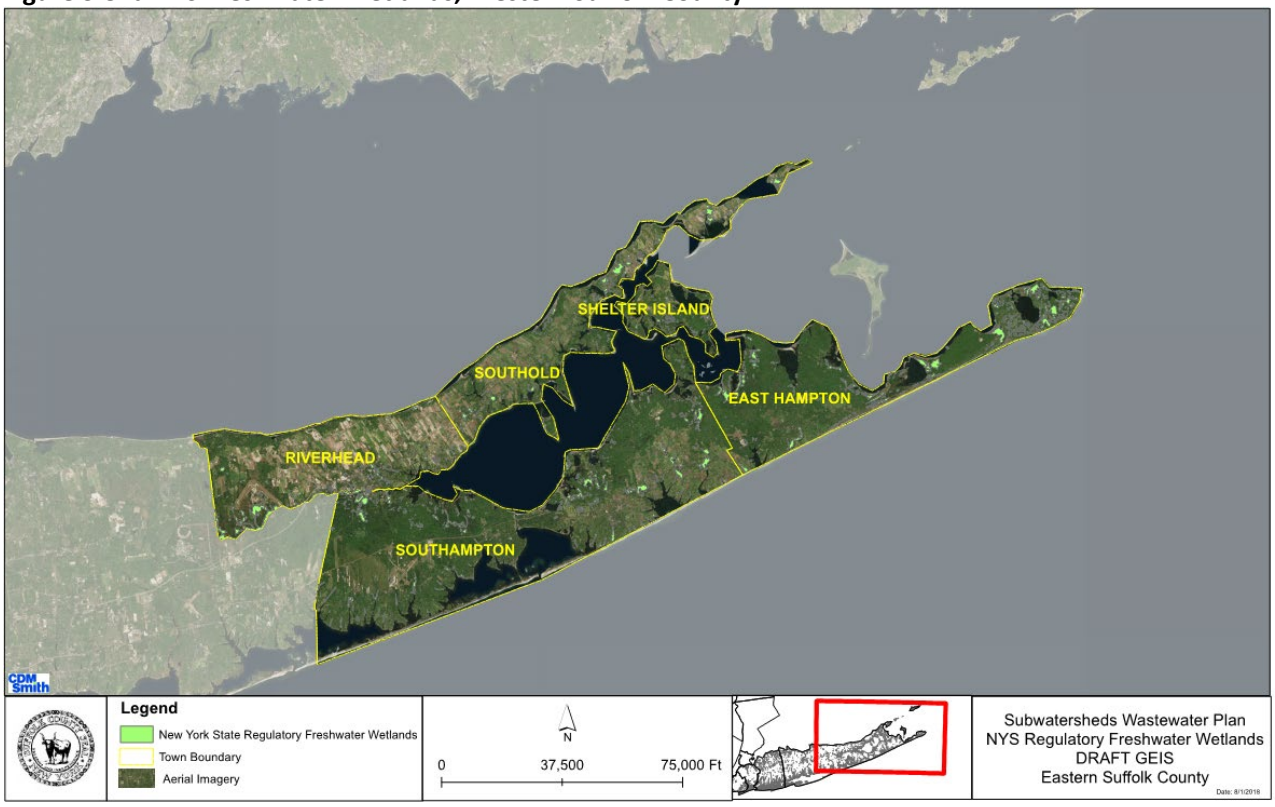


**Figure 3-51b NYS Freshwater Wetlands, Eastern Suffolk County**

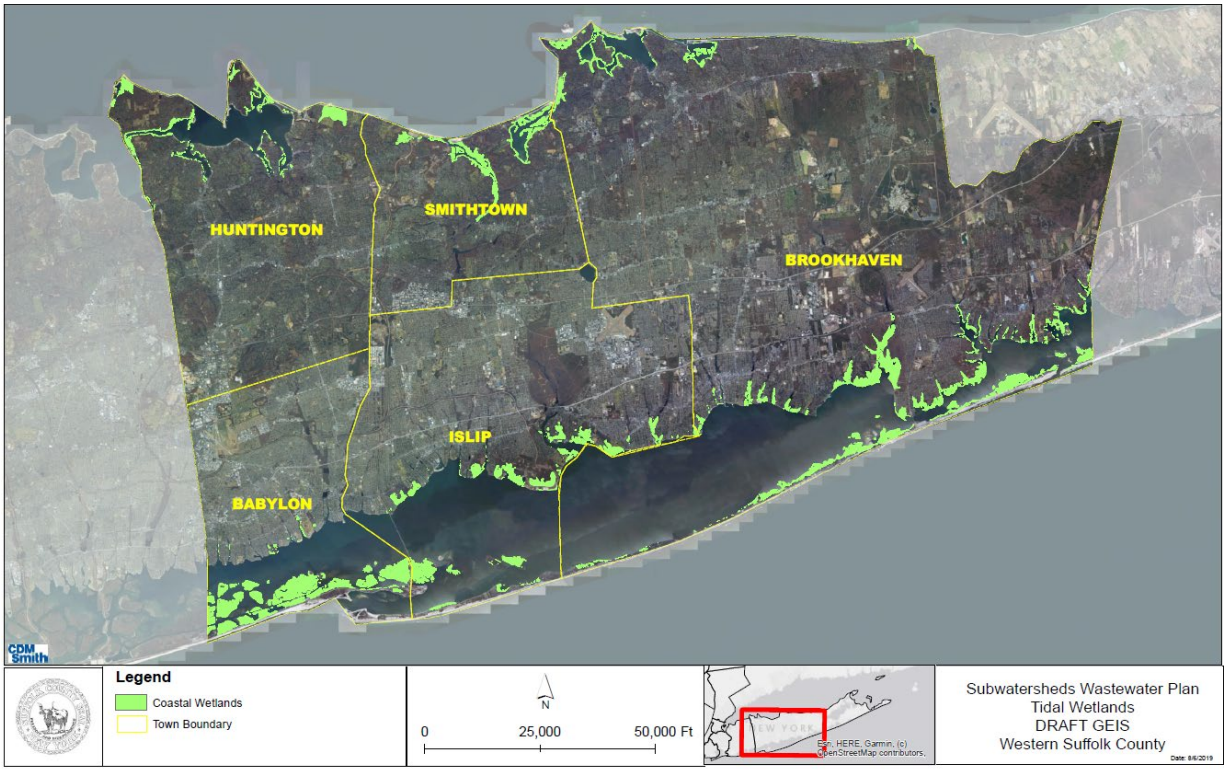


**Figure 3-52a NYS Tidal Wetlands, Western Suffolk County**

**Figure 3-52b NYS Tidal Wetlands, Eastern Suffolk County**

### 3.3.1.5 Floodplains

Suffolk County, surrounded on three sides by water, includes areas that are prone to flooding. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the National Flood Insurance Program (NFIP). FIRMS can be accessed and viewed online by accessing the FEMA Flood Map portal (https://msc.fema.gov/portal/home). Flood zones are defined as the following:

- Undetermined Risk Areas: Zone D includes areas where flooding could happen although the flood risks are undetermined because no analysis has been conducted (FEMA 2011).
- Minimal Flood Hazard Areas: Zones C and X (unshaded) are defined as areas of minimal flood hazard above the 500-year flood level.
- Moderate Flood Hazard Areas: Zones B and X (shaded) are defined as areas of moderate flood hazard usually located between the limits of the 100-year and 500-year floodplain.
- Special Flood Hazard Areas (SFHA): is defined as areas with a one percent annual chance of flooding (100-year floodplain); these areas are designated on the FIRM as Zones A, AO, AH, A1-A-30, AE, A99, AR, AR/AE, AR/AO, AR/A1-A30, AR/A, V, VE or V1-V30.

Suffolk County participates in the NFIP and has FIRMs in place for the entire County with an effective date of September 25, 2009. The FIRMs include the flood zones previously defined including Zones VE and AE, which are located in coastal areas including the lands bordering the Atlantic Ocean, Great Peconic Bay, Long Island Sound and the Great South Bay. Further inland, there are areas that have also been determined to have flooding risks such as Peconic River. Flood zone areas within Suffolk County are shown in **Figure 3-53** for western Suffolk County and **Figure 3-54** for eastern Suffolk County.

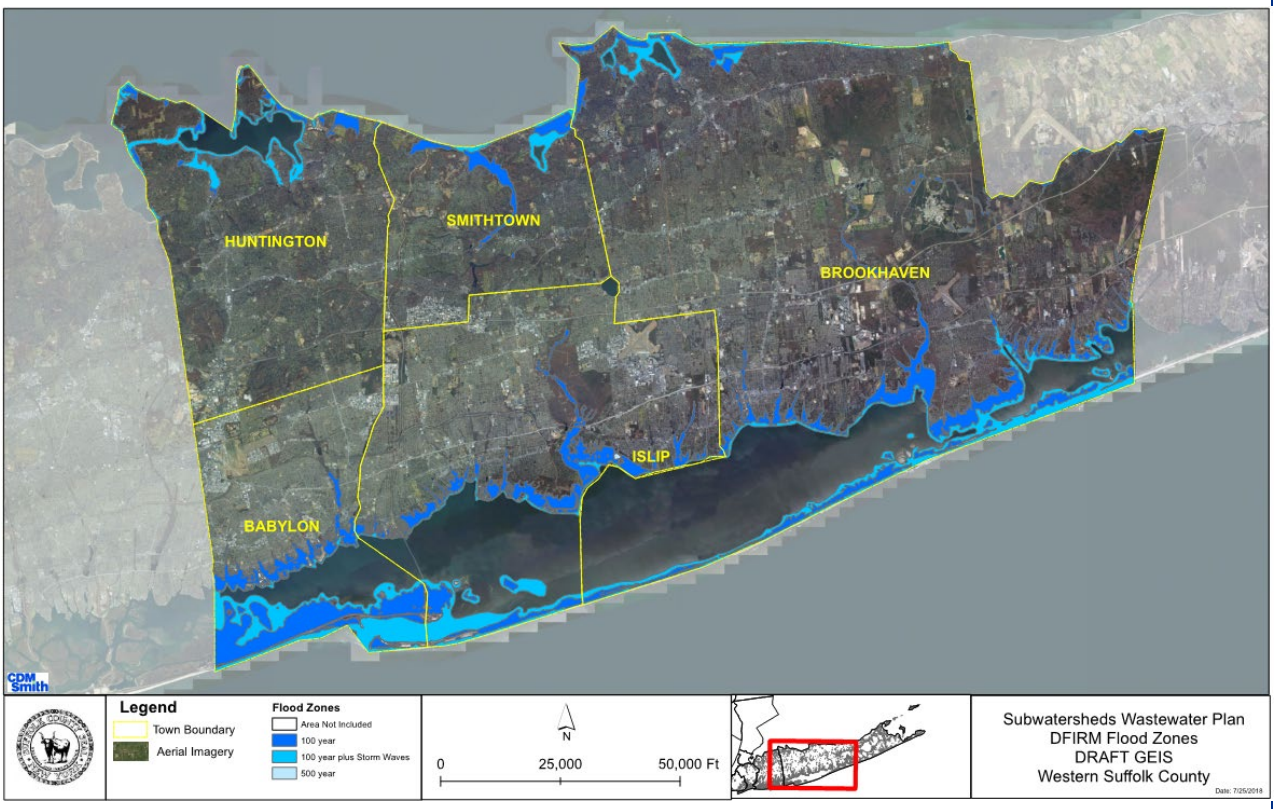


**Figure 3-53 DFIRM Western Suffolk County**

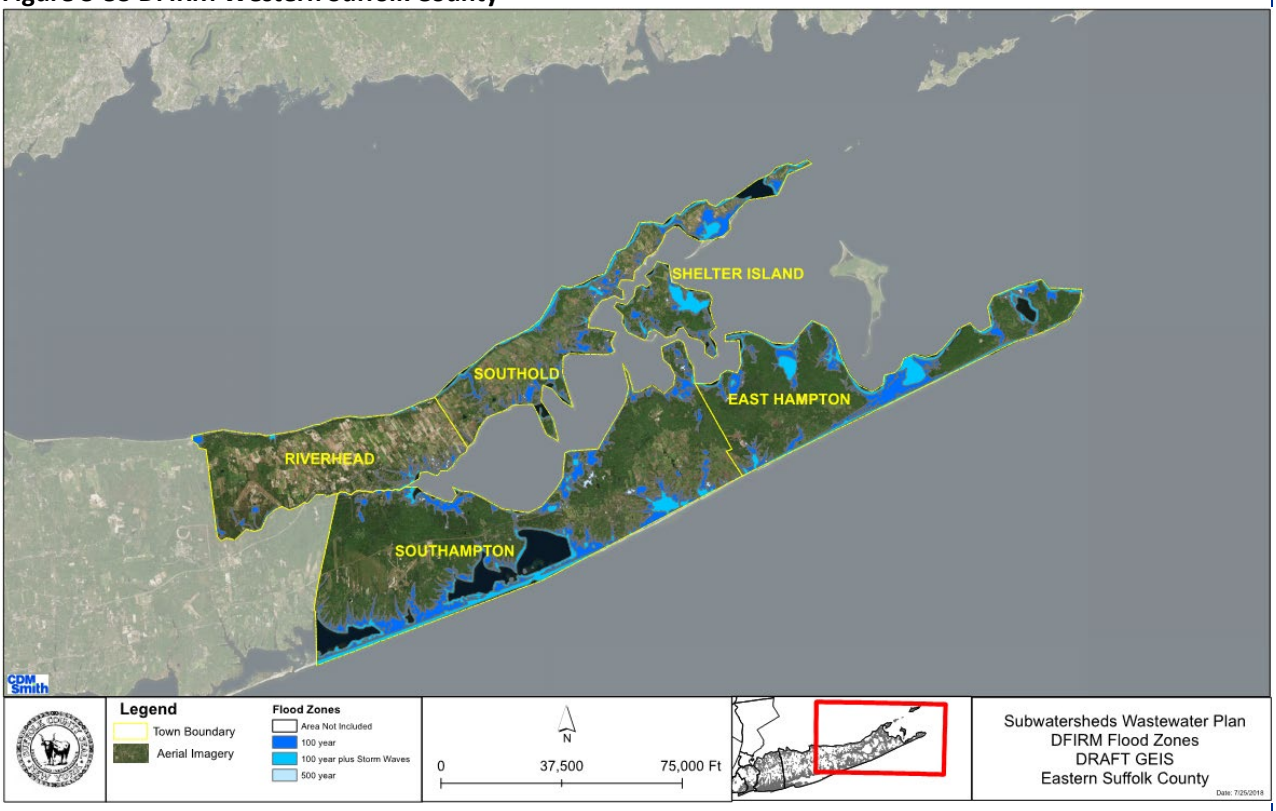


**Figure 3-54 DFIRM Eastern Suffolk County**

# 3.4 Historic and Archaeological Resources

## 3.4.1 Historic Resources

Long Island has long been inhabited and was home to Native American populations at the time of European contact at the beginning of the 17th century. Adrian Block, a Dutchman, was the first explorer to touch land at Montauk Point in 1614. The first European resident was Lion Gardiner, who settled in Long Island between the North and South Forks in 1639; Gardiner's Island, a small island in the Town of East Hampton in Eastern Suffolk County, is named after the family. In the mid-17th century, English colonists came to Long Island from the Connecticut and Massachusetts colonies, founding settlements at Southold, Southampton, East Hampton, Shelter Island, and Setauket. While Dutch settlers continued to move into Long Island from Manhattan, by the mid-1600s the English controlled eastern Long Island.

Suffolk County was established as a political entity by the adoption of the "Charter of Liberties and Privileges" in 1683 and was one of the 12 original counties of the Province of New York. During the Revolutionary War, Suffolk County was occupied by the British between 1776 and 1783. During the 18th and 19th centuries, the land was farmed, and fishing, shipbuilding and whaling (up through the mid-19th century) were common industries. Farming has continued in eastern Long Island, yielding crops of strawberries, cabbage, potatoes, and pumpkins. In the 1930s Suffolk County hosted large U.S. defense and aerospace suppliers such as Grumman Corporation. Brookhaven National Laboratory, a U.S. Department of Energy research laboratory, was established after World War II in Upton. After the Second World War, the population of the County grew exponentially through the proliferation of housing developments and corresponding growth of commercial and retail enterprises. Today, Suffolk County’s historic villages, protected waters, and beaches make Suffolk County a popular tourism location, as does the growing number of vineyards especially on the North Fork.

There are numerous historic resources in Suffolk County that reflect the historical development of eastern Long Island. These include historic districts listed in or eligible for listing in the National and State Registers of Historic Places, including but not limited to the Shelter Island Heights Historic District on Shelter Island; Quogue Historic District; Village of Nissequogue, Port Jefferson Village Historic District; the Orient Historic District in the Town of Orient; the East Marion Historic District in the Town of Southold (an expansion of the original 1640 Southold settlement); Greenport Village Historic District; Southold Historic District; the Main Road Historic District in the Towns of Riverhead and Southold; Shore Road Historic District in Cold Spring Harbor; Bellport Village Historic District; the Montauk Association Historic District; the East Hampton Village Historic District; Sag Harbor Village Historic District; Sagaponack Historic District; and Southampton Village Historic District. There are also numerous individually National Register-listed and eligible properties, including parks and historic estates.

## 3.4.2 Archaeological Resources

Archaeological resources include material culture (physical pieces that make up a culture such as tools or a building) and other physical remnants of past human activities on a site. Suffolk County has been occupied by humans for more than 11,000 years and its precontact and historic period occupation has been well-documented by archaeologists for more than a century. Precontact archaeological resources are those that date to the time before the region was colonized by

European settlers and are associated with Native American populations that used or occupied a site. Archaeological resources can also include remains from activities that occurred during the historic period, which began with the European colonization of Suffolk County in the 17th century. On sites where development (including the construction and demolition of buildings, grading, paving, landfilling, and other landscape modifications) occurred at some point during the past, archaeological resources may have been disturbed or destroyed by grading, excavation, infrastructure installation, and tidal action/erosion. However, some resources can survive in both rural and urban environments despite extensive development. Archaeological sites can also be protected when covered with pavement that protects sites from further disturbance and archaeological investigations can be designed to further investigate those deposits.

The New York State Cultural Resource Information System (CRIS), as maintained by the New York State OPRHP, indicates that large portions of the County have been included within areas of generalized archaeological sensitivity (See: https://cris.parks.ny.gov/)Native American sites identified in the County tend to be located in the immediate vicinity of sources of fresh and salt water and many have been clustered around tidal inlets where fresh water streams emptied into bays off the Long Island Sound to the north and the Atlantic Ocean to the south. Historic period sites are often located in the vicinity of Suffolk County's historic village and town settlements dating to the 17th century.

# 3.5 Noise and Odors

## 3.5.1 Noise

Municipalities within the County have local codes or ordinances that regulate noise within their jurisdictional boundaries. At noise receptors (i.e., noise-sensitive land uses such as residences, schools, hospitals, parks, etc.) throughout Suffolk County, existing noise levels vary widely depending on proximity to existing noise sources. Typical sources of noise include vehicular traffic on highways, arterial roads, and local streets, as well as aircraft activity, industrial facilities, mechanical and heating, ventilation, and air conditioning (HVAC) equipment, etc.

With respect to the County's wastewater infrastructure, noise at the existing STPs is generally associated with the operation of the mechanical equipment such as pumps that are required for the processing of the wastewater. The mechanical equipment is generally located within structures or underground and do not contribute substantially to total ambient noise levels at nearby noise receptors. Vehicular traffic associated with the operation and maintenance of the County's wastewater infrastructure is a very small portion of the total level of vehicular traffic on the roadways within the County and consequently does not constitute a major contributor to total noise levels at noise receptors in the County.

Onsite wastewater treatment systems such as septic systems do not contribute to the ambient noise levels.

## 3.5.2 Odors

Ambient air quality is monitored throughout New York State at more than 50 NYSDEC air quality monitoring stations. NYSDEC monitors air quality at three locations in Suffolk County where sulfur dioxide, PM2.5, and ozone data are collected. In 2018, an additional ozone monitoring station was established at Flax Pond. Measurements are regularly reported by NYSDEC, in some

cases in real time, as is the case for ozone. Existing air pollutant levels at locations throughout Suffolk County can vary depending on proximity to an existing air pollution source that includes vehicular traffic on highways, arterial roads, and local streets, as well as aircraft activity, industrial facilities, mechanical and HVAC equipment, and the like. Pollutant concentrations measured at area monitoring stations can be used to characterize existing or ambient air quality.

Concentrations of regulated air pollutants reported at monitoring stations throughout Suffolk County are shown in **Table 3-23**. As a limited number of air pollutants are monitored at the sites within the County, additional monitoring stations are shown to provide data on the standard list of parameters used to describe air quality. Recorded pollutant concentrations are compared values in the National Ambient Air Quality Standards (NAAQS). As shown in the table, the monitored levels of ozone levels exceed the NAAQS at two of the three monitoring stations in Suffolk County; all other monitored pollutants are below the NAAQS.

There is no monitoring data from these locations for odor-causing compounds associated with wastewater treatment. Many of the compounds associated with wastewater facilities are sulfur-based compounds, such as hydrogen sulfide ($H_2S$), and mercaptans. $H_2S$ is the most prevalent malodorous gas associated with domestic wastewater collection. Existing onsite septic systems and cesspools are not associated with the emission of regulated air pollutants.

**Table 3-23 Representative Monitored Ambient Air Quality Data**

| Pollutant | Closest Monitoring Location | Units | Averaging Period | Concentration | NAAQS |
|---|---|---|---|---|---|
| CO | Queens College 2, Queens | ppm | 1-hour | 1.78 | 35 |
| | | | 8-hour | 0.90 | 9 |
| | Queens College Near Road, Queens | ppm | 1-hour | 1.76 | 35 |
| | | | 8-hour | 1.20 | 9 |
| $SO_2$ | Holtsville, Suffolk | ppb | 1-hour(1) | 4.43 | 75 |
| | | | 3-hour(2) | 13.5 | 500 |
| PM10 | Queens College 2, Queens | µg/m³ | 24-hour | 35 | 150 |
| PM2.5 | Babylon, Suffolk | µg/m³ | 24-hour(3) | 16.9 | 35 |
| | | | Annual | 6.8 | 12 |
| $NO_2$ | Queens College 2, Queens | ppb | 1-hour(4) | 59.7 | 100 |
| | | | Annual | 15.25 | 53 |
| Lead | Rochester 2, Monroe | µg/m³ | 3-month | 0.005 | 0.15 |
| Ozone | Babylon, Suffolk | ppm | 8-hour | 0.076+ | 0.070 |
| | Holtsville, Suffolk | ppm | 8-hour | 0.069 | 0.070 |
| | Riverhead, Suffolk | ppm | 8-hour | 0.077+ | 0.070 |

**Notes:**

+ Indicates values exceeding the NAAQS

(1) The 1-hour value is based on a three-year average (2015–2017) of the 99th percentile of daily maximum 1-hour average concentrations. USEPA replaced the 24-hr and the annual standards with the 1-hour standard.

(2) The 3-hour value is based on the maximum three-hour average concentration in 2011–2012, the latest years of reported 3-hour concentrations.

| Pollutant | Closest Monitoring Location | Units | Averaging Period | Concentration | NAAQS |
|---|---|---|---|---|---|
| [3] The 24-hour value is based on a three-year average (2015–2017) of the 98th percentile of 24-hour average concentrations.<br>[4] The 1-hour value is based on a three-year average (2015–2017) of the 98th percentile of daily maximum 1-hour average concentrations.<br>**Source:** NYSDEC, New York State Ambient Air Quality Report (2012–2017). | | | | | |

Source: NYSDEC, New York State Ambient Air Quality Report (2012–2017).

## 3.6 Human Health (Contaminant Exposure/Hazardous Materials)

NYSDEC maintains an online data base of contaminated sites across the state. US EPA maintains a similar website database for federally designated hazardous waste sites. Spills, hazardous materials disposal and remediation activities have taken place across the County as well as throughout the state. These databases do not address contaminants from onsite treatment of sanitary waste.

Traditional onsite wastewater treatment systems (cesspools and septic tanks) do not use chemicals or hazardous materials. However, chemicals and/or hazardous materials are known to be disposed of in these systems by property owners. The SCDHS Office of Pollution Control Remediation Program is responsible for the assessment and remediation (clean up) of septic systems and leaching pools. The requirement for remediation is triggered when sample analysis indicates contamination around the subsurface system. Sample analysis results above the Department's 'action levels' stated in the SCDHS Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code (Article 12 - SOP #9-95), triggers the need for the operator or owner of the subsurface system to remove the contaminated material and ship it off site for disposal in accordance with applicable federal, state and local requirements.

Chemicals are used at wastewater treatment facilities to aid in the treatment process. Some of these chemicals such as sodium hypochlorite are hazardous and must be handed in strict compliance with the manufacturers' procedures. 6NYCRR Parts 596 through 599 are used by NYSDEC to regulate the storage and handling of hazardous chemicals. Some treatment chemicals are considered 'food grade' and storage is not regulated by Federal, State or local requirements.

As stated in the Suffolk County Sanitary Code Article 6, "…Suffolk County intends to facilitate the best available wastewater management policies and technologies, to minimize and prevent the impacts to water pollution from nitrogen and other constituents (such as pharmaceuticals, personal care products and volatile organic compounds) in sanitary wastewater to protect public health and water resources." Suffolk County Department of Health Services has stated its intent to promote public health and safeguard the water resources of the County. Proper treatment of wastewater, including addressing nitrogen, is noted as measures to protect water resources and improve public health protection.

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# Section 4

# Potential Impacts of Proposed Action

This section presents an evaluation of potential significant adverse impacts and the reasonable likelihood of their occurrence should the Proposed Action be implemented. This Section also recognizes the positive outcome of implementing the Proposed Action. The Proposed Action is briefly described as the County's implementation of a holistic wastewater management strategy based on the recommendations presented in the SC SWP and the changes to the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences required to implement these recommendations. Section 2.1 of this DGEIS provides a detailed description of the Proposed Action.

The baseline environmental setting of the County is described In Section 3 using readily available data sources. Characterization of priority subwatershed areas and groundwater/surface water quality is summarized below. Detailed information can be found in the SC SWP, Section 2.1 and Appendix D.

As noted in Section 3, the study area boundaries coincide with the limits of the County. Figures provided in that section show the county 'divided' and identified as 'western' and 'eastern' Suffolk County. **Figure 3-1** depicts those Towns identified within western Suffolk County as Huntington, Babylon, Smithtown, Islip and Brookhaven. **Figure 3-2** depicts the Towns identified within eastern Suffolk County and includes Riverhead, Southold, Southampton, East Hampton and Shelter Island. Additional maps that include the Priority Areas as defined in the Suffolk County Subwatershed Wastewater Plan (SC SWP, Sections 4.1 and 4.2) are included as Appendix B to this Draft GEIS.

The following environmental criteria were identified during scoping to be included in the environmental review of the Proposed Action. These environmental criteria were used in Section 3 and described the 'existing conditions'. These same environmental criteria will be used in this Section to analyze the potential environmental impacts (positive or negative) should the County implement the Proposed Action.

- Land Use, Consistency with Community Plans and Character
- Groundwater, Drinking Water and Surface Water Resources
- Natural Resources
- Historic and Archaeological Resources
- Noise and Odors
- Human Health (Contaminant Exposure/Hazardous Materials)

Section 4 also includes an assessment of compliance with the requirements of Environmental Justice. Briefly stated, the potential negative impacts associated with the implementation of the Proposed Action are limited to greenhouse gas emissions from the increase in electrical requirements. Direct impacts to land use, historic and archaeological resources, noise, odors and human health were not identified. Improvements in groundwater, drinking water and surface water quality as a result in the reduction of nitrogen loading are anticipated. This would result in a positive effect on the natural environment and indirectly on human health.

An assessment of the potential construction-related impacts is presented in Section 5.0.

The evaluation of potential impacts that follows reflects the adverse and beneficial impacts should the primary recommendations presented in the SC SWP (the Proposed Action) be adopted by the County. As discussed in Section 2.1, the primary recommendations include implementation of a County-wide wastewater upgrade program whereby the greater than 380,000 parcels currently served by on-site wastewater disposal systems (OSDS) would be upgraded to innovative/alternative on-site wastewater treatment systems (I/A OWTS) through four primary project phases. To enable the recommended upgrades, revisions to Article 6 of the Suffolk County Sanitary Code would be phased in and would include upgrades to I/A OWTS at:

- All new construction (including building additions and major renovations for single family residential and all commercial facilities);
- Existing system failure (single family residential; commercial <1,000 gallons per day (gpd)); and,
- Property transfer (single family residential; commercial <1,000 gpd)

The installation of an individual onsite wastewater treatment system associated with a residential property falls under the definition of a Type II action under the State Environmental Quality Review Act (SEQRA) [6NYCRR Part 617.5.(c)(11)], meaning that the action is not subject to review under 6NYCRR Part 617. Short-term construction related impacts associated with the construction of individual conventional OSDS are generally addressed through intra- and interagency coordination and therefore, are not included for review in this GEIS. Coordination is initiated through a property owner's application for sewage disposal systems for either residential, commercial, or subdivision/developments. While individual application requirements for residential, commercial, and subdivisions vary, in each case the property owner, design professional, and/or agent must respond and attest to a series of questions, under penalty of law, pertaining to existing environmental conditions and/or other required permits or variance(s). Using the information obtained on the application, the Suffolk County Department of Health Services (SCDHS) Office of Wastewater Management then requires that all other permits and/or variance requirements related to environmental management of the project are submitted to the Department before the permit to construct the proposed sanitary system is released. Inspection and oversight of requirements stipulated in the individual permits are than completed by the individual issuing agency, as necessary. This process is not proposed to be altered at this time.

Examples of other local Town/Village, New York State, and SCDHS requirements that may be required before a permit to construct is released includes, but is not limited to:

- Town/Village Wetland Permits;
- NYSDEC Wetland Permits;
- Town/Village requirements for satisfaction of local planning or town board approvals;
- Town/Village Erosion and Sediment Control Plans;
- NYS Erosion and Sediment Control Plans;
- Meeting SCDHS Office of Pollution Control sanitary testing, remediation, and abandonment requirements; and,
- Meeting SCDHS Office of Water Resources supply well siting requirements.

In addition to the portion of the Proposed Action discussing I/A OWTSs above, the Proposed Action also includes revisions to Article 6 increasing the maximum flow of Appendix A sewage treatment plants (STPs) from 15,000 gpd to 30,000 gpd. The Commercial Construction Standards for Appendix A systems modification addressing reduced setback requirements based on land use would be adopted to enable the more widespread use of Appendix A systems as a wastewater management tool in Suffolk County. This would not negate other standards (such as siting or good engineering practices) or regulations in place or the requirements for construction on the local level. Code modification and proposed changes to the setback requirements for Appendix A facilities do not require land development. These changes are focused on providing wastewater treatment options should the local municipality determine development is appropriate and provide approval within their jurisdiction. Development in this Draft GEIS refers to land development such as new housing projects, new commercial buildings, and new construction in general; it does not refer to the construction of new STPs or construction related to new STPs such as piping and pump stations. The potential impacts these changes may have are generically discussed under relevant environmental criteria subsections. Individual site-specific or area-specific projects proposing to use Appendix A systems would be subject to local jurisdictional review/approval in addition to project-specific environmental review under SEQRA.

The SC SWP also includes a variety of other wastewater management strategies that would ultimately yield a long-term, sustainable strategy, to address pollution emanating from untreated wastewater sources in Suffolk County. This includes several recommendations that require additional data collection before final recommendations can be made. These additional recommendations are summarized in Section 2.1.7 and should the County move forward with these additional recommendations, the need for review under SEQRA would be determined at that time and may require supplemental EIS or project-specific EIS. Examples of actions that would trigger supplemental or project-specific SEQRA review are provided in Section 12.

It should be noted the SC SWP acknowledges the use of STPs and clustered/decentralized systems as important wastewater management tools for implementation of a Countywide wastewater upgrade program. There are several sewering and STP projects in various stages of environmental review, approval, and funding. The nitrogen reduction forecasts in the SC SWP (Section 4.9) assumes these projects have been constructed and the parcels' sanitary wastewater is treated at the STPs. The water quality 'benefit' associated with the implementation of these

projects is reflected in the forecasted nitrogen reduction discussed in Sections 4.2 of the Draft GEIS and in Section 4.9 of the SC SWP. These sewer district expansion projects and new STPs project are subject to their own environmental review under SEQRA or National Environmental Policy Act (NEPA) and are considered 'presumptive sewering' in this Draft GEIS. Finally, the SC SWP also provides a preliminary list of areas that might benefit from new sewering projects or clustered/decentralized projects and provides initial recommendations for streamlining approval and long-term management of clustered/decentralized systems. All prospective sewer and clustered/decentralized projects are subject to their own environmental review under SEQRA. In addition, any new provisions to support the streamlining of approvals and long-term management of clustered/decentralized systems may be subject to supplemental SEQRA review.

The Proposed Action does not require or include site development; therefore, site development is not included for review in this GEIS. The review and approval of site development would continue to be conducted by the local municipality having jurisdiction.

The impacts described in this section include those that are determined to be reasonable outcomes of implementing only those recommendations that are included in the Proposed Action. As noted previously, the analysis presented in this DGEIS does not include site-specific impacts but looks at these changes as they may affect the County as a whole. Site-specific changes or developments would be the subject of local municipal review and their own review under SEQRA.

## 4.1 Land Use, Community Plans Consistency

If the Proposed Action, including the proposed changes to Article 6 of the County Sanitary Code and Appendix A Standards are implemented, they therefore would not have a direct impact on land use as the approvals of development projects are made on the local level (i.e. Town and Village). It is important to note, the Proposed Action does not include or require development to take place however, the implementation of the Proposed Action may affect new development, re-development, and existing land uses. As has been previously stated, site-specific changes are controlled by local zoning, policies and plans of the applicable Town or Village in Suffolk County. The Proposed Action does not limit or change the local entity jurisdiction to approve or deny development within its boundaries.

### 4.1.1 Land Use

The Proposed Action is the implementation of the recommendations included in the SC SWP to support the development of a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. There is no new land development associated with the Proposed Action. Indeed, the Statement of Purpose of Article 19 of the Suffolk County Sanitary Code (e.g., the existing sanitary code article that permits the use of I/A OWTS in Suffolk County) indicates that "it is not the intent of this Article to alter density requirements for unsewered parcels."

Additionally, for properties that may install I/A OWTS, the Groundwater Management Zones establish the minimum developable lot size within each groundwater hydrogeologic zone, and the local municipal zoning and subdivision regulations refer to these requirements. This is pertinent because the establishment of minimum lot sizes and density regulations, in most cases, falls within the purview of municipalities and their local zoning ordinances. The proposed changes to

the Sanitary Code do not limit the local municipality's jurisdictional power to review proposed development within its boundaries. The County Sanitary Code Article 6, as currently written, does cap the maximum lot size for the protection of groundwater which is then is reflected in local zoning lot size. The proposed changes to the County Sanitary Code can allow for lots to achieve their full development potential should wastewater treatment become available and should the local municipality approve such development. The proposed code changes are focused on the required onsite sanitary wastewater treatment specific to nitrogen removal. While land use and development within each Suffolk County municipality are governed by local zoning and subdivision regulations, all development within Suffolk County is subject to the Suffolk County Sanitary Code (i.e. wastewater treatment and disposal facilities).

However, the implementation of the Proposed Action with regards to the Appendix A systems may affect new development, re-development, and existing development density through the proposed amendments to the Suffolk County Sanitary Code and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences if allowed by the local municipality. Specifically, the proposed changes to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences could facilitate the more widespread use of "Appendix A" modified sewage disposal systems. The proposed Sanitary Code and Appendix A Standards would allow these systems to treat an increased flow of 30,000 gallons per day and reduce setback requirements for specific land use types, if development is approved by the local municipality. The increase in allowable flow to Appendix A facility may allow a parcel to maximize its density 'potential' where it was previously limited by wastewater treatment availability. Each case would still need to obtain local municipality approval. Other safeguards are in place such as parking and height restrictions and siting requirements. The reader is directed to Section 6.0 – Cumulative Impacts for a discussion of the potential growth inducement as it pertains to proposed code and standards changes associated with Appendix A systems.

Sewage treatment plants (STPs) are a proven technological approach for the treatment of nitrogen from sanitary wastewater and identified as such under the Proposed Action. STP projects are often associated with development. The review and approval of development would continue to reside with the local municipality having jurisdiction. The proposed changes to the Sanitary Code and to Appendix Standards would not impact the local municipality's ability to regulate the land use within its borders. SCDHS would continue to review proposed STPs and district expansions per the existing guidelines for the siting and expansion of STPs (SCDHS Guidance Memorandum #28 July 24, 2017). This guidance memorandum was established with the purpose of evaluating the potential impact to groundwater and surface water resources and impacts to neighboring properties resulting from elevated groundwater levels. Proposals for new STPs and or sewer district expansions would also continue to be the subject of their own environmental review under SEQRA.

If the Proposed Action, including the proposed changes to Article 6 of the County Sanitary Code and Appendix A Standards are implemented, they therefore would not have a direct impact on land use as the approvals of development projects are made on the local level (i.e. Town and Village).

## 4.1.2 Community Plans Consistency

The Proposed Action is assessed in the following paragraphs as to its consistency with the regional and County water protection plans, programs and policies identified in Section 3.1. As documented in the discussion that follows, the Proposed Action is consistent with these plans' goals.

### 4.1.2.1 Suffolk County Comprehensive Master Plan 2035 - Framework for the Future

The Suffolk County Comprehensive Master Plan 2035 ("SCCMP") established a roadmap to a more resilient Suffolk County where environmental stewardship is encouraged, natural resources and water quality are preserved, development is strategically built in appropriate locations, and the economy is based on smart growth initiatives and planning. The Proposed Action is consistent with the SCCMP's goals and objectives relating to long-term sustainability and environmental resources, in particular water resources. The Proposed Action supports the SCCMP's initiatives to expand sewer systems to serve concentrated developments to protect the aquifer, preserve open space, to optimize the availability of water supply, and improve surface water conditions. Therefore, the Proposed Action is consistent with the goals and objectives of the SCCMP.

### 4.1.2.2 Suffolk County Comprehensive Water Resources Management Plan

The 2015 CWRMP identified Suffolk County's reliance on on-site wastewater disposal systems that discharge to groundwater, fertilizer use, industrial and commercial solvents, petroleum products, and pesticides as sources of contamination that have a profound and long-lasting impact on groundwater, fresh surface water, and coastal marine water quality. The 2015 CWRMP established a comprehensive framework of implementation measures to establish a Countywide wastewater management strategy.

The preparation of the SC SWP, and therefore the Proposed Action, is a direct output of the recommendations provided by the 2015 CWRMP. The SC SWP is intended to address several recommendations provided in the 2015 CWRMP including, but not limited to:

- Development of a wastewater management strategy to reduce nitrogen pollution emanating from non-point wastewater sources;
- Establishment of a Responsible Management Entity (RME);
- Establishment of a water quality protection district;
- Delineation of water supply and surface water groundwater contributing areas and travel times;
- Use of I/A OWTS in lieu of conventional septic systems;
- Use of clustered/decentralized systems in select areas where individual onsite treatment systems are infeasible but where conventional STPs are not economically feasible;
- Use of conventional STPs where existing studies confirm they are economically feasible;
- Assess vulnerabilities to sea level rise, identify critical areas and review options for sanitary code revisions to address long-term needs, and,

- Implementation of wastewater pilot areas to confirm the effectiveness of the proposed wastewater management nitrogen reduction approaches provided in the SC SWP.

Key milestones within the 2015 CWRMP focus on alternative wastewater treatment systems and monitoring programs to assess effectiveness of existing treatment modalities and potential improvements. Therefore, the Proposed Action is consistent with the goals and objectives of the 2015 CWRMP.

#### 4.1.2.3 Long Island Pine Barrens Protection Act

The Proposed Action's goal of protecting groundwater quality is consistent with the Long Island Pine Barrens (LIPB) Protection Act vision as discussed in Section 3.1.1.3. The overarching purpose of the LIPB Protection Act was to facilitate state and local protection, preservation, and proper management of the unique natural resources of the Pine Barrens-Peconic Bay system. Specifically, it required the preparation and implementation of a state supported regional comprehensive land use plan for the Central Pine Barrens area. This land use plan was to establish a "core preservation area," protect the Central Pine Barrens area, and designate "compatible growth areas" to accommodate appropriate patterns of development and regional growth. The Proposed Action is consistent with the LIPB Act's vision of a regional approach to groundwater and surface water protection.

#### 4.1.2.4 Central Pine Barrens Comprehensive Land Use Plan

The purpose of the CPB Plan is to create a regional approach to public land management in the Central Pine Barrens that focuses on land acquisition strategies for the Core Preservation Area while carefully expanding the Core Growth Area to be consistent with water resource protection and habitat preservation goals. The CPB Plan discusses several standards to address land use and groundwater quality issues within the Central Pine Barrens, and related guidelines that offer mitigation strategies. In particular, the CPB Plan includes nitrate-nitrogen standards that focus on compliance with Article 6 of the Suffolk County Sanitary code, sewage treatment plant discharge locations outside of the Central Pine Barrens, and denitrification systems in lieu of treatment plants. The Proposed Action, which would advance strategies to reduce nitrogen through implementing new wastewater treatment programs, is consistent with the goals and objectives of the CPB Plan.

#### 4.1.2.5 Special Groundwater Protection Area Plan

The Special Groundwater Protection Area (SGPA) Plan aimed to preserve the existing water quality and continue recharge of uncontaminated water to the aquifer. The plan recommended limits on new commercial or industrial land within the SGPAs, feasibility of groundwater monitoring and the preservation of open spaces to protect recharge areas. Overall, the SGPA Plan's implementation measures focused on upgrading existing sewage treatment plants, eliminating commercial or industrial practices that polluted groundwater, and returning turfed areas to open spaces or natural vegetation. The SGPA Plan promotes expansions of existing sewage treatment plants with effluent discharge to surface waters, when such expansions will allow extension of service to SGPA areas, where unsewered development threatens to impair groundwater quality.

The Proposed Action would further the goals of the SGPA Plan by facilitating strategies to improve groundwater quality, including the implementation of new wastewater treatment alternatives such as I/A OWTS. As such, the Proposed Action is consistent with the goals and objectives of the SGPA Plan.

#### 4.1.2.6 Long Island Sound Study

The Long Island Sound Study (LISS) vision is stated as follows, 'The vision for the Sound is of waters that are clean, clear, safe to swim in, and charged with life. It is a vision of waters nourished and protected by extensive coastal wetlands, by publicly accessible, litter-free beaches and preserves, and of undeveloped islands. It is a vision of abundant and diverse wildlife, of flourishing commercial fisheries, of harbors accessible to the boating community, and of a regional consciousness and a way of life that protects and sustains the ecosystem'. Its 2015 Comprehensive Conservation and Management Plan (CCMP) is centered on four themes: clean waters and healthy watersheds, thriving habitats and wildlife, sustainable and resilient communities, and sound science and inclusive management.

The 2015 CCMP initiatives support reduction in nitrogen loading, improving wastewater treatment infrastructure, updating wastewater treatment policies and regulations, and implementing a water quality monitoring strategy. Consistent with the 2015 CCMP, the Proposed Action targets the reduction of nitrogen loading from wastewater sources by implementing an adaptive management plan that recognizes a combination of sewering, cluster/decentralized wastewater treatment, and I/A OWTS strategies to address nitrogen loading. Therefore, the Proposed Action is consistent with the goals and objections of the 2015 CCMP.

#### 4.1.2.7 Peconic Estuary Program

The mission and vision of the Peconic Estuary Program (PEP) is to protect and restore the Peconic Estuary system. The PEP Comprehensive Conservation and Management Plan (CCMP) is a guiding document that provides a blueprint to restore and protect the waters of the Peconic Estuary and includes action and detailed information for who is responsible for carrying out the steps. The document is currently being updated to reflect changes to water quality threats to the Peconic Estuary and is expected to be available in January 2020. The 2017 Peconic Estuary Program Habitat Restoration Plan (the "PEP Habitat Plan") is a comprehensive plan that describes the unique habitats, major threats to these habitats, and habitat restoration progress within the Peconic Estuary watershed and is discussed in more detailed in Section 3.1.1.7. One of the major threats identified by the PEP Habitat Plan was excess nutrients and toxic substances that reach the Peconic Estuary through sewage treatment plants, on-site waste systems, fertilizers, and stormwater runoff.

The Proposed Action, which seeks to reduce nitrogen through the implementation of new wastewater management strategies, is consistent with the PEP CCMP and the Habitat Restoration Plan. The Proposed Action includes the County establishment of a Countywide Wastewater Management District and Responsible Management Entity (RME) to protect the ground and surface water resources of the County from nitrogen loading associated with septic systems and cesspools. The role of the RME would be executed by SC DHS Office of Wastewater Management who would manage the installation of I/A OWTS, which consist of onsite advanced nitrogen removal wastewater treatment units, in priority areas where the need to reduce nitrogen loading

has been identified. Clustered/decentralized systems and new STPs or the expansion of existing STPs will especially help within priority wastewater treatment areas for enhanced nitrogen removal. All of these measures associated with the Proposed Action would advance the goals and objectives of the Peconic Estuary Program.

#### 4.1.2.8 Long Island South Shore Estuary Reserve

The Long Island South Shore Estuary Reserve (SSER) is a 326-mile watershed that includes a system of streams and estuaries that empty into 173 square miles of south shore bays and wetlands. The 2001 Long Island SSER Comprehensive Management Plan (CMP) sets forth goals and implementation measures to improve the SSER's water quality, restore its living resources, protect its maritime history, and expand its estuary-related economy. A more detailed summary of the SSER CMP in provided in Section 3.1.1.8. The recommendations of the CMP provide strategies for management of polluted stormwater runoff in areas where the most significant reductions can be gained.

The Proposed Action is for the development of a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. The Proposed Action is consistent with the SSER CMP's recommendations to improve wastewater management and pollution control and in particular, the reduction of non-point source pollution. Therefore, the Proposed Action is consistent with the goals and objectives of the SSER CMP.

#### 4.1.2.9 Long Island Nitrogen Action Plan

New York State has appropriated five million dollars to address nitrogen pollution on Long Island, leading to the joint initiative by the NYSDEC and the Long Island Regional Planning Council (LIRPC) to develop a Long Island Nitrogen Action Plan (LINAP). Working together, NYSDEC and LIRPC established a Project Management Team and engaged a broad group of stakeholders to develop a science-based, long term plan to address a variety of sources of nitrogen, including cesspools and septic systems. The primary goals of the LINAP are to:

- Identify sources of nitrogen to surface waters and groundwater;
- Establish nitrogen reduction endpoints; and,
- Develop an implementation plan to achieve reductions.

The LINAP identified the preparation of Subwatershed Wastewater Plans (SWPs) for Nassau and Suffolk Counties as critical stepping stones for the overall success of the LINAP. The SWPs will identify the sources of nitrogen on Long Island, characterize the water quality and ecological sensitivity to nitrogen in all water bodies, and provide a recommended strategy of how to address nitrogen from wastewater sources. Furthermore, the SWPs will establish initial load reduction goals, and, of critical importance, identify water resources where wastewater management alone may not result in sufficient nitrogen removal to protect the environment and human health. The identification of these water bodies will pave the way for future evaluations of alternate means for nitrogen mitigation to address legacy pollution such as permeable reactive barriers, in-water aquaculture/bioharvesting, hydromodification, and fertilizer management. The Proposed Action is consistent with the goals and objectives of LINAP as it is the implementation of the

recommendations identified in the SC SWP to reduce nitrogen loading from sanitary wastewater sources to groundwater and surface water resources.

#### 4.1.2.10 Summary

As stated in the above text, the Proposed Action is consistent with the goals and objectives of the plans, policies and initiatives in-place to protect and improve the groundwater and surface water resources of Suffolk County.

## 4.2 Groundwater, Drinking Water and Surface Water

The recommended wastewater upgrade program in the SC SWP includes the implementation of a four phased program that focuses on addressing water resources with the highest priority first as shown in **Figure 4-1** and described in Section 4.4 of the SC SWP. Implementation of the Proposed Action would reduce nitrogen loading in those areas where wastewater upgrades take place resulting in an improvement in water quality. As described in the SC SWP and Section 2.1 of this Draft GEIS, Phase I is defined as the program ramp-up phase. Nitrogen load reductions would be modest during the Phase I ramp-up period with an estimated 1,000 I/A OWTS installed annually through existing voluntary incentive programs, through new requirements set forth in Article 6 of the Suffolk County Sanitary Code for new construction, and as required in Town/Village mandated areas.

During Phase II, I/A OWTS installations would be triggered through Article 6 of the Suffolk County Sanitary Code by property transfer, new construction and existing system failure in the area shown in purple and the existing County, Town and Village voluntary I/A OWTS upgrades and Town and Village I/A OWTS upgrade mandates would continue. The Phase II area includes the 0 to 2-year groundwater contributing area to surface waters, and the Surface Water and Groundwater Priority Rank 1 areas.

During the 30-year Phase II, the pace of nitrogen load removal would gradually but aggressively increase to accommodate industry growth, with up to 7,650 I/A OWTS installations occurring annually during Phase II. A timeline of the I/A OWTS installation is provided in **Figure 2-1** and **Table 2-1** details the program phases**.** Installation of I/A OWTS within the 0 to 2-year groundwater contributing area would enable the quickest reduction in overall nitrogen loading to each surface water body in anticipation that water quality benefits would result. Implementation of I/A OWTS in Groundwater Priority Rank 1 areas would address potential human health impacts associated with consumption of high nitrogen water (in areas served by private wells) and treatment of high nitrogen water (in areas served by community supply wells), with additional benefit being provided towards the protection of surface waters where Groundwater Priority Rank 1 areas overlap surface water contributing areas. Implementation of I/A OWTS in Surface Water Priority Rank 1 areas would address those surface waters with the greatest need for nitrogen load reduction.

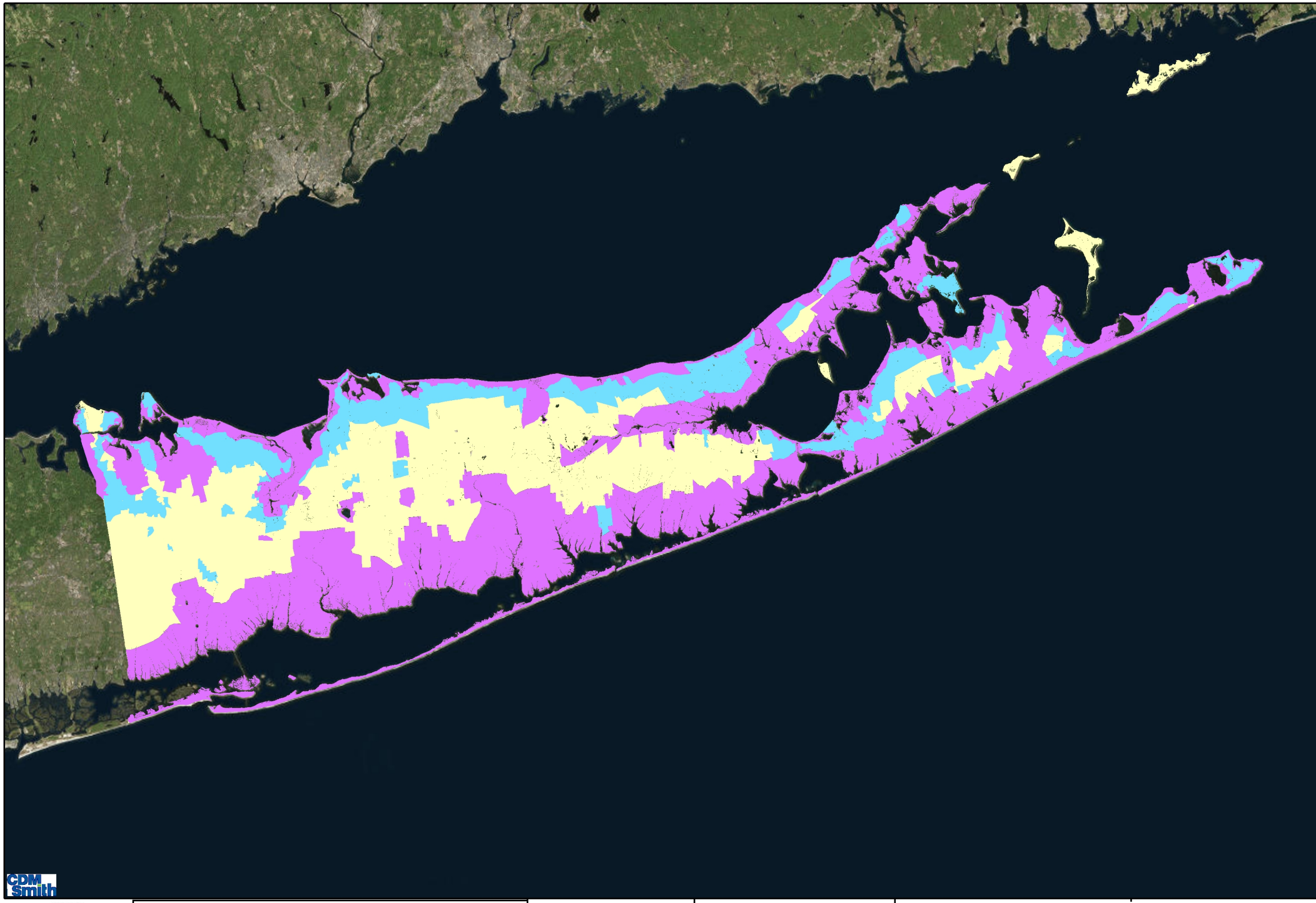



**Figure 4-1 SC Subwatersheds Wastewater Plan**

**Implementation Phase**

II III IV

N

0 24,500 49,000

Ft

**Phase II**

SW Priority Area 1
GW Priority Area 1
0-2 Year Contributing Area

**Phase III**

SW Priority Area 2-4
GW Priority Area 2
2-25/50 Year Contributing Area

**Phase IV**

Remaining Surface Water and Groundwater Protection Parcels

Progress would continue at a steady pace during Phase III when up to 4,500 I/A OWTS installations would occur on an annual basis. During the Phase III period, I/A OWTS installations would continue for new construction and the existing County, Town and Village voluntary I/A OWTS upgrades and Town and Village I/A OWTS upgrade mandates would continue. In addition, I/A OWTS installations would be initiated in the groundwater contributing areas for all surface water Priority Rank 2, 3 and 4 areas, and all groundwater/drinking water Priority Rank 2 areas shown in light blue.

During the Phase IV period, all remaining parcels that were not upgraded to an advanced wastewater treatment system during Phases I through III would be upgraded. The Phase IV schedule has not yet been identified as it will be established based on the evaluations conducted during the first three phases of the program, but it would begin when Phase III is near completion.

The sanitary nitrogen load to groundwater would be reduced as the SC SWP phases progress as shown on **Figure 4-2.**

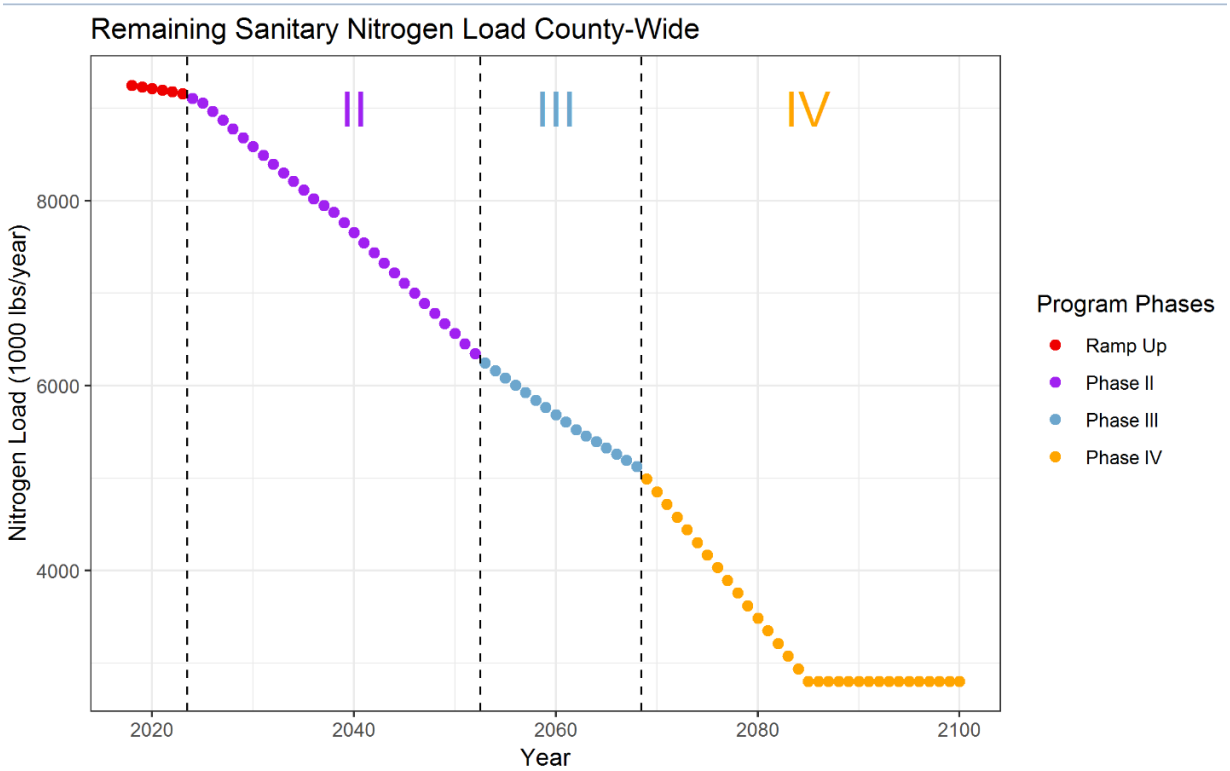



**Figure 4-2 Sanitary Nitrogen Load Reductions Resulting from SC SWP Implementation**

## 4.2.1 Groundwater Impacts

As described in Section 2.1.5 of the SC SWP, the County's three-dimensional groundwater flow and solute transport models were used to assess the impact of parcel-specific nitrogen loads comprised of nitrogen loads from sanitary wastewater, nitrogen loads from fertilizer, nitrogen loads from pets and nitrogen loads from atmospheric deposition on nitrogen concentrations in the aquifer system that would result from existing conditions of land use and sanitary wastewater

management throughout the County. The same modeling approach was also used to assess the nitrogen concentrations in groundwater that would result from implementation of the Proposed Action; e.g., implementation of sanitary sewering in the presumptively sewered areas and implementation of I/A OWTS elsewhere throughout the County. A list of the presumptively sewered area projects is presented in **Table 6-1** of this Draft GEIS.

Baseline conditions, or the simulated concentrations of nitrogen in the shallow upper glacial aquifer that would result after 200 years of continued nitrogen loading under existing conditions (2016) of land use and wastewater management were shown by **Figure 3-18** and the distribution of simulated nitrogen concentrations in untreated water from community supply wells was shown by **Figure 3-14**.

The cumulative improvement in shallow upper glacial aquifer groundwater quality that is predicted to result from the presumptive sewered areas and implementation of I/A OWTS on all other unsewered parcels throughout the County is illustrated by **Figures 4-3** and **4-4**. **Figure 4-3** illustrates the model-predicted nitrogen concentrations in the shallow upper glacial aquifer after sewering the presumptively sewered areas and I/A OWTS implementation on all other currently unsewered developed parcels throughout the County. Areas shown in dark blue on **Figure 4-3** are areas where the predicted nitrogen concentration in the shallow upper glacial aquifer would be less than 1 mg/L; nitrogen concentrations in areas shown in light blue are predicted to be less than 2 mg/L. Predicted nitrogen concentrations in the shallow upper glacial aquifer are simulated to be less than 4 mg/L in areas shown in green, and between 4 and 6 mg/L in areas shown in yellow. After SC SWP implementation, some limited areas are predicted to have nitrogen concentrations in the shallow upper glacial aquifer of between 6 mg/L and 10 mg/L (shown in orange) or even greater than 10 mg/L (shown in red). These areas are generally limited to agricultural areas and areas immediately downgradient of sewage treatment plants.

A comparison of **Figure 4-3** and **Figure 3-18** shows that implementation of the SC SWP would result in dramatic improvement in nitrogen concentrations in the shallow upper glacial aquifer, as shallow upper glacial aquifer nitrogen concentrations throughout most of the County are predicted to be less than 6 mg/L. Modeling and empirical evaluations of nitrogen loading and groundwater quality documented in the **Long Island Comprehensive Waste Treatment Management Plan** (208 Study, 1978) concluded that average nitrate concentrations in groundwater would have to be less than 6 mg/L to result in compliance with the 10 mg/L drinking water maximum contaminant level (MCL) 90 percent of the time,

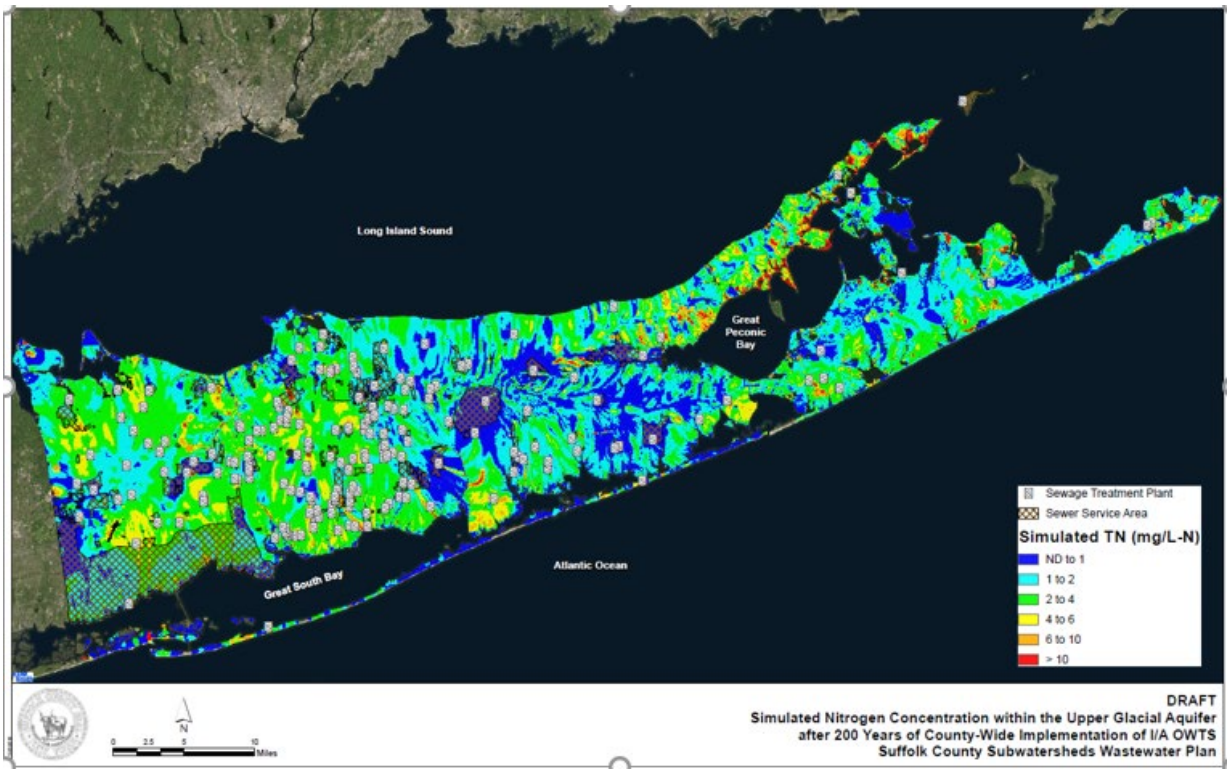



**Figure 4-3 Predicted Nitrogen Concentrations in the Shallow Upper Glacial Aquifer after SC SWP Implementation**

**Figure 4-4** illustrates the predicted change (e.g., improvement) in groundwater quality after SWP implementation; e.g., sewering in presumptively sewered areas and I/A OWTS installations at all other currently unsewered parcels. The figure shows increasing reductions in simulated nitrogen concentrations from white (no change, or very small change) to increasingly deeper shades of blue, indicating increasing simulated reductions in nitrogen. As anticipated, the deeper shades of blue indicating improved nitrogen concentrations of 4 to over 10 mg/L are located in the most densely populated areas where the nitrogen load from sanitary wastewater loading will be most significantly reduced by wastewater management. Areas shown in white are generally areas that are either already sewered (e.g., Suffolk County Sewer District No. 3), sparsely populated (e.g., Pine Barrens areas in Brookhaven and Riverhead), agricultural areas (e.g., areas of the North Fork) or otherwise preserved lands (e.g., Mashomack Preserve on Shelter Island).

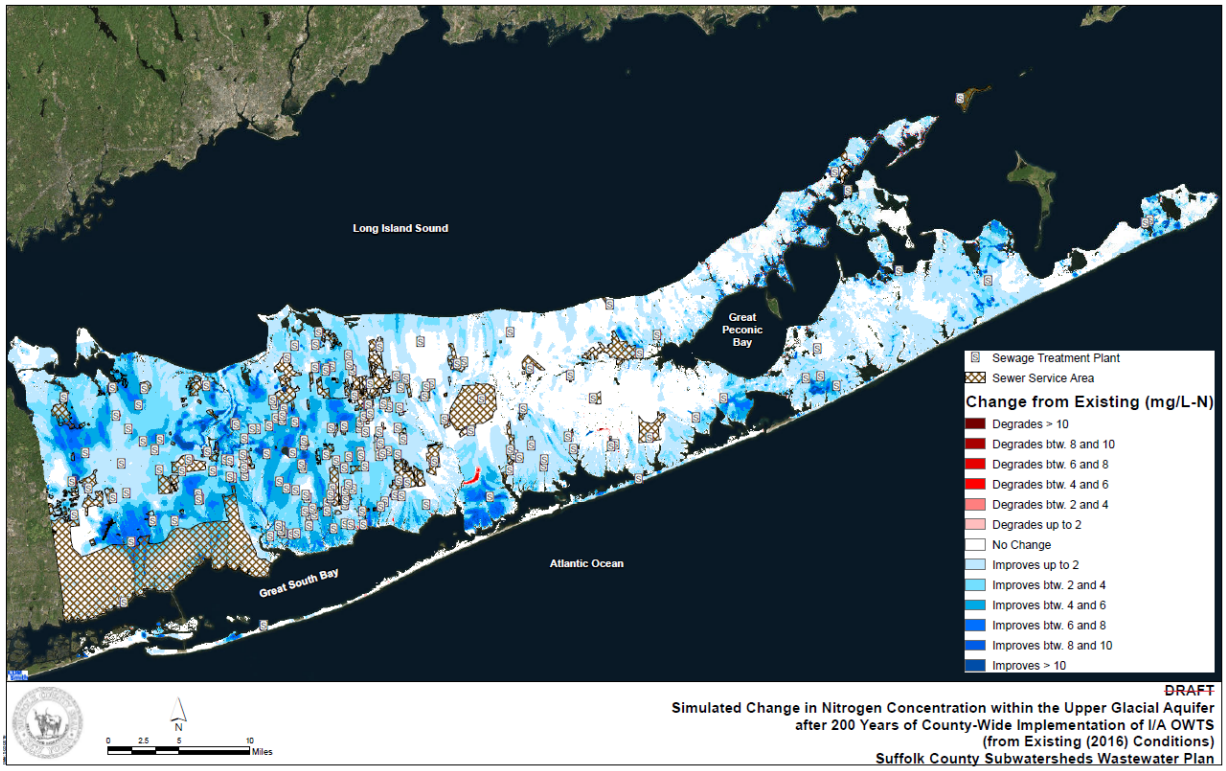


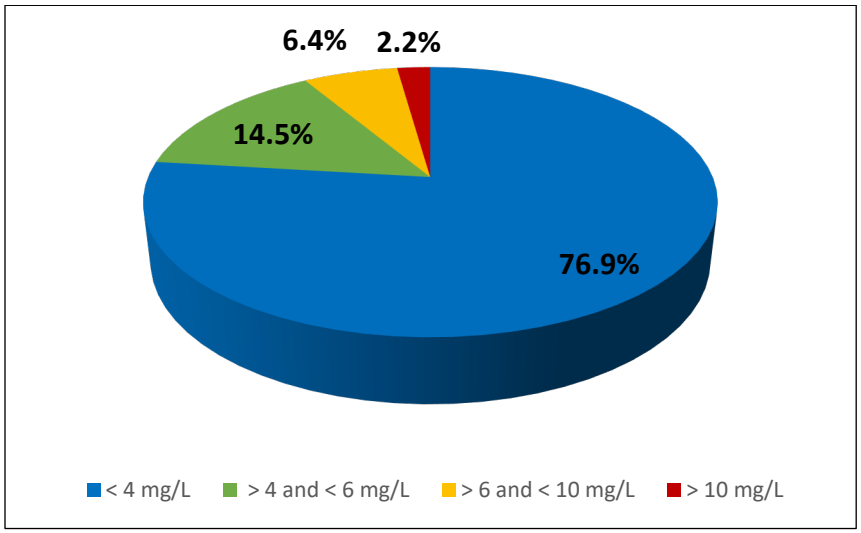

**Figure 4-4 Simulated Reductions in Shallow Upper Glacial Aquifer Nitrogen Concentration after SC SWP Implementation**

Implementation of the SC SWP (including the specific elements of the Proposed Action) would provide beneficial impacts to groundwater quality as nitrogen loading is significantly reduced. No adverse impacts to groundwater quality are anticipated to result from I/A OWTS implementation or modification to the Sanitary Code.

## 4.2.2 Drinking Water Impacts

**Figure 4-5** compares the distribution of model-simulated nitrogen concentrations in untreated water at community supply wells if current land uses and wastewater management persisted for a 50-year period and the significant improvement in untreated water from community supply wells that would result from sewering and I/A OWTS implementation in accordance with SC SWP implementation (including the specific elements of the Proposed Action). The top panel in the figure shows the distribution of simulated nitrogen concentrations in untreated water at community supply wells resulting from existing land uses based on existing conditions; e.g., the SC SWP was not implemented. The top panel in **Figure 4-5** illustrates that untreated water in approximately 2 percent of the community supply wells in Suffolk County is projected to exceed the 10 mg/L Maximum Contaminant Level (MCL) if current conditions in land use and wastewater management remain constant for 50 years. These projections are consistent with actual observed water quality data as discussed in Section 3.3 of the SC SWP which confirms that nitrogen concentrations in untreated water from community supply wells is generally less than the MCL. The bottom panel in **Figure 4-5** shows the distribution of simulated nitrogen concentrations resulting from existing land uses and I/A OWTS implementation in public supply

wells after 50 years (wells having a minimum time of travel greater than 50 years are not included) following full implementation of the I/A OWTS program.



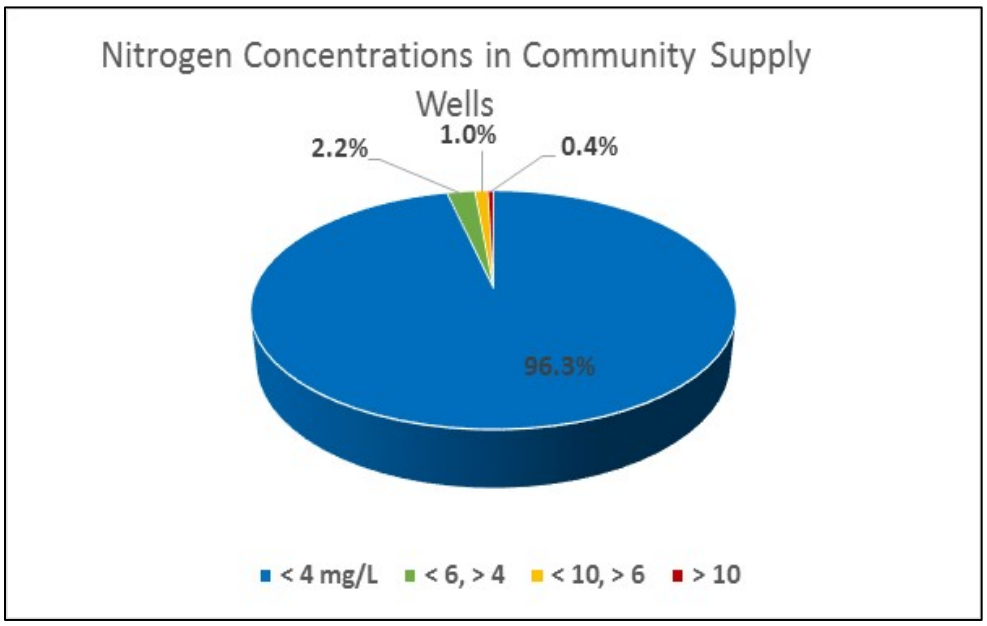




**Figure 4-5 Model-simulated Distribution of Nitrogen Concentrations in Community Supply Wells before and after SC SWP Implementation**

The figure shows that nitrogen concentrations in over 96 percent of the community supply wells would be reduced to less than 4 mg/L after 50 years (an increase of over 19 percent of community supply wells), nitrogen concentrations in 2.2 percent of the wells are simulated to be reduced to between 4 and 6 mg/L (a reduction of over 12 percent), only one percent is simulated to be between 6 and 10 mg/L after I/A OWTS implementation (down from 6.4 percent) and 0.4 percent of the community supply wells are simulated to exceed 10 mg/L after I/A OWTS implementation. This illustrates dramatic benefits in improved groundwater quality. It is noted that the wells where untreated raw water is simulated to exceed 10 mg/L are in an agricultural

area where sanitary wastewater treatment alone was not predicted to reduce the nitrogen concentrations to less than 10 mg/L; fertilization best management practices leveraging the existing stewardship programs should continue in these locations as described in Section 8.4.12 of the SC SWP.

In general, community supply wells located in the western part of the County are screened deeper within the aquifer system. SCDHS has determined that the majority of the 30,000 private supply wells in Suffolk County are located in the East End towns. The private wells tend to be screened in shallower zones of the aquifer and will benefit more quickly from the reduced nitrogen loading.

**Figures 4-3**, **4-4** and **4-5** illustrate the beneficial impacts of SC SWP implementation on drinking water as nitrogen concentrations in untreated water are reduced. No adverse impacts to drinking water are anticipated to result from I/A OWTS implementation or from Sanitary Code modification.

### 4.2.3 Surface Water Impacts

The primary objective of SC SWP implementation (including the specific elements of the Proposed Action) is to reduce nitrogen loading to surface waters to improve water quality in water bodies with documented impacts and to protect water quality in water bodies where ideal water quality is observed. As described in Section 2.1.8 of the SC SWP, together with a team of subject area experts, Suffolk County identified water bodies with ideal water quality based on water quality data collected over the past ten years. Water quality data for water bodies with ideal water quality showed:

- Dissolved oxygen levels greater than NYSDEC's chronic water quality standard of a 4.8 mg/L daily average in 90 percent of all samples;
- Chlorophyll-*a* levels less than 5.5 µg/L in 90 percent of all samples collected, OR average blooming season chlorophyll-a levels less than 5.5 µg/L;
- Water clarity (as measured by secchi depth) greater than two meters (6.56 feet) during the blooming season;
- No observed harmful algal blooms (HABs) species that are associated with primarily human health impacts during the past ten years, and
- A maximum of one HAB of species that are associated with primarily environmental impacts in the past ten years.

Section 2.1.8 of the SC SWP provides a detailed discussion of how and why the endpoints and associated thresholds referenced above were selected and agreed upon by the technical Focus Area Work Group. These water bodies were identified as reference water bodies and are identified in **Table 4-1** and **Figure 4-6**. The impact of nitrogen loading on individual water bodies varies based upon a variety of water body-specific characteristics. Two of the most important characteristics are the water body volume (e.g., the same amount of nitrogen will have a much greater impact on a small water body than on a larger water body where it will be diluted to lower concentrations) and residence time (e.g., nitrogen that is quickly flushed out of a water body by a fast-moving current will have less impact than in a sluggish, slower-moving water body

**Table 4-1 Reference Water Bodies Achieving All Ecological Endpoints**

| Subwatershed | SWP PWL Number | Subwatershed | SWP PWL Number |
|---|---|---|---|
| Coecles Harbor | 1701-0163 | Northwest Creek and Tidal Tribs | 1701-0046 |
| Cold Spring Pond and Tribs | 1701-0127 | Northwest Harbor | 1701-0368+0275+0276 |
| Gardiner's Bay | 1701-0164 | Noyack Bay | 1701-0167-rev |
| Goose Creek | 1701-0236 | Sag Harbor | 1701-0035-SH+0239 |
| Hallock/Long Beach Bay and Tidal Tribs | 1701-0227 | Sebonac Creek/Bullhead Bay and Tidal Tribs | 1701-0051 |
| Lake Montauk | 1701-0031 | Shelter Island Sound, North and Tribs | 1701-0170 |
| Little Peconic Bay | 1701-0126+0172 | Shelter Island Sound, South and Tribs | 1701-0365-rev+0240 |
| Little Sebonac Creek | 1701-0253 | Shinnecock Bay – Bennet Cove (Cormorant Cove) | 1701-0033-BC+0252+0296 |
| Long Island Sound, Suffolk County, East | 1702-0266 | Shinnecock Bay East | 1701-0033-E |
| Long Island Sound, Suffolk County, West | 1702-0098+0232 | Southold Bay | 1701-0044 |
| Mill Creek and Tidal Tribs | 1701-0238+ | Stirling Creek and Basin | 1701-0049 |
| Mt Sinai Harbor and Tidal Tribs | 1702-0019 | Town/Jockey Creeks and Tidal Tribs | 1701-0235 |
| Napeague Harbor and Tidal Tribs | 1701-0166 | West Neck Harbor | 1701-0132-rev |
| North Sea Harbor and Tribs | 1701-0037 | Wooley Pond | 1701-0048+ |

where the nitrogen remains longer to stimulate algal growth). To account for these conditions, the SC SWP "normalized" the nitrogen loads for each water body by dividing the predicted nitrogen load by the water body's volume, and multiplying the nitrogen loads times the water body's residence time. This normalized load is referred to as the "unit nitrogen load * residence time" metric and was used for all nitrogen load comparative evaluations completed in the SC SWP and within this Draft GEIS. The combined "unit nitrogen load * residence time" metric for each of the marine and mixed water bodies evaluated was compared to the metrics calculated for the 28 reference water bodies that exhibited ideal water quality. The nitrogen load reductions required so that each surface water body would achieve the same "unit nitrogen load * residence time" as the reference water bodies were compiled and identified as the sanitary nitrogen load reduction targets for the achievement of overall/ideal water quality. These nitrogen load reduction targets were compared to the nitrogen load reductions that would be expected to result from I/A OWTS implementation throughout the subwatershed.

Ultimately, all of the 191 subwatersheds evaluated were grouped into wastewater management areas for management purposes (please refer to Section 2.1.91 for a detailed explanation and description of each of the wastewater management areas). **Table 4-2** compares the nitrogen load

reduction targets for each of the wastewater management areas to achieve ideal water quality to the nitrogen load reductions that can be achieved by I/A OWTS implementation within the groundwater contributing areas. **Table 4-2** also identifies the nitrogen load reductions required to achieve the "unit nitrogen load * residence time" metric that was calculated for subwatersheds that achieved dissolved oxygen levels greater than NYSDEC's chronic water quality standard of a 4.8 mg/L daily average in 90 percent of all samples with only one HAB with primarily environmental impacts.

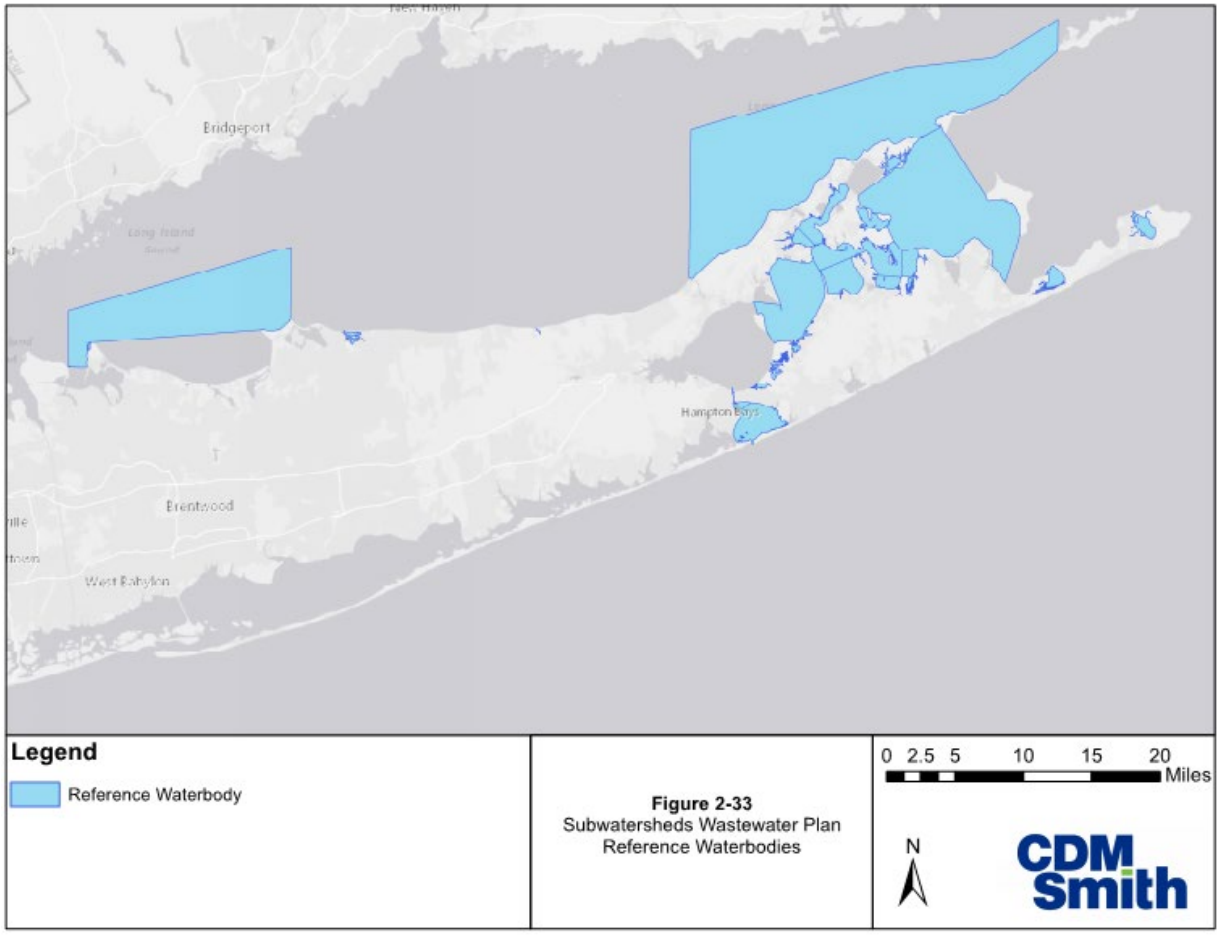


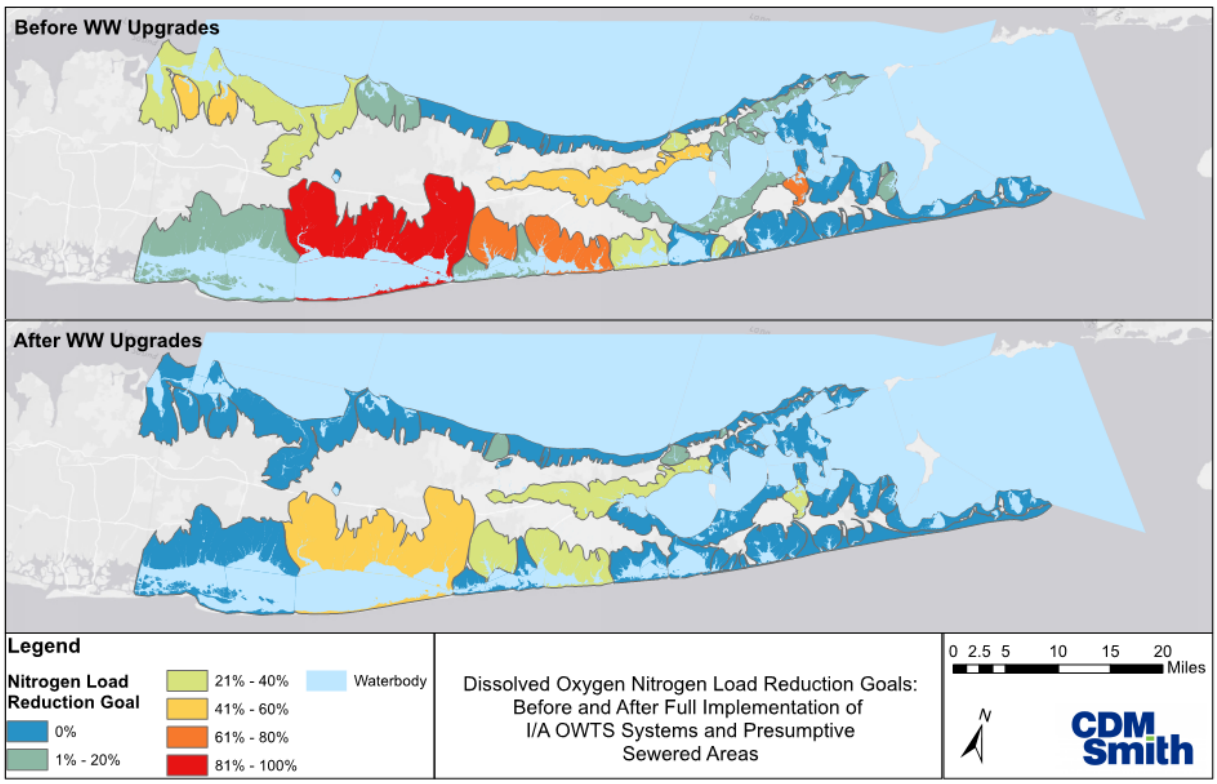

**Figure 4-6 Reference Water Bodies**

**Table 4-2 Nitrogen Load Reduction Management Areas and Nitrogen Load Reduction Targets**

| Management Area | Management Area Name | Management Area Reference Water Body HAB/DO Improvement Goal* | Management Area Reference Water body Overall Water Quality Improvement Goal* | Achievable Reduction through On-Site Wastewater Management |
|---|---|---|---|---|
| 1 | Western Long Island Sound Harbor Restoration Areas | 44% | 72% | 50% |
| 2 | Long Island Sound Harbors and Bays Restoration and Protection Area I | 23% | 37% | 43% |
| 3 | Long Island Sound Harbors and Bays Restoration and Protection Area II | 5% | 13% | 45% |
| 4 | Central and Western Long Island Sound Open Waters Protection Area | 0% | 0% | 16% |
| 5 | Long Island Sound Inlets and Creeks Restoration Area | 34% | 67% | 39% |
| 6 | Eastern Long Island Sound Open Waters and Long Island Sound Fresh Waters Protection Area | 0% | 0% | 5% |
| 7 | Peconic Estuary Restoration and Protection Area I | 49% | 74% | 23% |
| 8 | Peconic Estuary Restoration and Protection Area II | 14% | 30% | 34% |
| 9 | Peconic Estuary Restoration and Protection Area III | 15% | 33% | 30% |
| 10 | Sag Harbor Cove and Connected Creeks | 62% | 81% | 45% |
| 11 | West Neck Bay and Creek and Menantic Creek | 37% | 68% | 42% |
| 12 | Peconic Estuary Restoration and Protection Area IV | 0% | 6% | 11% |
| 13 | Coastal Ponds Restoration and Protection Water bodies | N/A | 63% | 36% |
| 14 | Shinnecock Bay Restoration and Protection Area I | 28% | 52% | 44% |
| 15 | Shinnecock Bay Restoration and Protection Area II | 0% | 20% | 42% |
| 16 | Moriches Bay Restoration Area I | 76% | 88% | 48% |
| 17 | Moriches Bay Restoration Area II | 18% | 41% | 48% |
| 18 | Great South Bay Restoration Area I | 87% | 93% | 48% |
| 19 | Great South Bay Restoration Area II | 2% | 44% | 27% |
| 20 | Lake Ronkonkoma | N/A | 52% | 48% |
| 21 | Atlantic Ocean | N/A | N/A | N/A |

* Reduction goals of well-characterized water bodies within each management area used to calculate the weighted average management area nitrogen reduction goals shown.
The Overall Water Quality Improvement Goal is based on the reference water body approach for marine and mixed waters and EPA guidance value for freshwater.

**Figure 4-7** compares the reductions in sanitary wastewater nitrogen loading that would be required to achieve the dissolved oxygen/HAB endpoint (e.g., achieve the same unit nitrogen load * residence time as the average unit nitrogen load * residence time for water bodies with no HAB or hypoxic events within the last 10 years) before and after SC SWP implementation. The figure shows that implementation of the SWP will fully achieve these water quality objectives for all Long Island Sound Wastewater Management Areas, except for Wastewater Management Area 5 which includes the poorly characterized Wading River, for four of the Peconic Estuary Wastewater Management Areas and for four of the South Shore Estuary Wastewater Management Areas. While significant progress in water quality improvement will be provided for Wastewater Management Areas 7, 10, 16 and 18, additional nitrogen load reductions would be required to achieve the desired endpoints.



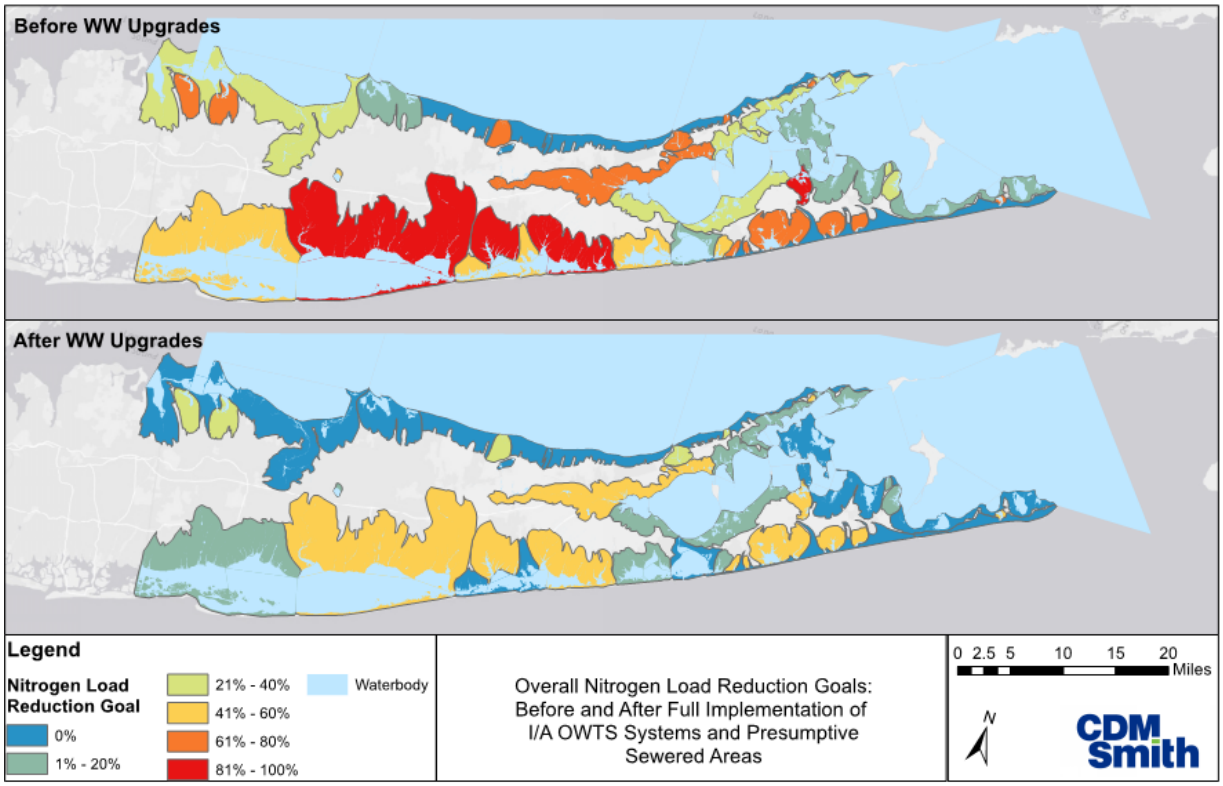

Note: The upper panel in the figure shows the nitrogen load reductions required to achieve the same unit nitrogen load observed in Suffolk County waters with no hypoxic or HAB events. The lower panel shows the much lower nitrogen load reductions required to achieve the unit nitrogen loads after SWP implementation.

**Figure 4-7 Surface Waters Progress Towards Achievement of HAB/Dissolved Oxygen Criteria Based on Nitrogen Load Reductions after SWP Implementation**

The proposed reduction in nitrogen loading would establish the conditions necessary to support restored ecosystems, increased biodiversity, protection of human health and result in economic benefits. Benefits could include, but not be limited to:

- Increased dissolved oxygen concentrations and reduction in the intensity and frequency of hypoxic episodes resulting in the conditions required to support healthier ecosystems and increased biodiversity;
- Reduction of harmful algal blooms which would improve and expand shell fishing; result in less beach closures; and provide for the protection human health against HAB-related bio-toxins;
- Clearer waters which would create conditions more conducive for eelgrass growth and potentially increase property value (SC SWP Section 1.1.5 identifies a number of references documenting the linkage between water clarity and property values).
- Protection from storm surge as conditions to support healthy submerged aquatic and wetland vegetation are restored and
- Stronger recreation, tourism, and commercial fishing economies.

**Figure 4-8** illustrates the improvement in surface water quality expected to result from reduction of sanitary nitrogen loads such that the "unit nitrogen load * residence time" metric is reduced to the "unit nitrogen load * residence time" that characterizes the reference water bodies. The top panel in the figure shows the wastewater management areas currently exhibiting ideal water quality in blue. The reference water body approach indicates that sanitary nitrogen loads in the dark green and light green shaded water bodies would need to be reduced by between 1 and 20 percent and 21 and 40 percent respectively, to achieve ideal water quality. Sanitary nitrogen load reductions of between 41 and 60 percent and 61 and 80 percent would be required to achieve ideal water quality in the surface water bodies shown in light orange and dark orange, while between 81 percent and 100 percent of the sanitary nitrogen load in the areas shaded in red would be required to achieve ideal water quality. The top panel shows that the highest nitrogen load reduction goals shown in red (80 to 100 percent) and dark orange (60 to 80 percent) tend to be located in densely populated areas discharging to poorly flushed water bodies and are also associated with the highest Priority Rank areas.




Note: The upper panel in the figure shows the nitrogen load reductions required to achieve the same unit nitrogen load observed in Suffolk County waters exhibiting ideal water quality. The lower panel shows the much lower nitrogen load reductions required to achieve the unit nitrogen loads after SWP implementation.

**Figure 4-8 Progress Towards Achievement of Ideal Water Quality after SC SWP Implementation**

The lower panel in **Figure 4-8** shows the progress towards ideal water quality that would be achieved by SC SWP implementation. The lower panel depicts the substantial progress that will be made towards achievement of these nitrogen load reduction goals when I/A OWTS installations are complete. The figure shows that I/A OWTS implementation will be successful in completely achieving water quality goals for four of the six LIS wastewater management areas, one of the six Peconic Estuary watershed wastewater management areas, two of the six South Shore Estuary wastewater management areas and the Atlantic Ocean.

## 4.2.4 Summary

Based on the analysis summarized above and detailed in the SC SWP, the Proposed Action would not result in a negative impact to the groundwater and surface water resources in the County, but rather would result in a cumulative improvement in the water quality of the groundwater and surface water resources. The following benefits are anticipated:

- Nitrogen reduction in shallow upper glacial groundwater with the nitrogen concentration in the aquifer throughout most of the County predicted to be less than 6 mg/L.

- Nitrogen concentrations in untreated water in over 96 percent of the community supply wells would be reduced to less than 4 mg/L after 50 years, with 2.2 percent of the community supply wells showing concentrations between 4 and 6 mg/L.
- Nitrogen reduction in surface water such that water quality goals are achieved in four of the six LIS wastewater management areas, one of the six Peconic Estuary watershed wastewater management areas, two of the six South Shore Estuary wastewater management areas and the Atlantic Ocean. This would provide the following added benefits to surface water quality:
    - Increased dissolved oxygen concentrations
    - Reduction of harmful algal blooms
    - Clearer waters
        - *Restoration of surface water ecosystems due to an improvement in water quality.*

## 4.3 Natural Environment

The Proposed Action, if implemented, does not require the development of a specific project. The goal of the Proposed Action is to reduce nitrogen loading originating from onsite sanitary systems through a phased wastewater management program. Implementation of the Proposed Action is anticipated to reduce nitrogen loading to water resources in the County and would therefore, not result in long-term negative impacts to the natural environment.

To facilitate implementation of the recommended wastewater upgrade program, proposed changes to the Sanitary Code would require the use of I/A OWTS under specific conditions. Installation of an I/A OWTS would not require the permanent removal of vegetation or loss of habitat. Replacement of an existing cesspool or septic facility with an I/A OWTS would require the temporary removal of existing vegetation, likely lawn, to remove the existing OSDS and install the new I/A OWTS. The area would then be replanted or reseeded. This is similar to the disturbance required for the replacement of an existing onsite wastewater disposal system. Information regarding the potential installation related impacts is summarized in *Section 5, Short-term or Construction Related Impacts.*

It is assumed that regulatory requirements would remain in place to address development (i.e. local building codes, zoning, and site plan approvals) and the use of wetland areas and floodplains would continue to be governed by federal, state and local regulations. Requirements associated with the use of Critical Environmental Areas (as defined in Section 3.3.1.2) would not change as a result of implementing the Proposed Action. Regulations in place to protect threatened and endangered species would not be altered by this project.

The implementation of the recommendations in the SC SWP and specifically the Proposed Action would result in a reduction of nitrogen loading to water resources within the County. The reduced nitrogen loading is anticipated to result in an improvement to groundwater and surface water quality. This would have a beneficial impact to the natural environment in the long-term. Poor groundwater and surface water quality and high levels of nitrogen tend to have a negative

impact on the surrounding natural environment, especially environmentally sensitive areas and freshwater and tidal wetlands. An improvement in surface water or groundwater quality by the reduction of nitrogen levels, as discussed in *Section 4.2, Groundwater and Surface Water* above, would be deemed beneficial to the wildlife and vegetation within Suffolk County, including those animals and plants listed as threatened or endangered, and the ecosystems within critical environmental areas, including the Central Pine Barrens. .

The proposed changes to the Sanitary Code and the Appendix A Standards would not result in an alteration to regulations regarding floodplains and flood zones within Suffolk County. As there would be no development required by this project, existing floodplains and flood zones within the study area would not be impacted nor would there be any additional floodplains or flood zones created as a result of the Proposed Action. The existing floodplains would maintain their current level of functionality.

STPs, new sewer districts and expansion of existing sewer districts would also result in the reduction of nitrogen loading from sanitary sources providing a benefit in water quality. The potential impacts associated with projects such as these are evaluated in a project specific environmental review.

The Proposed Action does not minimize the need to comply with existing Federal, State of local regulations protecting critical environmental areas, endangered and threatened species, wetlands or floodplains. In fact, implementation of the Proposed Action is forecasted to result in groundwater and surface water quality improvements that would support improvements to the associated natural environment. Excess nitrogen has been linked., for example, to water quality issues resulting in HAB events and reduction in the storm-surge protection provided by coastal wetlands. Existing measures in place to protect environmentally-sensitive areas throughout the County would not be affected by the implementation of the Proposed Action. Therefore, implementation of the Proposed Action would not result in long-term negative impacts to the natural environment.

## 4.4 Historic and Archaeological Resources

I/A OWTS replacement of OSDS would not negatively impact the historic setting or character of an historic property. Use of Appendix A systems would comply with requirements established by State and local entities to protect historic properties and archaeological resources. Negative impacts are not been identified.

### 4.4.1 Historic Resources

I/A OWTS currently approved by Suffolk County for provisional use as defined in Article 19 of the Suffolk County Sanitary Code are primarily below grade and in most areas would only have visible components with low profile covers for access to the system. In addition, the visibility of access covers can be reduced through landscaping or other natural structures. As such, it is not expected that the in-kind replacement or retrofit of existing septic systems would negatively impact the setting or character of individual historic properties where such systems may be modified, nor would they have an adverse impact on the overall historic character or appearance of larger historic districts. Please see **Figures 4-9** and for examples of installed I/A OWTS provided by SCDHS. **Figure 4-9** shows an installed Fuji Clean I/A OWTS with three ports flush

with the lawn. **Figure 4-10** shows an installed I/A OWTS with a pressurized shallow drainfield. Neither of these examples would negatively impact the historic setting or character of a property. Therefore, the implementation of the Proposed Action would not result in a long-term impact to historic resources.

**Figure 4-9 Example Visible Components of Installed I/A OWTS (source: SCDHS)**

The proposed change to the Appendix A Standards reducing the setback requirements for specific land uses, would not negate the need for consultation with New York State Historic Preservation Office (SHPO) prior to project implementation. Maintenance of the Appendix A facilities would not be changed by the Proposed Action. No long-term impact to historic structures has been identified by implementation of the Proposed Action as they pertain to Appendix A systems.

**Figure 4-10 Example Installed I/A OWTS and Pressurized Shallow Drainfield with No Visual Impact (source: SCDHS)**

STPs, sewer districts, and sewer district expansions are also identified as a proven technology for the reduction of nitrogen loading to groundwater and surface water from sanitary wastewater. Projects such as these would be the subject of their own environmental reviews.

### 4.4.2 Archaeological Resources

With the completion of any required archaeological analyses and continued consultation with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), the project would not result in impacts on archaeological resources. Normal maintenance of the I/A OWTS would not require additional excavation or modification to the structure. Any potential impacts to archaeological resources would occur during installation, see Section 5. Therefore, implementation of the Proposed Action would not result in long-term impacts to archaeological resources.

## 4.5 Noise and Odors

Implementation of the Proposed Action would not have the potential to result in substantial changes to noise levels at receptors in the County and would not have the potential to cause significant adverse noise impacts. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require that odor reduction be implemented into the design of Appendix A STPs to

qualify for reduced setbacks. Site specific projects would continue to be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would be evaluated. Therefore, the Proposed Action is not anticipated to generate odors noticeable offsite and would not have the potential to cause significant adverse odor impacts.

### 4.5.1 Noise

The Proposed Action would not require the development of a specific project and would not introduce new noise sources that would be expected to be audible offsite. New treatment equipment (I/A OWTS) would be required to comply with local applicable noise codes or ordinances. It is reasonable that such equipment would not result in unacceptable levels of noise at receptors. Based on information collected by the County, there have been no identified noise issues associated with the I/A OWTS approved for use at the date of this publication. As with existing onsite wastewater disposal systems (i.e. septic system), it is assumed such equipment would be located within structures or underground, shielding noise that is produced from surrounding receptors.

Additionally, changes pursuant to the Proposed Action would not result in new vehicular traffic that would increase noise levels at receptors along roadways in the County. Finally, as described previously, any major facilities or projects proposed in the future, such as sewer expansion projects, new Appendix A STPs, or individual/specific clustering projects, are subject to project-specific environmental review that would include consideration of potential noise effects. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require noise control be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Consequently, the Proposed Action would not have the potential to result in substantial changes to noise levels at receptors in the County and would not have the potential to cause significant adverse noise impacts. Therefore, no long-term noise impacts have been identified associated with the implementation of the Proposed Action.

### 4.5.2 Odors

Wastewater treatment in general has been identified as a potential source of noticeable offsite odors. The Proposed Action would reduce nitrogen pollution from wastewater sources by requiring the use of I/A OWTS in place of conventional septic systems. In addition to these I/A OWTSs, implementation of clustered/decentralized systems, the use of conventional STPs or other system must be operated in conformance with local requirements.

As part of the Proposed Action, I/A OWTS would replace an OSDS that consists of a septic tank, leaching structures, and does not have active or mechanical means of treatment or supplemental filtering. I/A OWTS would be installed below ground similar to that of a traditional OSDS. The I/A OWTS would not result in new odor sources. Additionally, the proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require that odor reduction be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Site specific projects would be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would

be evaluated. Therefore, the Proposed Action is not anticipated to generate odors noticeable offsite and would not have the potential to cause significant adverse odor impacts.

## 4.6 Human Health (Contaminant Exposure/Hazardous Materials)

The implementation of the Proposed Action would not result in increased exposure to hazardous materials or a potential long-term negative impact to human health. Improvement in water quality (reduced nitrogen loading) would be a benefit to human health.

NYSDEC maintains an online data base of contaminated sites across the state. US EPA maintains a similar website database for federally designated sites. Spills, hazardous materials disposal and remediation activities have taken place across the County as well as throughout the state. As previously noted, new development is not a component of the Proposed Action and should development be proposed, a site-specific assessment of potential impacts would include as a minimum consulting the online database(s) to determine if the site was identified as having past disposal activities.

The installation and use of I/A OWTS units does not require the use or storage of chemicals or other hazardous materials. The flow discharged from the units is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health. Upgrading of failed systems and old/grandfathered systems is expected to result in increased separation of the system from groundwater and reduced failures which in turns results in less human health hazards associated with exposures to sewage and physical harm from a collapsed system. However, chemicals and/or hazardous materials are known to be disposed of in these systems by property owners. The SCDHS Office of Pollution Control Remediation Program is responsible for the assessment and remediation (clean up) of septic systems and leaching pools. The requirement for remediation is triggered when sample analysis indicates contamination around the subsurface system. Sample analysis results above the Department's 'action levels' stated in the SCDHS Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code (Article 12 - SOP #9-95), triggers the need for the operator or owner of the subsurface system to remove the contaminated material and ship it off site for disposal in accordance with applicable federal, state and local requirements. Implementation of the Proposed Action would not alter these requirements.

In fact, reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) would have a positive impact on water quality that can result in an improvement to human health.

For example, a reduction in nitrogen loading is expected to result in an improvement to water quality. Nitrogen concentrations and the resulting HAB events are anticipated to decrease with the implementation of I/A OWTS. HAB events that are associated with human health impacts include:

- Blue green algae (cyanobacteria)
- Red Tide (Alexandrium fundyense, causes PSP)

- Red Tide (Dinophysis acuminate, causes DSP)

Improvements in water quality would establish the conditions required to result in increased wetlands health. Improvement in wetlands (primarily tidal wetlands) health would increase the systems' ability to provide improved wave action dissipation and mitigate flooding and storm-related tidal surge and therefore, reduce potential impacts to human health and safety.

Flooding and sea level rise would affect the ability of the I/A OWTS to reduce nitrogen loading during a flooding event. This is similar to the reduced treatment provided by the traditional OSDS during coastal flood events.

The shift from conventional sanitary system construction material, which was mainly concrete, to I/A systems introduces additional materials for major structural components. This can include plastics such as polyethylene and fiberglass. Both materials are widely accepted and used in many applications across the nation, and neither are known to result in the contamination from their usage in I/A systems.

I/A OWTS can include additional components, including filter media. One example is sawdust/wood chip media. Organic carbon sources have been known to generate initial BOD loadings (which have potential to clog leach fields). There are concerns regarding possible mobilization of iron, manganese, and possibly in highly reduced effluent. None of these have been demonstrated to be significant, unacceptable impacts, but continued monitoring is warranted by SC DHS as part of their long-term monitoring plan addressing STPS, conventional septic systems and I/A OWTS.

I/A OWTS utilize processes similar to a standard sewage treatment plant with standard bacteria. The use of specialized bacteria (bio-augmentation) and/or chemical addition would be examined by the County as part of its adaptive management process. Only additives found to be safe (no human health concerns) would be permitted for use.

Therefore, the implementation of the Proposed Action would not result in increased exposure to hazardous materials or a potential long-term negative impact to human health.

## 4.7 Environmental Justice Assessment

The Proposed Action, if implemented, would not cause disproportionate adverse impacts on minority or low-income populations within Suffolk County.

### 4.7.1 Overview

On March 19, 2003, NYSDEC issued *Commissioner's Policy-29 Environmental Justice and Permitting* (CP-29), to address environmental justice concerns and ensure community participation in the NYSDEC environmental permit review process and the NYSDEC application of the SEQRA. The Policy is intended to encourage meaningful public participation by minority or low-income communities in the environmental review process and to assist NYSDEC in addressing any adverse impacts on minority and low-income communities. This guidance policy also incorporates environmental justice concerns into some of the NYSDEC enforcement programs, grants programs, and public participation requirements.

Environmental justice is defined in CP-29 as follows, *"…the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."*

This Environmental Justice analysis has been prepared to assess whether the Proposed Action could cause disproportionate adverse impacts on minority or low-income populations within Suffolk County.

### 4.7.2 Regulatory Framework

NYSDEC Policy CP-29 establishes a procedure and requirements for the review of applications requiring permits or other approvals from the NYSDEC. Pursuant to the applicability guidance, Policy CP-29 is applicable to all to applications for major projects and major modifications for the permits authorized by the following sections of the Environmental Conservation Law:

- Titles 7 and 8 of Article 17, State Pollutant Discharge Elimination System (SPDES) (implemented by 6 NYCRR Part 750 et seq.);
- Article 19, Air Pollution Control (implemented by 6 NYCRR Part 201 et seq.);
- Title 7 of Article 27, Solid Waste Management (implemented by 6 NYCRR Part 360): including minor modifications involving any tonnage increases beyond the approved design capacity and minor modifications involving an increase in the amount of putrescible solid waste beyond the amount that has already been approved in the existing permit;
- Title 9 of Article 27, Industrial Hazardous Waste Management (implemented by 6 NYCRR Part 373); and
- Title 11 of Article 27, Siting of Industrial Hazardous Waste Facilities (implemented by 6 NYCRR Part 361).

Minor and major projects are defined by Section 621.2 of the Environmental Conservation Law (6 NYCRR Part 621). Relevant to individual wastewater management projects that would be facilitated by the Proposed Action, minor projects include:

- Minor stream bed or bank disturbance actions include the following: repair or in- kind replacement of existing structures; disturbances of less than 100 lineal feet (30.48 linear meters) along any 1,000 feet (304.8 meters) of watercourse (6 NYCRR Part 621.4(a)(1)(ii));
- Discharges of less than 10,000 gallons per day of sewage effluent, without the admixture of industrial wastes or other wastes, to groundwaters (6 NYCRR Part 621.4(f)(2)(i);
- Minor water withdrawal projects (6 NYCRR Part 621.4(b)(2);
- Minor Long Island well projects (6 NYCRR Part 621.4(b)(3);

- Minor freshwater wetland projects (6 NYCRR Part 621.4(j)(2); and
- Minor tidal wetland projects (6 NYCRR Part 621.4(k)(2).

### 4.7.3 Analysis of Proposed Action

NYSDEC has designated several potential environmental justice areas within Suffolk County. A potential environmental justice area is defined as, *"a minority or low-income community that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."*

As shown in **Figures 4-11** through **Figure 4-12**, the potential environmental justice areas include four areas within the Town of Southampton, the Shinnecock Indian Nation Reservation, one area within the Town of East Hampton, two areas within the Town of Huntington, two areas within the Town of Babylon, two areas within the Town of Islip, six areas within the Town of Brookhaven, and the Unkechaug Nation Poospatuck Reservation.

The Proposed Action is the implementation of the recommendations included in the SC SWP to support the development of a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. The recommendations in the SC SWP were developed to protect and restore both groundwater/surface water quality and the coastal ecosystems of Suffolk County. The project area addressed by the SC SWP spans the entire County. Therefore, the Proposed Action is applicable to all parcels within the County borders and would not disproportionately affect parcels within environmental justice areas. Further, the implementation of the Proposed Action (reduction in nitrogen loading to groundwater and surface water) would improve water quality for all residents.

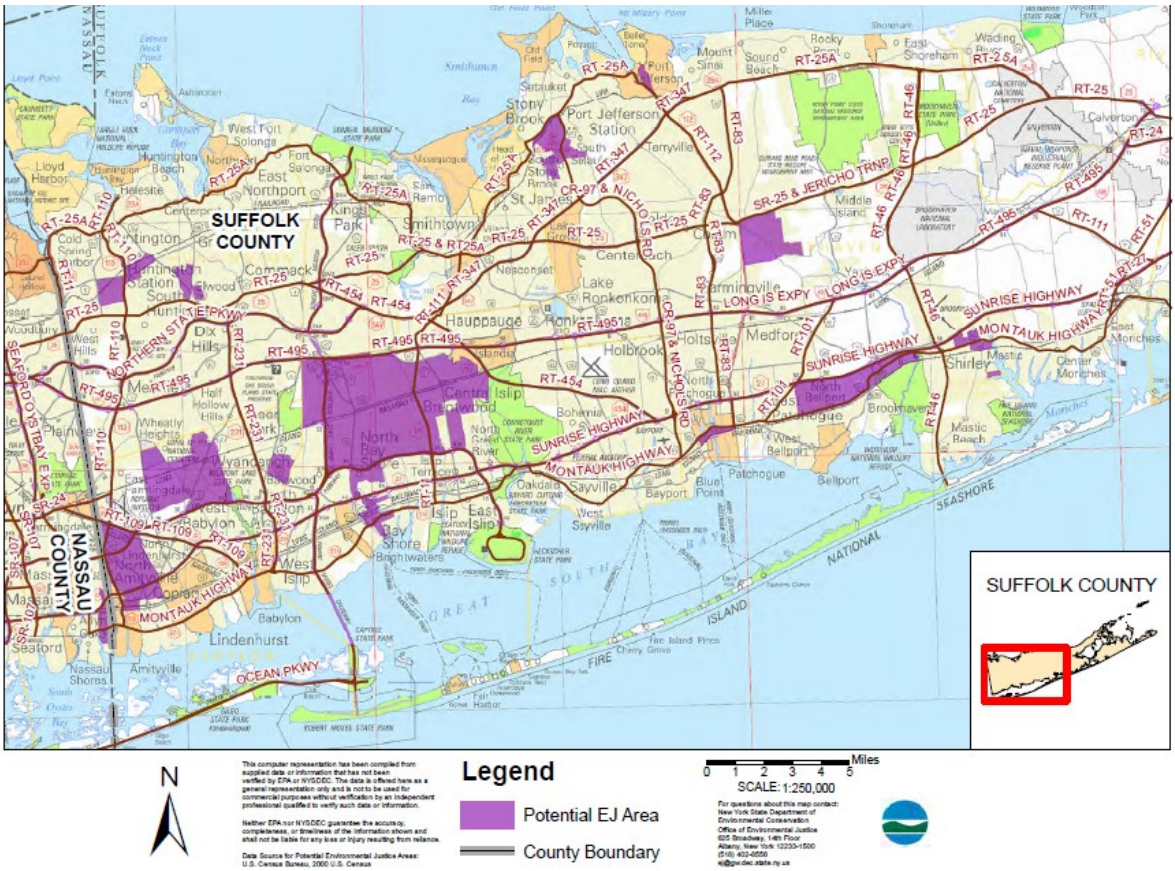



**Figure 4-11 Potential Environmental Justice Areas Western Suffolk County**

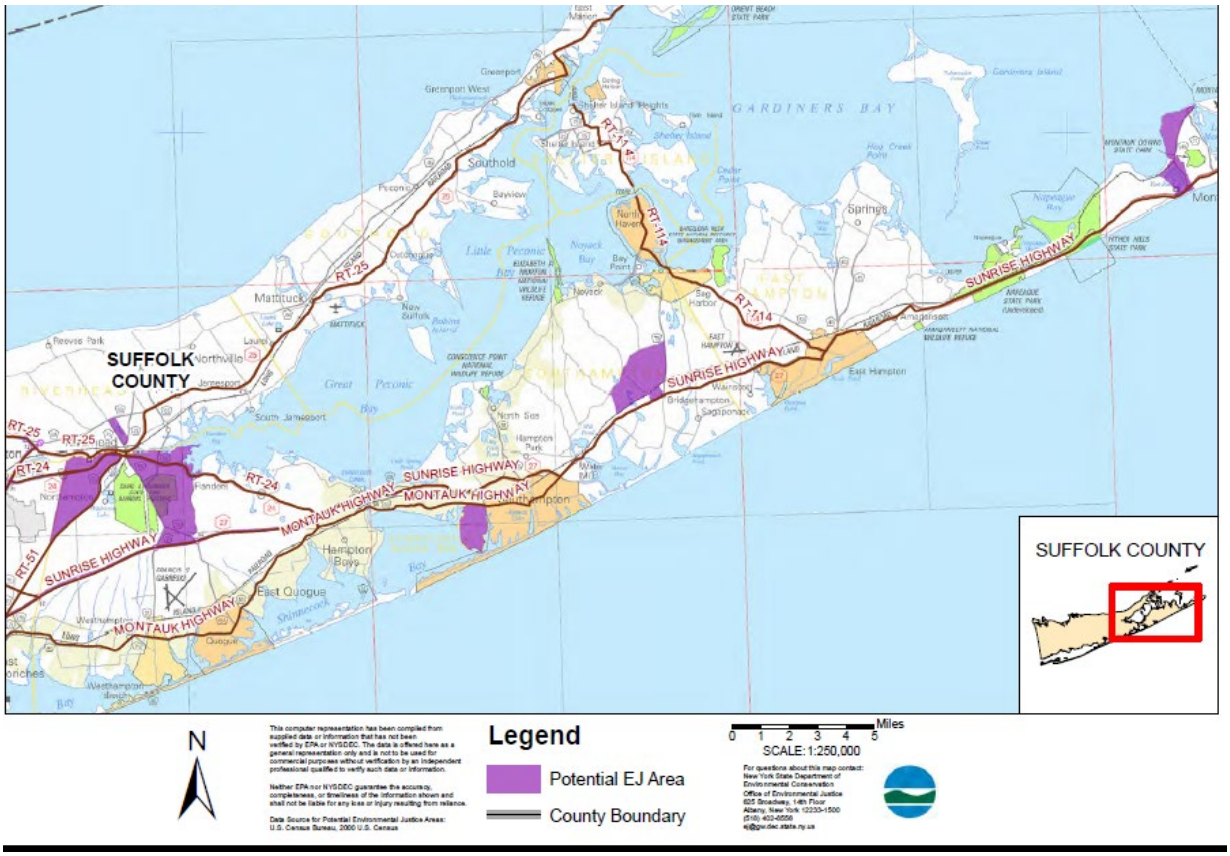



**Figure 4-12 Potential Environmental Justice Areas Eastern Suffolk County**

As a Countywide project that primarily involves changes to wastewater policies and regulations, the overall implementation of the Proposed Action would not disproportionately affect environmental justice communities. The County is aware of the economic needs of some communities and is currently offering financial assistance to qualified residents to install an approved I/A OWTS through a voluntary grant and low-interest loan program under the Septic Improvement Program (SIP).

Site specific facilities and projects related to wastewater management, such as new STPs or individual/specific clustering projects, are outside the scope of this Draft GEIS and would require their own environmental review, which would include consideration of potential environmental justice impacts. Some of the individual projects that would be enabled by the Proposed Action would be classified as minor projects under Section 621.2 of the Environmental Conservation Law, and therefore not subject to CP-29. However, for projects that are not classified as 'minor' under CP-29 would be required to undergo a preliminary screening analysis to identify whether the proposed project is in or near a potential environmental justice area, and to determine whether potential adverse environmental impacts related to the proposed project would be likely to affect a potential environmental justice area. Where a potential environmental justice area is identified by the preliminary screen, CP-29 includes requirements for an enhanced public participation plan and further environmental review.

Based on the information and analysis presented above, the Proposed Action would not have the potential to result in a significant or disproportionate adverse impact to environmental justice communities.

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# Section 5

# Short-term or Construction Related Impacts

The Proposed Action includes wastewater management strategies targeting nitrogen reduction in non-point wastewater sources originating within the County. The recommended strategies are described in Section 8 of the SC SWP and in Section 2.1 of this Draft GEIS. The Proposed Action is briefly described as the County's implementation of a holistic wastewater management strategy based on the recommendations presented in the SC SWP and the changes to the Suffolk County Sanitary Code and Construction Standards to facilitate these recommendations.

The SC SWP primary scope includes a Countywide feasibility study for the use of Innovative/Alternative Onsite Wastewater Treatment Systems (I/A OWTS) to replace existing wastewater onsite disposal systems (OSDS). There are greater than 360,000 OSDS in Suffolk County that are not designed to remove nitrogen and other contaminants that are contributing to the continued degradation of water resources within the County. The SC SWP evaluates the potential benefits of using I/A OWTS and provides a recommended Countywide roadmap that describes how, when, and where to use I/A OWTS, including proposed revisions to Article 6 of the Suffolk County Sanitary Code to accommodate their widespread use.

In addition to changes to Article 6, the SC SWP provides recommended revisions to the Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage Systems" to facilitate the more widespread use of the modified sewage disposal systems described in "Appendix A".

The recommendations defined within the Proposed Action and specifically addressed through this DGEIS include:

- Description of how, when, and where to require the use of I/A OWTS in lieu of conventional septic systems or grandfathered cesspools (referred to as the "Recommended Wastewater Management Strategy" herein); including recommended modifications to Article 6 of the Suffolk County Sanitary Code to facilitate the more widespread implementation of I/A OWTS; and,

- Recommended modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code. The changes to Article 6 would increase the maximum allowable flow of Appendix A STPs from 15,000 gallons per day (gpd) to 30,000 gpd providing additional parcels with the opportunity to connect to off-site treatment. This proposed modification would also reduce the County's setback requirements for Appendix A STPs within specific land use classifications. This would not negate other standards (such as siting or good engineering practices such as odor or noise controls) or regulations in place or the requirements for construction on the local level.

The SC SWP also provides initial recommendations for a variety of other wastewater management strategies that would ultimately yield a long-term, sustainable strategy, to address

pollution emanating from untreated wastewater sources in Suffolk County. Should the County move forward with these additional recommendations, the need for review under SEQRA would be determined at that time.

The Proposed Action does not require or include site development (i.e. new housing project, commercial buildings, etc.). The review and approval of site development would continue to be conducted by the local municipality having jurisdiction.

The installation of an individual onsite wastewater treatment system (OSDS) associated with a residential property fall under the definition of a Type II action under SEQRA [6NYCRR Part 617.5.(c)(11)], meaning that the action is not subject to review under 6NYCRR Part 617. Short-term impacts associated with the installation of individual conventional onsite wastewater disposal systems (OSDS) are generally addressed through intra- and interagency coordination. These measures are in place as safeguards and are not proposed to be changed as part of the Proposed Action. Coordination is initiated through a property owner's application for sewage disposal systems for either residential, commercial, or subdivision/developments. While individual application requirements for residential, commercial, and subdivisions vary, in each case the property owner, design professional, and/or agent must respond and attest to a series of questions, under penalty of law, pertaining to existing environmental conditions and/or other required permits or variance(s). Using the information obtained on the application, the Office of Wastewater Management then requires that all other permits and/or variance requirements related to environmental management of the project are submitted to the Department before the permit to construct the proposed sanitary system is released. Inspection and oversight of requirements stipulated in the individual permits are than completed by the individual issuing agency, as necessary. This process is not proposed to be altered at this time.

Examples of other local Town/Village, New York State, and SCDHS requirements that may be required before a permit to construct is released includes, but is not limited to:

- Town/Village Wetland Permits;
- NYSDEC Wetland Permits;
- Town/Village requirements for satisfaction of local BOR appeals/approvals;
- Town/Village Erosion and Sediment Control Plans;
- NYS Erosion and Sediment Control Plans;
- Meeting SCDHS Office of Pollution Control sanitary testing, remediation, and abandonment requirements; and,
- Meeting SCDHS Office of Water Resources supply well siting requirements.

Code modification and proposed changes to the setback requirements for Appendix A facilities also does not require land development. These changes are focused on providing wastewater treatment options should the local municipality determine development is appropriate and provide approval within their jurisdiction. The potential impacts these changes may have are

generically discussed under relevant environmental criteria subsections. Site-specific or area-specific projects would be subject to local jurisdictional review/approval in addition to environmental review under SEQRA. It is important to note that the proposed modifications to Article 6 and the proposed modified setback requirements would not negate the need for adhering to the County's site criteria or obtaining environmental permits should they be applicable for the specific site.

It should be noted the SC SWP acknowledges the effectiveness of use of STPs and clustered/ decentralized systems as important wastewater management tools for implementation of a countywide wastewater upgrade program in reducing nitrogen from sanitary wastewater. There are several sewering and STP projects in various stages of environmental review, approval, and funding. The nitrogen reduction forecasts in the SC SWP (Section 4.9) assumes these projects have been constructed and the parcels' sanitary wastewater is treated at the STPs. The water quality 'benefit' associated with the implementation of these projects is reflected in the forecasted nitrogen reduction discussed in Sections 4.2 of the Draft GEIS and in Section 4.9 of the SC SWP. These sewer district expansion projects and new STPs project are subject to their own environmental review under SEQRA or NEPA and are considered 'presumptive sewering' in this Draft GEIS (see Table 6-1 in Section 6.1). Finally, the SC SWP also provides a preliminary list of areas that might benefit from new sewer expansion or clustered/decentralized projects and provides initial recommendations for streamlining approval and long-term management of clustered/decentralized systems. All prospective sewer and clustered/decentralized projects are subject to their own environmental review under SEQRA. In addition, any new provisions to support the streamlining of approvals and long-term management of clustered/decentralized systems may be subject to supplemental SEQRA review. The potential for impact (and benefits) should the County move forward with these proposed Code and Standards changes is evaluated in this section as well as Sections 4, 6, and 7 of this Draft GEIS.

Because individual Appendix A, sewer expansion, and/or other clustered/decentralized projects likely require project-specific SEQRA review, the assessment in this section analyzes short-term impacts and land disturbance associated with the County's recommended Sanitary Code changes requiring the use of onsite nitrogen reduction wastewater systems, i.e. I/A OWTS for priority parcels where upgrades are required upon existing septic system failure, upon property transfer, and/or new residential development or expansion is to take place. Suffolk County Sanitary Code Article 19 governs the approval process and the management of I/A OWTS for use in the County. The full list of proposed 'triggers' requiring the installation of an I/A OWTS is provided in Section 2 of this document.

Short-term impacts and land disturbance would result from the excavation and removal of the current onsite sanitary system (i.e. septic tank or cesspool), any required soil remediation associated with historical use of the onsite sanitary system, and the installation of a new nitrogen reducing I/A OWTS. The primary assumption made to facilitate the following assessment is: the new I/A OWTS is of similar size to that of a traditional septic system; therefore, the area of disturbance would be similar to that required to replace an in-kind septic treatment system. The need to replace the existing leaching system would be contingent upon meeting the requirements of the Sanitary Code. There is a potential for some additional, assumed to be minor, modification to the electrical service to accommodate the use of a pump in the I/A OWTS.

The environmental criteria assessment that follow were identified as part of the Scoping process (see Appendix C) that are to be considered under this assessment. These environmental criteria are typically included in assessment when considering a project's short-term impacts.

Should these assumptions be inconsistent with the proposed project when implemented or the program phase, a re-evaluation of the SEQRA triggers should be performed by the Lead Agency.

## 5.1 Land (Parcel)

As previously stated, the Proposed Action includes changes in the Suffolk County Sanitary Code. There is no development proposed or specifically included as part of the Proposed Action. The Sanitary Code, in part, provides the requirements for onsite wastewater treatment. Local municipalities refer to the sanitary code when considering site plan and/or building permit applications. The review and approval of applications for onsite treatment are done by the Suffolk County Department of Health Services (SCDHS).

Short-term impacts and land disturbance parcels would result from the excavation of soils and removal of the current sanitary systems followed by the installation of the nitrogen reducing I/A OWTS. New I/A OWTS and their associated leaching method (whether use of existing leaching pool or installation of new leaching pool or leaching field) are assumed to be of similar size to the current requirements for onsite wastewater disposal systems (OSDS). Therefore, the area of disturbance would be similar to that required to replace an in-kind conventional OSDS. The need to replace the existing leaching system would be contingent upon meeting the requirements of the Sanitary Code.

Any land clearing required to install the new I/A OWTS and/or leaching system would typically be limited to lawn or other residentially landscaped area. Erosion and sediment control measures are governed by applicable state and local regulations, and it is presumed that these requirements would be implemented, as required, for the purposes of this Draft GEIS. In addition, because the area of disturbance for installation of an I/A OWTS and the associated leaching system is comparable to a conventional sanitary system and associated leaching system, there would not be any additional erosion or sediment control-related impacts to the current practices for installation of conventional sanitary systems. Erosion and sediment control requirements are set forth by NYSDEC Erosion and Sediment Control Standards, through NYSDEC permitting, and local municipalities. Best management practices (BMPs), such as silt fence and erosion prevention, may be implemented. If multiple adjacent sites are involved, the sites could be aggregated for construction stormwater compliance. Reseeding the area once the system is installed would take place. With the implementation of applicable erosion, sediment control, and stormwater management procedures in place followed by restoration, no significant adverse impacts to land are anticipated associated with the installation of the I/A OWTS or associated leaching system.

The proposed increase in flow treated by an Appendix A system and the reduction in setback for certain adjoining land use types would not negate the local municipality's project review and approval authority. Land use and development is governed on the local level. Proposed projects would continue to need site plan approval, comply with local building codes and adhere to zoning

requirements. The changes proposed by the County are provided to facilitate treatment options in areas where site constraints limit treatment options.

STPs, new sewer districts and sewer district expansions are proven methods to address the treatment of sanitary wastewater. Projects of this scale are subject to project specific environmental review (ex. SEQRA) and often the land use requirements of the local municipality. Site development approval remains the responsibility of the local municipality, therefore no short-term impacts to land use are identified specific to the Proposed Action.

## 5.2 Surface Water

Short-term surface water impacts are typically associated with erosion control and contractor activities that may result in a spill. The potential risk of impact associated with the installation of a traditional OSDS and that of an I/A OWTS are relatively the same. Similar equipment to that used for traditional OSDS installation, including a small bobcat and dump truck, are required. Contractors would be required to implement the same control measures to prevent offsite migration of soils as would be used when installing a traditional OSDS. Installation of new I/A OWTSs do not require work to take place directly in a water body.

As documented within the SC SWP, a reduction in nitrogen loading to surface water bodies is realized using I/A OWTS over the traditional OSDS. The reduction in nitrogen load is anticipated to result in varying degrees of water quality improvement within the individual receiving surface water body contributing areas where I/A OWTS are installed. This is detailed in Section 4.2 of this Draft GEIS and in Section 4.9 of the SC SWP included in Appendix B of this document.

As installation activities do not require access to surface water bodies, and ground disturbance required to install an I/A OWTS is similar in scale to that of a traditional septic system, implementation of the Proposed Action is not anticipated to result in an adverse impact to surface waters within the County. In addition, a reduction in nitrogen loading is anticipated to improve water quality, a positive result of the implementation of the proposed action,

## 5.3 Natural Environment

Land disturbance in wetlands, critical environmental areas, or other sensitive environmental areas is not anticipated as a requirement to implement the Proposed Action. The Proposed Action as defined, does not require development. The proposed change in the Sanitary Code addresses onsite wastewater treatment. Local municipality review and approval is currently required for land development. The review and approval process would not change with the implementation of the Proposed Action. Federal, state and local requirements as they pertain to an action that can impact wetlands, endangered and threatened species, floodplain, or other environmentally-protected resources or areas will be adhered to thereby reducing the potential for negative effects. For example, disturbance within wetlands is regulated under the Clean Water Act whereby permits can be issued by the US Army Corps of Engineers and or the NYSDEC. Local municipalities also may have regulations governing actions within or adjacent to wetlands.

Land disturbance activities in response to the change in the Sanitary Code would have a small area of land disturbance that would have a footprint similar to that of the existing onsite septic facility and would not require additional disturbance or use of sensitive ecological resources.

Land disturbance activities that would take place after the change in the Sanitary Code becomes effective would continue to consider the federal, state or other environmental regulations pertaining to regulated wetland areas and their regulated buffer or adjacent area. Limitations for land disturbance within flood plains, critical environmental areas, and the Central Pine Barrens would remain in effect. The additional requirements set by the regulations or management plans, such as local Master Plans and regional plans such as those identified in Section 3.1, are anticipated to ensure minimal potential for impact to the natural environment as a result of the implementation of the Proposed Action. Therefore, additional short-term impacts to the natural environment are not anticipated to result should the Proposed Action be implemented.

## 5.4 Historic and Archeological Resources

### 5.4.1 Historic Resources

As the proposed project would involve the in-kind replacement or retrofitting of existing septic systems, it is not expected that individual upgrades would result in vibration-inducing activities that could damage any nearby historic structures. The same site disturbance requirements for installation of conventional OSDS would apply to the installation of I/A OWTS. However, in areas designated as archeologically sensitive or in historic districts and near historic structures, land disturbance and building modifications can trigger the need for SHPO review.

### 5.4.2 Archaeological Resources

It is expected that the majority of the subsurface work associated with the implementation of the proposed program would involve the requirement for use of an I/A OWTS that would result in subsurface disturbance similar to that of in-kind replacement of existing infrastructure. For all locations where no new subsurface disturbance would be required, the project would not have the potential to impact archaeological resources. Should subsurface disturbance outside of previously disturbed areas be necessary during system installation, consultation with NYS OPRHP is to be initiated as is currently required. If requested by NYS OPRHP, additional archaeological analyses would be completed for specific project components that would require subsurface disturbance in undisturbed areas. Such analyses could include Phase 1A Archaeological Documentary Studies and/or Phase 1B Archaeological Investigations (often completed as a combined Phase 1 Archaeological Survey) to determine the presence or absence of archaeological resources on a project site; Phase 2 Archaeological Evaluations to determine the vertical and horizontal limits of an archaeological site and to evaluate its potential significance (e.g., eligibility for listing on the State and National Registers of Historic Places); and Phase 3 Data Recoveries/Mitigation. Following the protocol established by NYS OPRHP would limit the potential for negative impact on archaeological resources.

## 5.5 Noise

The Proposed Action does not require the development of a specific project; however, implementation of wastewater infrastructure project would need to comply with applicable local noise codes or ordinances specific to the location where they would occur. For example, local codes could limit the potential hours of construction activities to avoid noise disturbances during times when people are generally most sensitive to noise (i.e., nights and weekends). Consequently, construction activities associated with the Proposed Action are not anticipated to

result in significant adverse noise impacts. Additionally, noise as a result of I/A OWTS installation is not expected to be above the noise levels resulting from the installation of a conventional OSDS as I/A OWTS installation generally requires use of the same equipment.

The same noise codes would also be applicable to the implementation of Appendix A facilities or STPs. Code compliance would limit the potential for significant noise related impacts associated with the installation or construction of Appendix A systems and STPs.

## 5.6 Human Health

Installation of I/A OWTS associated with new construction, building expansion or failure of current onsite treatment system is not expected to result in potential adverse impacts to human health. No chemicals or other materials that may be harmful to human health are required for the use of I/A OWTS.

The use of I/A OWTS would reduce nitrogen loading to the groundwater, drinking water, and surface water resources, that will improve water quality within the County. The reduction in nitrogen is anticipated to provide varying degrees of additional protection towards human health, as documented within Section 4.0 of the SC SWP. Improvements to ground and surface water quality would not result in a negative impact on public health.

## 5.7 Conclusion

The Proposed Action does not include the development of a specific project. Installation of the nitrogen reducing I/A OWTS would result in similar property disturbance when compared to traditional septic facilities. Existing safeguards would not be modified as part of the implementation of the Proposed Action. Individual projects proposed using of an I/A OWTS system would be subject to local review and approval and would need to comply with siting requirements with regards to wetlands, coastal zones, and historic resources. Installation of an I/A OWTS on a parcel would not impact land use, result in a potential impact to historic or archeological features or generate noise levels greater than those that are currently generated by installation of conventional OSDSs. The reduction in nitrogen loading to ground and surface waters would improve water quality and therefore be a positive effect on human health and the natural environment.

The proposed increase in flow to an Appendix A facility and the proposed reduction in setbacks associated with specific land use types also not anticipated to increase the potential short-term impacts should these facilities be approved. Safe-guards would remain in place, including site selection guidelines, federal/state/local permitting requirements and local development approvals. New STPs, new sewer districts and sewer district expansions presumed to move forward as noted in Section 6.2 of this Draft GEIS are subject to their own environmental reviews. Short-term impacts are addressed as part those site-specific proposed projects.

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# Section 6

# Cumulative Impacts

This section addresses the potential cumulative impacts associated with the implementation of the Proposed Action. As stated in 6NYCRR Part 617.10 (e), '*In connection with projects that are to be developed in phases or stages, agencies should address not only the site specific impacts of the individual project under consideration, but also, in more general or conceptual terms, the cumulative impacts on the environment and the existing natural resource base of subsequent phases of a larger project or series of projects that may be developed in the future. In these cases, this part of the generic EIS must discuss the important elements and constraints present in the natural and cultural environment that may bear on the conditions of an agency decision on the immediate project.*'

The cumulative impacts may result from the incremental impact of a project when added to a past action, current action or a reasonably foreseeable action. The actions when added together can eventually lead to measurable environmental change. The Final Scoping Document identified the following three conditions requiring evaluation for 'cumulative impacts' in the Draft GEIS.

The text that follows looks at the Proposed Action in a broader context and discusses the potential cumulative effects under the following three conditions:

- Water export/impact to water supply
- Potential for growth inducement within the County
- Energy demand (greenhouse gas impact)

The analysis that follow first provides a description of each condition which is then followed by an assessment of potential cumulative impacts. Under the County's Adaptive Management Plan, the SC DHS would monitor and report annually on the success of the program and recommend changes if required. Models developed in the development of the SC SWP would be used to review future cumulative effects of the program.

## 6.1 Water Export/Impact to Water Supply

The cumulative impacts of water export (e.g., moving wastewater from one subwatershed to another as a result of wastewater treatment) on the groundwater table and on stream baseflows as a result of implementation of the recommendations in the SC SWP were evaluated.

If innovative/alternative on-site wastewater treatment systems (I/A OWTS) are implemented throughout the County there are no anticipated impacts to the groundwater table or to stream baseflows attributed to their use. Sanitary wastewater that currently recharges the aquifer as cesspool or conventional OSDS discharge would continue to recharge the aquifer from the parcel-specific I/A OWTS. Consequently, there would be no change to the water table elevation, availability of potable supply, stream baseflows or wetland areas resulting from the use of I/A OWTS in place of cesspools or conventional OSDS.

The sole cumulative change to water export/water supply would be an improvement in groundwater quality and downgradient surface water quality. As described in the SC SWP, groundwater models were used to evaluate the nitrogen concentration in groundwater resulting from nitrogen loads from sanitary wastewater, fertilizer, atmospheric deposition and pets. Based on data collected as part of Suffolk County's Septic Demonstration Program and as required through Article 19 of the Suffolk County Sanitary Code, SCDHS has demonstrated that installation of I/A OWTS approved with Provisional Use status (as defined in Article 19) reduces nitrogen in sanitary wastewater by approximately 70 percent. Groundwater model simulations characterized the predicted nitrogen concentrations in the shallow upper glacial aquifer groundwater under existing wastewater management practices (e.g., patchwork sewering for up to 26 percent of Suffolk County and cesspools or conventional OSDS for an estimated 74 percent of Suffolk County)and the predicted nitrogen concentrations in shallow upper glacial aquifer groundwater resulting from implementation of the Proposed Action (e.g., the conversion of all cesspools and conventional OSDS to I/A OWTS throughout the County and sewering in the presumptive sewered areas defined in Section 4.5.2 of the SC SWP).

The subsections that follow further detail the analysis conducted to evaluate the potential Countywide impacts on groundwater quantity and quality and surface water quantity and quality with the County's implementation of the proposed wastewater management strategies. Although the focus of the subsections that follow reports forecasted water quality improvement in terms of nitrogen, there is also a potential for other contaminants to be addressed by the implementation of the County's wastewater management program (See Sections 1.1.4 and 8.4.4 of the SC SWP).

### 6.1.1 Assessment of Potential Cumulative Impacts to Ground and Surface Water Resources

The cumulative improvement in shallow upper glacial groundwater quality that is predicted to result from the conversion of all cesspools and conventional OSDS to I/A OWTS throughout the County is illustrated by **Figures 6-1, 6-2** and **6-3**. **Figure 6-1** illustrates the model-predicted nitrogen concentrations in the shallow upper glacial aquifer based on existing conditions of land use and wastewater management, as described in Section 3 of the SC SWP, while **Figure 6-2** illustrates the improved nitrogen concentrations in the shallow upper glacial aquifer that are predicted to result after I/A OWTS conversion on parcels not currently identified as part of sewer district expansion of new sewer project in the County.

Areas shown in dark blue on **Figures 6-1** and **6-2** are areas where the predicted nitrogen concentration in the shallow upper glacial aquifer would be less than 1 mg/L; nitrogen concentrations in areas shown in light blue are predicted to be less than 2 mg/L. Predicted nitrogen concentrations in the shallow upper glacial aquifer are simulated to be less than 4 mg/L in areas shown in green, and between 4 and 6 mg/L in areas shown in yellow. After SC SWP implementation, some limited areas are predicted to have nitrogen concentrations in the shallow upper glacial aquifer of between 6 mg/L and 10 mg/L (shown in orange) or even greater than 10 mg/L (shown in red). These areas are generally limited to agricultural areas, areas immediately downgradient of sewage treatment plants and to some coastal areas of the model [1].

[1] The red areas along the North Fork coastline are believed to partially result from the mathematical groundwater model's representation of the fresh-water/salt-water interfaces and the nitrogen loads. The model tracks the direction and rate of nitrogen movement through the aquifer by introducing 'particles' of nitrogen at the water table at each parcel. The 'particles' move with the groundwater flow to discharge to a surface water body or a supply well. In the model, the position of the shallow fresh water lens on top of salt water that exists along the North Fork coasts causes a discharge situation that behaves much like a multi-lane highway merging into a single lane causing a traffic jam. Discharge of the nitrogen 'particles' in the shallow fresh water layer is constrained because the aquifer is thin, causing the simulated high local values of nitrogen.

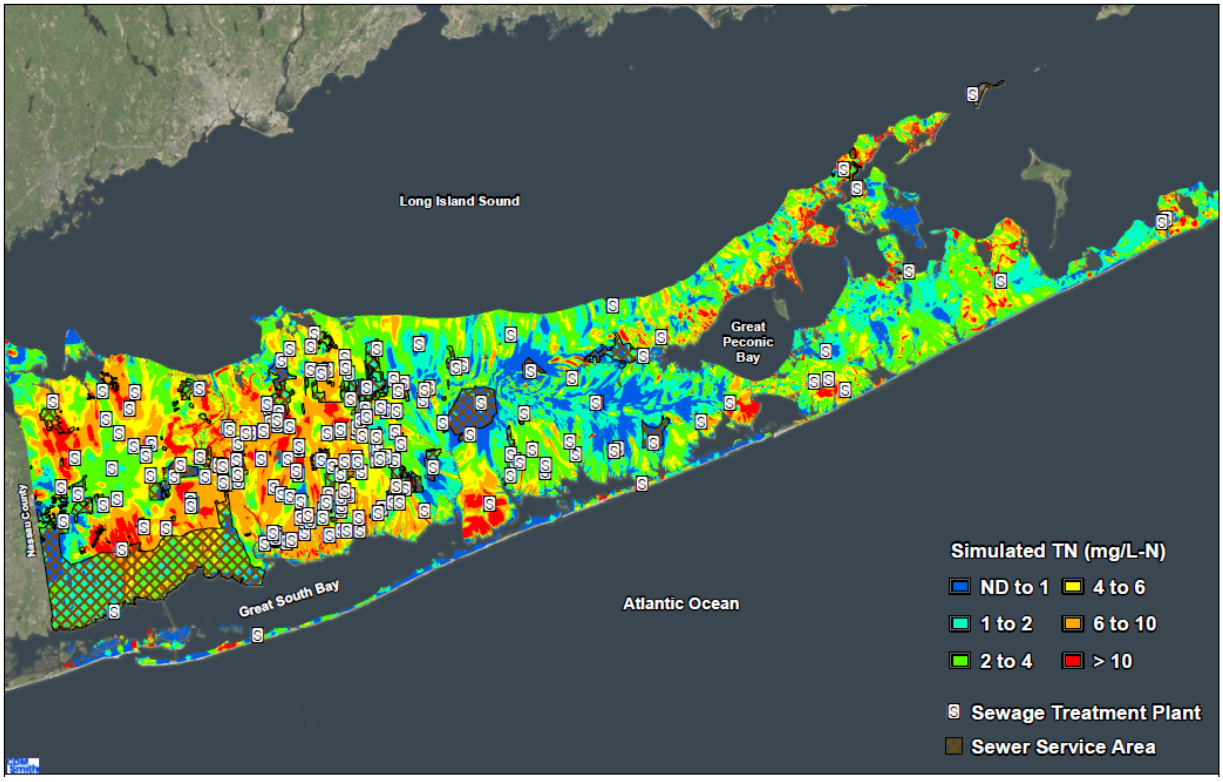



**Figure 6-1 Model-Simulated Nitrogen Concentration in the Shallow Upper Glacial Aquifer after 50 Years of Existing Land Use and Wastewater Management (with no change in wastewater management practices)**

**Figure 6-2** shows that implementation of the SC SWP would result in dramatic improvement in nitrogen concentrations in the shallow upper glacial aquifer, as shallow upper glacial aquifer nitrogen concentrations throughout most of the County are predicted to be less than 10 mg/L.

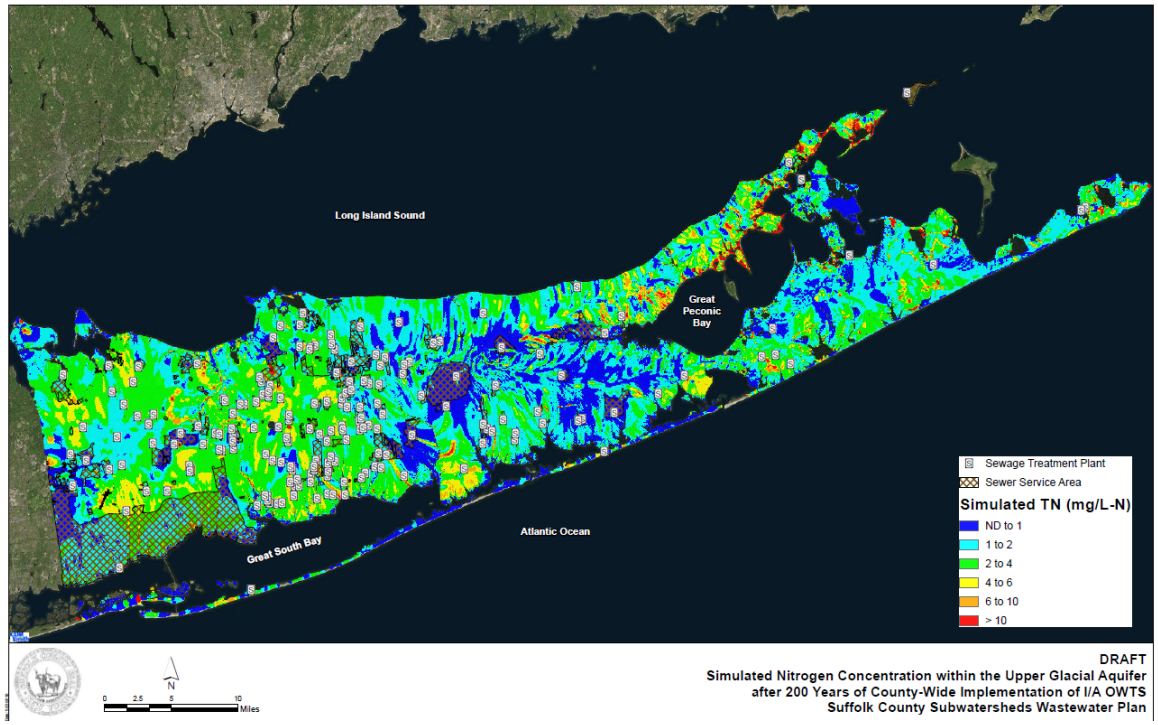



**Figure 6-2 Predicted Nitrogen Concentrations in the Shallow Upper Glacial Aquifer after SC SWP Implementation**

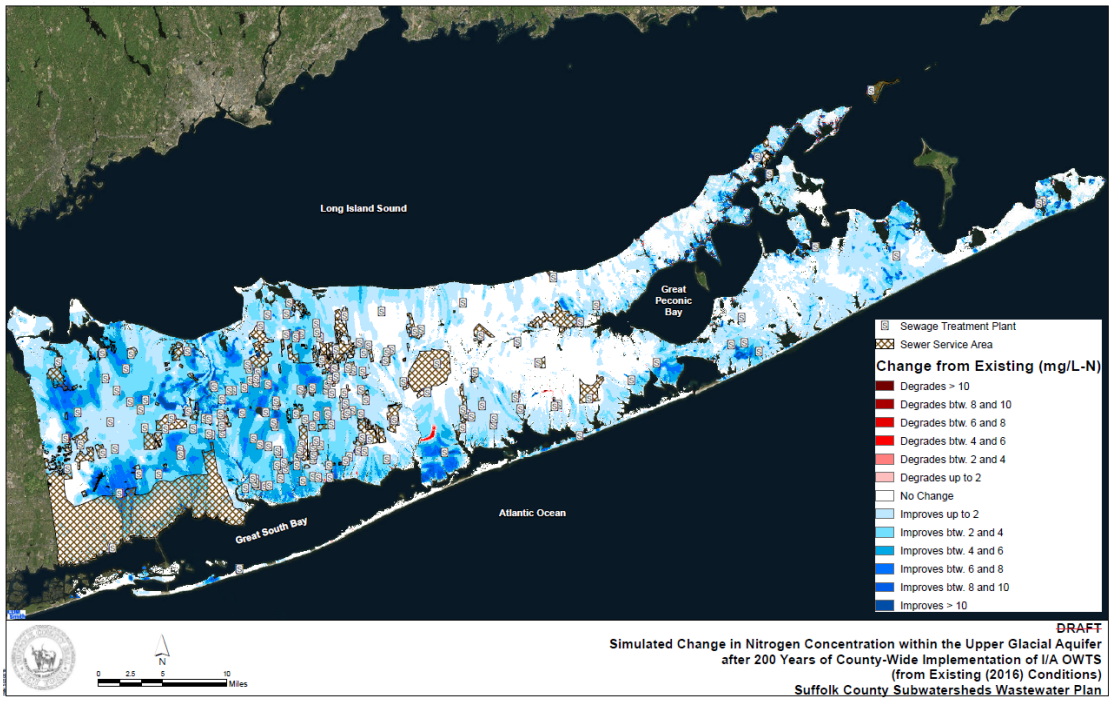



**Figure 6-3 Predicted Changes in Nitrogen Concentrations in the Shallow Upper Glacial Aquifer after SC SWP Implementation**

**Figure 6-3** illustrates the predicted change (e.g., improvement) in groundwater quality after I/A OWTS are installed. The figure shows increasing reductions in simulated nitrogen concentration from white (no change, or very small change) to increasingly deeper shades of blue, indicating increasing simulated reductions in nitrogen concentration. As anticipated, the deeper shades of blue indicating improved nitrogen concentrations of 4 to over 10 mg/L are located in the densely populated areas where the nitrogen load from sanitary wastewater loading would be most significantly reduced by I/A OWTS implementation. Areas shown in white are generally areas that are either already sewered (e.g., Southwest Sewer District), sparsely populated (e.g., Pine Barrens areas in Brookhaven and Riverhead), agricultural areas (e.g., areas of the North Fork) or otherwise preserved lands (e.g., Mashomack Preserve on Shelter Island).

As described in Section 2.1.8 of the SC SWP, Suffolk County has identified 28 surface water bodies, shown by **Figure 6-4**, that typically exhibit desirable water quality, as indicated by water chemistry, water clarity and the absence of harmful algal blooms (HABs). These surface water bodies were identified as reference water bodies.

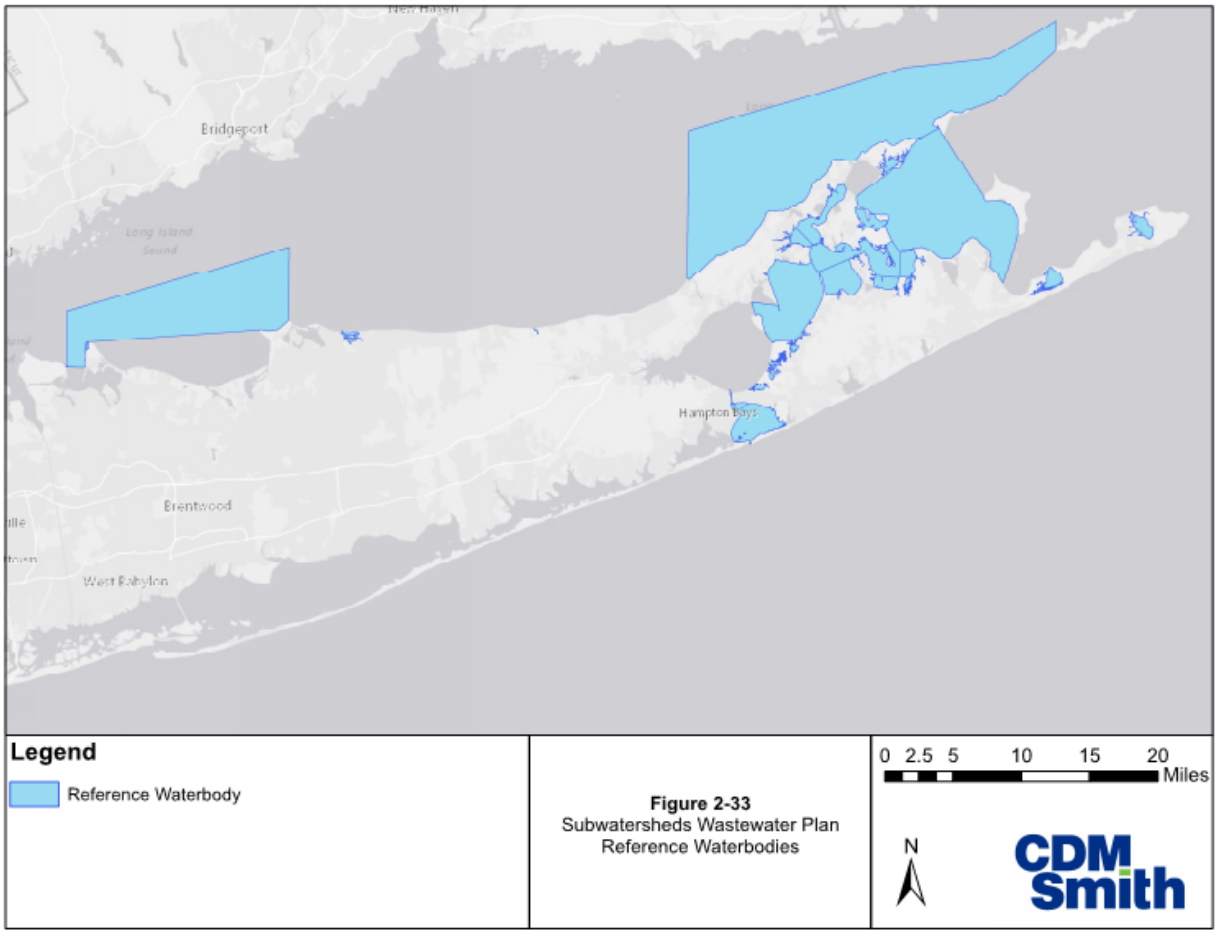



**Figure 6-4 Suffolk County Reference Surface Water Bodies**

As part of the SC SWP development, the sanitary nitrogen load reductions required to achieve a unit nitrogen load expected to result in the same desired water quality as the reference water

bodies was identified. Suffolk County also identified a larger set of reference water bodies that achieved New York State dissolved oxygen criteria 90 percent of the time, had no HAB events with primarily health impacts over the past ten years and no more than one HAB event with primarily environmental impacts. The sanitary nitrogen load reductions required to achieve the calculated unit nitrogen loads for these dissolved oxygen-HAB reference water bodies were also compiled.

**Figure 6-5** shows the anticipated progress towards achieving the nitrogen load reductions that would be achieved by SC SWP implementation. The top panel on **Figure 6-5** provides a visual overview of the reductions in nitrogen from sanitary wastewater that would be required to achieve the same unit nitrogen loading as the water bodies that have achieved the desired dissolved oxygen concentrations and minimal HABs. The bottom panel shows the remaining nitrogen load reduction goals after SC SWP implementation. **Figure 6-5** shows that implementation of the SC SWP would fully achieve the nitrogen load reductions consistent with the dissolved oxygen and HAB endpoints for all Long Island Sound Wastewater Management Areas, except for Wastewater Management Area 5 which includes the poorly characterized Wading River, for four of the Peconic Estuary Wastewater Management Areas and for four of the South Shore Estuary Wastewater Management Areas. While significant progress in water quality improvement would be provided for the four Wastewater Management areas (Areas 7 and10 in the Peconic Estuary watershed and 16 and 18 in the South Shore watershed), additional nitrogen load reductions would be required to achieve the desired endpoints.

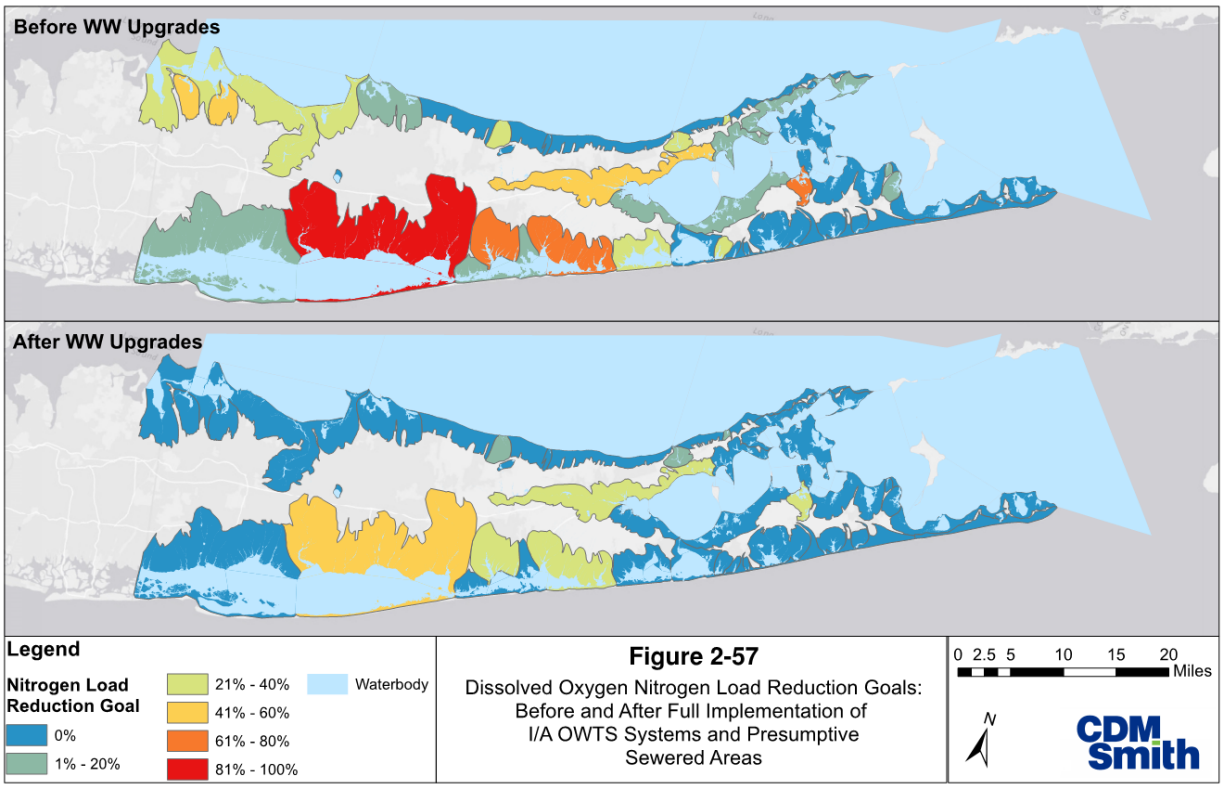



**Figure 6-5 Comparison of Wastewater Management Area Nitrogen Load Reduction Targets to Achieve Unit Nitrogen Loads of Dissolved Oxygen/HAB before and after SC SWP Implementation**

Further details on the individual wastewater management areas and the projected nitrogen reductions may be found in Section 4.9 of the SC SWP.

The anticipated progress towards achievement of the water quality characteristics observed in the reference water bodies resulting from sanitary nitrogen load reductions is illustrated by **Figure 6-6**. The top panel on **Figure 6-6** provides a visual overview of the reductions in nitrogen from sanitary wastewater that would be required to achieve the ideal water quality established by the reference water bodies under current wastewater management practices. The highest nitrogen load reduction goals shown in red (greater than 80 percent) and orange (60 to 80 percent) tend to be located in densely populated areas discharging to poorly flushed water bodies and are also associated with the highest Priority Rank areas as defined in Section 4.9.1 of the SC SWP. The lower panel on **Figure 6-6** depicts the substantial progress that would be made towards achievement of these nitrogen load reduction goals after all existing cesspools and conventional on-site disposal systems (OSDS) are converted to I/A OWTS. The figure shows that I/A OWTS implementation would be successful in achieving water quality goals for four of the six Long Island Sound wastewater management areas, one of the six Peconic Estuary watershed wastewater management areas, two of the six South Shore Estuary wastewater management areas and the Atlantic Ocean.

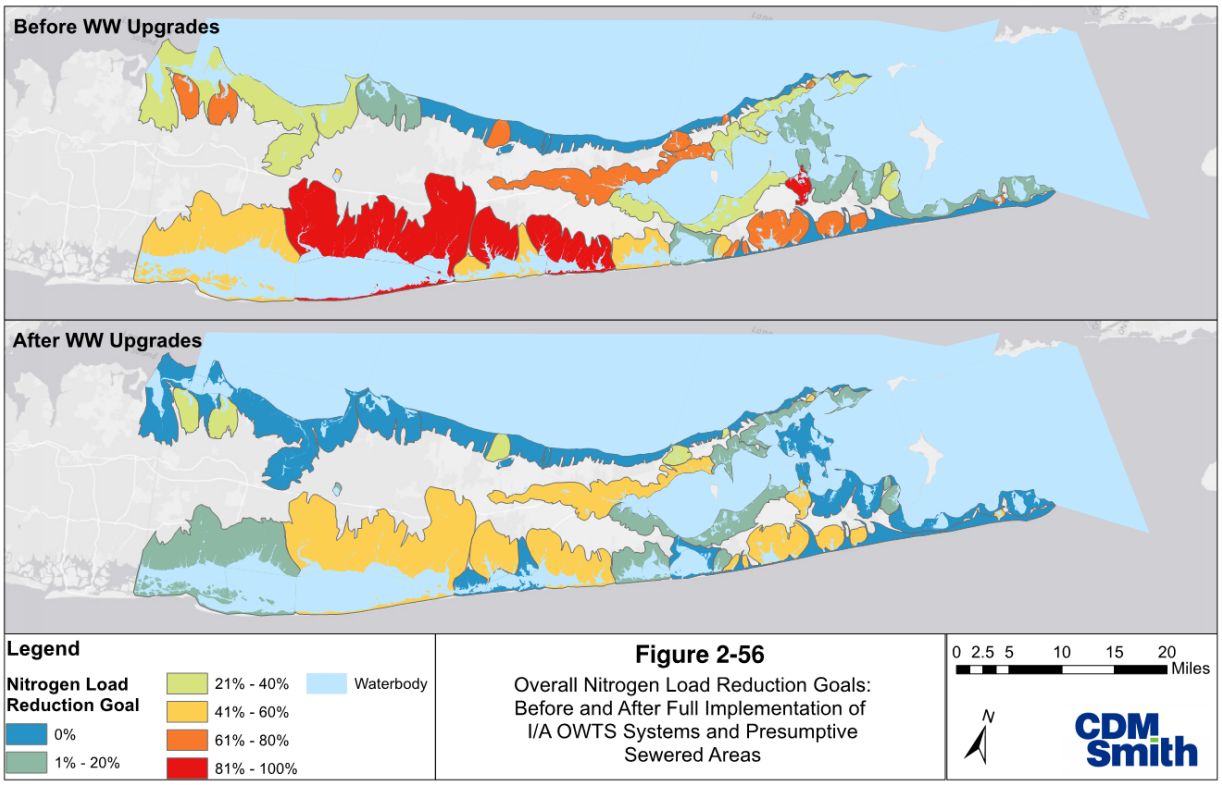



**Figure 6-6 Comparison of Wastewater Management Area Nitrogen Load Reduction Targets to Achieve Ecological Endpoints before and after SC SWP Implementation**

While the use of I/A OWTS is the presumed nitrogen load reduction approach throughout most of Suffolk County, sewer expansion may have advantages over I/A OWTS in locations with significant water quality impairments due to nitrogen, in areas with challenging site conditions (e.g. small lots, high groundwater, poor soils), in areas within close proximity to existing sewer districts, and in areas with special considerations such as within areas that may be prone to flooding or sea level rise. Implementation of Appendix A systems that discharge to groundwater is anticipated to reduce nitrogen concentrations to less than 10 mg/L, removing even more of the existing nitrogen load than I/A OWTS. It is anticipated that Appendix A systems would collect sanitary wastewater from a small developed area, and that treated effluent would be discharged to groundwater via recharge beds or leaching pools, with no regional impact to the groundwater table or stream baseflows. In water bodies with extremely high load reduction goals such as the Great South Bay and its contributing subwatersheds, connection to the adjacent SWSD provides a significant benefit towards achieving load reduction goals since the outfall for the SWSD is to the Atlantic Ocean. In essence, 100 percent of the wastewater nitrogen emanating from parcels connected to the SWSD is removed from the Great South Bay subwatershed.

Individual sewering projects could have unintended consequences such as drawdown of the groundwater table and reduced groundwater baseflow to streams, construction through sensitive areas, and potential impacts to adjacent potable supply wells (if not sited properly). For the reasons stated above, the sewering recommendations provided in the SC SWP are considered initial planning level recommendations only. All individual sewer projects are subject to project-specific feasibility study and project specific environmental review (ex. SEQRA).

To account for existing sewering proposals that already have construction funding procured in the modeling and recommendations of the SC SWP, the SC SWP assumes that six existing sewering expansion proposals would be moving forward and that parcels within the expansion areas would be connected to sewers. This assumption is consistent with current county requirements where parcels within existing sewer districts cannot have individual onsite treatment systems such as cesspools but must be connected to sewers. These areas are summarized on **Table 6-1**. It should be noted that each of these projects is subject to project-specific feasibility study and project specific environmental review (ex. NEPA or SEQRA).

**Table 6-1 Presumptive Sewered Areas**

| Sewer Project | Project Description | Status | Funding |
|---|---|---|---|
| Carlls River (funded portions) West Babylon, Wyandanch, North Babylon (areas 108-11, 108-8, 110-2) | Connection of 4,297 residential parcels to Bergen Point WWTP under Suffolk County Coastal Resiliency Initiative (SCCRI) | Design underway, environmental review underway. | FEMA/GOSR to fund construction after design is complete. |
| Forge River Watershed Sewer District Phases I & II (Mastic/Shirley) | Construction of 1 MGD WWTP and connection of 2,893 parcels as part of SCCRI | Design underway, environmental reviews complete. | FEMA/GOSR to fund construction after design is complete. |
| Patchogue / Patchogue River | Connection of 648 parcels to existing Village WWTP as part of SCCRI | Design contract awarded, environmental review complete. Final design work underway, contract letting expected by early 2019. | FEMA/GOSR to fund $18 million construction costs after design is completed. |
| Oakdale Phase 1a / Connetquot River | Connection of 420 residential parcels to Suffolk County Sewer District No. 3, Southwest. | Pre-design phase. Phase 1a boundaries mapped and undergoing study. | State funds of $26.4 million have been allocated. |
| Kings Park Business District | Connection of 140 commercial parcels in business district, Kingswood Apartment complex (144 units) and six residential parcels to SD#6 at estimated cost of $18 million | Project design is 95% complete. State enabling legislation required for use of town-owned parcel as site for pump station. | New York State FY 2017-<br>18 Budget includes $20 million to advance project. |
| Ronkonkoma Hub | Construction of 1.5 million GPD pump station and force main to connect both Ronkonkoma Hub TOD and MacArthur Industrial District to Bergen Point WWTP. | Design completed, environmental review completed, construction contract for force main awarded. Town of Brookhaven's selected Master Developer to construct pump station. | $31 million in sewer bonds and $4M Empire State Development Corporation (ESDC) Grant appropriated. |

As shown above, three of the projects (Carlls River, Oakdale Phase IA and Ronkonkoma Hub) involve connection of parcels to the County's existing Bergen Point WWTP in Suffolk County Sewer District 3, Southwest, which discharges treated effluent to the Atlantic Ocean. This would eliminate approximately 140,000 pounds of nitrogen each year from the Carlls River, Connequot River and downstream water bodies, including the Great South Bay. This volume of water would not be recharged to the local groundwater system. One project would connect additional parcels to the existing Patchogue sewage treatment plant, and one would connect additional parcels to

the Kings Park sewage treatment plant; both of which discharge to surface waters. The Forge River project includes construction of a new wastewater treatment plant discharging treated effluent to groundwater.

Diversion of sanitary wastewater effluent from existing OSDS in the Carlls River and Oakdale Phase IA/Connetquot to the existing Suffolk County Sewer District No. 3 Southwest (Bergen Point WWTP), sanitary wastewater effluent from existing OSDS in Patchogue to the Patchogue Village Wastewater Treatment Plant and sanitary wastewater from existing OSDS in Kings Park to the existing Kings Park Wastewater Treatment Plant would result in reduced groundwater recharge of approximately 1.7 MGD. On a Countywide basis, this amounts to approximately 0.1 percent of the average daily recharge of 1,367 MGD (2015 Comp Plan) and would have no impact on the ability to provide the approximately 245 MGD of potable supply used Countywide.

Considering the proposed 1.5 MGD of additional wastewater that would be diverted to Suffolk County Sewer District No. 3, Southwest from the Ronkonkoma Hub in the future, the total reduced groundwater recharge would approach 3.2 MGD, which is just over 0.2 percent of the average daily Countywide recharge rate. This Countywide reduced recharge would have no impact on the ability to provide public water supply. It is important to note that SCDHS Guidance Memorandum #28 (July 24, 2017) provides the requirements necessary for siting proposed or expanded STPs to determine potential impact to drinking water supplies.

Additional information concerning each of these wastewater projects can be found in the Project-specific environmental evaluations (ex. NEPA or SEQRA) that have been completed or would be provided should the environmental review process be underway.

### 6.1.2 Assessment of Potential Cumulative Impacts to Water Supply

The cumulative impacts associated with implementation of the SC SWP recommendations on the drinking water supply considers potential impacts to both water quantity and water quality. Currently, groundwater withdrawn by supply wells for potable use is returned to the aquifer system by OSDS. Because implementation of I/A OWTS would not change the rate of aquifer recharge from the existing OSDS, no impact to the quantity of potable supply would result from SC SWP implementation. The potential cumulative Countywide impact to water quantity was evaluated by comparison of the increased surface water discharges of treated wastewater effluent (e.g., 3.2 MGD as identified above) to the total aquifer recharge identified in the Suffolk County Comprehensive Water Resources Management Plan. The projected reduction in recharge of 3.2 MGD is 0.23 percent of the average estimated Countywide recharge to the aquifer system; this is a negligible impact on the quantity of water available for potable supply. It is important to note that SCDHS Guidance Memorandum #28 (July 24, 2017) provides the requirements necessary for siting proposed or expanded STPs to determine potential impact to drinking water supplies.

Because implementation of I/A OWTS would not change the rate of aquifer recharge from the existing OSDS, no impact to the quantity of potable supply would result from SC SWP implementation.

Cumulative impacts to water quality are based on nitrogen concentrations and assessed using the groundwater model-simulated impacts to nitrogen concentrations assuming the recommendations in the SC SWP are implemented.

The cumulative impact to public and private water supply quality is beneficial, in that the nitrogen concentration in untreated water supplies would be reduced. As shown by **Figures 6-2** and **6-3** above, nitrogen concentrations in the shallow upper glacial aquifer would be reduced as I/A OWTS are implemented throughout the County. This would provide rapid benefits in terms of reduced nitrogen concentrations for the thousands of private supply wells in the East End towns that withdraw water from the shallow aquifer system. Many community water supply wells are screened deeper within either the upper glacial aquifer or the Magothy aquifer. While the results of I/A OWTS implementation would not result in an immediate reduction in nitrogen concentrations in these deeper wells, as the nitrogen contribution from onsite treatment systems is reduced, existing nitrogen concentrations in the untreated water from the deeper wells would also gradually decline over time.

**Figure 6-7** summarizes the distribution of simulated nitrogen concentrations resulting from existing land uses and existing sanitary wastewater management in public supply wells after 50 years (wells having a minimum time of travel greater than 50 years are not included). The figure depicts baseline conditions and shows that nitrogen concentrations in almost 77 percent of the community supply wells are simulated to be less than 4 mg/L after 50 years, 14.5 percent are simulated to be between 4 and 6 mg/L, over six percent are simulated to be between 6 and 10 mg/L and two percent are simulated to exceed 10 mg/L.

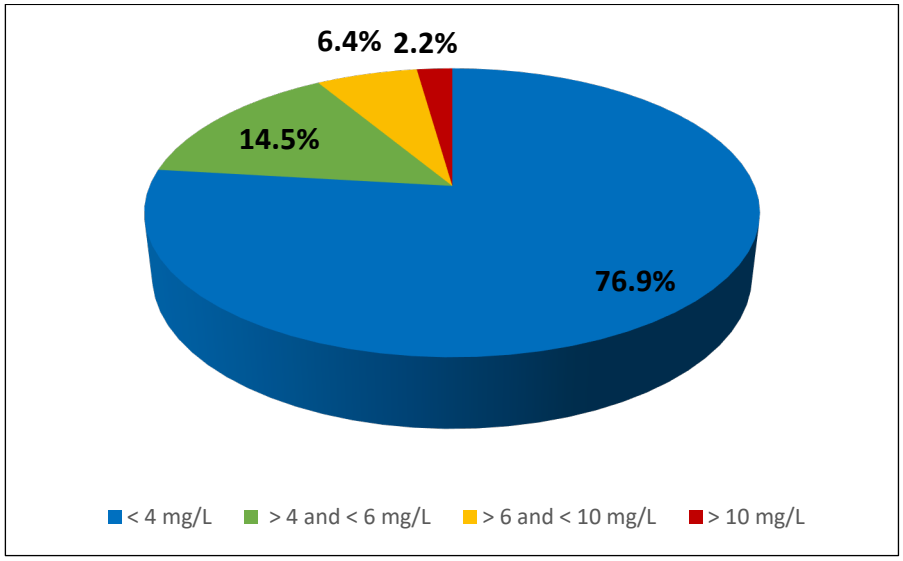



**Figure 6-7 Distribution of Nitrogen Concentrations in Untreated Water from Community Supply Wells after Fifty Years Based on Existing Land Use and Existing Wastewater Management Practices**

**Figure 6-8** shows the significant improvement in untreated water from community supply wells that would result from the replacement of cesspools and conventional OSDS with I/A OWTS in accordance with SC SWP recommendations. The figure shows the distribution of simulated nitrogen concentrations after 50 years (wells having a minimum time of travel greater than 50 years are not included).

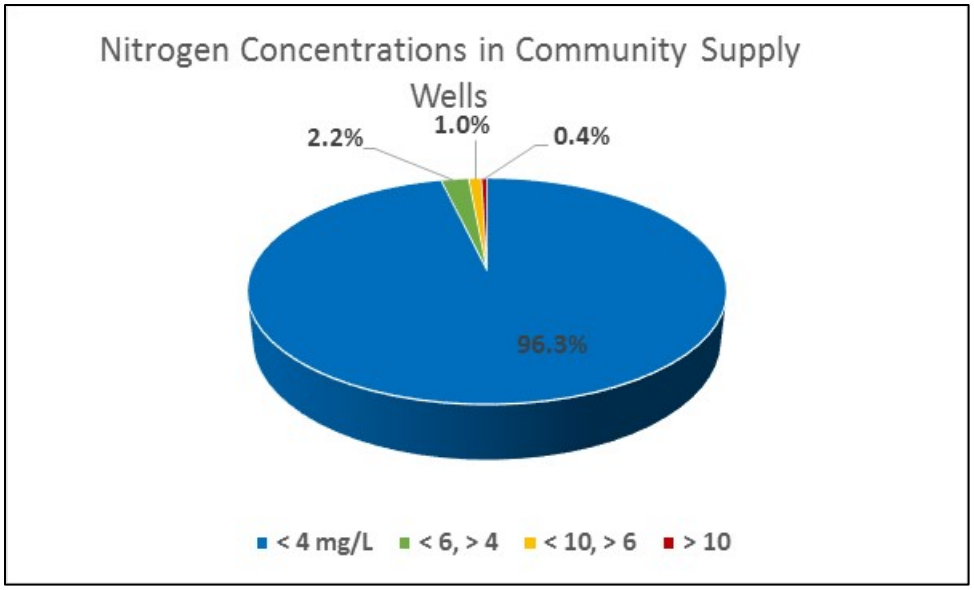



**Figure 6-8 Distribution of Nitrogen Concentrations in Untreated Water from Community Supply Wells after Fifty Years Based on Existing Land Use and SC SWP I/A OWTS Implementation**

The figure also shows that nitrogen concentrations in over 96 percent of the community supply wells would be less than 4 mg/L after 50 years, 2.2 percent are simulated to be between 4 and 6 mg/L, only one percent is simulated to be between 6 and 10 mg/L and 0.4 percent are simulated to exceed 10 mg/L. The wells where untreated raw water is simulated to exceed 10 mg/L are in an agricultural area where sanitary wastewater treatment alone was not predicted to reduce the nitrogen concentrations to less than 10 mg/L; additional fertilization limitations would be required.

### 6.1.3 Conclusion

The cumulative impacts of water export (e.g., moving wastewater from one subwatershed to another as a result of wastewater treatment) on the groundwater table and on stream baseflows as a result of implementation of the recommendations in the SC SWP were evaluated.

Implementation of I/A OWTS and/or Appendix A systems would have no impact on groundwater recharge, the groundwater table elevation or surface water baseflow. Implementation of the proposed sewering projects would result in site-specific impacts to the groundwater table and stream baseflows rather than cumulative Countywide impacts. For example, treated effluent from the new STP to be built as part of the Forge River project would be discharged to groundwater as is the case with the existing OSDS, treated effluent from the Patchogue project would be discharged directly to the Patchogue River, while the three projects that include connection to the existing Bergen Point WWTP could cause localized baseflow declines on individual downgradient water bodies. The County is cognizant of the concern for regional drawdown of the water table. The Annual Reports prepared as part of the Adaptive Management Plan would include a section on evaluation of regional impacts to groundwater drawdown. Should a potential impact to groundwater levels be identified, supplemental groundwater modeling and supplemental SEQRA review may be triggered.

On a Countywide basis, diversion of sanitary wastewater effluent from existing OSDS within the presumptive sewer project areas to off-shore surface waters was determined to result in an insignificant reduction in groundwater recharge and would have no impact on the ability to provide the approximately 245 MGD of potable supply used Countywide. The potential for impact to stream baseflow would be evaluated on a project specific basis as part of that project's environmental review.

Implementation of I/A OWTS would not change the rate of aquifer recharge from the existing OSDS, no impact to the quantity of potable supply would result from SC SWP implementation. The cumulative impact to water supply quality is shown to be beneficial, in that the nitrogen concentration in untreated water supplies would be reduced.

## 6.2 Potential for Growth Inducement Within the County

As stated in earlier sections of this document, the Proposed Action does not include or specifically identify new development within the County; however, the implementation of the Proposed Action may affect future development potential of parcels, demand for utilities, and existing land uses consistent with the goals of the local zoning and objectives of the SC SWP for the reduction of nitrogen loading. The implementation of the Proposed Action would not lead to growth beyond what is allowed by local municipalities. The proposed changes to the Sanitary Code and to Appendix A of the Standards for the Approval of Plans and Construction for Sewage Disposal Systems for Other than Single-Family Residences are analyzed as to their potential to induce growth (i.e. expand development) within the County. The individual Towns and Villages have the responsibility to examine how (if any) these changes affect their respective jurisdictions.

The Proposed Action as defined in Section 2.1, includes a roadmap of wastewater policy recommendations. The 'purpose' of the Proposed Action simply stated is the reduction of nitrogen to groundwater and surface water from OSDS. The Proposed Action addresses the 'need' for action to reduce the negative impacts of nitrogen on groundwater and surface water throughout the County. The County approach to nitrogen load reduction from sanitary wastewater includes an integrated and collaborative approach that has included local municipalities, LINAP and LICAP to name a few. Should an unanticipated outcome arise from the use of I/A OWTS and increased flexibility in use of Appendix A systems, the County, through its Adaptive Management plan and annual monitoring can assess the need for additional program change or enhancements.

While site-specific changes within these subwatersheds and the individual parcels themselves are controlled by current zoning, policies and plans of the applicable Towns and Villages, this discussion considers the growth inducing potential of implementing the Proposed Action. (Site-specific and/or municipality-specific developments are not discussed in this Draft GEIS but would be subject to their own SEQRA review as noted in Section 12 of this Draft GEIS.)

### 6.2.1 I/A OWTS Implementation

Article 19 was enacted to facilitate use of I/A OWTS in Suffolk County as an environmental conservation and public health protection measure. It authorizes the Suffolk County Department of Health Services (SCDHS), as a Responsible Management Entity (RME), to develop and use resources, standards, capabilities and systems to ensure that I/A OWTS are properly managed

and maintained. Article 19 of the Suffolk County Sanitary Code, adopted by the Suffolk County Legislature in 2016, provides a historic first by permitting the voluntary use of I/A OWTS in Suffolk County. Article 19 also states that 'it is not the intent of that Article to alter density requirements for unsewered parcels'.

In addition, select Towns/Villages have already advanced requirements for the use of I/A OWTS in sensitive areas by setting forth local laws requiring the installation of I/A OWTS and/or by offering an I/A OWTS rebate program using Community Preservation Funds (CPF). Four towns and four villages in the County have adopted laws mandating the installation of I/A OWTS under certain circumstances. **Table 2-2** in Section 2 provides a listing of I/A OWTS mandates by Town and Village within Suffolk County. Consistent with the intent of Article 19 of the Sanitary Code, Town/Village mandates have been advanced to use I/A OWTS as an environmental conservation and public health protection measure and do not provide provisions for increased density.

The recommendations for revisions to Article 6 of the Suffolk County Sanitary Code that would facilitate the phased in use of I/A OWTS provided in the recommended wastewater alternative of the SC SWP do not provide provisions for increased density and do not provide recommended revisions to Article 19 that would facilitate increased density.

In summary, I/A OWTS as a technology to address sanitary wastewater would not affect the development or re-development of a parcel, nor would the review and approval process of the local municipality having jurisdiction over development of a parcel be altered by the use of this technology.

### 6.2.2 Modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code

Modifications to Appendix A of the Commercial Standards and Article 6 of the Sanitary Code are proposed to increase the use of clustered/ decentralized systems to reduce nitrogen loading from sanitary wastewater in Suffolk County. The use of Appendix A systems is currently limited to design flows up to 15,000 gallons per day (gpd). Adoption of the proposed amendments to Article 6 (as noted in Section 2.1.1) of the Sanitary Code would allow flows up to 30,000 gpd, doubling the sanitary flow the treatment system could receive. This proposed change is associated with treatment only. It is recognized, that the proposed increase of the design flow of an Appendix A facility may allow for a parcel or lot to meet its development potential under current zoning. This would be specific to a parcel where actual development was limited by sanitary wastewater treatment availability such as could potentially exist in an existing downtown area. Municipalities should be aware that where barriers to development in downtown areas currently exist based on sanitary wastewater treatment availability are eliminated, the municipalities may need to analyzer-examine their existing zoning codes and modify if appropriate.

The need for proposed new development to meet local zoning requirements, site plan review and approval, to obtain building permits, etc. would remain unchanged. The responsibility of reviewing and approving development would continue to remain with the local municipality having jurisdiction. The increase in potential permitted treatment flow within Article 6 would also not negate the need for environmental review if review triggers are met under SEQRA, for example. As is today, each project would still be required to provide a STP siting evaluation report (Office of Wastewater Technical Memorandum #28) considering environmental aspects of

the proposed work. A project-specific Feasibility Report would also continue to be required. There are no proposed changes to this requirement. Increase in density is not a component of the proposed change in permittable treatment flow. These proposed changes would not negate the requirements per Federal and State regulations or those of the local municipality in which the facility may be located. Therefore, an increase in density above what is currently allowed under existing zoning is not anticipated to be induced from the increase in design flows for Appendix A systems.

The proposed changes to the Standards for Approval of Plans and Construction for Sewage Disposal Other Than Single-Family Residences – Appendix A "Standards for the Construction of Modified Subsurface Disposal Systems and Small Community Sewerage Systems" address the setback requirements for these types of facilities for certain land use types as required by the County. The purpose of the proposed changes is to facilitate siting of Appendix A systems in existing developed areas with limited land available. The proposed change would reduce the setback requirement of the 'Appendix A treatment system' based on the land use of Appendix A system siting parcel and the adjoining parcels. The changes proposed by the County include the reduction of the setback requirements in Table A-2 of Appendix A for specific land use categories; the proposed setbacks are depicted on **Table 6-2**. Approval of development would continue to be in accordance with local zoning and would continue to require the approval of the local Town/Village. The local planning and approval process would not be altered by the changes proposed by the County.

The proposed Appendix A system setback requirements were developed based on an evaluation conducted as part of the SC SWP (see Section 8.1.2.1) that considered setback requirements established by other jurisdictions and engineering mitigative options (including odor and noise controls).

As shown in **Table 6-2** proposed setbacks are provided for a variety of property uses. The proposed reduced setbacks are related to the land use of subject property and neighboring properties. Properties designated as residential land use have the most stringent setback requirements while properties designated as commercial land use have the smallest setbacks. For proposed Appendix A systems with below grade tanks, reduced setbacks are permitted. Projects that propose to use above-grade tanks and do not provide odor control would be subject to the same setback requirements as defined in the existing Appendix A standards. Likewise, properties with above grade tanks and odor control would be subject to the same reduced setback requirements allowed for systems with odor control as defined in the existing Appendix A standards. Finally, the proposed setbacks for leaching structures have been reduced to be consistent with the current requirements for I/A OWTS.

The proposed changes to the setbacks are not growth inducing because, as noted earlier, local zoning would continue to prevail as would the need for local project review and approval and environmental review as may be required under SEQRA. The proposed reduction in setback requirements for certain land use types is only proposed to allow for the use of these treatment systems in areas of the County that may experience challenges in siting nitrogen reduction treatment systems.

**Table 6-2 Proposed Setbacks for Appendix A Clustered/Decentralized Systems**

| Proposed Setbacks (feet) for Appendix A STPs | | | | | | |
|---|---|---|---|---|---|---|
| | | Distance (feet) to Structure and Neighboring Property Line: | | | | |
| **Property Use Served By Appendix A STP** | **STP Structure** | **Habitable Structure** | **Non-Habitable Structure** | **Residential Property Line** | **Mixed Use Property Line** | **Commercial Property Line** |
| **Residential Use i.e. Single-Family, Condo's, Townhouses, Apartments, Co-Op's** | **Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A)** | 75 | 50 | 75 | 25 | 10 |
| **Commercial** | **Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A)** | 10 | 10 | 75 | 25 | 10 |
| **Mixed Use w/ more than 25% of the site commercial use** | **Enclosed STP w/below grade tanks + Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A)** | 25 | 10 | 75 | 25 | 10 |
| **All Uses** | **Enclosed STP w/above grade tanks w/o Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A)** | 200 | 100 | 150 | 150 | 150 |
| **All Uses** | **Enclosed STP w/above grade tanks w/Odor Control (Less Than or Equal to 15,000/30,000 gpd – Appendix A)** | 75 | 50 | 75 | 75 | 75 |
| **All Uses** | **Leaching Structures** | 10 | 10 | 10 | 10 | 10 |

## 6.2.3 Sewering and Clustered/Decentralized Projects

The initial recommendations in the SC SWP are based, in part, on assumptions regarding sewer expansion and clustered/decentralized projects. The SC SWP assumes the existing proposed sewer projects (identified in Section 4.5.2 of the SC SWP) are independent on-going projects and for the purposes of the analysis are presumed to be moving forward. As is true elsewhere throughout the County, new development within each area to be sewered would be in accordance

with the local zoning, policies and plans. In some cases, these sewering projects could support growth, but only in accordance with Town-specific zoning and plans and approval. Decentralized treatment systems are permittable under current County Sanitary Code. (While outside of the scope of this Draft GEIS, Suffolk County is pursing strategies to streamline the approval process of these systems.)

For example, the sewering that will be implemented as part of the redevelopment of the Ronkonkoma Hub project supports growth that is consistent with the Town of Brookhaven's Urban Renewal Plan for the Ronkonkoma Hub Transit-Oriented Development, the Land Use Plan and Implementation Plan for the Proposed Ronkonkoma Hub Transit-Development, the adoption of the Ronkonkoma Hub Transit-Oriented Development District and the zone change for the parcels to TOD District. The Findings Statement for the Ronkonkoma Hub Transit Oriented Development (Town of Brookhaven 2014) also identifies the limits to both development and sewer capacity; additional growth and or sewer capacity would require additional SEQRA assessment.

Similarly, the draft EIS for the Forge River Sewering project identified that vacant parcels along the Montauk Highway corridor could be developed in accordance with applicable zoning. That EIS identified development along the corridor as an indirect beneficial effect, as it would remove a barrier to redevelopment along the Montauk Highway Corridor, again, as approved by the Town of Brookhaven.

In contrast the Carlls River and Connetquot River sewering areas are not associated with new development and consistent with this Draft GEIS, the Environmental Assessment prepared by FEMA for the project (Environmental Assessment Carlls River and Connetquot River Watersheds and Southwest Sewer District #3 Suffolk County, New York FEMA-4085-DR-NY March 2019) documents that the potential for redevelopment within the project area is limited by existing zoning. Similarly, the proposed Westhampton Beach sewering project is not associated with new development. The Expanded Environmental Assessment developed for the Westhampton Beach Village sewering project (Draft Expanded Environmental Assessment, Village of Westhampton Beach Sewer System, Cameron Engineering & Associates 2017) reports that the planned designed capacity of the sewer system is the same as the current wastewater flow from the connected parcels.

Second, the SC SWP also provides a preliminary list of areas that might benefit from new sewer expansion or clustered/decentralized projects and provides initial recommendations for streamlining approval and long-term management of clustered/decentralized systems. Clustered systems are permitted under current County code. As reiterated throughout this Draft GEIS, all prospective sewer and clustered/decentralized projects are subject to their own environmental review under SEQRA. In addition, any new provisions to support the streamlining of approvals and long-term management of clustered/decentralized systems may be subject to supplemental SEQRA review. Approval of project plans is anticipated to continue to be required on the local level.

### 6.2.4 Conclusion

As note in the discussion above, the review and approval of proposed developments is the responsibility of the local municipality and therefore, local zoning requirements would prevail.

Changes to the Sanitary Code and Standards would not negate the authority of the local municipality to review and approve development within its boundaries. The proposed changes to Article 6 and to the Standards relates solely to requirements for onsite wastewater treatment of a specific parcel (or Appendix A facility) should that parcel, or parcels be approved for development by the local municipality having jurisdiction. Local municipalities where their downtown area growth was limited by wastewater treatment availability may look to re-examining their zoning code for potential updates or modification.

The presumptive sewering projects are in various stages of project execution including; feasibility study, preliminary design, environmental review, funding, etc. As reported in Section 6.2.3, local municipality zoning and development approval requirements remain. As such, the local municipality remains responsible for the growth within its borders. All new sewer expansion or clustered/decentralized projects that could be pursued, in part, as a result of the initial recommendations provided within the SC SWP would require project-specific environmental review under SEQRA.

## 6.3 Energy Demand (Greenhouse Gas Impact)

The implementation of the Proposed Action includes the use of I/A OWTS that have an energy requirement and therefore have the potential to result in greenhouse gas (GHG) impact. GHG impact is discussed in terms of the amount of carbon dioxide emissions added by Countywide operation of I/A OWTS. Carbon dioxide is generated by the burning of fossil fuel, in this case to generate electricity to run the pumps and other electrical components of the I/A OWTS unit. The estimated energy demand and corresponding GHG emissions assuming that I/A OWTS would be installed on parcels not currently identified as being connected to sewers are summarized below.

The cumulative impacts of SC SWP implementation upon energy demand is estimated assuming that I/A OWTS are installed on the parcels in the following land use categories:

- Residential (low, medium and high density),
- Commercial,
- Industrial, and
- Institutional.

Parcels in the above land use categories total 383,894. This value represents the number of parcels throughout the County that are currently not sewered and where there are no current proposals to extend sewers. As of the writing of this DGEIS, there are 6,189 parcels that are included in proposals for sewering projects. The energy demands and corresponding GHG emissions are not included in this estimate as these proposed projects are the subject of their own project-specific SEQRA reviews. There are 132,050 parcels that are currently serviced by existing sewers and treatment facilities (privately or publicly owned).

Greenhouse gas (GHG) emissions and sinks are reported annually by US EPA (https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks). The primary sources of GHG emission in the US include transportation, electricity production, industry, commercial & residential, agriculture and land use/forestry (also a sink). The burning of

fossil fuels for energy is a major contributor to GHG each year (EPA: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017).

To estimate metric tons of carbon dioxide emissions that may be generated should the sanitary flow from all 383,894 parcels be treated by I/A OWTS, the 'Greenhouse Gas Equivalencies Calculator' on the EPA website was used (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator). **Table 6-2** shows the potential energy demand and corresponding GHG generated under this scenario. For the purposes of this estimate, a conservative (high) 5 kWh daily energy demand for each I/A OWTS system was assumed. This value is based on a review of vendor-reported energy requirements and calculating a conservative (high) average estimate (http://peconicgreengrowth.org/enhanced-technologies/). The energy demands of some systems is reported as low as 1 kWh.

The estimated energy demand is calculated by multiplying the number of parcels by the daily energy demand. This value is then plugged into the EPA GHG equivalencies calculator that provides the GHG emissions in metric tons of carbon dioxide. To put the number in perspective, the tool also provides a list of activities that would also generate a similar (or equivalent) amount of carbon dioxide. An example is provided in **Table 6-2**.

**Table 6-2 Potential Energy Demand and Estimated Greenhouse Gas Generated (GHG) by I/A OWTS Implementation**

| Wastewater Treatment Option | Estimated Number of Parcels to be Served | Estimated Energy Requirement per Parcel (kWh/day) | Estimated Energy Demand if All Priority Parcels are Connected (kWh/day) | Estimated [1] GHG as Carbon Dioxide | GHG [1] Equivalency |
|---|---|---|---|---|---|
| Individual I/A OWTS | 383,894 | 5 | 1,919,470 | 1,357 metric tons | 237 homes' electricity use for one year (as $CO_2$ emissions) |

Note: [1] Calculations made using the EPA Greenhouse Gas Equivalencies Calculator - https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

This is a worst-case high estimate that would be reduced if energy is provided by renewable sources (e.g., solar). The lower end of electrical requirement for the I/A OWTS is about 1 kWh/day. Using the same EPA Greenhouse Gas Equivalencies Calculator, the estimated carbon dioxide equivalents from powering the 383,894 parcels would be 271 metric tons, which is equivalent to the $CO_2$ emissions from 47 homes' electricity use for one year. Again, this estimate would be reduced by incorporation of renewable energy sources. In addition to I/A OWTS systems servicing individual parcels, the Final Scoping Document identified the inclusion of the energy related GHG that could be generated from a cluster facility, or an I/A OWTS sized to treat flow from several parcels. The potential energy demand should multiple parcels (cluster) be serviced by a single I/A OWTS system can be estimated. The County has conceptually evaluated the use of Appendix A STPs as an option for "clustering" (treatment facility servicing a number of parcels) versus the use of individual I/A OWTS systems as it pertains to cost per household. The cluster facilities require the installation of 'grinder pumps' at each parcel. The energy requirement would vary by pump capacity and the volume of flow generate. One manufacturer

provided an electrical requirement estimate of 200 kWh per year (assuming a single residence with a flow of 250 gallons per day) or less than 1 kWh/day. [https://eone.com/sewer-systems/sales-service/faq] If it is assumed this is 1kWh/day, the estimated GHG as carbon dioxide is 0.0007 metric tons per parcel or 1.6 pound, using the same 383,894 parcels to be served value in Table 6-2. This would translate to the GHG equivalency of driving 1.7 miles by the average passenger car.

### 6.3.1 Conclusion

Although the energy requirements and the associated GHG generated is small, it is above that of the conventional OSDS. At this time, the onsite treatment system available to address nitrogen and are approved for use in Suffolk County include an energy demand that is associated with a resulting GHG emission. The energy requirement of the I/A OWTS can also be met by the use of solar panels which would not result in the generation of additional GHG. Use of solar panels would mitigate the addition of GHGs associated with the Proposed Action.

# Section 7

# Unavoidable Adverse Impacts

As required by NYCRR Part 617.9(b)(iii)(b), this section of the Draft GEIS provides a discussion of "those adverse environmental impacts that cannot be avoided or adequately mitigated" should the County implement the wastewater management strategies identified in the SC SWP (specifically Section 8 of that document) and the changes to the County's Sanitary Code to facilitate the strategies. Proposed changes to the County's Sanitary Code Article 6 and to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences 'Appendix A' have been evaluated under this environmental review process. Section 2.1 of this Draft GEIS provides the complete description of the proposed changes.

As stated throughout this document, the Proposed Action does not include the development nor require the development of a physical project. The changes to the Sanitary Code and Appendix A requirements are proposed to address water quality impacts associated with nitrogen loading from existing onsite wastewater disposal systems (OSDS). Future development would continue to be reviewed and approved as is done now by the local entity having jurisdiction. Short-term construction related impacts associated with the construction of individual conventional onsite wastewater disposal systems (OSDS) are generally addressed through intra- and interagency coordination. In addition, the SCDHS siting guidelines for STPs would not be changed. The need for feasibility studies, good engineering practices (ex. proper design and maintenance, odor and noise controls, etc.), and environmental review and permitting would be unchanged. This includes permits and approvals that may be required from local Town/Village, NYS and SCDHS. These could include wetland permits, erosion and sediment control plans, meeting SCDHS Office of Pollution Control sanitary testing, remediation and abandonment requirements and SCDHS Office of Water Resources supply well siting requirements.

Short-term impacts evaluated in Section 5 of this Draft GEIS did not identify potential impacts associated with the installation of I/A OWTS over that of conventional onsite wastewater disposal systems (OSDS). Potential impacts associated with the installation of the I/A OWTS would be similar to that of OSDS. Site soils and vegetation would be excavated, the new equipment would be installed below ground and backfilled and reseeded. These potential impacts would be mitigated by the use of soil erosion measures during the work and revegetating (as required by local code) the area after the completion of the installation. The I/A OWTS does require an electrical supply connection that is not required by OSDS systems. As indicated in Section 6.3, this needed power would result in a relatively small increase in greenhouse gases generation when compared to a single parcel's electricity usage and could be offset by the use of solar panels.

Should the County implement the change to Article 6 increasing the allowable flow to Appendix A facilities as well as modify the setback requirements stated in Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences, short-term impacts are not expected to increase over those under current Code and Standards. Development review and approvals would continue to be under the jurisdiction of the

local municipality. Site construction practices and permitting requirements would remain in place as would the need for project-specific environmental review.

Cumulative impacts evaluated in Section 6 presented the water quality improvements forecasted by the use of I/A OWTS throughout the County and indicate that nitrogen concentrations would decrease in the upper glacial aquifer throughout most of the County. The SC SWP (Appendix E) looked at the challenges of siting Appendix A cluster treatment facilities with larger flow in developed downtown areas of the County. An increase in Appendix A system treatment flow capacity would result in the reduction of nitrogen contribution to ground and surface water over the use of OSDS. Use of good engineering practices and adhering to establish standards would reduce the potential for impact from noise and or odors should the setback distances be reduced in specific land use types. As previously stated, the approval of development would remain with the local municipality having jurisdiction.

STPs are an effective technology associated with the removal nitrogen from wastewater. The Proposed Action recognizes their importance in addressing nitrogen loading. Projects such as these are typically evaluated under a project specific environmental review. It is recognized that STP projects can result in short-term construction related impacts that are unavoidable. Using best management practices, good engineering practices and adhering to standards for siting such facilities these short-term impacts can be minimized.

Adverse Countywide impacts to groundwater and surface water quantity and quality are not anticipated as a result of implementation of the Proposed Action. The Proposed Action does not include or specifically identify new development within the County. Parcel development within the surface water and groundwater priority areas are controlled by current zoning, policies and plans of the applicable Towns and Villages. Proposed development would continue to require the reviews by these jurisdictional entities. The implementation of the Proposed Action specific to the Appendix A facilities may allow a lot or parcel to meet its full development potential under current zoning. This would likely be in downtown areas where development is limited by the availability of sanitary wastewater treatment capacity. However, implementation of the Proposed Action would not alter the existing review and approval processes in place including those of the local municipality having jurisdiction.

Based on the analyses conducted as part of this Draft GEIS, there were no significant adverse environmental impacts identified that would not be adequately addressed or mitigated if the County was to implement the recommended wastewater management plan, associated Sanitary Code changes, and associated changes to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences under the Proposed Action. As recommended in Section 8.6.11 of the SC SWP, an Adaptive Management Plan would be prepared to provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources. The need for further SEQRA review would be determined at the time the future changes (or additions) to the County's wastewater management strategy are identified.

# Section 8

# Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action, natural and man-made resources would be expended. For example, resources would be needed in the manufacturing and installation of the approved I/A OWTS. The commitment of the resources required (such as metal and plastic) to construct the I/A OWTS unit would result in those resources not being available for other uses.

The reduction in setback requirements for Appendix A modified sewage disposal systems would not in and of itself expend natural and man-made resources. The proposed change in Article 6 of the Sanitary Code to allow for Appendix A modified sewage disposal systems to treat up to 30,000 gallons of sanitary flow per day has the potential to require additional resources (natural and man-made) associated with design, manufacturing, installing and maintaining the system over that of the currently allowed 15,000 gallon per day facility.

STPs, a proven technology for the treatment of sanitary wastewater and address nitrogen, would also require the use of resources (natural and man-made). Resources such as land, construction materials, and human effort to design, install, monitor and maintain the STP would be required. The analysis of the specific commitment of resources associated with individual STP or clustered/decentralized projects would likely be addressed in a project specific environmental review (i.e. project specific SEQRA review). One would expect that resources such as land for a project site, equipment, labor, and energy would be required for individual STP or cluster/decentralized projects. Operation of a STP would also include a commitment of energy.

Energy in the form of electricity to operate the newly installed I/A OWTS systems and human effort to design, install, monitor and maintain the I/A OWTS would be required. The commitment of resources would not be affected by the proposed change in setback requirements for Appendix A facilities for an individual project. The increase in permittable flow for Appendix A facilities may result in an increase in resource commitment, but this is not above what would be required for the same facility located elsewhere. As the intent in the proposed changes to Appendix A is to facilitate a more widespread use of this technology to treat sanitary waste and reduce nitrogen loading, there is a potential for an increase in use of resources to support such projects.

Energy commitment cannot be 'recycled' or reused. The energy requirements of the I/A OWTS units are discussed in Section 6.3 includes the estimated commitment of energy required (consumed) should I/A OWTS be installed at all currently unsewered parcels within the County that are not located within areas identified for sewering. The energy requirement for the use of a grinder pump should a parcel be connected to a cluster facility is also presented. The energy commitment for an I/A OWTS is not shared by the conventional onsite sanitary disposal system and as such is considered an irretrievable commitment of a resource associated with the Proposed Action. Solar panels specific to I/A OWTS are available and could be purchased for use by the property owner. This would reduce the energy commitment of the units.

Financial resources in the form of grants or loans to provide assistance with the upgrading of the non-sewered parcels could be considerable based on the current cost of the new I/A OWTS units. Owner maintenance costs and electrical costs would both be greater than that associated with current septic systems. Commitment of public funds to help offset the installation cost of the I/A OWTS systems would result in these funds not being available for other projects or services. However, this is not a significant adverse impact on the State, County or local funding institutions.

In summary, although there may be a considerable commitment of resources, the benefits associated with reducing nitrogen loading to the surface water and groundwater are also considerable. Water quality improvement is a factor in establishing a stable and resilient environment. Reduced nitrogen loading to surface water bodies would improve water quality that can have a positive effect on aquatic life and human enjoyment of the resource that may require the use of financial resources. The use of financial resources in this manner would serve as a benefit to those involved in local tourism, fishing and the like. Ensuring surface water, groundwater and drinking water quality for the existing and future County residents is a positive impact of the Proposed Action.

# Section 9

# Mitigative Measures

This section of the Draft GEIS addresses measures to mitigate potential significant impacts that are identified in Sections 4 – Potential Impact of Proposed Action and Section 5 – Short-term or Construction-Related Impacts. It is important to note, the evaluation of potential impacts included in the earlier sections of the document reflects the adverse and beneficial impacts should the recommended countywide wastewater upgrade program presented in the SC SWP that include the recommended revisions to the Sanitary Code and the recommended revisions to Appendix A of the Construction Standards be adopted by the County. The impacts described in Sections 4 and 5 include those that are determined to be reasonable outcomes of implementing the Proposed Action. The analysis presented in this Draft GEIS does not include site-specific impacts but looks at these changes as they may affect the County on a whole. The Proposed Action as defined in Section 2.1, includes a roadmap of wastewater policy recommendations. The recommendations in the Proposed Action are broad based in nature, will require future legislative action, and are not project specific. Site-specific changes or developments would be the subject of local municipal review and their own environmental review under SEQRA.

As stated in Section 4 of the Draft GEIS, based on the analysis conducted, there were no significant impacts identified associated with the County's implementation of the wastewater management strategies identified in the SC SWP (Section 8) and summarized in Section 2.1 of this Draft GEIS. Beneficial impacts on surface water and groundwater quality are identified as a result of the implementation of the Proposed Action. Beneficial impacts (water quality improvement) do not require mitigation. Article 19 of the County Sanitary Code precludes the use of I/A OWTS as means to increase a parcel's wastewater density. All development would continue to be in conformance with local development requirements including zoning as well as nitrogen reduction goals. I/A OWTS units have an electrical requirement not present with OSDS. Temporary impacts associated with the installation of the wastewater management feature is not anticipated to exceed those associated with other typical projects of their size. Siting and construction in accordance with state, County and local requirements would mitigate these potential impacts. Through the proposed Adaptive Management strategy, the County would track the nitrogen load goals and the progress toward achieving reduction goals. Annual reporting would also include an assessment of potential plan improvements.

The Proposed Action is the implementation of the recommendations included in the Suffolk County Subwatersheds Wastewater Plan (SC SWP) comprising a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources originating within the County. The SC SWP identifies first order nitrogen load reductions to improve water quality (i.e. groundwater and surface water). The reduction goals are not enforceable regulatory limits, but instead, the goals are recommended reductions that were developed to reduce nitrogen loading to groundwater and surface waters and improve water quality. The current trend of increased nitrogen concentrations in groundwater and surface water resources would be reversed through the implementation of a Countywide phased

wastewater upgrade program wherein all existing OSDS would eventually be replaced with nitrogen reducing wastewater technologies.

The implementation of a Countywide plan would result in the reduction in nitrogen loading from wastewater sources so as to protect and restore both groundwater and surface water quality and the coastal ecosystems of Suffolk County. Several wastewater management technologies were evaluated to address nitrogen loading from OSDS. While the recommendations within the SC SWP focus on the use of I/A OWTS as the primary wastewater management strategy, initial recommendations for other management methods, including sewer expansion, and clustering/decentralized systems are also provided (but would require follow up study and project-specific feasibility analysis before final recommendations can be provided).

The County, under Article 19 of the Sanitary Code, has measures in place establishing stringent requirements for design, operation/maintenance and performance testing of onsite treatment systems to ensure that I/A OWTS are performing as designed in reducing total nitrogen to the treatment goal of 19 mg/l. Treatment units that do not perform would be removed from the County's list of approved vendors. Change to the Sanitary Code increasing the permittable flow to Appendix A facilities does not reduce the requirement for meeting the existing siting, construction, and treatment standards as established by SC DHS, nor is the development review process by the local municipality having jurisdiction modified. These reviews and standards would remain in place under the Proposed Action.

No impact to land use were identified in the review of the Proposed Action as the proposed changes to the Sanitary Code do not change existing local municipality jurisdictional power to review and approve proposed development within their boundaries. Part of the Countywide wastewater management strategy includes the use of preexisting established "Groundwater Management Zones" as defined in Article 6 of the Sanitary Code to institute maximum allowable residential density per acre for new developments that do not include wastewater treatment and disposal facilities. These requirements are applicable to parcels where I/A OWTS are to be installed. The Groundwater Management Zones establish the minimum developable lot size within each groundwater hydrogeologic zone, and the local municipal zoning and subdivision regulations refer to these requirements. This is pertinent because the establishment of minimum lot sizes and density regulations are typically solely within the purview of municipalities and their local zoning ordinances. For STPs and Appendix A facilities, the proposed changes to the Sanitary Code and to Appendix Standards would not impact the local municipality ability to govern the land use within its borders. SCDHS would continue to review proposed STPs and district expansions per the existing guidelines for the siting and expansion of STPs (SCDHS Guidance Memorandum #28 July 24, 2017). This guidance memorandum was established with the purpose of evaluating the potential impact to groundwater and surface water resources and impacts to neighboring properties resulting from elevated groundwater levels.

The potential growth inducing aspects of the proposed changes to the Sanitary Code is presented in Section 6.0 – Cumulative Impacts. The analysis concludes that the review and approval of proposed developments is the responsibility of the local municipality. Changes to the Sanitary Code and Appendix A Standards would not negate the authority of the local municipality to review and approve development within its boundaries. The Proposed Action focus is on the

requirements for nitrogen loading reduction to groundwater (including drinking water) and surface water from sanitary wastewater sources should a parcel or parcels be approved for development by the local municipality having jurisdiction.

By implementing the Proposed Action, a reduction in nitrogen would be realized in groundwater and surface water resources throughout the County. This a positive impact and no mitigation would be required. Improvement in water quality would have a positive impact on the natural environment with a potential to reduce HABs events, improve wetland function and provide improved habitat for aquatic life. These forecasted outcomes of the implementation of the Proposed Action would not require mitigation.

STPs are a proven technology to address nitrogen in sanitary wastewater. The SC SWP recognizes the existing proposed STP projects that are in various stages of development, including; Feasibility Study, environmental review or design and provides initial recommendations for areas that might benefit from sewer expansion or new clustered/decentralized systems. All STP, new sewer district or expanded sewer district projects, including clustered/decentralized systems, would be subject to site specific environmental review where mitigative measure would be identified as required. These 'presumptive sewer projects' are discussed in Section 6.1 of this Draft GEIS while initial recommendations for areas that would benefit from sewer expansion or clustered/decentralized systems are included in Sections 8.1.5 and 8.1.2.4 of the SC SWP. No additional long-term or operational mitigative measures are identified specific to the Proposed Action.

Section 5 of the Draft GEIS identifies short-term or construction related impacts of the Proposed Action. This section of the Draft GEIS looks at the installation of I/A OWTS in place of the conventional OSDS. Ground disturbance and time associated with the installation of I/A OWTS are anticipated to be similar to ground disturbance and time associated with installation of conventional OSDS. In addition, existing Office of Wastewater Management permitting requirements provide a mechanism to ensure that individual projects have the necessary environmental and other permits in-place (e.g., wetlands, site plan review, construction, etc.) to address project-specific environmental concerns. Parcels approved for development or redevelopment by the local municipality having jurisdiction are required to have an approved sanitary wastewater mechanism identified meeting the requirements of SC DHS. Therefore, no additional potential impact to land use, natural environment or archeological resources are identified.

Best practices for soil erosion and sediment control required by the local jurisdiction as part of the local municipality review process during the installation of the I/A OWTS would limit the potential for offsite impacts as a result of this process. Appendix A facility construction may trigger review and compliance with NYSDEC erosion control and stormwater management measures should the construction area be 1 acre or more in size. In addition, local jurisdictional review of the development would include stormwater management and erosion control and would not be negated by the proposed changes to the Standards. No additional mitigative measures are identified.

As noted above, the proposed changes to Article 6 and to the Construction Standards does not limit the review and approval requirements of the local municipality having jurisdiction for

development in which the proposed Appendix A facility would be located. Development would continue to be reviewed and approved in accordance with local zoning and land use. No additional short-term mitigation measures are identified.

The use of I/A OWTS, Appendix facilities, and sewering associated with STPs would reduce nitrogen loading to the groundwater, drinking water, and surface water resources, that would result in improvement of water quality. The reduction in nitrogen is anticipated to provide varying degrees of additional protection of human health, as documented within Section 4.0 of the SC SWP. Potential improvement on public health does not require mitigation.

## 9.1 Summary of Mitigative Measures

### 9.1.1 Land Use, Community Plans and Character

Because no impacts to land use were identified, and the Proposed Action was found to be consistent with the goals of community plans and character, no mitigative measures are required.

The Proposed Action is the implementation of the recommendations included in the SC SWP to support the development of a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. As described in Section 4.1, there is no new land development associated with the Proposed Action and the Proposed Action is consistent with the goals and objectives of the plans, policies and initiatives in-place to protect and improve the groundwater and surface water resources of Suffolk County.

The Proposed Action also includes revisions to Article 6 allowing for the maximum flow of Appendix A STPs to be increased from 15,000 gallons per day to 30,000 gpd. The Commercial Construction Standards for Appendix A systems modification addressing reduced setback requirements based on land use would be adopted to enable the more widespread use of Appendix A systems as a wastewater management tool in Suffolk County. This would not negate other standards (such as siting or good engineering practices) or regulations in place or the requirements for construction on the local level. Code modification and proposed changes to the setback requirements for Appendix A facilities does not require land development. These code and standards changes are focused on providing wastewater treatment options should the local municipality determine development is appropriate and provide approval within their jurisdiction. Site-specific or area-specific development projects that may include an Appendix A system would be subject to local jurisdictional review/approval in addition to environmental review under SEQRA.

### 9.1.2 Groundwater and Surface Water

Because no significant negative impacts to groundwater and surface water resources were identified as a result of implementing the Proposed Action, no mitigating measures are required.

The Proposed Action is the implementation of the recommendations included in the SC SWP to support the development of a Countywide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. Based on the evaluation described in Section 4.2 of this document and Section 4.9 of the SC SWP, the Proposed Action would result in a cumulative benefit to groundwater and surface water resources, and to the environment including:

- Reduction in nitrogen concentrations throughout the aquifer system, including reduction in nitrogen concentrations in private water supplies;
- Reduction in nitrogen concentrations in over 96 percent of the community supply wells to less than 4 mg/L after 50 years, to between 4 and 6 mg/L in 2.2 percent additional community supply wells and;
- Reduced nitrogen loading to surface water bodies, resulting in increased concentrations of dissolved oxygen and compliance with applicable water quality criteria, progress towards the establishment of clearer waters required for establishment of submerged aquatic vegetation, reduction in harmful algal blooms and restoration of ecosystems.

Section 4.2 of this GEIS also identified the potential for a 0.23% reduction in aquifer recharge from the presumptive sewered areas. This would have no impact on Countywide water supplies, and site-specific impacts resulting from individual projects would be identified during the project-specific environmental (e.g., NEPA and/or SEQRA) reviews.

Increasing the maximum flow to an Appendix A system can expand the option of sanitary waste treatment in areas where sewers do not exist and provide for reduction of nitrogen loading to groundwater and local surface water resources. These changes are focused on providing wastewater treatment options should the local municipality determine development is appropriate and provide approval within their jurisdiction. An environmental benefit to ground and surface water can be realized by the use of such treatment systems. As an example, a paper pilot (Hamlet of Mattituck) was prepared and included in Appendix E of the SC SWP that concluded, in part, an Appendix A modified sewage disposal system could result in an overall net reduction in nitrogen when compared to current wastewater management practices. Good engineering practices and adhering to siting criteria as well as other regulatory requirements associated with the implementation of such facilities would limit the potential for impact. No significant impacts to groundwater or surface water resources were identified.

### 9.1.3 Natural Environment

As implementation of the Proposed Action would not result in long-term negative impacts to the natural environment, no mitigating measures have been identified.

The Proposed Action, if implemented, does not require the development of a specific project. The goal of the Proposed Action is to reduce nitrogen loading originating from onsite sanitary systems through a phased wastewater management program. Replacement of an existing cesspool or septic facility with an I/A OWTS would require the temporary removal of existing vegetation, likely lawn, to remove the existing unit and install the new one. The area would then be replanted or reseeded. The proposed changes to the Sanitary Code and the Appendix A Standards would not result in an alteration to regulations regarding wetlands, critical environmental areas, floodplains and flood zones within Suffolk County. As there would be no development required by this proposed project, existing floodplains and flood zones within the study area would not be impacted nor would there be any additional floodplains or flood zones created as a result of the Proposed Action. The existing floodplains would maintain their current level of functionality.

STPs, new sewer districts and expansion of existing sewer districts, as well as clustered/ decentralized systems would also result in the reduction of nitrogen loading from sanitary sources providing a benefit in water quality. The potential impacts associated with projects such as these are evaluated in a project specific environmental review. Adhering to standard facility siting criteria and good engineering practices would limit environmental impact from such projects.

Implementation of the Proposed Action is predicted to result in groundwater and surface water quality improvements that would support improvements to the associated natural environment. Excess nitrogen has been linked, for example, to water quality issues resulting in HABs events and reduction in the storm-surge protection provided by coastal wetlands. The reduced nitrogen loading is anticipated to result in improved groundwater and surface water quality that would have a beneficial impact to the natural environment in the long-term. Reductions in HAB events and establishment of the water quality conditions required for restoration of submerged aquatic vegetation would be improvements to the natural environment.

### 9.1.4 Historic and Archaeological Resources

As implementation of the Proposed Action would not result in a long-term impact to historic resources or archaeological resources, no mitigating measures are required.

As described in Section 4.4, the I/A OWTS currently approved by Suffolk County for provisional use as defined in Article 19 of the Suffolk County Sanitary Code are primarily below grade and in most areas would only have visible components with low profile covers for access to the system. Visibility could be reduced through landscaping or other natural structures. As such, it is not expected that the in-kind replacement or retrofit of existing septic systems would negatively impact the setting or character of individual historic properties where such systems may be modified, nor would they have an adverse impact on the overall historic character or appearance of larger historic districts.

The proposed change to the Appendix A Standards reducing the setback requirements for specific land uses, would not negate the need for consultation with New York SHPO prior to project implementation. Maintenance of the Appendix A facilities would not be changed by the Proposed Action. No long-term impact to historic structures has been identified by implementation of the Proposed Action as they pertain to Appendix A systems.

STPs, sewer districts, and sewer district expansions are also identified as a proven technology for the reduction of nitrogen loading to groundwater and surface water from sanitary wastewater. Projects such as these would be the subject of their own environmental reviews. With the completion of any required archaeological analyses and continued consultation with OPRHP, the project would not result in impacts on archaeological resources.

### 9.1.5 Noise and Odors

Because no significant noise impacts have been identified, no noise mitigating measures are required. The potential for odors generally results from poorly operated or maintained facilities. Article 19 of the Suffolk County Sanitary Code currently requires that each property owner purchasing an I/A OWTS procure an annual maintenance contract to keep the I/A OWTS

operating successfully. Maintenance and use of these contracts would mitigate the potential for odors from I/A OWTS that are not operating properly. Appendix A facilities, STPs, new sewer districts, or sewer district expansions would also require the review of odor control measures as part of their design. Potential odors would be evaluated as part of the project's environmental review (ex. SEQRA).

## Noise

The Proposed Action would not require the development of a specific project and would not introduce new noise sources that would be expected to be audible offsite. As with existing onsite wastewater disposal systems (i.e. septic system), it is assumed such equipment would be located within structures or underground, shielding noise that they produce from surrounding receptors. As described in Section 4.5.1 of this document, there have been no identified noise issues resulting from I/A OWTS implementation as of the date of this publication, and any new I/A OWTS would be required to comply with local applicable noise codes or ordinances.

Changes pursuant to the Proposed Action would not result in new vehicular traffic that would increase noise levels at receptors along roadways in the County. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require noise control be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Consequently, the Proposed Action would not have the potential to result in substantial changes to noise levels at receptors in the County and would not have the potential to cause significant adverse noise impacts. As described previously, any major facilities or projects proposed in the future, such as sewer expansion projects, new Appendix A STPs, or individual/specific clustering projects, are subject to project-specific environmental review that would include consideration of potential noise effects. Therefore, no long-term noise impacts have been identified associated with the implementation of the Proposed Action.

## Odors

Wastewater treatment in general has been identified as a potential source of noticeable offsite odors. However, as identified in Section 4.5.2 of this document, the I/A OWTS would not result in new odor sources. The proposed revisions to Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other than Single Family Residences require odor reduction be implemented into the design of Appendix A STPs to qualify for reduced setbacks. Site specific projects would be the subject of local review and approval. STPs, new sewer districts, or sewer district expansions would also be the subject of their own environmental review (ex. SEQRA) where the potential for odors would be evaluated.

The potential for odors generally results from poorly operated or maintained facilities. Article 19 of the Suffolk County Sanitary Code currently requires that each property owner purchasing an I/A OWTS procure an annual maintenance contract to keep the I/A OWTS operating successfully. This requirement would not change under the Proposed Action. Maintenance and use of these contracts would mitigate the potential for odors from I/A OWTS that are not operating properly. No additional mitigative measures are identified.

### 9.1.6 Human Health (Contaminant Exposure/Hazardous Materials)

The implementation of the Proposed Action would not result in increased exposure to hazardous materials or a potential long-term negative impact to human health; therefore, no mitigative measure are required.

The installation and use of I/A OWTS units in accordance with the Proposed Action does not require the use or storage of chemicals or other hazardous materials. The flow discharged from the units is not considered hazardous and proper operation of the systems would not result in a potential negative impact on human health. Upgrading of failed systems and old/grandfathered systems is expected to result in increased separation of the system to groundwater and reduced failures which in turns results in less human health hazards associated with exposures to sewage and physical harm from a collapsed system. Existing Article 12 of the Suffolk County Sanitary Code addresses requirements for assessment and remediation of existing systems if necessary.

New development is not a component of the Proposed Action and should construction of a new Appendix A facility be proposed, a site-specific assessment of potential impacts would include as a minimum consulting the online database(s) to determine if the site was identified as having past disposal activities.

The shift from conventional sanitary system construction material, which was mainly concrete, to I/A systems introduces additional materials for major structural components. This can include plastics such as polyethylene and fiberglass. Both materials are widely accepted and used in many applications across the nation, and neither are known to result in the contamination from their usage in I/A systems. I/A systems can include additional components, including filter media (ex. sawdust/wood chip). Impacts have not been identified, but continued monitoring is warranted under the SCDHS long-term monitoring plan that would address STPs, conventional septic systems as well as I/A OWTS.

I/A OWTS utilize processes similar to a standard sewage treatment plant with standard bacteria. The use of specialized bacteria (bio-augmentation) and/or chemical addition would be examined by the County as part of its adaptive management process. Only additives found to be safe (no human health concerns) would be permitted for use.

The reduction in total nitrogen loading to surface waters and groundwaters (improvement in water quality) would have a positive impact on water quality that can result in an improvement on human health as the number of HABs events associated with nitrogen loads declines.

### 9.1.7 Environmental Justice Assessment

The Proposed Action includes grant funding opportunities that are now and would continue to be made available to County residents who meet eligibility criteria to minimize the financial burden to residents. The Proposed Action would not have the potential to result in a significant or disproportionate adverse impact to environmental justice communities, therefore no mitigative measures are identified.

As described in Section 4.7, nineteen environmental justice areas were identified in Suffolk County. The Proposed Action is the implementation of the recommendations included in the SC SWP to support the development of a Countywide wastewater management strategy to reduce

nitrogen emanating from non-point wastewater sources. The recommendations in the SC SWP were developed to protect and restore both groundwater/surface water quality and the coastal ecosystems of Suffolk County. The Proposed Action is applicable to all parcels within the County borders and would not disproportionately affect parcels within environmental justice areas. Implementation of the Proposed Action (reduction in nitrogen loading to groundwater and surface water) would improve water quality for all residents, including residents of the Environmental Justice Areas.

### 9.1.8 Growth-Inducement

Because the Proposed Action does not include or require development and, growth or development would continue to be the responsibility of the local jurisdiction, mitigation measures are not identified.

Growth-inducing aspects of the Proposed Action are evaluated in Section 6.2 of this Draft GEIS. The replacement of existing OSDS with I/A OWTS are not growth inducing as providing for treatment of sanitary wastewater generated by activities on a parcel is a requirement of development. However, the implementation of the Proposed Action may affect future development potential of parcels, demand for utilities, and existing land uses consistent with the goals of the local zoning and objectives of the SC SWP for nitrogen reduction. Implementation of the SC SWP would not lead to growth beyond what is allowed by local municipalities.

Modification of Appendix A of the Sanitary Code to increase allowable flow to 30,000 gpd or reduce setbacks has the potential to allow for the development density of specific parcels (likely in downtown areas) to be maximized in accordance with zoning as the development may currently be limited by the availability of sanitary wastewater treatment. However, implementation of these modifications would not negate the review and approval process of the local municipality having jurisdiction. Other zoning or development requirements such as height restrictions and parking would not be affected by the Proposed Action. These changes are focused on providing wastewater treatment options should the local municipality determine development (and growth) is appropriate and provide approval within their jurisdiction.

Expansion of sewering in the presumptive sewered areas support growth in specific areas in accordance with Town and/or Village-specific zoning requirements. Project-specific growth inducement would be addressed by each project-specific environmental evaluation.

### 9.1.9 Greenhouse Gas Emissions

While the increased energy demand and associated greenhouse gas emissions associated with each I/A OWTS are small, a cumulative impact has been identified in Section 6.3 of this Draft GEIS. This increased energy demand results from the power required to operate the pumps and/or blowers and controls. As the SC SWP is implemented, updated and amended as part of the Adaptive Management Strategy described below in Section 9.2, it is anticipated that measures would be identified and implemented to reduce these impacts. Potential mitigation measures include:

- County continue to assess viability of I/A OWTS technologies with lower energy demand (e.g., fewer pumps/blowers) for approved use;

- Continue to monitor an assess the use of passive treatment systems such as permeable reactive barriers, or PRBs; and
- Evaluate the use and approval of solar-operated I/A OWTS.

## 9.2 Adaptive Management Strategy

The County plans to maximize the benefit (improved water quality) and minimize the potential for impact by careful examination of program elements and integrating improvements at set project review periods. The County recognizes the potential for change to the wastewater management strategy as a result of the availability of new data, changes in climatic conditions that may impact the modeling outputs (warmer temperatures, increased precipitation, sea level rise, etc.), and/or technological advancements. In addition, several preliminary recommendations were made wherein additional data is needed before final policy options can be recommended (e.g., how to address commercial parcels with flows >1,000 gpd). To allow for responses to these and other factors, the County proposes to implement an 'adaptive management strategy'.

The wastewater management program defined within the SC SWP (Section 8) is intended to be a guide that builds upon the best information available at the time of plan development. The wastewater management program recognizes the use of many nitrogen reduction strategies (STPs, Appendix A facilities, I/A OWTS) as part of the Countywide nitrogen reduction program. As with any extended program, the implementation of an adaptive management strategy is a critical element to ensure the overall success of the program. The recommendations provided in the SC SWP may overlap with several parallel ongoing initiatives focused on restoring and maintaining water quality in Suffolk County. These include, but are not limited to;

- LINAP,
- Long Island Commission for Aquifer Protection,
- Individual estuary programs (LISS, PEP, and SSER), and
- Town/Village initiatives.

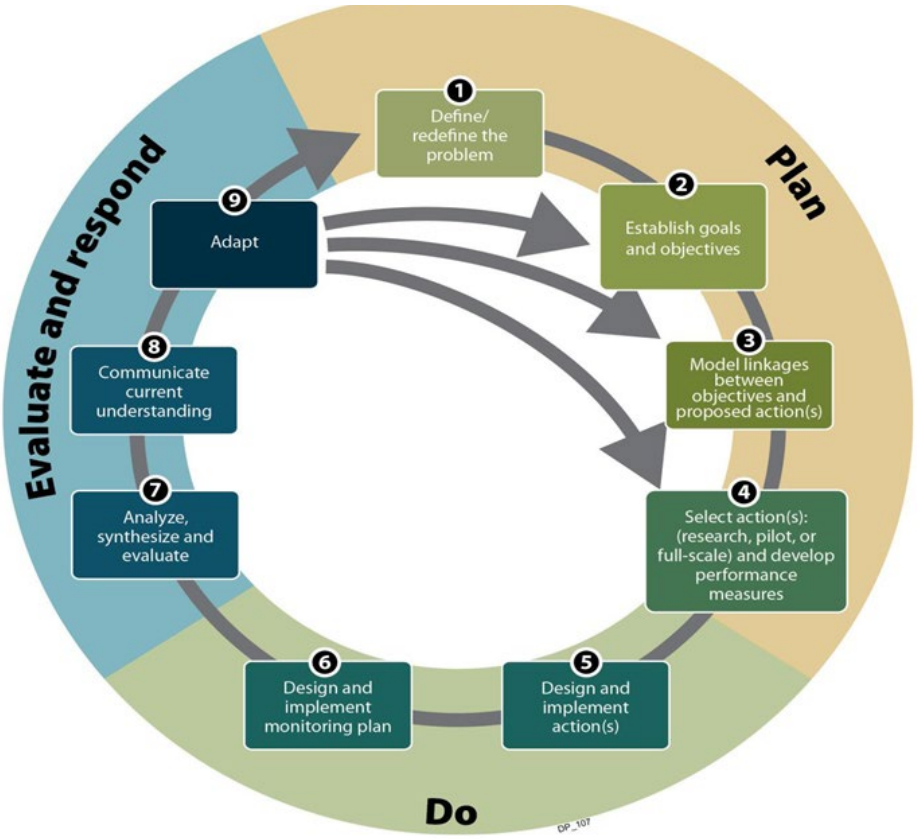
The Adaptive Management Plan would include a recommended strategy to establish an integrated, collaborative framework for cross-coordination of programs to ensure one vision, reduce redundancies and to maximize the efficiency of the connected programs. Under the County's Adaptive Management Plan, the SC DHS would monitor and report annually on the success of the program and recommend changes if required. Models developed in the development of the SC SWP would be used to review future cumulative effects of the program, for example.

Adaptive management is a process of information gathering, review and analysis, and response that promotes flexible decision-making. The Adaptive Management process is graphically depicted by **Figure 9-1**. This process is particularly appropriate for complex programs, for programs where the effects of an organization's decisions and actions play out over an extended period of time, and where an organization must meet multiple objectives – as in the case of the SC SWP. If impacts from implementation of the SC SWP are identified during the review process,

mitigation measures can be identified and implemented into the program as part of adaptive management. The County's adaptive management program includes the following five critical components:

1. Establishment of a program lead;
2. Establishment of clearly defined goals and objectives (performance measures);
3. Establishment of clearly defined program review intervals;
4. Establishment of a monitoring plan to track program progress; and,
5. A reporting mechanism that will:
    - Document progress;
    - Identify new data sources;
    - Identify corrective actions, and,
    - Identify recommendations to the Program.

Under the adaptive management process, an Adaptive Management Plan would be developed that would provide the mechanisms to ensure that critical program elements are in-place prior to moving forward with individual program elements (e.g., industry readiness, design professional readiness, scavenger plant capacity). Finally, the Adaptive Management Plan would provide an additional location to publish defined SEQRA thresholds that would prompt requirements for supplemental EIS or project-specific EIS, essentially building on the list of thresholds identified in Section 12 of this Draft GEIS.




*DSC's adaptive management cycle*

Source: http://resources.ca.gov/ecorestore/what-is-california-ecorestore/

**Figure 9-1 Example Adaptive Management Process as Utilized in the California EcoRestore Initiative**

A summary of each of the primary Adaptive Management Plan elements is provided in detail in Section 8.6.11 of the SC SWP.

The Adaptive Management Plan would include periodic project reviews that provide the formal mechanism for reviewing program data and progress against the defined program objectives. The nitrogen load from Appendix A systems would be regulated as part of the siting requirements for all systems in the County. Mass loading from Appendix A systems would be tracked as of the Adaptive Management Plan. In the spirit of adaptive management, the review frequency may be periodically adjusted based upon the specific phase or needs of the program. In addition, supplemental program reviews (e.g. in addition to the pre-established program review period) should be completed as needed, based upon the needs of the program. For example, should the proposed revisions to the Appendix A setback requirements and flow requirements have unintended consequences, corrective actions would be identified and implemented. This would also be a mechanism to identify potential unintended regional drawdown of the water table as a result of additional sewering projects and offshore outfalls. This is particularly applicable in situations where new, unanticipated, studies are released that provide new data that could significantly impact the recommendations and objectives of the program.

SC DHS is rolling out a new computer tracking system in 2019 to track new applications and the number of I/A OWTS installed as well as their location. Using the data collected, SC DHS would be able to determine the progress toward achieving nitrogen load reduction goals.

As discussed previously, the Proposed Action has four primary program phases. Based upon the initial timeline provided in the SC SWP, the following program review periods are recommended:

- Phase I – Annual;
- Phase II – Biannual;
- Phase III – Every five years; and,
- Phase IV – TBD

The program review periods were selected based upon the number and frequency of major recommendations during each program phase. For example, Phase I "Ramp- Up" includes several critical ramp-up recommendations that will be required before Phase II can begin. For that reason, annual reviews to check in on status and the availability of new data is warranted during that review period. During Phase II, major program changes occur on, at most, a biennial basis through the deliberate phased implementation of recommended upgrades within select geographic target areas and trigger mechanisms to accommodate industry growth.

Consistent with the adaptive management philosophy, the program review period frequency should be continually evaluated and adjusted, as needed, to fit the needs of the program. A review of the program review frequency should be included as part of each formal program review.

It should be noted that SCDHS DEQ currently has funding obligated from the NYSDEC SCUPE grant towards the preparation of an Adaptive Management and Monitoring Plan. The County anticipated that the first-year report would be completed in 2019/2020.

A SC SWP Annual Report should be prepared to track the progress of the SWP recommendations, present data obtained through the Adaptive Management and Monitoring Plan, and offer additional recommendations based upon the findings of the report. The SWP Annual Report should leverage information documented in the I/A OWTS Annual reports currently required under Article 19 of the Suffolk County Sanitary Code. An initial recommended report outline is provided below:

- Progress towards SC SWP recommendations;
- Progress toward collecting and analyzing data that were identified as datagaps in the SC SWP;
- Evaluation of long-term groundwater and surface water data trends identified in the SC SWP;
- Update on the I/A OWTS technologies' nitrogen reduction performance in Suffolk County;

- Update on the Appendix A systems (30,000 gpd) evaluated to confirm the intended objective of expanding usage as a nitrogen mass reduction tool;
- Statistics of wastewater treatment upgrades, both through I/A OWTS retrofits and sewer connections;
- Nitrogen Reductions Tracker – quantify percent reductions based on wastewater treatment upgrades and progress toward meeting nitrogen load reduction goals;
- Trends on storm numbers and intensity, high tide events and other events associated with climate change;
- Inclusion of corrective measures;
- Identification of new related initiatives, reports, and/or other data sources;
- Summary of proposed changes to the recommendations provided within the SC SWP, if necessary; and
- SEQRA thresholds evaluation.

Finally, the annual report should incorporate the I/A OWTS Annual Report required under Article 19 as an appendix. The I/A OWTS Annual Report would include updates on the Suffolk County Reclaim Our Water Initiative, the Center for Clean Water Technology, I/A OWTS performance data in Suffolk County, I/A OWTS in other jurisdictions, new and emerging technologies, an evaluation of existing requirements, and any recommendations for streamlining and future research.

The County recognizes the implementation of the recommendations within the SC SWP to be a 'first step' in addressing nitrogen loading. Section 9 of the SC SWP provides a list of County resources where nitrogen reduction goals would not be met by the implementation of this program alone. Through the adaptive management process, the County would make improvements to the program with a focus to mitigate potential adverse impacts. The changes would continue to be reviewed to ensure review under SEQRA are completed as required.

# Section 10

# Alternatives Analysis

New York State Environmental Quality Review Act (SEQR) regulations require identification and analysis of reasonable alternatives to the Proposed Action. Specifically, 6NYCRR Part 617.9(b)(v) states an environmental impact statement must include, "*a description and evaluation of the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor. The description and evaluation of each alternative would be at a level of detail sufficient to permit a comparative assessment of the alternatives discussed. The range of alternatives must include the no action alternative. The no action alternative discussion should evaluate the adverse or beneficial site changes that are likely to occur in the reasonably foreseeable future, in the absence of the proposed action.*"

The alternatives presented in this section for analysis are reasonable options to the proposed project that were identified during the scoping process. The alternatives are described in the text that follows and each is evaluated to determine if it substantively meets the goals and objectives of the County's Proposed Action, and has the potential to reduce, eliminate or avoid adverse impacts that result from the implementation of the Proposed Action. The analysis of alternatives that follows also includes a discussion of the potential for environmental impact as compared to the Proposed Action.

Five alternatives to the Proposed Action are considered;

- Section 10.1 No Action Alternative - Continued use of onsite wastewater disposal systems (OSDS) and the patchwork of wastewater collection and treatment systems that currently exist within the County
- Section 10.2 Countywide centralized wastewater collection and treatment systems (expansion of existing sewer districts and/or establishment of new sewer districts) to treat sanitary wastewater from existing developed parcels. As defined, this alternative would discharge all treated sanitary effluent off-shore.
- Section 10.3 Increase minimum lot size Countywide –Increase minimum lot size for new residences from 20,000 square feet (1/2 acre) to 40,000 square feet (1 acre) in all groundwater management zones to reduce nitrogen loading from on-site discharge of sanitary wastewater
- Section 10.4 County purchase of 'priority area' properties using Open Space funding – Property purchases would be limited to undeveloped parcels
- Section 10.5 Dual plumbing/dual water systems – Separate piping to address household grey and blackwater.

It should be noted that the alternatives analyzed below are considered 'instead of' the implementation of the Proposed Action. Although when compared to the Proposed Action, the County's goal of nitrogen load reduction from wastewater is not fully met, the utilization of these alternatives (other than the No Action alternative) may be worthwhile and reasonable to address nitrogen in specific areas of the County. The No Action alternative would not provide a path forward for the County to address the current elevated levels of nitrogen in groundwater and surface waters. It is acknowledged that wastewater upgrades could take place on a voluntary basis but is likely to take centuries to realize water quality benefits.

The Countywide centralized wastewater collection and treatment systems with ocean outfall alternative would reduce nitrogen loads from wastewater sources 100 percent from reaching groundwater and surface water resources but is projected to result in a drawdown to the water table and groundwater baseflow/underflow to surface waters. Increasing the minimum parcel size for new development from ½ acre to 1 acre would reduce the impacts of new (future) development on nitrogen loading. This approach would not affect the nitrogen loading from existing developed parcels. Similarly, the Open Space Preservation alternative addresses future nitrogen contributions but does not address the nitrogen load contribution from existing developed parcels. The Dual Plumbing/dual Water System alternative would reduce the demand for potable water but would not meet the County's objective of reducing the nitrogen load contribution to groundwater and surface waters from sanitary wastewater at unsewered parcels.

These individual alternatives may prove beneficial when combined or integrated with the Proposed Action to achieve the nitrogen reduction goal. Consideration for use, where appropriate, would continue by the County under their integrated approach detailed in Section 8 of the SC SWP. This integrated approach or wastewater management strategy is also addressed in Section 9.2 (Adaptive Management Plan) of this Draft GEIS.

# 10.1 No Action

## 10.1.1 Description of No-Action Alternative

According to SEQR, an EIS must include an analysis of the No Action Alternative. This analysis provides an assessment of the County not implementing the recommendations in the SC SWP, essentially not implementing a holistic wastewater management program focused on the reduction of nitrogen loading to County surface waters and groundwater resources (i.e. the Proposed Action). Under the No Action Alternative, the use of traditional OSDS on residential and commercial parcels would continue in addition to the current patchwork of wastewater collection and treatment systems and the voluntary use of innovative/alternative on-site wastewater treatment systems (I/A OWTS). Modification to the County Sanitary Code Article 6 and Appendix A of the Standards for Approval of Plans and Construction for Sewage Disposal Systems for other than Single Family Residences would not be advanced.

Piloting of I/A OWTS would be discontinued. The County would not pursue additional grant funding opportunities to help offset the cost of installing nitrogen reducing onsite wastewater systems on residential properties. The County would not provide resources to support the allocation of funds associated with new onsite system identification and reporting. Increased trends in nitrogen concentrations in groundwater and surface water would be expected.

Water bodies currently not affected by high nitrogen levels could also begin to show degradation as conventional OSDS continue to discharge nitrogen and as installation of new conventional OSDS continued without addressing the associated nitrogen contributions.

Without additional amendments to Article 6 of the Suffolk County Sanitary Code facilitating the conversion of existing OSDS to I/A OWTS and additional County pilot testing and funding of I/A OWTS, the burden for requiring enhanced treatment for nitrogen in wastewater from unsewered areas would fall to the local municipalities, environmental groups and local environmentally minded citizens. Without County piloting efforts, this would then fall to the local municipalities or others to execute. Even so, it is not likely the Suffolk County Department of Health Services (SCDHS) would relinquish its existing role as the Responsible Management Entity, as defined in Article 19 of the Suffolk County Sanitary Code, to review and approve new I/A OWTS. The use of nitrogen reducing systems would not be uniformly required throughout the County by County Sanitary Code; although, the use of an I/A OWTS for certain residential properties may be required by local Town codes, as noted in **Table 10-1**.

As shown in **Table 10-1**, four towns and four villages in Suffolk County have adopted laws mandating the installation of I/A OWTS under certain circumstances. Mandates requiring I/A OWTS for all new construction have already been adopted by the Towns of East Hampton and Shelter Island and Villages of East Hampton, Quogue, Sag Harbor and Southampton. The towns and villages requiring I/A OWTS at new construction generally also require upgrades to I/A OWTS for any major building expansion. The remaining jurisdictions identified in **Table 10-1** have limited their current I/A OWTS installation mandates to projects located within high priority areas (e.g., typically within close proximity to surface waters). While most mandates are focused on I/A OWTS at residential properties, the Town of East Hampton has extended the mandate to commercial projects as well.

**Table 10-1 Summary of Existing I/A OWTS Mandates in the Towns & Villages of Suffolk County**

| Jurisdiction | Description of I/A OWTS Upgrade & Install Mandates | Effective Date |
|---|---|---|
| Town of East Hampton | An I/A OWTS shall be required for the following projects:<br>- All new residential and commericial construction;<br>- Any voluntary replacement of an existing system;<br>- Any substantial expansion (50% increase in GFA or value) of existing residential and commercial buildings; or<br>- All nonresidential properties that require site plan review. | 1/1/2018 |
| Village of East Hampton | An I/A OWTS shall be required for the following residential projects:<br>- All new construction or reconstruction of new single-family or multiple family residences or buildings capable of being used as a residence,<br>- Any substantial expansion (25% increase in GFA) of existing residential buildings; or<br>- Any construction that increases the number of bedrooms beyond the number authorized in previous SCDHS permits. | 2/7/2019 |
| Town of Southampton | The following residential projects located within the High Priority Area require an I/A OWTS:<br>- All new residential construction;<br>- Any substantial sanitary system upgrade required by the SCDHS;<br>- An increase in 25% of the floor area of a residential building; or<br>- When required by the Town Conservation Board or the Environment Division. | 10/1/2017 |
| Village of Sag Harbor | An I/A OWTS shall be required for the following projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade (cost of upgrade equals or exceeds 50% of the cost of the current system) or replacement of a residential septic system required by SCDHS;<br>- An increase of 25% or more in the floor area of a residential building;<br>- Any new residential septic system or substantial upgrade required by the Harbor Committee; or<br>- All nonresidential properties that require site plan review. | *Expected* 3/12/2019 |
| Village of Southampton | An I/A OWTS approved by the SCDHS shall be required for the following residential projects located within the high-priority area and medium-priority area as identified in the Town of Southampton Community Preservation Fund Water Quality Improvement Project Plan:<br>- All new residential construction;<br>- Any substantial septic system upgrade required by the SCDHS or the Village Zoning Board of Appeals pursuant to a wetlands (natural resource) special permit under Article IIIA of the Zoning Code; or<br>- Any increase in the number of bedrooms in an existing residence. | 12/1/2017 |
| Village of Quogue | An I/A OWTS shall be required for the following residential projects:<br>- All new residential construction;<br>- Any substantial septic system upgrade in a high-priority area or a medium-priority area;<br>- An addition or renovation to an existing residence that results in an increase of 25% or more in the gross floor area (as defined in § 196-49) of such residence; or<br>- A substantial renovation to an existing residence (whether or not the gross floor area is increased), the cost of which, as determined in connection with the granting of a building permit, exceeds $500,000. | 3/18/2018 |
| Town of Shelter Island | An I/A OWTS approved by the SCDHS shall be required for the following projects:<br>- Any new residential construction with greater than 1500 square foot living areas; or<br>- Any residential or commercial septic system upgrade required by the SCDHS. | 3/23/2018 |
| Town of Brookhaven | An I/A OWTS shall be required for the following residential projects for properties located in the Nitrogen Protection Zone (500' from a body of water):<br>- New construction of a residential dwelling; or<br>- Major addition that increases the amount of bedrooms or bathrooms. | 1/1/2017 |

The Town of East Hampton Code currently requires the use of I/A OWTS for new residential construction and substantial expansion of existing residential and commercial buildings. As of January 1, 2018, all onsite sanitary systems installed within the Town are to be 'Low Nitrogen sanitary systems'. The Town of East Hampton also offers a rebate program (Town Code Chapter 209) as an incentive for eligible property owners who replace their OSDS with a SCDHS approved

low-nitrogen sanitary system. The funding for the Town's rebate program is from the Community Preservation Fund that the Town estimates will generate approximately $150 million for water quality improvements Town-wide over the next 30 years.

The Town of Southampton Town Code currently requires the use of SCDHS approved I/A OWTS for residential projects located within the 'High Priority Area' as designated by the Town. The Town of Brookhaven Code also references the Suffolk County onsite treatment requirements for construction within a 'Nitrogen Protection Zone' (areas within 500 feet of surface waters including, Atlantic Ocean, Long Island Sound, Great South Bay, rivers, streams, lakes, ponds, ditches or canals within the Town).

The No Action alternative presumes that County and New York State Septic Improvement Program (NY SIP) funding would continue at current rates sufficient to support up to 1,000 I/A OWTS installations each year. However, with no formal framework or plans for implementation of a Countywide wastewater upgrade program, it is possible that these grant funding programs could eventually expire or may not be renewed. As shown in **Table 10-2**, the Towns of Southampton, East Hampton, and Shelter Island have established I/A OWTS rebate programs to offset the cost of installing I/A OWTS within their respective jurisdictions. Rebate funds are generated through the Community Preservation Fund (CPF). The CPF was initially established by voter referendum in 1998, when voters in East Hampton, Riverhead, Shelter Island, Southampton and Southold approved a real estate transfer tax of 2 percent on each transaction occurring in these towns. On November 8, 2016, voters in the five East End Towns extended the CPF to 2050 and also added the opportunity for each Town to invest up to 20 percent of the funds toward water quality improvement projects, which includes funding for the I/A OWTS rebate programs. When combined with funding from SC and NYS SIP, qualifying property owners living within the three participating I/A OWTS CPF Rebate townships can receive funding of up to $50,000 to offset the cost of I/A OWTS on their property.

**Table 10-2 Summary of Town I/A OWTS Community Preservation Fund Rebate Program**

| Town of Southampton, CPF Rebate | Town of East Hampton, CPF Rebate | Town of Shelter Island, CPF Rebate |
|---|---|---|
| ▪ Rebates up to $20,000<br>▪ Residential & Non-residential in high and medium priority areas are eligible<br>▪ No restrictions on ownership<br>▪ Seasonal properties, rental properties & second homes ARE eligible<br>▪ New construction is eligible<br>▪ Income eligibility requirements in place<br>▪ No restrictions related to home occupations<br>▪ No covenants required | ▪ Rebates up to $16,000 in the Water Protection District or for homeowners who qualify for affordable housing<br>▪ Rebates up to $10,000 for all other eligible applicants<br>▪ Residential and commercial property owners eligible<br>▪ No restriction on ownership<br>▪ Second homeowners and rental properties are eligible<br>▪ New construction not eligible<br>▪ Income eligibility for residential owners based on NYS STAR Program | ▪ Rebates of up to $15,000 to residential property owners<br>▪ No restrictions on ownership<br>▪ Seasonal properties, rental properties, & second homes are eligible<br>▪ No covenants required |

The potential development of new wastewater treatment facilities and the establishment of individual sewer districts would continue as in the past, fragmented and provided as a service in discrete areas of the county. Of the 200 wastewater treatment facilities located throughout the County in 2017, 39 were municipally owned while the remaining 161 were under private ownership. [SC SWP, Section 1.1.6.5]

Most Town and Village programs trigger I/A OWTS installation on new construction (which would not reduce current levels of nitrogen loading from sanitary wastewater) while some programs require upgrades at substantial building expansion. I/A OWTS installations triggered by renovations/expansions that exceed building size or value thresholds could reduce current nitrogen loading from a particular parcel. On a Countywide basis, the SC SWP (Section 8.1.1) reports that there were 368 additions a year but does not identify whether these new additions are located within the Towns/Villages requiring implementation of I/A OWTS upon building additions achieving specific thresholds.

### 10.1.2 Overview of No Action Effectiveness

I/A OWTS installations triggered by failure of existing systems in the Towns of Shelter Island or Southampton or the Villages of Southampton or Sag Harbor, are anticipated to be implemented at the current Countywide rate of 2.25 percent per year identified in the SC SWP (Section 8.1.1) and would continue to require the same review/approval by SCDHS as currently required by Code. Based on the estimated number of existing unsewered residences within the surface water priority areas of Southampton and Shelter Island (32,781),), this is estimated to amount to 738 installations in Southampton and Shelter Island per year. Assuming the Countywide rate of septic system failures continued to occur in these towns, it would take almost 45 years to convert existing onsite systems in these areas to I/A OWTS. It should be noted that this represents an optimistically short upgrade timeframe as the Suffolk County Sanitary Code does not require homeowners to upgrade failing cesspools. That is, homeowners may continue to elect to perform maintenance (e.g., pump-outs) of the failing system in perpetuity. Homeowners who elect to upgrade their failing system would be required to upgrade to I/A OWTS.

For the purpose of evaluating the No Action alternative, it is also assumed that the current voluntary rate of I/A OWTS installations by Suffolk County residents who proactively reduce their nitrogen loading to the groundwater would continue at the current rate of approximately 1,000 per year. Considering the number of unsewered residential parcels in the Surface Water Priority Areas and a 1,000 voluntary I/A OWTS installation rate per year, it would take over two centuries to achieve wastewater upgrades in all surface water priority areas, without additional mandatory triggers or funding incentives; consequently, progress towards abating the nitrogen load reduction goals developed in the SC SWP and shown on **Figure 10-1** below would not be observed for over a century for several lifetime generations for surface waters within the west end towns, Riverhead and Southold. Progress towards nitrogen load reductions in East Hampton, Shelter Island and Southampton would be anticipated as I/A OWTS upgrades are implemented based on OSDS failure and voluntary upgrades. For comparison, the recommended wastewater alternative achieves upgrades within all surface water priority areas within 50 years of establishing a stable and recurring revenue source.

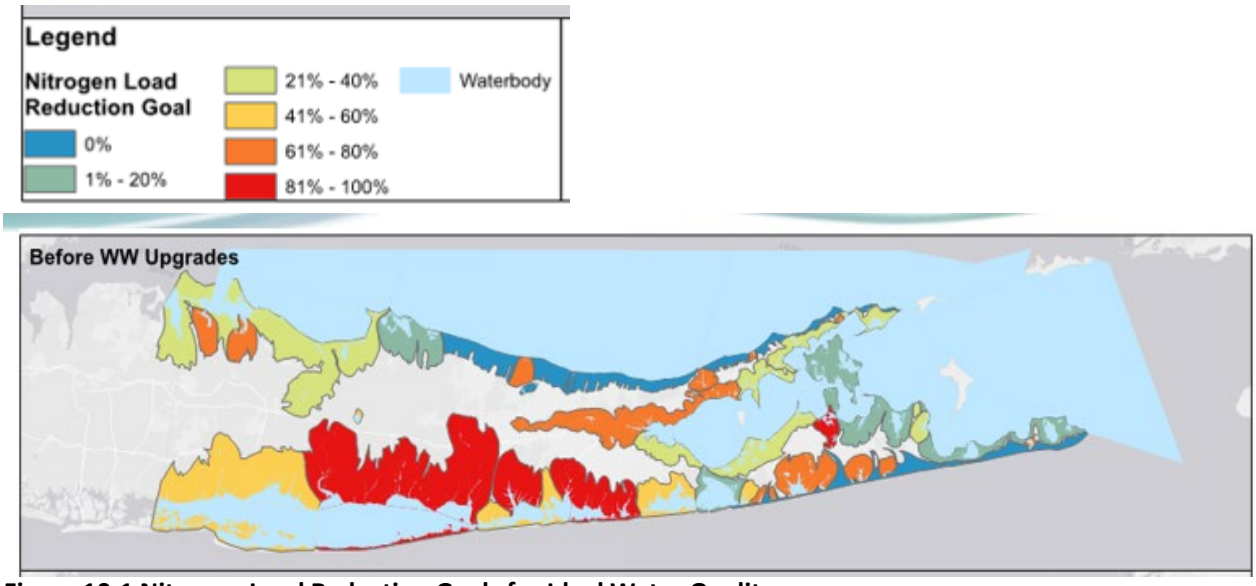



**Figure 10-1 Nitrogen Load Reduction Goals for Ideal Water Quality**

As a LINAP stakeholder, County support for implementation of measures to reduce nitrogen loading to ground and surface water resources are anticipated. The goals of LINAP, include in part pursuing the implementation of proactive measures to reduce nitrogen pollution to the waters within the County. The No Action Alternative is inconsistent with this goal. By taking 'no action' the County would no longer be acting in support of the goals identified by LINAP.

### 10.1.3 Summary

Based upon the implementation horizon for the No Action Alternative, it would not provide a path forward for the County to address the current elevated levels of nitrogen in groundwater that has impacted drinking water quality and resulted in the surface water impacts documented in Section 3 of this GEIS, including hypoxic events, fish kills and harmful algal blooms in surface waters. Based upon water quality data documenting continued increased nitrogen concentrations in ground and surface waters, it is anticipated that water quality would show continued negative impacts. Other surface water impacts linked to nitrogen levels such as fish kills due to hypoxia episodes, and loss of eelgrass along shorelines would not be addressed by the No Action Alternative. While wastewater upgrades could eventually be achieved through the existing voluntary grant programs, it would take centuries to realize the water quality benefits under the No Action Alternative. It is likely the existing grant programs would expire without a clear path and defined countywide wastewater upgrade program.

## 10.2 Countywide Centralized Wastewater Collection and Treatment Systems

### 10.2.1 Description of Countywide Sewering Alternative

Construction and operation of centralized sanitary sewage collection and treatment systems throughout the County is one alternative to implementation of individual innovative/alternative wastewater treatment systems (I/A OWTS). Following the examples of Suffolk County's neighbors to the west, Nassau County and New York City, this alternative assumes that sanitary

sewage from each household would be conveyed via a sanitary sewer system (e.g., collection system) to a wastewater treatment plant (WWTP) for treatment and off-shore discharge.

For the purposes of this evaluation, the type(s) of collection system, the number and locations of WWTPs and the wastewater treatment processes implemented at each WWTP were not defined. It is reasonable to assume that any hypothetical collection and treatment systems would consider both the characteristics of the areas to be sewered and New York State-defined effluent discharge limits. Depending on area-specific considerations, either a conventional gravity collection system or a low-pressure sewer system would convey sanitary wastewater directly from each currently unsewered property in the County to a WWTP. Each WWTP would provide conventional wastewater treatment as a minimum. Conventional treatment typically includes primary treatment where solids are settled out of the incoming wastewater stream by gravity, secondary treatment to remove organic components of the wastewater stream, and disinfection to inactivate pathogens. WWTPs discharging to sensitive surface waters would also include additional treatment processes to remove contaminants such as nitrogen.

The hypothetical Countywide centralized wastewater collection and treatment systems alternative presumes that all treated effluent is discharged to an off-shore surface water body and not to one of the 191 subwatersheds evaluated as part of the SC SWP. This alternative would represent a "best-case" alternative from a nitrogen load reduction perspective in that all nitrogen from sanitary wastewater from currently unsewered parcels would be removed from groundwater and the 191 surface waters that were evaluated as part of this SC SWP. By assuming all effluent is 'exported' (discharged offshore), this hypothetical scenario would also represent the 'worse-case' impact to groundwater and surface water resources as it would result in the maximum drawdown to the water table and greatest reduction to groundwater baseflow/ underflow to surface waters. All other potential sewering scenarios would fall within the range of existing conditions (e.g., no further reduction of nitrogen loading and no impacts on the groundwater table and stream baseflows) and this projection of best-case nitrogen removal (e.g., 100 percent of the sanitary load from currently unsewered parcels) and worst-case impacts on groundwater tables and stream baseflows. This would include a scenario where tertiary treatment was provided and discharge to groundwater was provided. Nitrogen loading would be reduced somewhere less than 100 percent yet impacts to the groundwater table and stream baseflow would be less than those presented in this evaluation.

### 10.2.2 Overview of Countywide Sewering Effectiveness and Impacts

If implemented Countywide, centralized sanitary sewering and treatment with off-shore discharge of effluent would successfully prevent the nitrogen present in sanitary wastewater from reaching groundwater and the downgradient surface waters. Removal of the sanitary wastewater and associated nitrogen loads currently being discharged to groundwater from the over 380,000 unsewered parcels in the County will remove over 31,200 pounds per day of nitrogen from reaching the sole source aquifer that provides the County with its potable supply. This would remove 64 percent of the nitrogen load from groundwater that currently discharges to the 191 subwatersheds evaluated in the SC SWP.

Construction of centralized sanitary wastewater and collection systems would include siting one or more new wastewater treatment plants, the construction of the wastewater treatment plant or

plants, construction of underground pipes to convey the untreated wastewater from each parcel to the wastewater treatment plant(s) and supporting infrastructure such as regional pump stations or parcel-specific grinder pump stations to convey sanitary wastewater to the treatment plant for treatment and the effluent to its discharge location. Temporary ground disturbance would require the use of erosion and sediment control measures. Construction-related traffic impacts would result both from the need to excavate existing roadways to install collection systems and from the additional construction-related traffic. Noise impacts would also be expected as construction proceeds.

Operational manpower would be required to operate the wastewater treatment plant(s) and maintain pump stations and the collection systems. Chemicals typically used in the treatment processes would be stored/handled per State and County requirements limiting potential exposure to employees, the environment and public, and energy would be required to operate both the pump stations and the wastewater treatment plant(s).

In addition to the benefits associated with reducing nitrogen loading, there are potential impacts to the groundwater table and surface water resources should the County implement centralized sanitary wastewater treatment and collection systems. These are described in the following subsection.

## 10.2.3 Impacts to Groundwater Supply and the Water Table

The potential impact of centralized sewering program that is of most concern is the potential negative effect to the groundwater resource; e.g., potable supply and groundwater baseflow to surface water resources.

### 10.2.3.1 Impacts to Groundwater Supply

Countywide, groundwater recharge is estimated to be 1,367 million gallons per day (MGD) on an average annual basis, as documented in the **2015 Comprehensive Water Resources Management Plan** Section 3.1.2). Currently it is estimated that approximately 85 percent of groundwater removed from the aquifer for potable supply during the non-growing season is returned via cesspools or septic systems to recharge the groundwater supply. Countywide centralized sewering and off-shore discharge would divert approximately 133.9 MGD (e.g., wintertime potable supply pumpage, because it is the best estimate of indoor water use and indoor water use is what is currently discharged to on-site wastewater disposal systems) from the aquifer.

As groundwater recharge from precipitation significantly exceeds the amount of potable water supply withdrawn for public supply on a Countywide basis, the aquifer system would continue to be capable of reliably providing potable supply to County residents. Potable supplies to localized areas of Shelter Island and the North Fork where the aquifer system is shallower would need to be evaluated on an area-specific basis, considering the impacts of reduced recharge along with sea level rise on migration of the salt water interface. It is possible that a Countywide sewering option would result in the need to convey water from further west in the County to East End areas.

### 10.2.3.2 Simulated Impacts to the Water Table

The groundwater decline anticipated to result from implementation of a centralized sewering program was estimated using the existing Suffolk County groundwater flow models to assess the "worst-case" condition; e.g., construction of one or more outfalls to convey treated effluent to discharge off-shore.

Under undeveloped conditions, Suffolk County streams, ponds and wetland areas are groundwater fed as shown schematically by **Figure 10-2**. In unsewered areas of the County, groundwater is withdrawn from the aquifer for potable supply, and then returned to the aquifer as wastewater via onsite septic disposal systems. When sanitary sewer systems that convey sanitary sewage to a wastewater treatment plant for treatment and off-shore disposal are constructed, the groundwater withdrawn from the aquifer is not returned, and the elevation of the water table may decline. If the water table elevation declines below the ground surface along a stream bed, pond or wetland area, groundwater baseflow is reduced, pond levels may drop, stream baseflows would decline and wetland areas would become drier. Drier wetland areas would be expected to prompt a change in vegetation type from obligate or facultative wetland species to upland species.

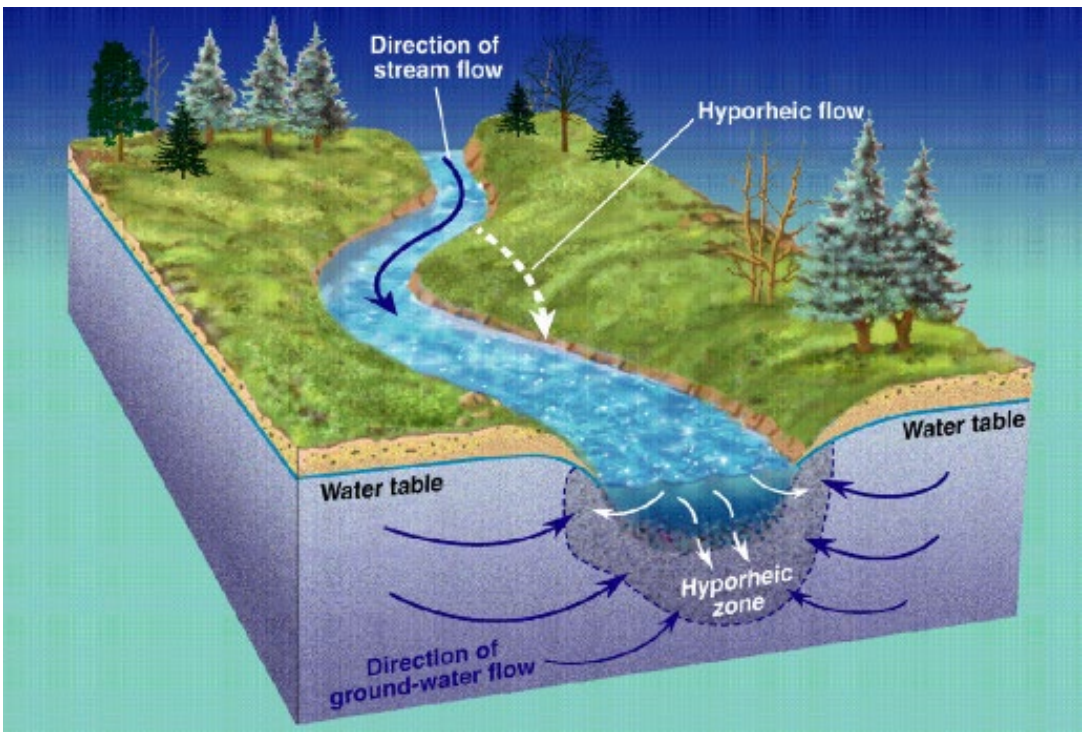



**Figure 10-2 Groundwater and Surface Water Interaction**

The specific concern associated with groundwater decline effects on stream baseflow was observed in neighboring Nassau County. As a result of the construction and operation of the Bay Park, Cedar Creek and Glen Cove WWTPs in Nassau County, the baseflows of streams that had been groundwater fed prior to sewering were significantly reduced in response to the groundwater table declines as documented extensively (e.g., Nassau County Comprehensive Water Management Plan, Phase I, Volume III, CH2M Hill, 1989) and documented on Figure 10-3.

Figure 10-3 shows observed baseflow (approximated as the low stream flow over consecutive 7-day periods) for Massapequa Creek in southeastern Nassau County. Sanitary sewers were completed within this area in the late 1970s through the early 1980s. A stream baseflow decline of more than 50 percent is evident.

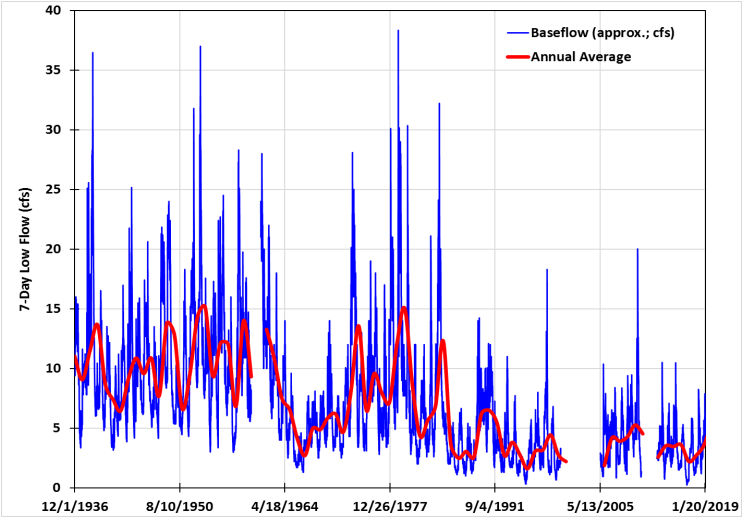



**Figure 10-3 Stream baseflow (approximated as 7-day low flow) to Massapequa Creek, Nassau County, New York: 1936-2019. Data from USGS.**

Although Nassau County and Suffolk County have similar populations, at 912 square miles, Suffolk County is over three times the size of Nassau County (285 square miles), providing more area for the aquifer system to be recharged via precipitation.

Nevertheless, Suffolk County monitored groundwater elevations along stream corridors in Suffolk County Sewer District No. 3, Southwest Sewer District (SWSD) as well as stream headwaters locations for over a decade to discern the impact of sanitary sewering in the SWSD on area surface water resources. Suffolk County found that while baseflow declines did occur, they were much less significant than those observed in Nassau County (1996 FANS Monitoring Report, CDM 1997).

For this evaluation, the water table was simulated based on the same boundary conditions and conditions of precipitation/recharge/water supply pumping used to simulate the recent average annual flow field used to delineate the subwatersheds described in the SC SWP. These same conditions were used to define the starting water table elevations, stream headwaters' locations and stream baseflows. The baseline water table simulation assumes that 85 percent of the winter time water supply pumping is returned to the aquifer via on-site wastewater systems (either septic systems or cesspools) for each unsewered parcel.

The same boundary conditions, precipitation and recharge and water supply pumping rates were then used for the centralized sewering scenario evaluation. The model simulation assumed that sanitary wastewater from parcels that are currently sewered continued to be collected, treated and discharged at the existing locations (e.g., either recharged to groundwater or discharged off-shore). The one change to the baseline simulation was removal of all groundwater recharge from existing on-site sanitary wastewater disposal systems within a community water supply distribution area. Instead, as described above, it is assumed that the wastewater is collected, conveyed to a WWTP, treated and discharged offshore eliminating the recharged flow from the onsite systems to the groundwater and/or surface water body located within the subwatershed.

After the sanitary return flow was removed from the models, they were run under steady-state conditions. The model-simulated decline in the water table that would result from Countywide sanitary sewering is shown on **Figure 10-4**. As shown on the figure, declines in the water table

could exceed 10 feet if widespread sewering with off-shore discharge is implemented throughout the County.

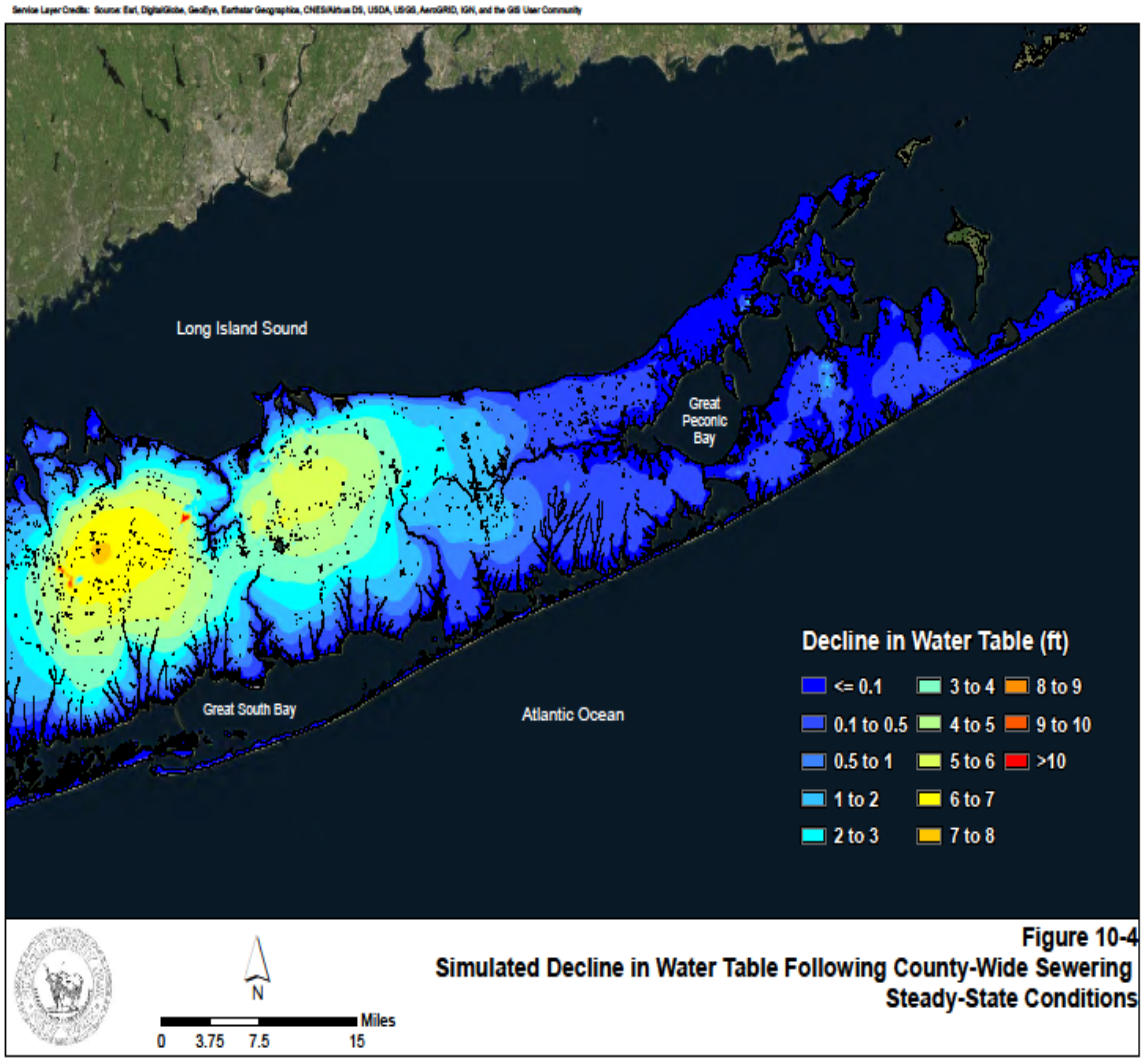



**Figure 10-4 Simulated Decline in Water Table Following County-Wide Sewering (Steady-State Conditions)**

Impacts to baseflow of selected streams and water bodies are shown on **Table 10-3**. Model-predicted impacts range from an 8 percent decline in fresh baseflow to the Peconic River where there is limited development and public water supply pumping in the groundwater contributing area, to a 46 percent decline in stream baseflow for the Carlls River in the more densely developed western part of the County. Impacts shown in the table are for the non-tidal portions of the streams. Impacts dampen further east as development density (and sanitary wastewater generation rates) are reduced.

**Table 10-3 Model-Predicted Stream Baseflow Declines Resulting from Sanitary Sewering**

| Stream | Baseflow Decline (%) |
|---|---|
| Carlls River | 46% |
| Carmans River | 17% |
| Champlin Creek | 34% |
| Connetquot Brook | 20% |
| Neguntatogue Creek | 39% |
| Nissequogue River | 23% |
| Orowoc Creek | 38% |
| Patchogue River | 26% |
| Peconic River | 8% |
| Sampawams Creek | 34% |
| Santapogue Creek | 31% |
| Willetts Creek | 39% |

Water supply pumping from private wells and sanitary return flows at residential parcels utilizing private wells were not incorporated into these model simulations. Under existing conditions it is typically presumed that approximately 85 percent of the water withdrawn for potable use is returned via an on-site septic system on the same parcel. Incorporating the potential recharge losses from the areas that have a high density of pumping from private wells (e.g., eastern portions of the County) would result in additional impacts if they were sewered. The potential impacts due to predicted water table declines are also anticipated to exacerbate salt-water intrusion along coastal areas, in particular the twin Forks and Shelter Island.

This worst-case evaluation (e.g., wastewater from approximately 380,000 currently unsewered parcels is collected, treated and conveyed to off-shore discharge) would result in baseflow declines, particularly in streams in the more densely developed western areas of the County and provides a conservative assessment of potential impacts. The evaluation shows that under this worst-case alternative, over 50 percent of the baseflow would continue to be maintained in each of the streams evaluated. In fact, individual sewering projects that may be considered in the future are anticipated to connect a much smaller number of parcels to centralized sewage treatment facilities and would be expected to result in smaller declines that should be evaluated on a project-specific basis. New sewering projects that convey wastewater to treatment plants discharging to groundwater would not be expected to result in stream baseflow declines.

The Countywide sewering alternative successfully achieves the County's objective of reducing the nitrogen load contribution from sanitary wastewater generated at unsewered parcels to groundwater and surface waters. However, as explained in the SC SWP (Section 4.5), expansion of existing sewer districts may be appropriate where existing plants have additional capacity and sanitary sewering may be a practical alternative for densely developed areas such as the Forge River area. Expansion of sewered areas with discharge to groundwater would not result in a reduction of groundwater recharge and would not affect the Countywide water budget. Significant expansion of sewered areas with off-shore discharge has the potential for impacts to

groundwater and surface water as discussed above and impacts would need to be evaluated on a case-by-case basis.

### 10.2.4 Summary

As noted above, if implemented Countywide, centralized sanitary sewering and treatment with off-shore discharge would successfully prevent the nitrogen present in sanitary wastewater from reaching groundwater and the downgradient surface waters, assuming all wastewater treatment plant discharges are to off-shore waters located beyond the 191 surface waters evaluated in the SC SWP (e.g., the ocean).

Incorporating the use of centralized sanitary sewering and treatment is an important component of the County's wastewater treatment strategy. The hypothetical alternative of Countywide sewering evaluated within this Draft GEIS takes a 'one-size' fits all approach to wastewater management and does not incorporate the adaptive management strategy reflected in the Proposed Action that allows for nitrogen load reduction technologies to be implemented across the County meeting the individual or unique conditions of each parcel. In many locations, centralized sewering may not be practical from either an implementability perspective or an overall cost-benefit. (See the SC SWP Section 2.2.2 and Section 4.5 for a discussion of cost.)

Each individual sewering project would be the subject of its own environmental review (e.g. NEPA and/or SEQRA). In general impacts for projects such as this are experienced throughout the affected area. Short-term construction related impacts would be associated with the construction of the individual centralized sanitary wastewater treatment facilities, pumping stations, installation of miles of sanitary piping and the individual connections required at each parcel. Construction-related impacts related to traffic, noise and erosion potential would be experienced throughout the County. Construction may impact vegetated areas, affecting wildlife habitat.

There are also long-term positive and negative impacts to groundwater and surface water resources resulting from Countywide sewering. Nitrogen loading to groundwater and surface waters would be significantly reduced. The modeling results project Countywide sewering, treatment and off-shore discharge would result in a reduction in the groundwater table, stream baseflow declines and reductions in the lengths of flowing stream which can result in changes in vegetation and ecological habitats and animal species. The potential negative effects of sewering would need to be weighed against the positive effects of nitrogen load reduction. This assessment would be made on a project specific basis at the time a project is proposed.

## 10.3 Increase Minimum Lot Size Countywide

### 10.3.1 Overview of Increasing Minimum Lot Size Alternative

Using 2016 land use data, Suffolk County Department of Economic Development and Planning (SCDEDP) projected the number of additional residences that could be constructed throughout the County, should all vacant and agricultural lands with development potential be developed in the future. If all parcels were developed based on current zoning and Sanitary Code requirements, over 42,000 additional homes could be added to Suffolk County under this potential future build-out scenario, as summarized by **Table 10-4**.

**Table 10-4 Additional Homes Resulting from Potential Future Build-out Conditions**

| Town | Potential Number of Additional Homes Resulting at Build-out |
|---|---|
| Babylon | 996 |
| Brookhaven | 12,137 |
| East Hampton | 3,074 |
| Huntington | 2,361 |
| Islip | 6,156 |
| Riverhead | 4,221 |
| Shelter Island | 763 |
| Smithtown | 1,452 |
| Southampton | 6,872 |
| Southold | 4,714 |
| **Totals** | 42,746 |

This alternative considers increasing the minimum lot size for new development (Countywide) from the current 20,000 square feet (half acre) to 40,000 square feet (one acre). By way of background, in 1980, SCDHS established Groundwater Management Zones (GMZ) to protect the aquifer system from nitrogen contamination. Article 6 of the Suffolk County Sanitary Code permits residential development in unsewered areas within GMZ III, V and VI on parcels of 1-acre (40,000 square feet) or larger to limit groundwater nitrogen concentrations within those GMZs to 4 mg/L. Residential development in GMZs I, II, IV and VIII is limited to parcels of ½-acre (20,000 square feet) or larger to limit groundwater nitrogen concentrations within those GMZs to 6 mg/L. For other than residential developments, Article 6 of the Suffolk County Sanitary Code (760-607) allows individual sewerage systems on parcels where the population density equivalent is < 40,000 square feet within GMZs III, V or VI, and the population density is < 20,000 square feet outside of GMZs I, II, IV and VIII.

The 2015 Suffolk County Comprehensive Water Resources Management Plan (Comp Plan) recommended extending the protections afforded to GMZs III, V and VI to GMZ IV for the protection of groundwater and surface waters in coastal areas.

## 10.3.2 Effectiveness of Increasing Minimum Lot Size Alternative

Increasing the minimum parcel size for new development from ½ acre to 1 acre would reduce the impacts of new (future) development on nitrogen loading. This approach would not affect the nitrogen loading from existing parcels; although, this approach could be an effective component of a Countywide strategy to address future nitrogen loading. Increasing the minimum parcel size for new residential development from ½ acre to 1 acre would not be successful in reducing the existing nitrogen load to groundwater and surface waters, nor in achieving the nitrogen load reduction targets established for each subwatershed. Therefore, this alternative would not be successful in achieving the goals of the SC SWP. The following subsection provides details on the approach used to evaluate this alternative.

### 10.3.3 Evaluation Approach

The SC SWP specifically evaluated the potential benefits of implementing 1-acre zoning in GMZ IV; the evaluation documented in Section 2.2.4 was updated to include parcels in GMZs I, II, IV, VII and VIII, which are shown on **Figure 10-5.**

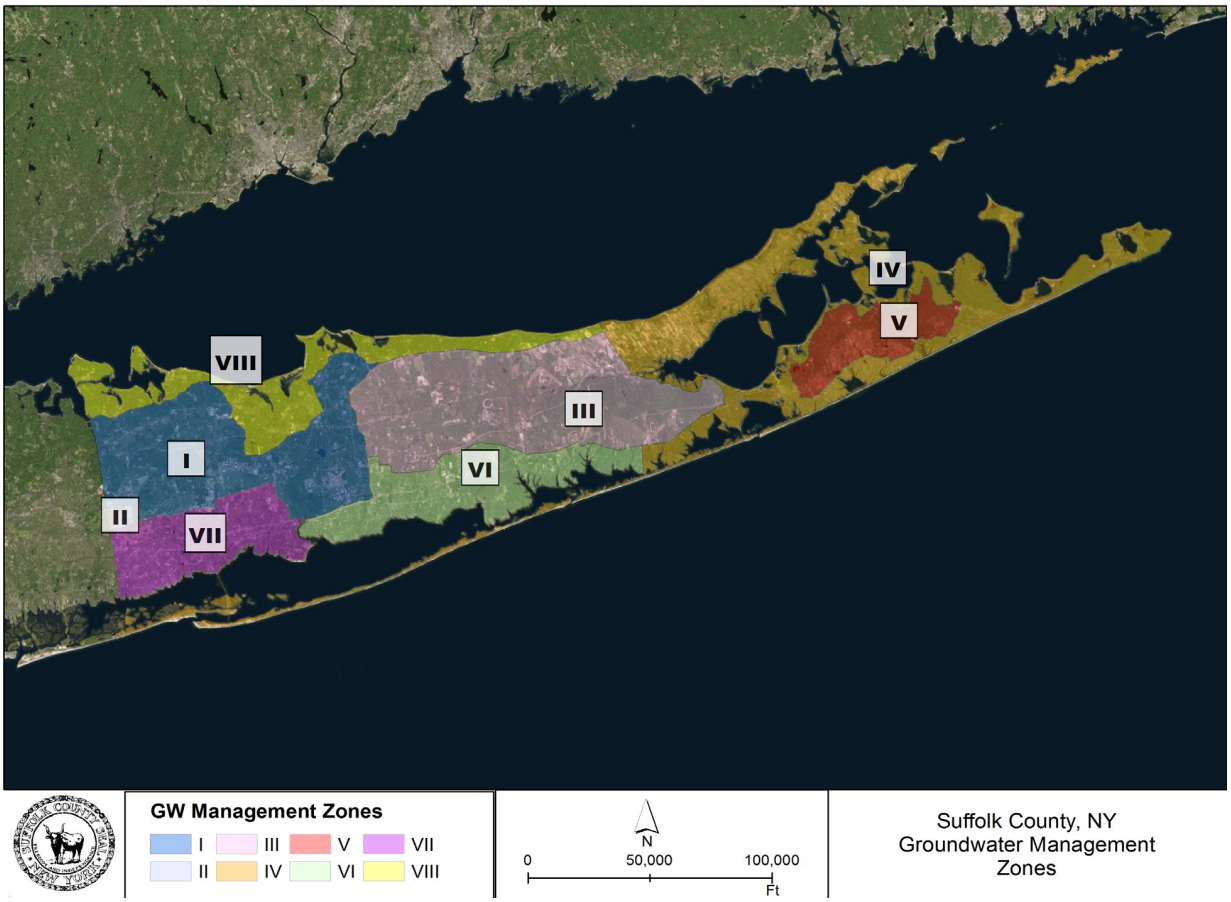



**Figure 10-5 Groundwater Management Zones**

**Table 10-5** (provided at the end of this section) lists the subwatersheds that are entirely or partially located within GMZs I, II, IV, VI, VII and VIII, along with the number of vacant parcels and the number of additional residences that could be added based on the SCDEDP's projections of ultimate future build-out. In all, SCDEDP projected that 11,278 additional residences could be constructed in GMZs I, II, IV, VII and VIII at full build-out in the future. Based on an average household size of three people per residence and ten pounds of nitrogen per capita per year, six percent nitrogen removal in the septic tank and another ten percent removal in the unsaturated zone, over 286,000 additional pounds of nitrogen loading would be introduced to County surface waters from sanitary wastewater per year from the new development at build-out.

The SCDEDP projection of build-out land uses considered Town zoning, which in some cases results in a more restrictive development density (e.g., 1-acre or 2-acre density) than would have been possible based on Article 6 of the Sanitary Code. Consequently, modification of Article 6 would not result in fewer residential parcels in these areas. Even with modification of Article 6, residences could continue to be constructed on some parcels that are smaller than 1 acre as they are grandfathered if they were shown as single and separate tax lots on 1981 tax maps. Because it was not possible to identify these parcels, a range of potential new residences and nitrogen load reductions was presented. The first estimate assumed that none of the residential development projected by SCDEDP could be constructed on parcels less than 1 acre in size (e.g., no grandfathering of smaller properties). This would represent the largest potential benefit associated with implementation of the potential Sanitary Code change. If none of the parcels were grandfathered, the number of residences that could be built would be reduced by 4,455 to 6,823. The second scenario assumed that existing parcels less than one acre are grandfathered in, and only sub-division of larger parcels (for example, those currently in agricultural use) would be affected by the change. However, if all parcels less than 1 acre were grandfathered in, a total of 9,644 parcels could be developed.

The last column in **Table 10-5** is the difference in the number of residences that could be built in GMZs I, II, IV, VII and VIII if a minimum parcel size of 1 acre was required, and if smaller parcels were not grandfathered. This assumption is the basis for the 'best case' nitrogen load impact.

The subwatersheds where the number of potential residences could be reduced by an increase in the minimum parcel size in GMZ I, II, IV, VII and VIII are listed in **Table 10-6** (provided at the end of this section). **Table 10-6** also summarizes the nitrogen load reduction targets for each subwatershed (based on aggregated subwatershed loads and the Wastewater Management Zone nitrogen load reduction percentages) along with the nitrogen load reductions that would result from reduction of future development density to a minimum of 1 acre (and no grandfathering); this estimate provides the largest reduction in nitrogen loading that could be anticipated from a change in development density requirements. These values are not nitrogen load reductions from existing conditions, but the amount of future increased nitrogen load that would be mitigated by establishing a minimum parcel size of 1 acre.

For comparison, the last column in **Table 10-6** presents the reduction in nitrogen loading from baseline conditions that would be provided by I/A OWTS implementation throughout each of the individual subwatersheds.

Review of **Table 10-6** shows that establishment of a one-acre minimum zoning target in GMZ IV (and assuming no grandfathered properties), would result in a reduced future annual nitrogen loading of over 133,000 pounds, (based on a reduction of 4,455 parcels, 10 pounds of nitrogen per capita and 3 people per household); however, that is a small fraction of the overall nitrogen load reduction required. (Please note that the nitrogen load reduction targets are not additive, as they are representative of aggregated subwatersheds and an individual upstream subwatershed may also be included in several downstream subwatersheds.) It is also important to remember that the nitrogen load reduction targets are based upon the existing estimated nitrogen loads, rather than the future projected nitrogen loads.

Because **Table 10-6** mixes nitrogen load reduction targets (which are based on existing conditions and aggregated subwatersheds) with nitrogen load "reductions" that would be achieved based on potential future build-out, the values shown merely provide a frame of reference within which the potential impact of new developments can be considered. While the predicted nitrogen load reductions that could result from the requirement that no parcels less than 1 acre in GMZ IV could be developed are generally much lower than the nitrogen load reductions that are anticipated to result from I/A OWTS implementation, they exceed ten percent of the current nitrogen load reduction goals in some subwatersheds. The potential impacts of development on nitrogen loading should be considered in the context of wastewater management requirements and surface water impacts.

### 10.3.4 Summary

As noted above, increasing the minimum parcel size for new development from ½ acre to 1 acre would reduce the impacts of new (future) development on nitrogen loading. This approach would not affect the nitrogen loading from existing parcels, although this approach could be an effective component of a Countywide strategy to address nitrogen loading. Increasing the minimum parcel size for new residential development from ½ acre to 1 acre would not be successful in reducing the existing nitrogen load to groundwater and surface waters, nor in achieving the nitrogen load reduction targets established for each subwatershed. Therefore, this alternative on its own would not be successful in achieving the goals of the SC SWP.

## 10.4 County Purchase of Parcels in Priority Area

### 10.4.1 Description of Open Space Preservation Alternative

This alternative considers the County purchase of available parcels in high Priority Areas by the use of open space funding. Land purchased under this alternative would not be developed, thereby eliminating the parcel's potential to contribute additional nitrogen load to groundwater and surface water in the future.

Suffolk County's Open Space Land Acquisition Program is one of the most successful programs for land preservation in the Country. The County has been at the fore-front of farmland preservation through the acquisition of development rights starting in the 1970s and open space preservation through the acquisition of environmentally sensitive lands starting on a grand scale in the 1980s. When combined with State and Town programs, an estimated 121,854 acres of Open Space has been acquired in Suffolk County. Existing Open Space Preservation efforts have already mitigated nearly 3.65 million pounds of nitrogen per year from discharging to the sole source aquifer and reaching surface waters.

While the existing program has been very successful and represents an important element of the SC SWP and overall land preservation objectives, this alternative would not address the existing nitrogen load contribution from the estimated 380,000 OSDS that currently discharge nitrogen into our water resources. In addition, for the purpose of this analysis it is unrealistic to presume that all existing land owners would be willing to sell their land. Although not meeting the County's objectives associated with nitrogen load reduction goals on its own, this alternative as an important tool in the County's integrated approach to wastewater management.

### 10.4.2 Effectiveness of Open Space Preservation Alternative

Based on GIS intersections of the 2016 land use coverage developed by SCDEDP with a coverage of unsewered areas and a coverage of the Priority Rank 1 areas for Surface Water and Groundwater, there are 24,877 vacant parcels located in unsewered areas and 7,267 vacant parcels in Priority Rank 1 areas. Purchase of undeveloped parcels would not reduce the existing nitrogen loads from unsewered parcels, so would not accomplish the County's nitrogen reduction goals.

Implementation of this alternative would however, be successful in reducing the impacts of potential future nitrogen loading. Based on the estimated per capita annual nitrogen loading of 10 pounds, and a Countywide average of 3 people per household, purchase of all 7,267 vacant parcels would be successful in reducing increased future nitrogen loading by approximately 72,670 pounds of nitrogen per year but would not reduce the existing nitrogen load.

A comparison was performed of the nitrogen load reduction achieved by preserving one acre of open space with the nitrogen load reduction achieved by the addition of two I/A OWTS at two ½ acre residential parcels. The baseline nitrogen load associated with a hypothetical acre of land assumed that two residences with conventional septic systems removing 6 percent of the influent sanitary nitrogen load in the septic tank and 10 percent in the leaching pools/unsaturated zones were constructed on ½ acre parcels. This baseline nitrogen load was compared to the reduced nitrogen loads that would have resulted from:

- Preserving the acre as undeveloped, forested land and
- Implementation of two I/A systems.

Nitrogen loads from atmospheric deposition, sanitary wastewater, fertilizer and pets for each of the three potential conditions is summarized in **Table 10-7**.

**Table 10-7 Nitrogen Loads Generated at Hypothetical Acre of Land**

| Nitrogen Load Component | Baseline – Two ½ Acre Residential Parcels with OSDS (pounds/year) | I/A OWTS Implementation Two Residential ½ Acre Residential Parcels with I/A OWTS (pounds/year) | Open Space Preservation One Acre of Undeveloped Forest (pounds/year) |
|---|---|---|---|
| Atmospheric Deposition | 1.35 | 1.35 | 1.12 |
| Sanitary Wastewater | 50.76 | 16.20 | 0.00 |
| Fertilizer | 16.00 | 16.00 | 0.00 |
| Pets | 8.39 | 8.39 | 0.00 |
| Total Nitrogen Load | 76.49 | 41.93 | 1.12 |

I/A OWTS implementation results in a nitrogen reduction of 34.56 pounds/year from the baseline conditions. Open space preservation results in a nitrogen reduction of 75.37 pounds/year from the baseline conditions.

### 10.4.3 Summary

The analysis concludes that while open space preservation would result in a significantly lower nitrogen load per acre than residential development with an I/A OWTS system in-place, this alternative does not address the nitrogen load contribution from existing developed parcels that utilize onsite sanitary wastewater treatment, i.e. OSDS. Under this alternative, there would be no associated short-term construction-related impacts as the undeveloped parcels would be purchased and preserved as such. Long-term impacts may arise associated with the cost to County for the purchase and potential parcel maintenance (signage, monitoring, etc.). By purchasing the parcels for open space preservation, the need to install I/A OWTS would be avoided as would the need for additional electrical demand and associated greenhouse gas emissions.

Although this alternative would curtail future potential nitrogen contribution to ground and surface waters from undeveloped parcels, it does not on its own reduce the nitrogen contribution from existing developed parcels in unsewered areas. Therefore, it does not on its own meet the County's goal of nitrogen reduction from cesspools or conventional OSDS. Open Space preservation and farmland preservation is acknowledged as an effective component of a Countywide strategy to address nitrogen loading.

## 10.5 Dual Plumbing/Dual Water Systems

### 10.5.1 Description of Dual Plumbing/Dual Water Systems Alternative

Dual plumbing/dual water systems separate 'greywater' from the 'blackwater' component of the sanitary wastewater stream. Dual plumbing and dual water systems do not provide additional wastewater treatment in and of themselves. This alternative would require piping modification to either provide two separate water sources to the residence/building or to address the two (greywater and blackwater) separate sanitary wastewater streams.

The sources of water that would be distributed to a building by 'dual piping' (or two sets of pipes) include potable and reclaimed water.

Greywater is the relatively clean wastewater generated from household sinks, tubs, showers, washing machines, and other kitchen appliances, while blackwater is defined as the wastewater from toilets and industrial discharges. Nitrogen concentrations in greywater are typically lower than those in blackwater. Nitrogen contributions to greywater include post-shower water (that would contain skin cells and sweat) and some kitchen effluent (food solids). One study found average greywater total nitrate concentrations to be 13.5 mg/L (Citation: Jokerst A, Sharvelle SE, Hollowed ME, Roesner LA. Seasonal performance of an outdoor constructed wetland for graywater treatment in a temperate climate. Water Environ Res. 2011 Dec; 83(12):2187-98.).

Holding wastewater onsite and hauling away is not permitted within the County. Therefore, the toilet wastewater or blackwater would continue to be directed to the parcel's OSDS. This option is presented as an alternative to installation of I/A OWTS so connection to an I/A OWTS is not

considered as part of this alternative. Its nitrogen content would not be reduced by the modification to household wastewater piping.

Although both water and dual plumbing systems require additional plumbing ('dual piping'), a dual plumbing system is different from a dual water system. Both are defined below.

#### 10.5.1.1 Dual Water System

A dual water system is a system where two separate underground piped water distribution and systems are used to supply an area with potable and reclaimed water. Under this system, reclaimed water could be either treated wastewater (blackwater and greywater) or untreated greywater. Reclaimed water would be provided to service connections for use. With a dual water system, the water supplier supplies both the potable and reclaimed water to each parcel through separate dedicated service lines or piping. Reclaimed water is not treated to the same standards as potable water, which is treated to drinking water standards. The reclaimed water can be used within each property for toilet flushing, lawn/golf course irrigation, etc. Use of reclaimed water for activities that would result in human intake of the water (cooking, showering, dish washing, garden/agricultural irrigation, etc.) would depend on the quality of the reclaimed water. Each building within the area would also have two separate plumbing systems to receive and collect the 'used' water in the form of greywater or blackwater. To accomplish implementation of a dual water system, the water provider would need to install a separate distribution system throughout the service area dedicated for the reclaimed water. Currently, there are no standards for reclaimed water treatment in New York State. However, wastewater reuse is being implemented for golf course irrigation in the Town of Riverhead. Treatment requirements are based on EPA guidelines and an evaluation of water reuse requirements in California, Florida and Arizona. As treatment standards for reclaimed greywater do not yet exist in New York State, the dual water system is not considered further as a viable alternative to the Proposed Action.

#### 10.5.1.2 Dual Plumbing

The dual plumbing system is a system where a property has two separate/dedicated plumbing systems; one to capture the greywater and a second separate piping system to manage the blackwater generated onsite. Under this alternative, the greywater generated by uses within the building can be used on the property to satisfy water needs that do not require potable water including, but not limited to, filling toilets, lawn irrigation, car washing, and rinsing pavement. The quality of the greywater depends largely on the way it is produced; it can contain soap particles, lint, hair, and household cleaning chemicals. The dual plumbing system for a residential property is considered more fully below.

The dual plumbing system would include the installation of piping within existing buildings to accommodate the greywater separately from the blackwater. The blackwater contains elevated concentrations of nitrogen. The blackwater would be piped separately from the greywater and would be either sent to an onsite septic system or conveyed offsite to a wastewater treatment plant. When greywater and blackwater are managed together, the greywater typically dilutes the nitrogen concentration present in the blackwater. If the blackwater is sent to a septic system without nitrogen treatment, the effluent from the septic system would contain the same amount (load) of nitrogen as effluent from a septic system associated with a house without dual plumbing, although the concentrations would be higher. Overall, the mass of nitrogen generated

from the household and in the septic tank effluent would not be changed by implementing a dual plumbing system.

Benefits to dual plumbing include a decrease in demand for potable water, lower potable water costs to the end user, and a lower total flow to the onsite septic tanks. Potable water must be treated to drinking water standards, which is expensive, has high energy demands, and requires a high level of maintenance. If a dual plumbing system is used, greywater would be used in place of a portion of the current potable water for non-contact uses; therefore, the end user would be expected to purchase less potable water from the water supplier.

Implementing this system would require changing the piping (plumbing) throughout an existing home or structure which would be costly (to homeowners and business owners). Land disturbance would be required to install the new piping outside the structure directing the greywater to separate collection systems. Replumbing within the building would also be required should the greywater be recycled for use within the structure. For example, redirecting used shower water as a source for the building's toilets would require additional plumbing between the shower and the toilet. Additionally, if the greywater is used onsite, a storage system would need to be installed to store the water for when it is needed. Plumbing work would need to be completed by a County-licensed plumber and may require a Building Permit issued by the local municipality.

### 10.5.2 Effectiveness of Dual Plumbing/Dual Water Systems Alternative

In and of themselves, dual plumbing and dual water systems do not meet the County's objective of reducing the nitrogen load contribution from sanitary wastewater at unsewered parcels to the groundwater or surface water. Blackwater would continue to be conveyed to the parcel's onsite treatment system (e.g., cesspool or septic system) resulting in continued nitrogen loading. Nitrogen load reduction would not be achieved by this alternative.

In order to provide the benefit of reduced nitrogen loading, these alternatives would need to be accompanied by provision of on-site storage of blackwater and development of a blackwater collection and treatment system program.

The implementation of this alternative may result in a reduction in potable water demand on a parcel-specific basis.

### 10.5.3 Summary

Benefits to dual plumbing include a decrease in demand for potable water, lower potable water costs to the end user, and a lower total flow to the onsite septic tanks. Potable water must be treated to drinking water standards, which is expensive, has high energy demands, and requires a high level of maintenance. If a dual plumbing system is used, greywater would be used in place of a portion of the current potable water for non-contact uses; therefore, the end user would be expected to purchase less potable water from the water supplier. Dual plumbing and dual water systems do not meet the County's objective of reducing the nitrogen load contribution from sanitary wastewater at unsewered parcels to the groundwater or surface water. Blackwater would continue to be conveyed to the parcel's onsite treatment system (e.g., cesspool or septic

system) resulting in continued nitrogen loading. Nitrogen load reduction would not be achieved by this alternative.

## 10.6 Comparison of Alternatives

**Table 10-8** provides a summary comparison of the impacts or effects (negative and positive) of the alternatives described above under Section 10.1 through 10.5. For comparison the table also includes the impacts associated with the implementation of the Proposed Action.

With respect to the overarching goal of achieving nitrogen reduction in the surface waters and groundwater of the County, only the Proposed Action and three of the five alternatives have the potential to achieve nitrogen reduction. The No Action alternative would not achieve the nitrogen reduction goals Countywide. Implementation of a dual plumbing/dual water systems would not in and of itself achieve nitrogen reduction; additional requirements would need to be put in place to address the management of the waste stream from these systems. Of the three alternatives that achieve nitrogen reduction, two (increasing minimum lot sizes Countywide and purchase of open space in priority areas) would only address future discharge of nitrogen and would not address the current nitrogen loading from onsite systems. Therefore, these two alternatives would not achieve the nitrogen load reduction targets established for each subwatershed. The Proposed Action and Countywide centralized wastewater collection and treatment systems do address current and future nitrogen loading.

The Proposed Action and two of the five alternatives, including Countywide centralized wastewater collection and treatment systems and dual plumbing/dual water systems require capital costs increases to property owners.

Of the five alternatives and the Proposed Action, the Countywide centralized wastewater collection and treatment systems alternative would likely have the greatest construction-related impacts as sewers and pump stations would be constructed in unsewered areas throughout the County and at least one new WWTP would need to be built. The dual plumbing/dual water systems would likely have the second highest construction-related impacts because this would require land and structure disturbances to install the new piping and storage tanks for the water. The Proposed Action would have minimal disturbance compared to current disturbance associated with installing or replacing a traditional OSDS. The other three alternatives either require only legislative action or a change in the sanitary code (County purchase of priority areas and increasing minimum lot sizes, respectively) or no implementation at all (no action) and therefore, have no construction-related impacts.

Two alternatives – increasing minimum lot size and County purchase of priority areas – would benefit human health and the environment from reducing the number of future developable parcels, thereby reducing the amount of nitrogen that could be discharged from those parcels in the future and a reduction in future electrical demand and associated greenhouse gas emissions. The Proposed Action does not reduce the number of the parcels that could be developed, but it does address the nitrogen loading of currently developed parcels as well as future developed parcels. Reduction in nitrogen to groundwater (including drinking water) and surface water resources would benefit human health and the environment.

Adverse impacts would be observed under the No Action alternative as the current nitrogen loading from OSDSs would remain unchanged and the potential for future nitrogen loading would only be addressed through requirements enacted by local municipalities. Nitrogen loading under the County purchase of land under the Open Space Preservation program would likely be limited to parcels that are currently not developed and for which there is currently no nitrogen contribution to water resources. The Proposed Action addresses nitrogen contribution from sanitary wastewater from all parcels Countywide.

The most beneficial human health and natural environment impacts would be anticipated from implementation of the Proposed Action or centralized sewering where an overall Countywide reduction in nitrogen loading to groundwater (including drinking water) and surface water resources would result. However, the potential negative consequences of centralized sewering (e.g., reduced baseflow to streams, etc.) would need to be carefully evaluated as part of a project-specific Feasibility Study and environmental review.

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**Table 10-5 Summary of Subwatersheds in Groundwater Management Zone IV (6 pages)**

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Acabonack Harbor | 1701-0047 | 145 | 152 | 151 | 44 | 108 |
| Agawam Lake | 1701-0117 | 9 | 9 | 9 | 4 | 5 |
| Aspatuck Creek and River | 1701-0303-AC | 39 | 52 | 51 | 21 | 31 |
| Big/Little Fresh Ponds | 1701-0125 | 6 | 6 | 6 | 0 | 6 |
| Block Island Sound | 1701-0278 | 21 | 21 | 21 | 0 | 21 |
| Brushes Creek | 1701-0247-BC+0249 | 27 | 122 | 122 | 116 | 6 |
| Cedar Beach Creek and Tidal Tribs | 1701-0243 | 17 | 27 | 27 | 18 | 9 |
| Cold Spring Pond and Tribs | 1701-0127 | 51 | 85 | 85 | 49 | 36 |
| Corey Creek and Tidal Tribs | 1701-0244 | 54 | 73 | 73 | 34 | 39 |
| Cutchogue Harbor | 1701-0045-CH | 32 | 37 | 37 | 11 | 26 |
| Cutchogue Harbor - East Creek | 1701-0045-EC | 27 | 30 | 30 | 9 | 21 |
| Cutchogue Harbor - Mud Creek | 1701-0045-MC | 42 | 108 | 108 | 90 | 18 |
| Cutchogue Harbor - Wickham Creek | 1701-0045-WC | 20 | 35 | 35 | 21 | 14 |
| Dam Pond | 1701-0228 | 7 | 20 | 20 | 19 | 1 |
| Deep Hole Creek | 1701-0247-DHC+0249 | 34 | 63 | 63 | 41 | 22 |

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Far Pond | 1701-0295-FP | 12 | 19 | 19 | 11 | 8 |
| Fish Cove | 1701-0037-FC | 9 | 14 | 14 | 8 | 6 |
| Flanders Bay, East/Center, and Tribs | 1701-0030+0255+0273 | 96 | 212 | 212 | 163 | 49 |
| Flanders Bay, West/Lower Sawmill Creek | 1701-0254+0257 | 12 | 37 | 37 | 29 | 8 |
| Fort Pond | 1701-0122 | 31 | 32 | 32 | 7 | 25 |
| Fort Pond Bay | 1701-0370 | 38 | 39 | 38 | 22 | 17 |
| Fresh Pond | 1701-0279 | 44 | 47 | 47 | 39 | 8 |
| Gardiners Bay and minor Tidal Tribs | 1701-0164 | 99 | 101 | 100 | 19 | 82 |
| Georgica Pond | 1701-0145 | 43 | 43 | 43 | 28 | 15 |
| Goldsmith Inlet | 1702-0026 | 19 | 91 | 91 | 82 | 9 |
| Goose Creek | 1701-0236 | 59 | 77 | 77 | 28 | 49 |
| Goose Neck Creek | 1701-0272-GNC | 17 | 17 | 17 | 0 | 17 |
| Great Peconic Bay and minor coves | 1701-0165+0247+0249+0251 | 162 | 366 | 366 | 261 | 105 |
| Great South Bay, Middle | 1701-0040-rev | 37 | 38 | 38 | 2 | 36 |
| Gull Pond | 1701-0231 | 26 | 29 | 29 | 6 | 23 |
| Hallock/Long Beach Bay and Tidal Tribs | 1701-0227 | 85 | 116 | 116 | 80 | 36 |

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Halsey Neck Pond | 1701-0355 | 6 | 9 | 9 | 8 | 1 |
| Hashamomuck Pond/Long Creek and Budd's Pond | 1701-0162+0234 | 68 | 129 | 129 | 86 | 43 |
| Heady and Taylor Creeks and Tribs | 1701-0294 | 67 | 77 | 77 | 31 | 46 |
| Hog Creek and Tidal Tribs | 1701-0277 | 61 | 61 | 61 | 5 | 56 |
| Hook Pond | 1701-0131 | 29 | 38 | 38 | 23 | 15 |
| James Creek | 1701-0247-JC+0249 | 31 | 58 | 58 | 41 | 17 |
| Kellis Pond | 1701-0290 | 6 | 6 | 6 | 6 | 0 |
| Lake Montauk | 1701-0031 | 114 | 121 | 119 | 34 | 87 |
| Laurel Pond | 1701-0128 | 3 | 9 | 9 | 8 | 1 |
| Little Peconic Bay | 1701-0126+0172 | 84 | 134 | 132 | 68 | 66 |
| Little Sebonac Creek | 1701-0253 | 20 | 27 | 27 | 23 | 4 |
| Long Island Sound, Suffolk Co, Central | 1702-0265 | 175 | 803 | 803 | 739 | 64 |
| Long Island Sound, Suffolk County, East | 1702-0266 | 426 | 999 | 999 | 765 | 234 |
| Marion Lake | 1701-0229 | 31 | 36 | 36 | 14 | 22 |
| Mattituck (Marratooka) Pond | 1701-0129 | 2 | 10 | 10 | 9 | 1 |
| Mattituck Inlet/Cr, Low, and Tidal Tribs | 1702-0020+0245 | 96 | 230 | 230 | 186 | 44 |
| Mecox Bay and Tribs | 1701-0034+0289+0292 | 155 | 357 | 357 | 318 | 39 |

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Meetinghouse Creek and Tribs | 1701-0256-MC | 42 | 88 | 88 | 73 | 15 |
| Middle Pond | 1701-0295-MP | 16 | 18 | 18 | 5 | 13 |
| Mill Creek and Tidal Tribs | 1701-0238+ | 5 | 8 | 8 | 5 | 3 |
| Mill Pond and Sevens Ponds | 1701-0113+0289 | 1 | 1 | 1 | 1 | 0 |
| Moriches Bay East | 1701-0305-rev+0306 | 19 | 19 | 19 | 4 | 15 |
| Moriches Bay West | 1701-0038-rev | 2 | 2 | 2 | 0 | 2 |
| Napeague Bay | 1701-0369 | 65 | 66 | 66 | 39 | 27 |
| Napeague Harbor and Tidal Tribs | 1701-0166 | 10 | 13 | 13 | 6 | 7 |
| North Sea Harbor and Tribs | 1701-0037 | 51 | 60 | 60 | 25 | 35 |
| Northwest Creek and Tidal Tribs | 1701-0046 | 5 | 5 | 5 | 3 | 2 |
| Northwest Harbor | 1701-0368+0275+0276 | 22 | 22 | 22 | 20 | 2 |
| Noyack Bay | 1701-0167-rev | 35 | 42 | 42 | 29 | 13 |
| Noyack Creek and Tidal Tribs | 1701-0237 | 12 | 13 | 13 | 6 | 7 |
| Ogden Pond | 1701-0302 | 11 | 12 | 12 | 8 | 4 |
| Old Fort Pond | 1701-0295-OFP | 13 | 13 | 13 | 6 | 7 |
| Old Town Pond | 1701-0118 | 6 | 6 | 6 | 6 | 0 |

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Orient Harbor and minor Tidal Tribs | 1701-0168 | 29 | 45 | 45 | 27 | 18 |
| Peconic River, Lower, and Tidal Tribs | 1701-0259+0263 | 21 | 29 | 29 | 14 | 15 |
| Penniman Creek and Tidal Tribs | 1701-0300 | 21 | 21 | 21 | 17 | 4 |
| Penny Pond, Wells, Smith, and Gilbert Creeks | 1701-0298-rev+0033 | 32 | 36 | 36 | 7 | 29 |
| Phillips Creek, Lower, and Tidal Tribs | 1701-0299 | 43 | 43 | 43 | 19 | 24 |
| Pipes Cove | 1701-0366 | 18 | 21 | 21 | 7 | 14 |
| Quantuck Bay | 1701-0042+0303 | 26 | 26 | 26 | 8 | 18 |
| Quantuck Canal/Moneybogue Bay | 1701-0371 | 15 | 16 | 16 | 5 | 11 |
| Quantuck Creek and Old Ice Pond | 1701-0303-QC+0304 | 57 | 70 | 70 | 31 | 39 |
| Quogue Canal | 1701-0301 | 16 | 17 | 17 | 11 | 6 |
| Red Creek Pond and Tidal Tribs | 1701-0250 | 9 | 10 | 10 | 5 | 5 |
| Reeves Bay and Tidal Tribs | 1701-0272-RB | 47 | 51 | 51 | 10 | 41 |
| Richmond Creek and Tidal Tribs | 1701-0245 | 44 | 126 | 126 | 119 | 7 |
| Sag Harbor | 1701-0035-SH+0239 | 64 | 68 | 68 | 13 | 55 |
| Sag Harbor Cove and Tribs | 1701-0035-SHC | 51 | 56 | 55 | 11 | 45 |
| Sagaponack Pond and Poxabogue Pond | 1701-0146+0286 | 48 | 94 | 94 | 89 | 5 |
| Sebonac Cr/Bullhead Bay and Tidal Tribs | 1701-0051 | 46 | 55 | 55 | 42 | 13 |

| Subwatershed Name | PWL ID | Number of Vacant/Ag Parcels for Potential Development | SCDEDP Projected Number of New Residences at Build-out | Estimated Number of New Residential Parcels at 1 Acre Minimum with Grandfathering | Estimated Number of New Residential Parcels at 1 Acre Minimum and no Grandfathering | Reduced Number of Residences from Build-out Projection |
|---|---|---|---|---|---|---|
| Shelter Island Sound, North, and Tribs | 1701-0170 | 27 | 35 | 35 | 18 | 17 |
| Shelter Island Sound, South, and Tribs | 1701-0365-rev+0240 | 36 | 37 | 37 | 25 | 12 |
| Shinnecock Bay - Bennet Cove (Cormorant Cove) | 1701-0033-BC+0252+0296 | 57 | 68 | 67 | 27 | 41 |
| Shinnecock Bay Central | 1701-0033-C | 8 | 8 | 8 | 1 | 7 |
| Shinnecock Bay East | 1701-0033-E | 74 | 78 | 78 | 23 | 55 |
| Shinnecock Bay West | 1701-0033-W | 45 | 51 | 51 | 30 | 21 |
| SI Sound Trib/Moores Drain, Lower, Tribs | 1701-0232+0233 | 10 | 15 | 15 | 8 | 7 |
| Southold Bay | 1701-0044 | 83 | 104 | 104 | 35 | 69 |
| Spring Pond | 1701-0230 | 11 | 11 | 11 | 0 | 11 |
| Stirling Creek and Basin | 1701-0049 | 20 | 23 | 23 | 7 | 16 |
| Terry's Creek and Tribs | 1701-0256-TC | 59 | 116 | 116 | 76 | 40 |
| Three Mile Harbor | 1701-0036 | 271 | 289 | 287 | 66 | 223 |
| Tiana Bay and Tidal Tribs | 1701-0112 | 86 | 108 | 107 | 34 | 74 |
| Town/Jockey Creeks and Tidal Tribs | 1701-0235 | 26 | 34 | 34 | 14 | 20 |
| Wainscott Pond/Fairfield Pond | 1701-0144 | 7 | 12 | 12 | 11 | 1 |
| Weesuck Creek and Tidal Tribs | 1701-0111-rev | 28 | 60 | 59 | 39 | 21 |
| West Creek and Tidal Tribs | 1701-0246 | 27 | 30 | 30 | 13 | 17 |
| Wickapogue Pond | 1701-0119 | 5 | 5 | 5 | 4 | 1 |
| Wooley Pond | 1701-0048+ | 12 | 12 | 12 | 1 | 11 |

**Table 10-6 Comparison of Reduced Nitrogen Load & Nitrogen Load Reduction Target(4 pages)**

| Subwatershed Name | PWL ID | Nitrogen Load Reduction Target based on Wastewater Management Area (lb/year) | Nitrogen Load Reduction from Future Build-out Conditions Establishing 1 Acre Minimum (lb/year), Assuming No Grandfathering | Nitrogen Load Reduction from Existing Conditions Based on I/A OWTS Implementation |
|---|---|---|---|---|
| Acabonack Harbor | 1701-0047 | 27,320 | 2,741 | 21,824 |
| Agawam Lake | 1701-0117 | 22,878 | 127 | 15,389 |
| Aspatuck Creek and River | 1701-0303-AC | 20,924 | 787 | 13,958 |
| Big/Little Fresh Ponds | 1701-0125 | 11,151 | 152 | 3,803 |
| Block Island Sound | 1701-0278 | 10,971 | 533 | 8,147 |
| Brushes Creek | 1701-0247-BC+0249 | 3,454 | 152 | 2,351 |
| Cedar Beach Creek and Tidal Tribs | 1701-0243 | 2,898 | 228 | 1,961 |
| Cold Spring Pond and Tribs | 1701-0127 | 11,132 | 914 | 7,377 |
| Corey Creek and Tidal Tribs | 1701-0244 | 8,357 | 990 | 5,487 |
| Cutchogue Harbor | 1701-0045-CH | 28,907 | 660 | 4,448 |
| Cutchogue Harbor - East Creek | 1701-0045-EC | 6,432 | 533 | 4,289 |
| Cutchogue Harbor - Mud Creek | 1701-0045-MC | 11,909 | 457 | 8,031 |
| Cutchogue Harbor - Wickham Creek | 1701-0045-WC | 4,032 | 355 | 2,694 |
| Dam Pond | 1701-0228 | 304 | 25 | 207 |
| Deep Hole Creek | 1701-0247-DHC+0249 | 7,739 | 558 | 5,136 |
| Far Pond | 1701-0295-FP | 2,663 | 203 | 1,638 |
| Fish Cove | 1701-0037-FC | 6,040 | 152 | 4,005 |
| Flanders Bay, East/Center, and Tribs | 1701-0030+0255+0273 | 133,173 | 1,244 | 12,170 |
| Flanders Bay, West/Lower Sawmill Creek | 1701-0254+0257 | 66,468 | 203 | 6,866 |
| Fort Pond | 1701-0122 | 5,916 | 635 | 4,503 |
| Fort Pond Bay | 1701-0370 | 8,185 | 431 | 4,166 |
| Fresh Pond | 1701-0279 | 4,891 | 203 | 3,871 |
| Gardiners Bay and minor Tidal Tribs | 1701-0164 | 711,147 | 2,081 | 17,636 |
| Georgica Pond | 1701-0145 | 25,078 | 381 | 16,853 |
| Goldsmith Inlet | 1702-0026 | 2,192 | 228 | 1,492 |
| Goose Creek | 1701-0236 | 10,575 | 1,244 | 7,123 |
| Goose Neck Creek | 1701-0272-GNC | 5,675 | 431 | 3,814 |

| Subwatershed Name | PWL ID | Nitrogen Load Reduction Target based on Wastewater Management Area (lb/year) | Nitrogen Load Reduction from Future Build-out Conditions Establishing 1 Acre Minimum (lb/year), Assuming No Grandfathering | Nitrogen Load Reduction from Existing Conditions Based on I/A OWTS Implementation |
|---|---|---|---|---|
| Great Peconic Bay and minor coves | 1701-0165+0247+0249+0251 | 232,236 | 2,665 | 30,537 |
| Great South Bay, Middle | 1701-0040-rev | 8,879 | 914 | 5,834 |
| Gull Pond | 1701-0231 | 3,067 | 584 | 2,088 |
| Hallock/Long Beach Bay and Tidal Tribs | 1701-0227 | 3,444 | 914 | 2,334 |
| Halsey Neck Pond | 1701-0355 | 902 | 25 | 452 |
| Hashamomuck Pond/Long Creek and Budd's Pond | 1701-0162+0234 | 8,505 | 1,091 | 5,765 |
| Heady and Taylor Creeks and Tribs | 1701-0294 | 25,284 | 1,167 | 13,853 |
| Hog Creek and Tidal Tribs | 1701-0277 | 11,794 | 1,421 | 9,059 |
| Hook Pond | 1701-0131 | 40,466 | 381 | 27,541 |
| James Creek | 1701-0247-JC+0249 | 13,341 | 431 | 8,741 |
| Kellis Pond | 1701-0290 | 2,064 | - | 1,405 |
| Lake Montauk | 1701-0031 | 23,389 | 2,208 | 16,096 |
| Laurel Pond | 1701-0128 | 493 | 25 | 336 |
| Little Peconic Bay | 1701-0126+0172 | 348,534 | 1,675 | 20,232 |
| Little Sebonac Creek | 1701-0253 | 1,875 | 102 | 1,102 |
| Long Island Sound, Suffolk Co, Central | 1702-0265 | 519,445 | 1,624 | 238,872 |
| Long Island Sound, Suffolk County, East | 1702-0266 | 64,267 | 5,939 | 25,501 |
| Marion Lake | 1701-0229 | 4,140 | 558 | 2,819 |
| Mattituck (Marratooka) Pond | 1701-0129 | 392 | 25 | 267 |
| Mattituck Inlet/Cr, Low, and Tidal Tribs | 1702-0020+0245 | 24,178 | 1,117 | 16,475 |
| Mecox Bay and Tribs | 1701-0034+0289+0292 | 49,779 | 990 | 23,229 |
| Meetinghouse Creek and Tribs | 1701-0256-MC | 9,007 | 381 | 5,895 |
| Middle Pond | 1701-0295-MP | 5,005 | 330 | 3,065 |
| Mill Creek and Tidal Tribs | 1701-0238+ | 3,955 | 76 | 3,003 |
| Mill Pond and Sevens Ponds | 1701-0113+0289 | 12,193 | - | 8,240 |
| Moriches Bay East | 1701-0305-rev+0306 | 85,459 | 381 | 37,767 |

| Subwatershed Name | PWL ID | Nitrogen Load Reduction Target based on Wastewater Management Area (lb/year) | Nitrogen Load Reduction from Future Build-out Conditions Establishing 1 Acre Minimum (lb/year), Assuming No Grandfathering | Nitrogen Load Reduction from Existing Conditions Based on I/A OWTS Implementation |
|---|---|---|---|---|
| Moriches Bay West | 1701-0038-rev | 517,405 | 51 | 2,153 |
| Napeague Bay | 1701-0369 | 379,103 | 685 | 3,667 |
| Napeague Harbor and Tidal Tribs | 1701-0166 | 5,209 | 178 | 2,539 |
| North Sea Harbor and Tribs | 1701-0037 | 36,050 | 888 | 12,881 |
| Northwest Creek and Tidal Tribs | 1701-0046 | 8,717 | 51 | 6,916 |
| Northwest Harbor | 1701-0368+0275+0276 | 15,241 | 51 | 4,353 |
| Noyack Bay | 1701-0167-rev | 23,329 | 330 | 10,666 |
| Noyack Creek and Tidal Tribs | 1701-0237 | 5,659 | 178 | 4,383 |
| Ogden Pond | 1701-0302 | 1,966 | 102 | 1,563 |
| Old Fort Pond | 1701-0295-OFP | 9,336 | 178 | 4,326 |
| Old Town Pond | 1701-0118 | 3,244 | - | 2,080 |
| Orient Harbor and minor Tidal Tribs | 1701-0168 | 88,579 | 457 | 5,080 |
| Peconic River, Lower, and Tidal Tribs | 1701-0259+0263 | 54,425 | 381 | 29,434 |
| Penniman Creek and Tidal Tribs | 1701-0300 | 5,379 | 102 | 3,571 |
| Penny Pond, Wells, Smith, and Gilbert Creeks | 1701-0298-rev+0033 | 26,184 | 736 | 18,295 |
| Phillips Creek, Lower, and Tidal Tribs | 1701-0299 | 15,431 | 609 | 10,315 |
| Pipes Cove | 1701-0366 | 6,846 | 355 | 3,535 |
| Quantuck Bay | 1701-0042+0303 | 56,467 | 457 | 4,008 |
| Quantuck Canal/Moneybogue Bay | 1701-0371 | 14,433 | 279 | 7,896 |
| Quantuck Creek and Old Ice Pond | 1701-0303-QC+0304 | 15,134 | 990 | 9,914 |
| Quogue Canal | 1701-0301 | 62,988 | 152 | 3,310 |
| Red Creek Pond and Tidal Tribs | 1701-0250 | 2,973 | 127 | 1,787 |
| Reeves Bay and Tidal Tribs | 1701-0272-RB | 24,205 | 1,041 | 16,249 |
| Richmond Creek and Tidal Tribs | 1701-0245 | 5,197 | 178 | 3,525 |

| Subwatershed Name | PWL ID | Nitrogen Load Reduction Target based on Wastewater Management Area (lb/year) | Nitrogen Load Reduction from Future Build-out Conditions Establishing 1 Acre Minimum (lb/year), Assuming No Grandfathering | Nitrogen Load Reduction from Existing Conditions Based on I/A OWTS Implementation |
|---|---|---|---|---|
| Sag Harbor | 1701-0035-SH+0239 | 66,127 | 1,396 | 18,289 |
| Sag Harbor Cove and Tribs | 1701-0035-SHC | 42,113 | 1,142 | 28,904 |
| Sagaponack Pond and Poxabogue Pond | 1701-0146+0286 | 27,244 | 127 | 18,458 |
| Sebonac Cr/Bullhead Bay and Tidal Tribs | 1701-0051 | 9,480 | 330 | 6,378 |
| Shelter Island Sound, North, and Tribs | 1701-0170 | 281,916 | 431 | 6,071 |
| Shelter Island Sound, South, and Tribs | 1701-0365-rev+0240 | 274,385 | 305 | 9,610 |
| Shinnecock Bay - Bennet Cove (Cormorant Cove) | 1701-0033-BC+0252+0296 | 26,005 | 1,041 | 17,422 |
| Shinnecock Bay Central | 1701-0033-C | 74,002 | 178 | 1,132 |
| Shinnecock Bay East | 1701-0033-E | 91,577 | 1,396 | 21,028 |
| Shinnecock Bay West | 1701-0033-W | 121,378 | 533 | 16,091 |
| SI Sound Trib/Moores Drain, Lower, Tribs | 1701-0232+0233 | 1,653 | 178 | 1,076 |
| Southold Bay | 1701-0044 | 35,204 | 1,751 | 5,227 |
| Spring Pond | 1701-0230 | 1,555 | 279 | 1,047 |
| Stirling Creek and Basin | 1701-0049 | 3,221 | 406 | 2,193 |
| Terry's Creek and Tribs | 1701-0256-TC | 9,897 | 1,015 | 6,738 |
| Three Mile Harbor | 1701-0036 | 60,534 | 5,660 | 47,103 |
| Tiana Bay and Tidal Tribs | 1701-0112 | 45,952 | 1,878 | 31,610 |
| Town/Jockey Creeks and Tidal Tribs | 1701-0235 | 16,952 | 508 | 11,516 |
| Wainscott Pond/Fairfield Pond | 1701-0144 | 2,593 | 25 | 1,719 |
| Weesuck Creek and Tidal Tribs | 1701-0111-rev | 13,075 | 533 | 8,916 |
| West Creek and Tidal Tribs | 1701-0246 | 4,936 | 431 | 3,211 |
| Wickapogue Pond | 1701-0119 | 2,172 | 25 | 1,398 |
| Wooley Pond | 1701-0048+ | 7,813 | 279 | 6,062 |

**Table 10-8 Comparison of Alternatives**

| Alternatives | Effect on Groundwater/ Surface Water | Implementation Requirements | Impacts |
|---|---|---|---|
| **No Action** | Advantages<br>• Nitrogen load reduction achieved sporadically throughout the County.<br>Disadvantages<br>• Benefits anticipated to take centuries.<br>• Water bodies currently not affected could also show degradation as conventional OSDS would be installed and nitrogen contributions not addressed.<br>• The burden for requiring enhanced treatment for nitrogen in wastewater from unsewered areas would fall to the local municipalities, environmental groups and local environmentally minded citizens. Individual property owners may choose to install I/A OWTS.<br>• Not a holistic approach/ fragmented. Towns may or may not require improved onsite treatment. | • Only addresses parcels located within local municipalities requiring nitrogen reducing systems. | 1. Human Health Natural Environment: Adverse impact from continued degradation of water quality associated with nitrogen discharge. Treatment required to remove nitrogen from potable supplies or alternative potable supply sources required. Continued low dissolved oxygen and HAB events impacting aquatic ecosystems and potentially human health. Degradation to coastal environment and wetland and floodplain function. |
| **Countywide Centralized Wastewater Collection and Treatment Systems** | Advantages<br>• Nitrogen reduction would result from improved treatment of wastewater. Over 31,200 pounds per day of nitrogen would be prevented from reaching the sole source aquifer that provides the County with its potable supply and provides baseflow to surface waters.<br>•<br>Disadvantages<br>• Potential for reduced recharge to groundwater and surface water bodies. Reductions in the groundwater table, lengths of flowing streams, stream baseflows, and resulting vegetation and ecological impacts.<br>• Impacts to groundwater recharge may result in the need to provide a water supply to East End areas | • Legislative action for expansion or creation of District(s)<br>• Areas would need to be sewered, one or more new wastewater treatment plants would need to be sited, constructed and operated, and NY State would need to establish discharge limits. Sewers may be gravity fed or low-pressure sewer system from properties.<br>• Would require significant collection infrastructure including piping, pump stations, etc.. | 1. Construction: Ground disturbance due to piping installation, erosion and sediment control measures required. Traffic and noise may impact wildlife. Construction-related impacts would be experienced throughout the County.<br>2. Human Health and Natural Environment: Benefit associated with the reduction in the release of nitrogen to ground- and surface water leading to an improvement in water quality. Potential to reduce HAB events and improve coastal resiliency. Chemicals may need to be stored on site. Impacts to groundwater recharge may result in the need to provide a water supply to East End areas. May have negative ecological impacts as a result of localized reduced baseflow to surface waters as all discharge is off shore.<br>3. Land Use: Potential for increased development opportunities in accordance with local zoning and plans. |
| **Increasing minimum lot sizes County-wide** | Advantages<br>• A projected 11,278 additional residences could be constructed in GMZs I, II, IV, and VIII at full build-out in the future. This would amount to over 286,000 additional pounds of nitrogen loading per year.<br>• Potential for reduction in future nitrogen loading of over 133,000 pounds; however, that is a small fraction of the overall nitrogen load reduction required to achieve the nitrogen loading associated with desired water quality.<br>Disadvantages<br>• Does not address the current nitrogen loading from onsite systems. Limited number of undeveloped parcels in high priority areas.<br>• Nitrogen load reduction targets established for each subwatershed would not be achieved. | • Change in County Sanitary Code | 1. Construction: No change to existing site-specific disturbance required to install traditional onsite systems<br>2. Human Health and Natural Environment: Potential benefit from reduced number of future developable parcels which reduces the future amount of nitrogen that might get discharged to the environment. However, this does not result in improvement over the No Action alternative identified above, as nitrogen from existing parcels would not be reduced. Additionally, a reduction in development could reduce future electrical demand and associated greenhouse gas emissions.<br>3. Land Use: Potential for reduction in future development. |
| **County purchase of 'priority areas' through the use of Suffolk County Open Space funding** | Advantages<br>• Potential to reduce future discharge of nitrogen.<br>• Purchase of all 7,267 vacant parcels would be successful in reducing increased future nitrogen loading by approximately 72,670 pounds of nitrogen per year; however, that is a small fraction of the overall nitrogen load reduction required<br>Disadvantages<br>• Does not address the current nitrogen loading from onsite systems. Limited number of undeveloped parcels in high priority areas. | • Legislative action<br>• The County would need to maintain parcels purchased which can affect current workforce and County budget. | 1. Human Health and Natural Environment: Potential benefit from the reduction in the number of future developable parcels which reduces the future amount of nitrogen that might get discharged to the environment. However, this does not result in improvement over the No Action alternative identified above, as nitrogen from existing parcels would not be reduced. By purchasing the parcels for open space preservation, the need to install I/A OWTS would be avoided for those parcels, as would the need for additional electrical demand and associated greenhouse gas emissions |

| Alternatives | Effect on Groundwater/ Surface Water | Implementation Requirements | Impacts |
|---|---|---|---|
| | • Nitrogen load reduction targets established for each subwatershed would not be achieved. | | 2. Land Use: Potential for reduced number of parcels available for development. |
| **Dual plumbing/ dual water systems** | Advantages<br>• Potential to reduce discharge of nitrogen if the liquid waste is either disposed of outside the County or undergoes treatment to remove nitrogen from the waste stream.<br>Disadvantages<br>• The alternative does not address management of nitrogen in the waste stream.<br>• Reduced demand of potable water. | • County Sanitary Code change<br>• Treatment requirements are based on EPA guidelines and an evaluation of water reuse requirements in California, Florida and Arizona. | 1. Construction: Structure disturbances to install new piping.<br>2. Human Health and Natural Environment: Localized benefit associated with direct discharge of non-nitrogen contaminated water. Potential benefit associated with reduced potable water demand. |
| **Proposed Action** | Advantages<br>• As existing systems are upgraded to I/A OWTS, there is improvement in groundwater and surface water quality resulting from improved onsite treatment of wastewater for nitrogen.<br>Disadvantages<br>• This alternative would not have a negative effect on surface water or groundwater. | • County Sanitary Code changes<br>• Establishment of designer/ manufacturer/ RME capacity<br>• RME Staffing | 1. Construction: Similar land disturbance as required to install or replace traditional onsite systems.<br>2. Human Health and Natural Environment: Benefit associated with the reduction in the release of nitrogen to ground- and surface water leading to an improvement in water quality. Potential to reduce HAB events, increase dissolved oxygen, improve conditions to support seagrass and improve coastal resiliency. |

Note: Stakeholder Support would be required for all alternatives except for the No Action alternative.

# Section 11

# Transfer of Development Rights (TDR)

Transfer of development rights programs exist for many of the towns and villages that make up Suffolk County. An inventory of Transfer of Development Right (TDRs) programs was assembled by Suffolk County (SCDEDP, March 2014) that identified 14 TDR programs operated by the 10 Towns in the County (https://suffolkcountyny.gov/Departments/Economic-Development-and-Planning/Planning-and-Environment/Special-Projects/HUD-Sustainable-Communities-Grant). In addition to these programs, TDR programs exist on a regional scale. This Draft GEIS addresses the County's Proposed Action and does not rely upon the local laws or codes for implementation. Therefore, the individual programs are not the subject of this analysis. While a detailed Transfer of Development Rights plan was not in the scope of SC SWP, the SC SWP process successfully provided these tools, which should be used to further refine TDR policies and plans. This may be done for new plans, as well as for pre-existing plans which are reviewed, reauthorized, or expanded.

The discussion that follows looks at regional TDR programs.

Requirements for approval of water supply and sewage disposal systems are included in the Suffolk County Sanitary Code. Development density standards are established by the Suffolk County Department of Health Services (SC DHS). These standards are in effect to protect the groundwater quality in specific recharge areas across the County. Article 6 Sections 760-602, 760-608 and 760-610 allow for the use of transfer development rights (TDR) to conform with the standards established by the SC DHS and as a mechanism by which an unsewered parcel or project can exceed the allowable sanitary density.

SC DHS General Guidance Memorandum #27 dated May 5, 2014 provides guidelines for the use of TDR and Pine Barrens credits for sanitary density credit. Memorandum #27 provides information on methods, requirements and limitations on the use of TDR. TDR are used when an applicant wishes to transfer allowable sanitary density from one parcel ('sending') to another parcel ('receiving') to allow for increased development on the 'receiving' parcel. The TDR standards protect groundwater, drinking water and surface water quality while offering developers flexibility.

The method to accomplish sanitary density transfer can be accomplished without the need for a variance from the SC DHS. These transfers are said to be 'as-of-right' if consistent with the following list of plans;

- Central Pine Barrens Comprehensive Land Use Plan
- Suffolk County Save Open Save (enacted 2004)
- Southold Township (adopted 2007)
- East Hampton Township (adopted 2007)

- Huntington Township (adopted 2008)
- Smithtown Township (adopted 2010)

In areas not identified in the above documents, there are no provisions in the Sanitary Code or in SC DHS standards that address the automatic use of TDR for sanitary density purposes. Developers do have the option of filing a variance application.

To facilitate the construction of affordable ownership and rental workforce housing throughout the County, the Suffolk County Workforce Housing Development Program (WHDP) was established. This program allows for the transfer of development rights from properties acquired by the County pursuant to the Save Open Space Bond Act for open space and passive parkland purposes to non-environmentally sensitive properties. Use of the transferred development rights under the WHDP credit, as with all TDR programs is subject to meeting the requirements of SCDHS.

Article 6 of the SC Sanitary Code identifies the requirements for sewage facilities for single-family residential subdivision and developments including the use of TDR within Groundwater Management Zones (750-608.B and C.). Similarly, Article 6 in subsections 760-610.D and E also identifies the requirements for sanitary facilities for development other than single family residential and addresses the conditions where TDR may be permitted. The use of TDR is permittable if in conformance with the standards established by the SC DHS.

Possible review principles for TDR programs may include, but not be limited to, the following. These are illustrative, and not exhaustive, and not intended to be definitive or binding; they should be explored for viability, given the balancing of environmental health goals with other social and economic needs, and SEQRA should be a platform for coordinating review in a transparent manner.

1. Limit Density Transfer into “sensitive zones”

1. Restrict transfers into a sensitive zone, from outside the sensitive zone (e.g., no transfers into priority areas 1 and 2);

2. Limit excess density transfer from area with lower priority rank to area with higher priority rank (groundwater or surface water; e.g., avoid transfers from priority area 4 to area 3, etc.).

3. Load-based Transfer Restrictions

4. Limit receiving parcels to waterbodies with n-load capacity;

5. Cap max increase in total load through TDRs to waterbodies with no n-load capacity (e.g., 10%) including projected loads at buildout;

6. Identify locations of high priority commercial parcels with SWP Addendum and consider revision to Article 6 TDR requirements based upon addendum findings.

7. Incentives

8. Consider incentives for transfer of development rights out of high priority areas and/or areas with high load reduction goals.

9. Tracking and Adaptive Management

10. Establishment of central countywide TDR tracking database;

11. Periodic review of impact of sending and receiving parcels.

As shown above, the overarching initial guideline is to limit, to the extent practicable, the transfer of development rights from locations with acceptable water quality to locations with poor water quality. This becomes particularly important in areas with significant load reduction goals that have already been identified as not being able to meet load reduction goals through wastewater management alone. In addition, consideration should be given to promote or incentivize the sale of density rights from waterbodies that have existing water quality degradation and/or high priority rank and load reduction goals. Finally, the establishment of a central TDR entry portal and database is recommended so that the existing location of TDRs (both sending and receiving parcels) can be tracked. This would enable monitoring of TDR trends in Suffolk County and would provide early warning for potential negative consequences associated with transferring excessive development rights into waterbodies that are already highly susceptible to water quality degradation from excess nitrogen.

Consistent with previous recommendations in the SWP, the location of commercial parcels with the potential for significant nitrogen loads above existing density requirements (e.g., grandfathered parcels) is generally unknown and needs to be quantified before recommendations for large scale commercial projects (e.g., design flows of greater than 1,000 gpd) can be provided within this SWP. Because many TDR projects are focused on multi-residential and other commercial projects, it is recommended that final countywide recommendations for potential TDR program modifications (e.g., updates to the Suffolk County Sanitary Code and/or guidance memorandum) be included as part of the SWP Addendum that is recommended for implementation in 2020.

It should be noted, the County's existing use of Transfer Development Rights has not been modified in the SC SWP, nor is it specifically identified as an implementation strategy in the SC SWP. Hence, the SC SWP would not have any impact to the County's TDR program. Should the Sanitary Code be modified to revise the TDR strategy in the future, it will be the subject of its own review under SEQRA.

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# Section 12

# Project/Site Specific and Subsequent Review Requirements Under SEQRA

There is no new development associated with the proposed action, however, the implementation of the proposed action may affect future development potential, demand for utilities, and existing land uses consistent with the goals and objectives of the SC SWP (nitrogen reduction) as well as the local municipality requirements and zoning. It is intended that the SC SWP be implemented in phases, using an adaptive management approach, such that both the County's wastewater management program and the effectiveness of the wastewater management program are evaluated according to a regular schedule and modifications are incorporated as appropriate. An Adaptive Management Plan would be prepared to provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources. Future revisions to the SC SWP may prompt changes requiring additional review under SEQRA. Potential impacts to the natural or physical environment as well as to utilities and community services associated with the implementation of site-specific projects will be addressed by subsequent SEQRA review.

As stated in 6NYCRR part 617.10 (c.), *'Generic EISs and their findings should set forth specific conditions or criteria under which future actions will be undertaken or approved, including requirements for any subsequent SEQR compliance. This may include thresholds and criteria for supplemental EISs to reflect specific significant impacts, such as site-specific impacts, that were not adequately addressed or analyzed in the generic EIS.'*

This section identifies specific conditions or criteria under which a future action or actions would require additional review under SEQRA. The discussion that follows is not inclusive of all possible triggers for supplemental review. Measures protective of the environment would remain in place as are discussed in Section 9 - Mitigative Measures. This includes the use of soil erosion measures, work at historic properties, or work adjacent to environmentally sensitive areas. It is important to note that should the installation of an I/A OWTS or other sanitary wastewater treatment system require an application for an environmental permit (such as a tidal or freshwater wetlands permit) where a SEQRA determination maybe required, these are considered site specific. This Draft GEIS could be used to support that permit application process but would need to be augmented by site specific information to complete the environmental review requirements.

## 12.1 Additional Environmental Review Related to the Proposed Action

The proposed project addressed by this Draft GEIS is based on the recommendations and implementation plan described in the SC SWP (Section 8). The SC SWP does not include the specific development of a physical structure or change in current or future land use. The SC SWP

does provide the County with a path to improve the way onsite sanitary wastewater treatment is accomplished with a focus on nitrogen load reduction and groundwater and surface water quality improvement.

It is important to note that the SC SWP includes a wide list of strategies and existing technologies that are proven to reduce nitrogen loading from sanitary wastewater to groundwater and/or surface water. The strategies identified as part of the 'Phase I' roll-out of the County's program would be re-assessed and changes or additional measures and Code changes are anticipated for the future. In addition, as recommended in Section 8.4.11 of the SC SWP, an Adaptive Management Plan would be prepared to provide a formal mechanism for periodic program review intervals; program monitoring; the identification and incorporation of new data sources, and ultimately a means to adjust the recommendations of the plan to be consistent with current program status and data sources. The need for further SEQRA review would be determined at the time the future changes (or additions) to the County's wastewater management strategy are identified.

Supplemental environmental review (Supplemental GEIS), if required by a Lead Agency, would be limited to the specific significant adverse environmental impacts not addressed or inadequately addressed in this GEIS document.

Impacts under this Draft GEIS are based on the assumption that the installation of an I/A OWTS is similar to that of a conventional septic system. Additional analysis may be required, for example, should the I/A system installations be more intrusive or require significantly more land disturbance. The recommendations from the SC SWP that are reflected in this Draft GEIS are based on various sewering projects moving forward to implementation. These projects are in various stages of planning, design, environmental review or implementation. The scope of these 'presumptive sewering' projects (see Table 6-2 for the list and status), if altered, may require a review of the recommendations in the SC SWP. It is important to note these sewering projects are subject to project specific environmental review per state or federal requirements based on project sponsorship and funding. The proposed revisions to Appendix A modified sewage disposal system flow and setback requirements would not negate the need for project-specific SEQRA and siting review by the local municipality having jurisdiction in addition to review/permitting by the County.

The wastewater management program defines within the SC SWP (Section 8) is intended to be a guide that builds upon the best information available at the time the Plan was developed. The County's Adaptive Management strategy provides for effective periodic review of the Plan. Modifications can be made based on new data, or as a result of County's formal review of the program's progress in reducing nitrogen loads. Example actions, thresholds or criteria that could trigger supplemental review under SEQRA follows. These triggers are specific to the Proposed Action, the County wastewater management plan, as defined in Section 2.1 of this document and Section 8 of the SC SWP.

- Additional change to the County Sanitary Code or construction standards to implement the recommendations in the SC SWP. This would include;

- Changes to Article 6 in accordance with the four-phase recommended wastewater alternative to address commercial properties that exceed design flowrates of greater than 1,000 gpd. Additional information/data is needed for these systems before finalizing policy recommendations as discussed in Section 8 of the SC SWP.
- Additional Code changes to address Appendix A systems.
- Additional changes to the Suffolk County Sanitary Code or Office of Wastewater Management construction standards to address sites or parcels with unique challenges such as not meeting setback requirements and/or other site constraints.
- Changes required to address Special Use Areas such as schools, fire house, police departments and libraries.
- Changes to Article 6 for increased minimum lot size within select GMZs or subwatersheds.
- Changes to streamline the approval process for Appendix A systems.
- Changes to address home elevations performed as part of a resiliency project.
- Changes as a direct result of the performance monitoring of I/A OWTS and Appendix A systems;
- Changes that include the use of non-standard bacteria and/or chemicals in the I/A OWTS;
- Changes to address environmental conditions effected by climate change.
- Changes to address contaminants other than nitrogen.
- Adopting requirements to implement the SC SWP not reflected in this Draft GEIS.
- Significant change in the recommendations and/or the implementation plan included in the SC SWP;
- The approval of new I/A OWTS with installation/construction requirements that significantly exceed that of a conventional septic system;
- Significant changes required as a result of the County's periodic program review and program monitoring (Adaptive Management), and
- Newly discovered information whose importance and relevance is required for the Lead Agency to make its determination.

The following table (**Table 12-1**) provides some examples by environmental criteria addressed in this Draft GEIS that should be considered by the Lead Agency (Suffolk County) when determining the need for further environmental review under SEQRA.

**Table 12-1 Example Thresholds by Environmental Criteria**

| Environmental Criteria | Example Threshold | Minimum Requirements |
|---|---|---|
| ▪ Groundwater and Surface Water Resources | Potential for increase in nitrogen loading and general water quality degradation<br>Potential for aquifer drawdown (ex. new or expanded WTP) | Re-evaluate the criteria used to approve I/A OWTS vendors and modify and required<br>Evaluate water table declines, reduced lengths of stream flow or reduced stream baseflow. |
| ▪ Natural Environment | Potential to negatively impact threatened or endangered species, critical habitat or result in a reduction in their habitat.<br>Potential for negative impacts to wetlands and coastal environments<br>Potential impact to natural environment – stream flow and or wetlands - due to aquifer drawdown. | Develop mitigative measure to avoid impact to threatened or endangered species and their habitat as well as wetlands and coastal environments.<br>Consult and comply with the requirements (ex. obtain environmental permits) of the federal and state agencies having jurisdiction.<br><br>Evaluation of water table declines, reduced lengths of flowing streams or reduced stream baseflows for any new or expanded wastewater treatment plants discharging to surface waters. |
| ▪ Historic/Archaeological Resources | Potential for construction in areas not previously disturbed or in area known to be sensitive for archeological resources.<br>Negative impact to structures included on the National Register of Historic Places or National Natural Landmarks | Consultation and compliance with the requirements of NY State Historic Preservation Office |
| ▪ Noise/Odors | Potential to exceed the noise limits established in local municipal codes.<br>Potential for odors to be noticeable offsite. | Include noise attenuating device to reduce noise impact. Include odor control equipment. |
| ▪ Human Health | Potential for contaminant exposure and/or hazard materials not realized in this GEIS. | Evaluate the potential for health impacts. Remediate site in conformance with federal, state and local requirements |
| ▪ Consistency with Local Community Plans and Character | Potential for inconsistency with local municipal Master Plans or result in an impact in local community character. | Review proposed project for consistency, modify as required |
| ▪ Construction Impacts | Construction activities required to take place within or can negatively impact an environmentally sensitive area such as wetland, protected waterbody or critical habitat. Potential for site vegetation cutting/removal. | Obtain and comply with required environmental permits from agencies with jurisdiction<br>Removal of site vegetation considering Northern Long-eared-Bat and song bird nesting period. |

## 12.2 Potential Future Actions that would Trigger Project-Specific Environmental Review

This sub section looks at potential actions (related to wastewater treatment) that would not fall under the category of supplemental review under SEQRA. The implementation of the Proposed Action does not include or require site specific development such as a cluster system to address sanitary flow from a specific group of parcels and new or improvements to existing wastewater treatment plants. Projects such as these are not addressed by this Draft GEIS and will require project specific review under SEQRA. Suffolk County may or may not be the Lead Agency for these project specific SEQRA reviews. The information in this Draft GEIS and in the SC SWP would be available for use by the project proposer for use in the project specific environmental review.

Example projects that would trigger review under SEQRA, including possibly an EIS, to address site-specific or municipality-specific actions and their potential impacts are provided. The possible projects that follow are associated with wastewater treatment and would likely exceed environmental review thresholds identified in 6NYCRR Part 617. This is not an exhaustive list but does provide the general categories of actions likely to exceed the environmental review thresholds and require some level of environmental review under SEQRA.

Example projects or actions that trigger review under SEQRA include:

- Proposed new wastewater treatment plant (WWTP);
- Proposed expansion of existing WWTP;
- Proposed creation of a new sewer district;
- Proposed expansion of an existing sewer district;
- Proposed creation of a new scavenger waste treatment facility;
- Proposed expansion of an existing scavenger waste treatment facility;
- Proposed clustered/decentralized treatment system, including Appendix A modified sewage disposal systems, not under review as part of a new subdivision; and
- Proposed change to local law, including but not limited to a proposed change to the SC Sanitary Code or other legislative action not addressed under this SEQRA review.

As for any proposed project or action, the level of review under SEQRA would be determined by the Lead Agency.

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# Section 13

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# Appendix A

# Acronyms and Abbreviations

# Appendix A

# Acronyms and Abbreviations

| | |
|---|---|
| AWWA | American Water Works Association |
| BAT | Best Available Technology |
| BMPs | Best Management Practices |
| BNL | Brookhaven National Laboratory |
| BNR | Biological Nitrogen Removal |
| BOD | Biochemical Oxygen Demand |
| BOD5 | 5-day Biochemical Oxygen Demand |
| CCE | Cornell Cooperative Extension |
| CCMP | Comprehensive Conservation and Management Plan |
| CEA | critical environmental area |
| CEC | Contaminant of Emerging Concern |
| CLEARS | Cornell Laboratory for Environmental Applications of Remote Sensing |
| CLUP | (Central Pine Barrens) Comprehensive Land Use Plan |
| CMP | Comprehensive Management Plan |
| CO | Carbon Monoxide |
| $CO_2$ | Carbon Dioxide |
| CPB Plan | Central Pine Barrens Comprehensive Land Use Plan |
| CPF | Community Preservation Fund |
| CRIS | Cultural Resource Information System |
| CP-29 | Commissioner's Policy-29 Environmental Justice and Permitting |
| CSO | combined sewer overflow |
| CWMD | Countywide Wastewater Management District |
| CWRMP | Comprehensive Water Resources Management Plan |
| DGEIS | Draft Generic Environmental Impact Statement (under SEQRA) |

| | |
|---|---|
| DEQ | (SCDHS) Division of Environmental Quality |
| DO | dissolved oxygen |
| DSP | Diarrheic Shellfish Poisoning |
| ECL | Environmental Conservation Law |
| EIS | Environmental Impact Statement |
| EPA | (United States) Environmental Protection Agency |
| FEMA | Federal Emergency Management Agency |
| FINS | Fire Island National Seashore |
| FIRM | Flood Insurance Rate Map |
| GEIS | Generic Environmental Impact Statement (under SEQRA) |
| GHG | greenhouse gas |
| GIS | Geographic Information System |
| GMZ | Groundwater Management Zone (under SCSC Article 6) |
| GOSR | Governor's Office of Storm Recovery |
| gpd | gallons per day |
| $H_2S$ | hydrogen sulfide |
| HABs | Harmful Algal Blooms |
| HMGP | Habitat Management Grant Program |
| I/A OWTS | Innovative/Alternative On-Site Wastewater Treatment Systems |
| IPaC | Information for Planning and Consultation |
| IPCC | Intergovernmental Panel on Climate Change |
| kWh | kilowatt hour |
| LCV | League of Conservation Voters |
| LICAP | Long Island Commission on Aquifer Protection |
| LINAP | Long Island Nitrogen Action Plan |
| LIRPB | Long Island Regional Planning Board |
| LIREDC | Long Island Regional Economic Development Council |
| LIRPC | Long Island Regional Planning Commission |

| | |
|---|---|
| LIPB | Long Island Pine Barrens |
| LISS | Long Island Sound Study |
| MCL | maximum contaminant level |
| MCLG | maximum contaminant level goal |
| mg/L | milligrams per liter (equivalent to parts per million (ppm)) |
| MGD | million gallons per day |
| NAAQS | National Ambient Air Quality Standards |
| NEP | National Estuary Program |
| NEPA | National Environmental Policy Act |
| NFIP | National Flood Insurance Program |
| NOAA | National Oceanic and Atmospheric Administration |
| NO2 | Nitrogen oxide |
| NRCS | National Resources Conservation Service |
| NYCRR | New York Codes, Rules and Regulations |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| NYSEFC | New York State Environmental Facilities Corporation |
| NWI | National Wetland Inventory |
| OPRHP | (NYS) Office of Parks Recreation and Historic Preservation |
| OSDS | On-site Wastewater Disposal Systems |
| OWTS | Onsite Wastewater Treatment System |
| PCE | Perchloroethylene (tetrachloroethylene or Perc – dry cleaning solvent) |
| PDD | Planned Development District |
| PEP | Peconic Estuary Program |
| PFAS | per- and polyfluoroalkyl substances |
| PM | Particulate Matter |
| PPCPs | Pharmaceuticals and Personal Care Products |

| | |
|---|---|
| ppm | parts per million |
| PRB | Permeable Reactive Barrier |
| PSP | Paralytic Shellfish Poisoning |
| PUD | Planned Unit Development |
| PWL | (NYSDEC) Priority Waterbody List |
| PWS | Public Water System (both Community and Non-community) |
| RME | Responsible Management Entity |
| ROD | Residential Overlay District |
| SAV | submerged aquatic vegetation |
| SCCMP | Suffolk County Comprehensive Management Plan |
| SCDEDP | Suffolk County Department of Economic Development and Planning |
| SCDHS | Suffolk County Department of Health Services |
| SCDOIT | Suffolk County Department of Information Technology |
| SCDPW | Suffolk County Department of Public Works |
| SCSC | Suffolk County Sanitary Code |
| SC SWP | Suffolk County Subwatershed Wastewater Plan |
| SCSWCD | Suffolk County Soil and Water Conservation District |
| SCUPE | Suffolk County Septic/Cesspool Upgrade Program Enterprise |
| SCWA | Suffolk County Water Authority |
| SEQRA | (NYS) State Environmental Quality Review Act |
| SFHA | Special Flood Hazardous Area |
| SGPA | Special Groundwater Protection Area |
| SHPO | State Historic Preservation Office |
| SIP | (New York State) Septic Improvement Program |
| SO2 | Sulfur dioxide |
| SoMAS | Stony Brook School of Marine and Atmospheric Sciences |
| SOP | Standard Operating Procedure |
| SPDES | (NY) State Pollution Discharge Elimination System |

| | |
|---|---|
| SSER | South Shore Estuary Reserve |
| STP | Sewage Treatment Plant |
| SWAP | (Federal) Source Water Assessment Program |
| SWSD | (Suffolk County) Southwest Sewer District |
| TDR | transfer of development rights |
| TMDL | Total Maximum Daily Level |
| TNC | The Nature Conservancy |
| TOD | Transit-Oriented Development |
| µg/L | microgram per liter |
| $\mu g/m^3$ | microgram per cubic meter |
| USACOE | United States Army Corps of Engineers |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| VOC | volatile organic chemical |
| WQID | Water Quality Improvement District |

# Appendix B

# Suffolk County Subwatersheds Wastewater Plan

(separately bound)

# Appendix C

# SEQRA Record

Intro. Res. No. 1191-2017 Laid on Table 3/7/2017
Introduced by Presiding Officer Gregory

**RESOLUTION NO. -2017, ADOPTING THE FINAL SCOPE FOR THE DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT IN CONNECTION WITH THE SUFFOLK COUNTY SUBWATERSHEDS WASTEWATER MANAGEMENT PLAN ("THE SUFFOLK COUNTY WASTEWATER MANAGEMENT PROGRAM FOR THE REDUCTION OF NITROGEN LOADING FROM WASTEWATER SOURCES")**

**WHEREAS**, the New York State Department of Environmental Conservation ("NYSDEC") and the Long Island Regional Planning Council, in consultation and in partnership with numerous local governments and interested organizations on Long Island, are embarking on development of the Long Island Nitrogen Action Plan ("LINAP"); and

**WHEREAS**, the NYSDEC has awarded Suffolk County 50% State grant funds under the Suffolk County Septic/Cesspool Upgrade Program Enterprise ("SCUPE") to be implemented by the Suffolk County Department of Health Services, Division of Environmental Quality ("SCDHS DEQ") to support LINAP initiatives; and

**WHEREAS**, the Suffolk County SCUPE funds were accepted and appropriated under Resolution No. 280-2016 and will be used to address nitrogen and pathogen loadings from sanitary wastewater or other sources for the restoration and protection of Suffolk County's water; and

**WHEREAS**, the Suffolk County SCUPE funds include funding for the preparation of a Suffolk County Subwatersheds Wastewater Plan ("SWP") and Generic Environmental Impact Statement ("GEIS") which are to be completed as early action elements of the LINAP; and

**WHEREAS**, the SWP and GEIS are being developed to guide policymakers in the development of a Suffolk County Wastewater Management Program to mitigate nitrogen pollution emanating from wastewater sources; and

**WHEREAS**, the Suffolk County Legislature approved Resolution No. 849-2016, which adopted a Positive Declaration requiring the preparation of a Draft Generic Environmental Impact Statement (DGEIS) for the Suffolk County Wastewater Management Program to mitigate nitrogen pollution emanating from wastewater sources; and

**WHEREAS**, a draft scoping document was prepared and issued to all involved and interested parties as well as posted on the Suffolk County Website; and

**WHEREAS**, the Council of Environmental Quality (CEQ) held public scoping hearings on November 29, 2016, and December 1, 2016 to solicit oral and written comments on the content of the document; and

**WHEREAS**, on December 13, 2016 the written comment period expired and a final scoping document was prepared to address the substantive issues raised; and

**WHEREAS**, the SCDHS DEQ referred the final scoping document for the DGEIS for the Suffolk County Subwatersheds Wastewater Plan to the CEQ for recommendations; now, therefore be it

**1st** **RESOLVED**, that this Legislature hereby determines that based upon the information received, pursuant to Chapter 450 of the Suffolk County Code, the final scoping document for the DGEIS for the Subwatersheds Wastewater Plan (see Exhibit "A"), adequately addresses all substantive and relevant comments received and is hereby adopted; and be it further

**2nd** **RESOLVED**, a copy of the Resolution shall be filed with the Suffolk County Department of Health Services Division of Environmental Quality, the initiating party of said project, and with the CEQ, and be it further

**3rd** **RESOLVED**, that in accordance with Section C1-4(1)(d) of the Suffolk County Charter and Section 450-5(C)(4) of the Suffolk County Code, the CEQ is hereby directed to circulate the Final Scope for the Generic Environmental Impact Statement for the Subwatersheds Wastewater Plan, pursuant to the provisions of Title 6 NYCRR, Part 617.

DATED:

APPROVED BY:

_____

County Executive of Suffolk County

Date:

# FINAL SCOPING DOCUMENT

## Generic Environmental Impact Statement

**Suffolk County Subwatersheds Wastewater Plan**

***Suffolk County Wastewater Management Program for the Reduction of Nitrogen Loading from Wastewater Sources***

**Suffolk County, New York**

**February 2017**

# 1.0 Introduction

This Final Scoping Document has been prepared to initiate the environmental review process for the approval and implementation of the Suffolk County Subwatersheds Wastewater Plan (SC SWP). The SC SWP will support the development of a County-wide wastewater management strategy through the establishment of 'priority areas' for nitrogen reduction, establishment of nitrogen load reduction goals for each priority area, and the development of a recommended wastewater upgrade strategy to meet nitrogen load reduction goals (See Attachment A for additional information on the SC SWP). Changes to the County Sanitary Code will enable the Suffolk County Department of Health Services (SCDHS) to work with United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), Towns, Villages, residents, property owners and other stakeholders to implement the wastewater treatment technologies required to achieve the nitrogen reduction goals. This document presents an outline of the Generic Environmental Impact Statement (GEIS) and identifies the information that will be collected and evaluated to assess the potential environmental impacts that could result from implementation of the recommendations provided in the SC SWP.

This Scoping Document includes a:

- Description of the Proposed Action;
- An outline of the GEIS, which will address potentially significant environmental impacts of the proposed action and include preliminary identification of mitigating measures, reasonable alternatives to the proposed action, growth inducing, secondary and cumulative impacts, and
- Public Comment that has been received on the Draft Scoping Document.

The GEIS will be prepared using existing available data; no field studies or field data collection are anticipated. Site-specific data collection may be required to complete a project specific, or study-area specific draft/final EIS (D/FEIS).

The SCDHS Division of Environmental Quality (DEQ) is the project proposer. On August 31, 2016 SCDHS DEQ notified interested and involved agencies of its intent to assume Lead Agency status and as such in accordance with Title 6 NYCRR Part 617.6(a) and (b) classify this proposed action as a Type I Action under the New York State Environmental Quality Review Act (SEQRA). No objections were received within 30 days of the mailing. The Suffolk County Council on Environmental Quality (CEQ) addressed this proposed project at their September 21, 2016 meeting

and the Suffolk County Legislature passed Resolution HSV #66-2016 at their October 5, 2016 meeting, identifying the proposed action as a Type I action under SEQRA and initiating the scoping process. SCDHS DEQ, as Lead Agency, is responsible for conducting the environmental review of this proposed action. The proposed action will undergo a coordinated environmental review whereby a SEQRA Draft GEIS will be prepared to comprehensively address requirements of both federal and state laws and regulations.

Working together with the SCDHS, the Suffolk County Department of Economic Development and Planning and the Suffolk County Legislature, CEQ convened two Public Scoping Hearings to provide opportunity for public comment on the Draft Scoping Document. The first Public Scoping Hearing was held on November 29, 2016 at the Suffolk County Water Authority (SCWA) Education Center in Hauppauge, New York and the second Public Scoping Hearing was held on December 1, 2016 at the Suffolk County Community College Culinary Arts and Hospitality Center in Riverhead, New York. In addition, the Draft Scoping Document was posted on both the Suffolk County Department of Economic Development and Planning and the SCDHS websites, and written comments were accepted through December 13, 2016.

The Final Scope summarized in this document reflects the addition of the relevant issues that were identified during the public scoping process, including all comments received through December 13, 2016, and also identifies issues that were identified that will not be included in the GEIS. This Final Scope will be the basis for the GEIS.

# 2.0 Purpose and Need

In Suffolk County, approximately 75 percent of homes are unsewered and discharge sanitary wastewater containing nitrogen to the underlying groundwater that provides both the only source of potable supply for County residents, and baseflow to the County's surface water features. For decades, the presence of elevated levels of nitrogen in groundwater has been of concern due to the potential health impacts associated with methemoglobinemia (blue baby syndrome). Nitrogen contamination associated with discharge of sanitary wastewater has been studied and documented in the ***Long Island Comprehensive Waste Treatment Management Plan*** (208 Plan, 1978), the ***1987 Suffolk County Comprehensive Water Resources Management Plan*** and the ***2015 Suffolk County Comprehensive Water Resources Management Plan***. Article 6 of the Suffolk County Sanitary Code was enacted primarily to protect public health by limiting nitrogen loading from sanitary wastewater discharges to maintain groundwater nitrogen concentrations to levels of less than 4 mg/L in Groundwater Management Zones III, V and VI and to less than 6 mg/L everywhere else throughout the County. However, Article 6 did not consider the density or sanitary wastewater treatment levels necessary to protect downgradient groundwater-fed surface waters. Nitrogen concentrations associated with the eutrophic conditions that can trigger harmful algal blooms are generally significantly lower than the 10 mg/L drinking water maximum contaminant level (MCL) that is protective of human health.

Nitrogen conveyed to discharge in coastal receiving waters via groundwater baseflow has been linked to a number of issues in Suffolk County including fish kills due to hypoxic episodes, harmful algal blooms, and loss of eelgrass along shorelines. The impacts to the coastal communities of Suffolk County from SuperStorm Sandy in 2012 underscored the connection between nitrogen in groundwater baseflow discharging to surface water resources, loss of wetlands, and damage to

ecosystem health. Reduction in nitrogen loading is anticipated to support wetlands restoration and improve storm and flood protection and coastal resiliency provided by healthy wetlands. The County, recognizing the need for immediate action, updated the draft Suffolk County Comprehensive Water Resources Management Plan to include new chapters focusing on wastewater management, estuary programs, coastal resources, and alternative management and funding mechanisms.

The County found that approximately 80 percent of the unsewered residential properties fall within areas to be considered high priority for nitrogen removal based on at least one of the following:

- Close proximity to public supply wells or surface water bodies;
- Located in an area developed at higher density than permitted by Article 6 of the County's Sanitary Code and/or
- Located in an area with depth to groundwater less than ten feet below ground surface.

In accordance with Suffolk County's Reclaim Our Water initiative and the Long Island Nitrogen Action Plan (LINAP), Suffolk County is pursuing proactive measures to reduce nitrogen pollution to the County's waters. The SC SWP will be prepared to provide early action recommendations for nitrogen load reduction goals and a recommended wastewater management strategy for priority subwatersheds within Suffolk County. The SC SWP will be used to establish first order nitrogen load reduction goals generated based on the need for water quality improvements for County surface water, drinking water and groundwater resources. The SC SWP will be an integrated, holistic approach to delineating the County's subwatersheds based on a common platform of assumptions and boundary conditions. In concert with the SC SWP, modifications will be made to the Suffolk County Sanitary Code and Construction Standards to support the implementation of the SC SWP. Additionally, the County is pursuing the establishment of a County-wide Water Quality Protection District to facilitate financing options for the implementation of the SC SWP.

Ultimately the SC SWP aims to protect and restore both groundwater quality and the coastal ecosystems of Suffolk County by implementing a County-wide wastewater plan targeting the reduction of nitrogen loading from wastewater sources by using a combination of sewering, cluster/decentralized wastewater treatment, and I/A OWTS.

# 3.0 Proposed Action

The Draft GEIS is being prepared to address the SEQRA requirements for the implementation of the SC SWP. The proposed action is for the implementation of the SC SWP which will support the development of a County-wide wastewater management strategy to reduce nitrogen emanating from non-point wastewater sources. There are expected to be six major recommendations within the SC SWP as follows:

- A recommended wastewater management strategy to reduce nitrogen pollution emanating from non-point wastewater sources. The recommended wastewater management strategy will be developed using the methodology described in Attachment A;
- The establishment of a water quality protection district;

- The use of innovative/alternative onsite wastewater treatment systems (I/A OWTS) in lieu of conventional septic systems;
- The use of clustered/decentralized systems in select areas where individual onsite treatment systems are infeasible but where conventional sewage treatment plants (STPs) are not economically feasible;
- The use of conventional STPs where existing studies confirm they are economically feasible; and,
- The implementation of wastewater pilot areas to confirm the effectiveness of the proposed wastewater management nitrogen reduction approaches provided in the SC SWP.

The SC SWP will develop its recommendations through a sequenced, technical based, approach using groundwater modeling to establish subwatershed boundaries for all of the County's priority waterbodies, nitrogen load modeling to estimate nitrogen loads to each subwatershed, surface water modeling to estimate surface water residence times, and the evaluation of existing water quality. The modeling results and water quality data will then be used to establish 'priority areas' for nitrogen reduction and to establish nitrogen load reduction goals for each priority area. Recommended wastewater upgrade alternatives capable of meeting the nitrogen load reduction goals that are established in the SC SWP will then be evaluated using cost-benefit techniques. Further description of the SC SWP scope is provided in Attachment A.

## 1.0 Recommended Wastewater Management Strategy

The evaluations provided in the SC SWP will be used to support the development of a County-wide wastewater management strategy. The SC SWP will evaluate nitrogen loading to groundwater and surface water and will evaluate the cost and benefits of wastewater management alternatives capable of achieving the recommended nitrogen load reduction goals assuming the following treatment methods:

- Evaluate surface water sensitivity;
- Establish tiered priority area boundaries for nitrogen reduction;
- Establish nitrogen load reduction goals for each priority area; and,
- Evaluate cost and benefits of wastewater management alternatives based primarily upon the following treatment methods:
    - Innovative/alternative onsite wastewater treatment systems (I/A OWTS);
    - Clustered/decentralized ("Appendix A") systems; and,
    - Sewage Treatment Plants (STPs) to include only currently proposed projects.

A description of the three treatment methods is provided below. Using the recommendations of the SC SWP, Suffolk County will work with policymakers and stakeholders to develop final recommended actions and establish a final recommended wastewater management strategy to reduce nitrogen within the priority areas of the County. The approach will be completed in phases

to focus resources at the County's highest priority areas first (as defined in the SC SWP) and will consider activities that will prompt wastewater treatment upgrades under various scenarios including the following potential trigger points:

- Cesspool failure;
- New construction;
- Reconstruction;
- Property transfer;
- Grandfathered residential sites with legacy cesspools;
- Grandfathered residential sites with lot sizes below current Sanitary Code requirements;
- Grandfathered Other Than Single Family Residential sites including grandfathered SPDES and failed denitrification system sites;
- Large capacity cesspools, and
- Phased upgrades homes and businesses with conventional septic systems within the tiered priority area boundaries defined in the SC SWP.

Implementation of the scenarios identified above will require modification to Article V (General Sanitation) and Article VI (Realty Subdivisions, Developments and Other Construction Projects) of the Suffolk County Sanitary Code. Finally, Transfer of Development Rights (TDR) programs used for sanitary density transfer (including both as-of-right and non-as-of-right) will be evaluated based on the recommendations in the SC SWP. It should be noted that the proposed action and associated GEIS under the current environmental review will not be an all-inclusive/exhaustive evaluation of all TDR programs in Suffolk County; however, it will identify preliminary environmental concerns for individual programs based upon sanitary density transfer and identify the need for subsequent detailed TDR program reviews.

## 2.0 Water Quality Protection District and Responsible Management Entity

The SC SWP will likely recommend the establishment of a Water Quality Protection District and Responsible Management Entity (RME) to provide the administrative and financial structure for Suffolk County to protect the County's ground and surface water resources from further impacts from nitrogen loading associated with septic systems and cesspools. The RME will oversee and manage the installation and long-term operation and maintenance of I/A OWTS. The SCDHS Office of Wastewater Management will serve as the RME. The Water Quality Protection District would provide *both a means by which to assign the capital obligation as a benefit assessment plus* the establishment of a recurring revenue source to support implementation of the recommended wastewater management strategy.

A water quality protection funding approach will be discussed which would be used to:

- Provide a funding mechanism, such as low interest loans or grants, for the replacement of existing on-site systems by I/A OWTS as identified in the SC SWP;

- Provide a funding mechanism, such as low interest loans, grants, or a combination for clustered/decentralized systems;
- Provide a funding mechanism, such as low interest loans, grants, or a combination, to provide enhanced nitrogen removal at Town and Village-owned wastewater treatment systems;
- Provide a funding mechanism to support the installation of new advanced STPs and/or expansion of STPs within priority areas; and
- Provide a funding mechanism for the RME.

## 3.0 Innovative/Onsite Wastewater Treatment Systems

I/A OWTS consist of individual onsite advanced nitrogen removal wastewater treatment units as currently defined in Article XIX of the Suffolk County Sanitary Code.

It is anticipated that up to 360,000 existing residential onsite sanitary systems will eventually be converted to I/A OWTS using a phased approach. The details of the final proposed approach are anticipated to be developed by Suffolk County policymakers and stakeholders with guidance provided from the recommendations in the SC SWP. The use of I/A OWTS is expected to be expanded to Other Than Single Family Residential properties that meet the allowable flow/design limitations of approved technologies.

As described previously, modification of Articles V and VI of the Sanitary Code will be required to define the conditions under which upgrade of existing cesspools or septic systems will be required. It should be noted that the adoption of Article XIX and associated I/A OWTS Construction Standards (both Residential and Commercial [i.e., Other than Residential]) has already undergone SEQRA environmental review.

## 4.0 Clustered/Decentralized Systems

Clustered/decentralized systems include small, pre-packaged STPs as defined in Appendix A of the Construction Standards for Sewage Disposal Systems Other Than Single Family Residences (e.g., the Commercial Standards) and Article VI of the Suffolk County Sanitary Code. The use of Appendix A systems is currently limited to design flows up to 15,000 gallons per day (gpd).

Clustered/decentralized systems may be required and/or cost-beneficial at locations where I/A OWTS and STPs are not technically feasible or cost effective such as at mobile home parks, new housing developments, and grandfathered sites. Modifications to Appendix A of the Commercial Standards and Article VI of the Sanitary Code are proposed to expand the application of clustered/decentralized systems in Suffolk County. Modifications currently under consideration include:

- Modification to allow treatment of flows up to 30,000 gpd;
- Modification of Appendix A to reduce required separation distances;
- Evaluation of the approval process to streamline retrofits (e.g., SCDHS approval only [proposed requirement] versus SCDHS and SCDPW approval [current requirement]); and,

- Development and implementation of site-specific treatment standards for grandfathered sites with Appendix A systems. Site-specific treatment standards would conform with the proposed nitrogen limits for the priority areas defined by the SC SWP.

### 5. Sewage Treatment Plants

New STPs and/or the expansion of existing STPs will be completed within priority wastewater treatment areas for enhanced nitrogen removal. STPs will be implemented in accordance with existing sewer studies completed by Suffolk County and Town/Village studies to the extent information is readily available. Individual STP and/or related sewer infrastructure projects would require supplemental SEQRA environmental review.

### 6. Advanced Wastewater Treatment Pilot Areas

Pilot tests will be completed by Suffolk County under a variety of geographic, land use, and demographic conditions to confirm the effectiveness of the proposed wastewater management nitrogen reduction approaches described herein. Pilot testing will be completed for I/A OWTS and clustered/decentralized systems. Pilot test areas under consideration by the County include, but are not limited to:

- Sites with grandfathered flows that predate Article VI of the Sanitary Code or include failed sulfur denitrification systems (residential and commercial);
- Residential properties including lots with:
  - Small lot size
  - High groundwater table
  - Poor soils
- Commercial properties (various use);
- New York State and Suffolk County owned parks;
- Other New York State, Suffolk County or other municipally owned properties including parks, libraries or schools;
- Mobile home parks; and,
- Seasonal population locations.

In addition to the above, Suffolk County anticipates the installation of voluntary I/A OWTS at residential properties located throughout the County. An estimate of the number of voluntary installations anticipated over the next few years is currently under development.

The project area addressed by the GEIS is county-wide within the borders of Suffolk County.

## 4.0 Generic Environmental Impact Statement Outline

The Draft GEIS will evaluate the potential broad environmental issues resulting from implementation of the recommendations provided in the SC SWP. The GEIS will include discussions of the long-term environmental benefits and short-term construction-related impacts associated

with implementing the SC SWP recommendations. Site/parcel specific impacts such as change in individual lot development potential, zoning restrictions and demands on utility services will not be included in the GEIS as they are considered to be "site specific" and would be subject to supplemental SEQRA review.

The sections that will be included in the GEIS as specified in 6 NYCRR Part 617.10 are outlined below. The list of relevant environmental areas that may be impacted by the implementation of the proposed action are those identified as potential project impacts in Part 2 of the Full Environmental Assessment Form.

**1.0 Executive Summary** – The Executive Summary will provide a succinct summary of the GEIS including the project description, major findings of the environmental analysis, mitigation recommendations, and topics requiring further site-specific study and assessment prior to implementation.

**2.0 Description of the Proposed Action, Purpose and Need** – The Description of the Proposed Action, Purpose and Need will provide a concise description of the SC SWP including the County's proposed wastewater management strategy for the reduction of nitrogen loading from wastewater and associated changes to Suffolk County's Sanitary Code including its purpose, public need and benefits, as well as social and economic considerations.

**3.0 Existing Environmental Setting** –The baseline environmental setting of the County will be described. The most current readily available data sources will be used. Characterization of priority subwatersheds and groundwater quality will be based on the data collected and compiled in the SC SWP. Existing data sources to provide information on the environmental setting may include:

- US Census Data and Suffolk County Planning Department reports
- Town/Village Land Use maps and Zoning maps
- County/Town/Village comprehensive plans and planning documents
- Natural Resource Conservation Service Web Soil Survey
- USGS Maps and available topographic surveys
- Suffolk County Groundwater Model mappings
- NYSDEC Natural Heritage Program consultation
- NYSDEC Wetland Maps & National Wetland Inventory Maps (online)
- NYSDEC Sea Level Rise Projections (online and reflected in proposed regulation 6NYCRR Part 490)
- USFWS Information, Planning, and Conservation System (online)
- NYSDEC 303(d) list and related Total Maximum Daily Load (TMDL) documentation
- FEMA floodplain mapping (online)
- State and National Registers of Historic Places (online)

- NYS OPRHP database (online)
- Long Island Regional Economic Development Council's Economic Development Plan for the Long Island Region
- Suffolk County Department of Health Services (SCDHS) databases
- Aerial imagery
- Long Island Commission on Aquifer Protection
- Suffolk County Water Authority information, data, forecasts, etc. (SCWA data, etc.)
- Relevant data from related studies, including, but not limited to:
    - *Watershed delineation studies*
    - *Nitrogen load studies*
    - *Hydrodynamic studies (surface water residence time)*
    - *Ecological endpoints and water quality studies*

The existing data will be used to describe the following features within the County:

- Physical Environment
- Land Use
- Groundwater (including potable water supply) and Surface Water
- Natural Environment (threatened and endangered species, critical habitat, wetlands, floodplains)
- Historic and Archeological Resources
- Social Environment
- Noise/Odor
- Human Health (Contaminant Exposure/Hazardous Materials)
- Consistency with Community Plans and Character

**4.0 Potential Impacts of Proposed Action** – A statement and evaluation of potential significant adverse environmental impacts and the reasonable likelihood of their occurrence due to the proposed action will be included in this section of the GEIS. Based on a preliminary review of the proposed action, it is anticipated that implementation of the SC SWP and required County Sanitary Code changes could result in potential impacts to the following environmental parameters:

- **Land Use, Community Plans & Character**

The proposed action is an early action item that is consistent with the goals and objectives of LINAP. The proposed action will be assessed as to its consistency with the following regional and county water protection programs.

- *Long Island Pine Barrens Protection Act*
- *Central Pine Barrens Comprehensive Land Use Plan*
- *Special Groundwater Protection Area Plan*
- *Long Island Sound Study*
- *Peconic Estuary Program*
- *South Shore Estuary Reserve*
- *Suffolk County Comprehensive Master Plan 2035 - Framework for the Future*
- *Suffolk County Comprehensive Water Resources Management Plan*

There is no new development associated with this action, however, the implementation of this action may affect new development, zoning, and existing land uses. Potential growth inducing aspect of this action will be addressed in Section 6.0 –Cumulative Impacts. Site specific change are controlled by the current zoning and the policies and plans of the applicable Town or Village in Suffolk County. These site-specific changes would be subject to supplemental SEQRA environmental review(s).

- **Groundwater and Surface Water**

The purpose of the proposed action is to reduce nitrogen loading from onsite wastewater sources and thereby improve groundwater and surface water quality. This section will summarize the anticipated reductions in nitrogen loading to groundwater and to surface water bodies receiving groundwater baseflow as reported in the SC SWP. Potential groundwater impacts (e.g., reduction in nitrogen concentrations in the aquifer at public supply wells) will be assessed based on existing data and the analyses presented in the SC SWP. The potential benefits resulting from implementation of the SC SWP and revision to the Sanitary Code, such as reduced nitrate loading, will be presented. While the evaluation will focus upon nitrogen reduction, the potential presence/reduction of other wastewater constituents such as pharmaceuticals and personal care products (PPCPs) will also be acknowledged.

Surface water impacts will include potential impacts from changes to groundwater baseflow and nitrogen loading. The wetlands, streams, and other waterbodies located throughout Suffolk County will be listed in the GEIS. The potential impact associated with the implementation of the proposed action on these natural resources will be qualitatively evaluated. An evaluation of the potential impacts of wastewater management on groundwater levels and stream baseflows will be completed for two alternatives (e.g., the recommended wastewater management alternative and a hypothetical County-wide alternative providing sanitary sewers to all currently developed parcels) using the existing groundwater model. Potential salt water intrusion as a result of proposed sanitary sewering projects will be qualitatively evaluated. Detailed evaluations of potential impacts on

individual ecological communities and specific mitigation measures will not be addressed in the SC SWP DGEIS but may be required in future project-specific D/FEISs.

The need to consider the impact of projected increases in sea level elevation with respect to development along the coast will be noted.

- **Natural Environment**

Because the implementation of treatment options may result in the removal or disturbance of vegetation and/or habitat, and habitat for threatened or endangered species exists throughout the County, the potential for impact to threatened and endangered species and critical habitat as well as significant natural communities and critical habitat within Suffolk County will be identified based on available data using online resources such as the NYSDEC Environmental Resource Mapper and US Fish and Wildlife Service Information, Planning, and Conservation System (USFWS iPaC).

Floodplains or areas designated as 100-year and 500-year floodplain will be assessed for potential impact resulting from the SC SWP and associated code changes adopted as part of the proposed action. Reported results of the Sea, Lake and Overland Surges from Hurricanes (SLOSH) model from the National Hurricane Center may also be consulted to assess the potential for operational impacts during hurricanes.

- **Historic and Archaeological Resources**

Because construction of treatment systems would disturb soils, and because archaeological and historic resources are located throughout Suffolk County, the GEIS will contain a desktop assessment of potential impacts on historic and archaeological resources. Potential for impact will be assessed based on known resources. National Natural Landmarks such as the Orient State Park and Montauk State Park, historic districts and historical buildings and archaeological resources are located within Suffolk County. This section will note potential impacts to historic and archaeological resources, however specific assessments as may be required by NYS Office of Parks, Recreation and Historic Preservation for implementation of a specific component of the SC SWP will be subject to supplemental SEQRA review(s).

- **Noise/Odors**

Noise associated with operation of wastewater treatment systems will be identified. Wastewater treatment has been associated with the potential to emit odors that could be noticeable off site. Potential odors resulting from implementation of the recommended wastewater management alternative will be addressed generally. While no noise or odor data collection or studies will be conducted as part of this GEIS, noise and odor data available to characterize operating Appendix A, I/A OWTS or STPs available from Suffolk County or the Towns will be included.

- **Human Health** (Contaminant Exposure/Hazardous Materials)

Because of the breadth of the SC SWP, areas that may have been the subject of a remedial action or adjacent areas could be included. The GEIS will acknowledge that the County

encompasses areas where contamination spills and remediation have previously occurred. Information from the USEPA Human Health Impact Assessment will be incorporated into the assessment. New development is not part of the proposed action and an assessment of potential impacts would be subject to supplemental SEQRA review.

- **Environmental Justice Assessment**

The potential for the proposed action to impact people or communities unequally due to race, color, national origin, or income will be evaluated. The benefits will also be summarized.

**5.0 Short-term or Construction Impacts -** Construction-related impacts will be described in general in this section. Typical impacts related to construction that are identified in the EAF Part 2 include temporary impacts to:

- **Land**, which may include excavation, vegetation removal, erosion/sediment control;
- **Surface Water**, which may include new or expansion of treatment facilities;
- **Natural Environment**, as ground disturbance would be required;
- **Historic/Archeological Resources**, as ground disturbance would be required;
- **Noise**, as construction equipment may produce sound levels above local code established limits, and
- **Human Health** (Contaminant Exposure/Hazardous Materials), as construction may take place on parcels adjacent to land under remediation. No risk assessment will be included within the GEIS. However, a summary of potential human health benefits associated with nitrogen reduction in groundwater and surface water will be included.

Although no parcel-specific analyses will be completed, the potential need for modification to existing buildings and plumbing to facilitate installation of a new I/A OWTS or connection to an STP will be identified. Site-specific construction related impacts will be evaluated against the SEQRA triggers and may therefore be the subject of subsequent reviews under SEQRA.

**6.0 Cumulative Impacts** – A general overview of the cumulative impacts of SC SWP implementation on the environment, natural resources and cultural environment will be provided. This will include;

- **Water export/impact to water supply -** The cumulative impacts of water export (e.g., moving wastewater from one subwatershed to another as a result of wastewater treatment) upon the groundwater table and upon stream baseflows from SWP implementation will be evaluated using the existing groundwater model. The evaluation of water export will not include detailed evaluations on the ecology of estuarine or freshwater ecosystems; however, it will provide an initial understanding on the potential for sewering to impact these ecosystems in the context of the estimated decrease in groundwater levels.

- The cumulative impacts of SWP implementation upon the County' water supply will consider potential impacts to both water quantity and water quality. Potential impacts to water quantity will be evaluated by incorporation of new or increased surface water discharges of treated wastewater effluent into the baseline water budgets presented in the Suffolk County Comprehensive Water Resources Management Plan and comparison of the baseline and post-SWP implementation water budgets. Cumulative impacts to water quality will be based on nitrogen concentrations and will be assessed using the groundwater model-simulated impacts to nitrogen concentrations after the SWP is implemented.

- **Potential for growth inducement within the County** – There is no new development associated with the proposed action; however, the implementation of the proposed action may affect future development potential, demand for utilities, and existing land uses. The GEIS will identify any subwatersheds where SWP implementation is anticipated to reduce nitrogen loading to levels that are lower than the nitrogen reduction targets. While site specific changes within these subwatersheds are controlled by the current zoning, policies and plans of the applicable Suffolk County Towns and Villages this section will consider the growth inducing aspects that SWP implementation could prompt. Site-specific and/or municipality specific growth options will be subject to supplemental SEQRA review.

- **Energy Demand (Greenhouse Gas impact)** – The cumulative impacts of SWP implementation upon energy demand will be estimated using the total estimated parcels connected to I/A OWTS, cluster systems, and new/expanded STPs and typical I/A OWTS energy requirements (using data available from Suffolk County's existing I/A demonstration program, the Center for Clean Water Technology and/or manufacturers), typical cluster system energy requirements (using data available from the literature and manufacturers) and STP energy requirements (using existing data from Suffolk County Department of Public Works.

**7.0 Unavoidable Adverse Impacts** -This section will summarize those impacts that cannot be avoided or adequately mitigated if the SC SWP strategies and Sanitary Code changes are implemented.

**8.0 Irreversible and Irretrievable Commitments of Resources** -This section will discuss those nonrenewable natural resources that will be used in the implementation of the SC SWP. Trade-offs between short-term losses and long-term benefits will be addressed qualitatively in this section.

**9.0 Mitigative Measures** -Where significant project related impacts are identified based on the analysis conducted in the draft GEIS, measures to mitigate these potential impacts to the extent practicable will be suggested. This will include potential short-term construction as well as long-term operational impacts. For example, measures to reduce the potential for soil erosion during construction and traffic control measures (signage, flag persons, etc.) to avoid impacts on motorists and emergency vehicles will be identified. Potential operational mitigation measures would include I/A OWTS designs that incorporates good engineering practices and maintenance contracts and use of the RME to oversee design, construction, and

operation of I/A OWTS. Those impacts that cannot be mitigated will be reviewed under "Unavoidable Adverse Impacts."

Site specific mitigation measures will be the subject of supplemental SEQRA review.

**10.0 Alternatives Analysis** – This section of the GEIS will include a description and evaluation of reasonable alternatives to the proposed action that consider the goals and objectives of the County. The following alternatives will be evaluated in the Draft GEIS:

- No Action Alternative: Continued use of septic systems and the patchwork of wastewater collection and treatment systems that currently exist within the County
- County-wide centralized wastewater collection and treatment systems (expansion of existing sewer districts and/or establishment of new sewer districts) to treat wastewater from existing developed parcels
- Limiting nitrogen loading by increasing minimum lot sizes county-wide
- County purchase of 'priority areas' through the use of Open Space funding
- Dual plumbing/dual water systems

**11.0 Transfer of Development Rights (TDRs)** - The County's use of TDRs if included as an implementation strategy in the SC SWP will be discussed in general terms. Specific TDR Programs would be the subject of supplemental SEQRA review.

**12.0 Project/Site-Specific D/FEIS Requirements** -There is no new development associated with the proposed action, however, the implementation of the proposed action may affect future development potential, demand for utilities, and existing land uses. Potential impacts to the natural or physical environment as well as utilities and community services due to site specific projects will be addressed by subsequent SEQRA review. This section will provide a description of specific conditions or criteria under which a future action or actions that would require additional review under SEQR. Example thresholds or criteria that would trigger supplemental or site-specific EISs to address site specific or municipality specific actions will be provided.

**List of References**

**Glossary of Terms**

**Technical Appendices:**

- SEQRA documentation including Positive Declaration and Final Scoping Document
- Subwatershed Wastewater Plan, to be incorporated by reference
- Subwatershed Wastewater Plan Project Task Reports

# 5.0 SEQR Next Steps

Preparation of the GEIS will begin, based upon the outline of the content and evaluations identified in this Final Scoping Document.

# 6.0 Public Comments Received

Both verbal comments and written comments on the Draft Scoping Document were received. Transcripts of the public scoping meetings are included in this document as Attachment B. Written comments that were received by December 13, 2016 are included in this document as Attachment C.

Written comments were received from the following interested parties:

- Friends of Georgica Pond, December 2, 2016
- Peconic Baykeeper, December 12, 2016
- The Nature Conservancy, December 12, 2016
- Town of Brookhaven, December 13, 2016
- Central Pine Barrens, December 13, 2016

The location within this Final Scoping Document where the response to each comment may be found has been indicated within each comment letter and Public Scoping Hearing transcript.

## 6.1 Comments on the Suffolk County Subwatersheds Wastewater Plan (SC SWP) Scope

A number of public comments identified topics that will be evaluated in the Suffolk County Subwatersheds Wastewater Plan (SC SWP). As such, they will become part of the Proposed Action. The SC SWP will be included in the GEIS as an Appendix.

The following public comments will be incorporated into the scope of the GEIS in this manner:

**Central Pine Barrens 1(b)**: Please explain the methodology used to "evaluate surface water sensitivity" and define the term "sensitivity" as it is used.

**Central Pine Barrens 1(c)**: Please explain the methodology to be used in the plan to "evaluate nitrogen loading to groundwater and surface water." For example, will the plan examine the existing and build out development potential of all communities in the County to evaluate the expected nitrogen loading to groundwater and surface water resources? What benchmark will be used to determine maximum nitrogen loading to water resources and what are the acceptable limits?

**Central Pine Barrens 1(d)**: Please elaborate on how and for whom the costs and benefits of wastewater management alternatives will be evaluated. Will the analysis of benefits be in regard to those that accrue to property owners, Towns and developers or benefits to that accrue to ecological and water resources or a combination thereof?

**Central Pine Barrens 2(a)**: Please identify the timeframe for and the triggers that will require installation of an alternative treatment system and modifications to a property such as when new construction is proposed or in application to build an expansion of 50% or more of a structure. Please also identify the application phase(s) when it will be required, such as site plan review, subdivision review, Zoning Board of Appeals variance application, building permit phase, etc.

**Central Pine Barrens 2(b)**: The installation of a new treatment system may require other potentially significant modifications to a property, other than the replacement of one system with another, including, but not limited to, plumbing and waste line realignment, rerouting and installation; shoring up structures; site disturbance; potential clearing on a property encumbered by covenants or easements and alterations to existing structures and property. Costs to a property owner may be a limiting factor. Therefore, please identify funding mechanisms and compliance and enforcement staffing, fees, and fines to implement the plan (Note: A range of costs will be provided in the SC SWP along with an estimate of staffing. Please see Section 6.2.2.)

**Central Pine Barrens 3(c)**: Please explain how the goals and objective of the plan are met if new or expanded STPs are not designed and constructed.

**Central Pine Barrens 5(a) "Groundwater and Surface water"** Bullet 1: This section discusses improving groundwater and surface water quality. Please identify how "improvement" will be measured and what standard or standards will be applied to measure improvements including, but not limited to, drinking water quality standards, ecological standards, recreational activity standards, etc. Are public water suppliers involved in the project to measure potential "improvement", if applicable, to drinking water supplies?

**Central Pine Barrens 5(a) "Groundwater and Surface Water"** Bullet 3: This section indicates the presence/reduction of other wastewater constituents such as pharmaceuticals and personal care products (PPCPs) will also be acknowledged. Please identify how PPCPs will be remedied and will new systems provide a remedy and to what extent, if any?

**Central Pine Barrens 5(a)" Groundwater and Surface Water"** Bullet 4: The scope states "surface water impacts will include potential impacts from changes to "groundwater baseflow." Please identify or define "groundwater baseflow" and how it is impacted /altered.

**Central Pine Barrens 5 (a) "Plants and Animals"** Bullet 1: Please identify proximity and disturbance to wetlands and travel time.

**Central Pine Barrens 5(a) "Economics"** Bullet 2: This section should describe in further detail the proposed "Water Quality District," what it is, who is in it, where it is, how it will be funded, and compliance and enforcement procedures to be established in a Water Quality District

**Central Pine Barrens 5 (c) (i) Alternatives:** "…. Please clarify that although separate public and private entities may own and manage facilities in the County, the SCDHS is the regulatory authority responsible for implementing the Sanitary Code for approval and compliance of facilities …."

**Central Pine Barrens 5 (c) (iii) Alternatives**: Prior to implementing requirements for 360,000 properties to comply with new regulations, please consider a short-term alternative for voluntary

participation or potentially new development including new residential subdivisions and commercial and industrial site plans.

**Central Pine Barrens 5 (c) (v):** In the potential alternative for the County to acquire land through open space funding in the defined "priority area" please consider referring to recent amendments to the Community Preservation Fund (CPF) that allow a percentage of funds to be used toward water quality improvement initiatives. Clarify if funds in the CPF would be available for use in this project. In addition, please consider a recommendation to or alternative for municipalities, including Towns and Villages in the County where a CPF does not exist, to explore and consider establishing a CPF to manage the acquisition of priority areas. This may provide a revenue source to acquire land in priority areas and minimize financial impacts to residents in priority areas.

**The Nature Conservancy, Proposed Action, Section 2 Grandfathering, seventh paragraph:** Finally, the use of shallow, narrow drainfields should be included, in place of cesspits. (Note: Use of shallow, narrow drainfields will be an alternative evaluated in the SC SWP, which will be included in the GEIS as an Appendix).

**The Nature Conservancy, Advanced Wastewater Treatment Pilot Areas, Section 6:** In this section, we recommend adding other somewhat novel approaches to nitrogen reduction, including but not limited to, water re-use, resource recovery from wastewater (e.g., efforts to use macro-algae as fertilizer), urine-diversion and composting toilets, botanical treatment projects, wetland restoration, and buffers along water bodies, especially at agricultural sites.

**The Nature Conservancy, Potential Impacts of Proposed Action, Fifth bullet:** "Economics" is outlined in unjustifiably narrow terms. Water quality undergirds Long Island's economy in many respects: some 40% of the island 's businesses are considered water-dependent-either freshwater or surface waters. Real estate values are influenced by water quality. That means property tax revenues depend on water quality, as does the multi -billion-dollar tourist industry of Long Island. If water quality deteriorates further, all of these economic indices will suffer. Accordingly, the costs of not acting to reduce nitrogen to necessary levels must be considered in addition to the "potential economic benefits" of improved water quality. (Note: Economic benefits associated with installation, maintenance and monitoring of the new I/A OWTS will also be identified in the SWP based upon literature reported estimates. The Economy sector of the USEPA 3VS model will estimate how changes in the water quality of coastal embayments will affect water-dependent elements of the local economy, including tourism and recreational and commercial fishing. Information from the USEPA Suffolk County 3VS model will be incorporated to the extent that it is available within the project timeframe. Likewise, information regarding the potential cost/benefit to the septic industry and potential cost/benefit to property values in Suffolk County will be referenced from available resources being produced through Stony Brook University, to the extent that they are available within the project timeframe.

**Kevin McDonald, The Nature Conservancy**, December 1st, verbal comment, page 43 of transcript: "…. Getting those targets with a measure of safety …"

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, page 51 of transcript: "At below 10 mg/L I think we need to flesh out the commercial vs residential input."

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, page 52 of transcript: "The science has to be de-coupled from the cost benefit analysis … define the loading and the various scenarios, the various remedies. Put aside the cost benefit and then ultimately bring that in obviously …"

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, page 53 of transcript: "… Triggers for the upgrades; mandates, time of property transfer …. And I think it should go a step further actually identifying what the reductions would be based on what the reasonable timeframes are. We probably have an idea of what the property transfer is …. What is that in Suffolk County and how quickly do we … achieve the goals in nitrogen reduction?"

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, page 54 of transcript: "This may be an omission, perhaps not, sea level rise and coastal inundation. That has to be factored into the analysis …"

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, pages 54-55 of transcript: "What are the build-out scenarios? .... here's our reduction … what does that mean for ultimate build out for potential increased density?"

**Barbara Blass,** December 1st, verbal comment, page 56 of transcript: "…. Each of the five east end towns has a loose plan where they have identified priority areas and projects which would be eligible to receive monies through the CPF. And I'm just wondering how they are going to interface with your priority areas and just a general understanding of how it's going to work together." (Note: Suffolk County is making efforts to coordinate the SC SWP with Town CPF programs.)

**Friends of Georgica Pond,** Our preliminary thinking is that we want to advocate for voluntary upgrade of septic systems (+/- 75) around the pond in the coming year and the look for partnerships with the Town CPF and County within critical areas of the watershed, especially the commercial district of Wainscott. (Note: Suffolk County will continue to coordinate with the Friends of Georgica Pond to identify opportunities for aligning efforts; any projects that are aligned with the SC SWP objectives that are identified during SC SWP development will be included.)

## 6.2 Issues Identified during Scoping that Have Not Been Incorporated into the Final Scope

Not all of the comments that were received on the Draft Scoping Document can be fully addressed within the Scope of this GEIS, for a variety of reasons. Some identify issues that are not within the control of the project sponsor (e.g., future growth and development), and some will be more appropriately considered by a D/FEIS for a specific project. The comments that have not been incorporated into the final scope of the GEIS are identified in the following pages.

### 6.2.1 Comments that Would Best be Addressed in a Project-Specific D/FEIS or Supplemental GEIS

**Central Pine Barrens 1(a)**: What impact, if any, will the Plan have on the Pine Barrens Credit (PBC) program, specifically the standards allowing redemption of PBCs to increase sanitary flow in a typical septic system?

**Central Pine Barrens 3(a)**: Although this section states "New STPs and/or expansion of existing STPs will be completed … "it is not clear how facilities will be funded and where they will be sited. It

is worth noting in the Central Pine Barrens Comprehensive Land Use Plan, Standard 5.3.3.1.2, Sewage treatment plant discharge states, "*Where deemed practical by the County or State, sewage treatment plant discharge shall be outside and downgradient of the Central Pine Barrens. Denitrification systems that are approved by the New York State Department of Environmental Conservation of the Suffolk County Department of Health Services may be used in lieu of a sewage treatment plant.*" It would be helpful to review preliminary plans or assessments of potential new sewage treatment plants (STPs) or upgrades, if any, that are proposed to occur in the Central Pine Barrens region.

**Central Pine Barrens 5 (c) (ii)**: The scope should identify alternatives and existing conditions and processes that may not be capturing opportunities for improvements and identify potential modifications in practices or review processes that could occur to improve environmental conditions. Will the plan make recommendations to other involved agencies regarding zoning or changes to development standards that may improve conditions? Will the plan recommend changes that would require the retirement of Development Rights or Pine Barrens Credits or land preservation in instances of nonconforming subdivision or increases in land use density or intensity to offset potential environmental impacts?

**Kevin McAllister, Defend H2O**, December 1st, verbal comment, page 53 of transcript: "Grandfathering … ultimately the goal has to be to eliminate grandfathering …" (Note: Suffolk County is currently evaluating changes to Article 5 and 6 to address grandfathering. Changes that fall outside of the project timeframe would be subject to supplemental GEIS.)

### 6.2.2 Comments That Are Beyond the Scope of the SC SWP/GEIS

**Town of Brookhaven, Comment 1**. On page 2, Section 2.0, #1 Recommended Wastewater Management Strategy an additional point should be added that states: "Identify surface water numeric nutrient standard for nitrogen". The NYSDEC has this authority, and is in the process of developing numeric nutrient standards for New York surface waters.

**Town of Brookhaven Comment 2.** On page 2, Section 2.0 #1 There is a list indicating activities that will prompt wastewater treatment upgrades. Consider adding a category of "Illegal Rental Properties". These properties often house a disproportionately large number of people and so may have substantially higher nitrogen loading than similarly sized non-rental properties. There may be an opportunity to work with the Towns to require installation of I/A systems at these properties as part of legal settlements.

**Kevin McDonald, TNC, December 1st;** verbal comment, page 42-43, transcript: "… ask them where they want to have growth centers and tell everybody up front … "

**Central Pine Barrens 1(e)**: The scope of the plan's consideration of activities that will prompt wastewater treatment upgrades under various scenarios should include financial and other costs incurred by property owners, including the expenditure of time when properties are sold and purchased by new owners. The potential costs that will be passed onto new owners or included in sales should be assessed. A timeframe for compliance and enforcement provisions should be provided.

**Central Pine Barrens 2(b)**: The installation of a new treatment system may require other potentially significant modifications to a property, other than the replacement of one system with another, including, but not limited to, plumbing and waste line realignment, rerouting and installation; shoring up structures; site disturbance; potential clearing on a property encumbered by covenants or easements and alterations to existing structures and property. Costs to a property owner may be a limiting factor. Therefore, please identify funding mechanisms and compliance and enforcement staffing, fees, and fines to implement the plan. (Note: Please see Section 6.1 as much of this comment will be addressed in the SC SWP. Fees and Fines will not be determined in the SC SWP or GEIS.)

**Central Pine Barrens 5 (c) (iv)**: An alternative that requires retirement of a development right, flow credit, or Pine Barrens Credit, in cases of substandard subdivisions, increases in density or land use intensity, should be considered prior to implementing regulations that require alternative treatment systems. (Note: The intent of this comment as it relates to the scope of the GEIS is not clear)

**The Nature Conservancy: Proposed Action:** A project should be considered "proposed" if it has been seriously discussed, including for example, the proposed expansion of the Oakdale STP and Greenport STP. (Note: STP projects that are proposed for incorporation into the SC WP do not necessarily include "all" STP studies that have been proposed or discussed historically. As an early action LI NAP element intended to build upon readily available data, the SC SWP will only consider STPs that have existing sufficient information that can be used for the SC SWP [for example, existing feasibility studies]. Note also that as identified in the Scoping Document, all STP projects will be subject to individual SEQRA review.)

**The Nature Conservancy, Proposed Action, Grandfathering, Paragraph 6:** Regarding the phrase "failed denitrification system sites" requires elaboration in the bullet point "Grandfathered Other Than Single Family Residential sites including grandfathered SPDES and failed denitrification system sites." The GEIS should say where these sites are and how they have been measured. (Note: Suffolk County is evaluating options for scanning existing Office of Wastewater Management records and indexing them to individual parcels. If this project comes to fruition the identification of grandfathered SPDES and failed denitrification system sites would be evaluated during the scanning and indexing process.)

**The Nature Conservancy – Existing Environmental Setting, Physical Environment:** – Add to bullet points: Sediment characteristics. (Note: Sediment characteristics was not identified as a potential area of impact during EAF preparation).

**The Nature Conservancy – Alternatives Analysis**: As referenced in our introductory paragraph, the "no action alternative" does not really exist. It implies that if the County does not act, no one else will-and that is simply incorrect. The County has already approved Section 19 of the sanitary code and has authorized new I/A technology, such that towns may require use of these systems, and individuals may install them voluntarily. Further, the Long Island Nitrogen Action Plan will propose certain actions, if not require them, and the same can be said with the Long Island Sound and Peconic Estuary TMDLs.

And additional TMDLs may be created in Suffolk County related to nitrogen on the basis of the State's compliance with the federal Clean Water Act.) Accordingly, "no action" is not really possible. The "no action" alternative here is no action of the sort proposed, or no additional action at this time, but what exactly does that mean? No subwatersheds delineated, no goals set, no amendment to Articles 5 and 6, no attempts at uniform implementation, etc.-or the undertaking of these tasks by other entities? The absence of active County involvement while others act is a separate alternative that must be addressed in the GEIS. (Note: SEQRA requires consideration of the No Action alternative. The No Action alternative will, however, recognize the potential roles of other stakeholders.)

**Peconic Baykeeper**: SEQRA mandates that a lead agency identify the relevant areas of environmental concern, take a "hard look" at any potential impacts and provide a reasoned elaboration for its conclusions. In the process, the lead agency is obligated to consider a variety of potential impacts including short-term, long-term, primary, secondary and cumulative impacts. Cumulative impacts include any potential impacts associated with "reasonably related" actions. In this case, there are a host of reasonably related actions that should be considered in conjunction with the GEIS for the subwatersheds wastewater plan. In addition to the County's water resources management plan, this should include as a minimum the following:

Reclaim Our Waters Initiative - The Subwatersheds Study was described as a "sub-component" of the County Executive's Reclaim Our Waters Initiative. As such, the potential impacts assessed in the GEIS should include all reasonably related actions contained within the broader policy document referred to as the Reclaim Our Waters Initiative.

Comprehensive Water Resources Management Plan - The County has recently released a "Comprehensive Water Resources Management Plan" which has served as the foundation for initiatives like the Subwatersheds study. However, the Water Resources Management Plan has never been adopted by the County, nor have the potential environmental impacts of its recommendations been reviewed under the State Environmental Quality Review Act (SEQRA). Resource management plans are defined as Type I Actions under SEQRA. As such, if the County's water resources management plan is to be used to support amendments to the sanitary code or studies such as the subwatersheds wastewater plan, it should be analyzed under SEQRA in conjunction with the subwatersheds study.

The Sanitary Code - Recent and ongoing updates to the Suffolk County Sanitary Code are a direct result of the information prepared and analyzed as a part of the comprehensive water resources management plan. Segmentation is inconsistent with SEQRA and the division of reasonably related actions like the update of the sanitary code, the release of the water resources management plan and the subwatersheds wastewater plan represents an impermissible segmentation of these reasonably related actions.

Sewer Capacity Study - The County has previously prepared a sewer capacity study that analyzed the expansion of existing sewage treatment plants and the potential development of new systems. Sewer capacity and the permitting of innovative alternative on-site wastewater systems are also reasonably related actions to the subwatersheds study. Accordingly, the impacts of these plans should be considered in conjunction with the subwatersheds study.

County Comprehensive Plan - The County recently adopted a new comprehensive plan. Land use plans are Type I Actions under SEQRA. Despite this fact, the County deemed the adoption of the plan a Type II Action. Since resource management is a necessary component of a properly prepared comprehensive plan, the recently released water resources management plan should be considered a component of the County's Comprehensive Plan. The potential environmental impacts of the comprehensive plan should be considered in conjunction with the GEIS for the subwatersheds study.

County Regional Transportation and Development Plan - The County recently released a "Regional Transportation and Development Plan" which details infrastructure needs and potential economic development opportunities. This study, the comprehensive plan, the updates to the sanitary code and the sewer capacity study are all reasonably related actions under SEQRA. Accordingly, all associated potential impacts including cumulative impacts, should be considered at this time.

Bergen Point Expansion - The County recently approved a 10 million gallon per day expansion of the Bergen Point STP. In addition, the County is currently considering a 7-mile main extension from the Bergen Point Plant to the project known as the Ronkonkoma Hub. This project also includes a second main for the connection of both existing and proposed development along Veterans Memorial Highway. These are also reasonably related actions under SEQRA, the cumulative impact of which has never been assessed. Accordingly, the GEIS for the subwatersheds study should incorporate these actions as well.

In summary, the County is in the process of expanding sewering, implementing innovative on-site wastewater systems and updating the sanitary code. All of these reasonably related actions will impact water resources throughout the County. The County has an obligation to assess the cumulative impact of these reasonably related actions and development-related impacts resulting from increased wastewater capacity. To date, it has failed to do so. The subwatersheds wastewater plan represents an opportunity to secure compliance with SEQRA. We recommend that the scope of the GEIS be expanded to consider the full range of potential environmental impacts consistent with SEQRA**.**

**Attachment A – Suffolk County Subwatersheds Wastewater Plan Methodology Summary**

In accordance with Suffolk County's Reclaim Our Water initiative and the Long Island Nitrogen Action Plan* (LINAP – see note 4), Suffolk County is pursuing proactive measures to reduce nitrogen pollution to our waters. The Suffolk County Comprehensive Water Resources Management Plan (2015; "Comp Water Plan") characterized negative trends in the quality of groundwater in the upper glacial and Magothy aquifers in recent decades. The Comp Water Plan linked increasing nitrogen levels in groundwater not only to drinking water, but also to surface waters, including significant adverse impacts of nitrogen on dissolved oxygen, harmful algal blooms ("HABs"), eelgrass and other submerged aquatic vegetation, wetlands, shellfish, and, ultimately, coastal resiliency. For the first time, the Comp Water Plan established an integrated framework to address the legacy problem of onsite wastewater disposal systems in a meaningful manner; with acknowledgement that patchwork sewering will not be sufficient to solve the problem.

The Suffolk County Subwatersheds Wastewater Plan (SC SWP) will provide a recommended wastewater management strategy to reduce nitrogen pollution from non-point wastewater sources. To support development of the recommended wastewater management strategy, a sequenced, technically driven series of evaluations will be completed as follows:

- Delineation of the County's priority subwatersheds (~189 individual surface water receiving bodies) using the existing Suffolk County Groundwater Model. The groundwater model provides a common platform of assumptions and boundary conditions to ensure a uniform and consistent set of subwatersheds boundaries (see note 1).

- The generation of land use based annual nitrogen loading rates for each of the subwatersheds using the existing Suffolk County Groundwater Model mass transport module (see notes 1, 2 and 3).

- The development of surface water residence times for each of the 189 surface water bodies using the Environmental Fluids Dynamic Code (EFDC) modeling software.

- The establishment of baseline water quality using existing readily available surface water data from available studies and monitoring programs completed within Suffolk County.

- Using the results of the modeling efforts and baseline water quality, tiered priority areas will be established for wastewater management upgrades. The objective of establishing tiered priority areas is to provide a framework for implementing the recommended wastewater alternative in a phased approach which would focus the allocation of funding and resources on the highest priority areas (see note 1).

- Following the establishment of tiered priority areas, preliminary load reduction goals will be developed for each surface water body using empirical data relationships, existing regulatory target guidelines, and other readily available data sources from related studies (see note 1).

- Finally, recommendations for wastewater management upgrades will be provided for each priority tier based upon the ability to meet nitrogen load reduction goals (see notes 1, 5, and 6).

* *The New York State Department of Environmental Conservation (DEC) and the Long Island Regional Planning Council (LIRPC) are, in partnership with numerous local governments and interested organizations on Long Island, embarking on development of the Long Island Nitrogen Action Plan (LINAP)*

**Attachment A – Suffolk County Subwatersheds Wastewater Plan Methodology Summary**

Notes:

1. A parallel evaluation will be completed for the protection of groundwater and public and private supply wells. The evaluation will use the Suffolk County Groundwater Model to estimate predicted nitrogen concentrations in public supply wells and groundwater and required load reduction through wastewater management to reduce nitrogen concentrations to agreed upon endpoints.

2. The SC SWP will calculate the total nitrogen loads from all major sources (e.g.,. wastewater, residential fertilizer, agriculture, deposition, and pet wastes). While these loads will be considered in the determination of an overall first order reduction goal for a water body, the focus of the SC SWP will be assigning nitrogen load reduction goals for non-point wastewater sources to support achievement of the overall load reduction goals. LINAP and/or other related future initiatives will further consider these loads and reductions, and will expand on alternate available management measures such as permeable reactive barriers and in-water aquaculture.

3. The Suffolk County Groundwater Model will be used to support the identification of areas where legacy nitrogen may be of concern. However, the SC SWP evaluations will not include legacy nitrogen in its evaluations. LINAP and/or other related future initiatives will further consider these loads and will expand on alternate available management measures such as permeable reactive barriers and in-water aquaculture.

4. The SC SWP is considered an early action/initial step of the overall long-term LINAP program. In addition to being a guide for establishing County wastewater policy, the primary objective of the SC SWP will be to provide critical information regarding data gaps, areas requiring further detailed study, and ultimately to provide data that can support long-term LINAP scope refinement and focus and other related initiatives ongoing throughout Suffolk County (e.g., Long Island Sound Study, Peconic Estuary Program, South Shore Estuary Reserve, and related Town/Village initiatives). In alignment with these objectives, the SC SWP will be executed on an accelerated timetable and will not include the generation of new, sophisticated models that are typically used for Total Maximum Daily Load (TMDL) studies. Rather, the SWP will build, expand, and unify existing individual models and studies from the wealth of resources that already exist.

5. Recommended wastewater upgrades will focus on the use of I/A OWTS, the use of sewering at locations where existing sewer feasibility studies indicate sewering is cost effective, and the use of decentralized/clustered systems (e.g., small pre-packaged treatment plants or I/A OWTS that connect multiple tax lots or buildings together). The SC SWP cost benefit analysis will, amongst other evaluations, identify the criteria and locations where the use of decentralized/clustered systems represent the most cost-beneficial wastewater management approach. In addition, the SC SWP will evaluate and provide preliminary recommendations on how to overcome some of the potential challenges associated with implementing these systems (e.g., existing setback constraints, long-term O&M responsibility, approval process, etc.). Finally, increase of the minimum lot size may be considered in select subwatersheds where sufficient undeveloped land exists to provide a meaningful environmental benefit.

6. The SC SWP will include a recommended implementation plan. The recommended implementation plan will balance the need for providing a program acclimation period (e.g., hire staff for Responsible Management Entity, training of industry, industry market preparation, and funding source identification) with providing an aggressive implementation approach that provides meaningful environmental benefit.

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
OFFICE OF ECOLOGY
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ENVIRONMENTAL IMPACT PUBLIC SCOPING HEARING.

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20 East Main Street
Riverhead, New York

December 1, 2016
6:07 p.m.

HEARING of as described above held at the above-noted time and place, before Janice L. Antos, a Stenotype Reporter and Notary Public within and for the State of New York.

A P P E A R A N C E S:

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
OFFICE OF ECOLOGY
360 Yaphank Avenue
Yaphank, New York 11980

BY: KENNETH ZEGEL,
ASSOCIATE PUBLIC HEALTH ENGINEER

A L S O P R E S E N T:

Michael Kaufman, CEQ Vice Chairman
Peter Scully, Deputy County Executive
Maryanne Taylor, CDM

MR. KAUFMAN: I going to call the meeting to order. My name is Michael Kaufman Vice Chair of CEQ. I will be running the meeting today. You are right now at the Public Hearing regarding the Scoping of the Draft Generic Environmental Impact Statement for the Suffolk County Sub-watershed's Wastewater Management Plan which will be described in greater detail in a couple of minutes.

The public hearing is being held so that Suffolk County can receive comments from the public on the development of the environmental impact statement for the Suffolk County and Sub-watersheds Wastewater Plan. I don't see a flag so we can't do a Pledge of Allegiance.

MS. TAYLOR: Behind you.

MR. KAUFMAN: Wait, I have a choice of four. Which one do I do? All right, this one. We'll let Dick Amper start us off.

[AFTER RECITATION OF THE PLEDGE OF ALLEGIANCE, THE PUBLIC SCOPING HEARING

REGARDING THE ENVIRONMENTAL IMPACT STATEMENT OF THE COUNTY OF SUFFOLK WAS CALLED TO ORDER BY MICHAEL KAUFMAN AT 6:07 P.M.]

MR. KAUFMAN: Okay. Let's see, CEQ is the manager of SEQRA issues for this Environmental Impact Statement and we will be reviewing the entire EIS for the legislature. We are not employees of the County. We are not paid, rather we are citizen appointees with SEQRA experience. The project initiator and sponsor is the Suffolk County Department of Health. DOH, along with a consultant, CDM Smith, Camp Dresser McKee. Smith will be preparing the DGEIS. We're doing it as an GEIS, a global look at the County as opposed to specific areas.

The Suffolk County Legislature is the SEQRA lead agency, it makes all the final determinations about the GEIS process, now once it is completed and turned over by CEQ. The scope is the initial part of preparation of an EIS, it is mandated by

State Law and by the Suffolk County Code. Again, it is the public's chance as citizens to review and comment.

Now, the way we will be handling this is public comments are being taken today, we have a stenographer. Written comments may also be submitted to the Suffolk County Department of Health and to CEQ until December 13, 2016.

To give everyone a chance to speak, we're going to hold everyone to three minutes or 180 seconds depending on how I feel, and we'll ask that everyone please fill out cards to speak and write legibly, because sometimes it's hard to read this stuff.

Okay, housekeeping, in connection with this Public Hearing, Notice has been served in the official papers of Suffolk County as well as posted on the New York State DEC Environmental Notice Bulletin and the Suffolk County CEQ website. In addition, this Public Hearing Notice has been sent to all known involved agencies

as well as the Suffolk County Department of Health Services' list of interested agencies and parties.

Okay, we have asked you again to sign in today. I believe cards were distributed. We will be keeping the cards. We will do our best to keep you informed as actions proceed both on the Suffolk County DOH website and also the CEQ website and most relevant SEQRA documents as they are brought fourth.

Basically, the concept with that is there will be final scopes and there will be approvals of final scopes and there will probably be several drafts of the draft DGEIS. And then eventually there will be a final GEIS and then eventually after that, a finding statement.

It's a complex process but it gives everyone a chance to review and to comment. Now, CEQ and Suffolk County Health Staff will not be doing any Q and A today. We are engaging in explantations. If you have questions or want to submit

more testimony or anything like that, written comments, et cetera, again you have until December 13.

We want to hear from you. We don't want to try to engage and discuss the program that either can twist things around, et cetera. We want the public's comments and the public's input on all of this.

The project will be introduced by Peter Scully, Deputy Suffolk County Executive. After that, Suffolk County Department of Health will give a short presentation and then Maryanne Taylor of CDM Smith will present the main plan. As you can see it's -- part of it is up here. It's a little bit of a lengthy presentation. It's very very detailed. It will give you a pretty good flavor as to what is occurring and where the County wants to go.

And hopefully you will be able to understand what the County's objectives are and to be able to submit cogent

Electronically signed by Janice Darling (501-157-395-8040) f62f7850-46c1-4c7b-aacb-63652aa68ad2

comments. So without any further ado, I would like to introduce Peter Scully, Deputy County Exec.

MR. SCULLY: Thank you, Mike. And on behalf of Suffolk County Executive Steve Ballone, welcome to all of you. Thanks for joining us. I would like to acknowledge the presence of two Suffolk County Legislators, Al Krupski District Number One and Bridgette Fleming from District Number Two who are strong supporters of our efforts to address nitrogen pollution in Suffolk County, we appreciate their presence.

I believe we have two members of CEQ with us also, Frank Arubius (phonetic) and Robert Carpenter, and of course Mr. Kaufman who introduced himself previously.

This is an important opportunity for folks to comment on this important document, the Wastewater Plan and Environmental Impact Statement. We weren't sure what to anticipate in terms

of attendance tonight. I have a few slides that are really intended for folks who are not at all familiar with our overall effort. I'll run through them I think briefly, if I can figure out how to use the technology.

So just briefly comment, so, for those of you who have reviewed the Scope, and I hope most of you have at this point. You understand the both the breadth and the depth of this effort and the significance of its components. The Plan and GEIS are going to serve as the framework for septic load reduction goals, for individual onsite wastewater treatment systems, and small package sewage treatment plants, which we call pendic (phonetic) day systems for vast areas of the County where sewering will not be feasible.

And the Plan GEIS will provide a bridge from our septic demo program, which I'll talk about in a little bit, to wider scale limitation. Project also is

intended to provide the first consistent unified evaluation of our three major estuary system watersheds nitrogen loads, impact and reduction goals since the 208 study in the 1970s and will also deal with freshwater lakes and streams.

The plan will review alternatives and make recommendations based on analysis and cost and benefits and will provide support for the County's policy goal or creating a county wide wastewater district and key recommendation in both our comprehensive water resources management plan and the IBM Smarter Cities Challenge Report which was generated by the IBM Corporation after a team of experts visited Suffolk County in 2014 to assess our nitrogen problem.

So why the fuss? This is a generic slide we use to explain our setting who are not familiar with Suffolk County. We have a very large amount of people living in a very small area on what is essentially a sandbar served by a sole source aquifer and most of it is

unsewered. We have a diffuse public water supply well network. As most of you know, we still have a lot of people relying on private wells. Our wetlands and surface waters are a major feature of the Island. It drew people to Suffolk County but when people look around these days, many seem to understand that we do have a problem.

The beaches are closed, they are not allowed to take shellfish and eat them and there are warnings from the Health Department about how many servings of fin fish they can eat a month or should eat a month. And every day it seems we're reading a story about an algae bloom, a fish kill, a neurotoxin or blue green algae and somebody's dog being impacted by the toxic nature of that. And our bathing beaches increasingly are facing closures during summer months.

A little bit about setting, the shellfish industry obviously and the economic impact of the loss of that resource is obvious. Loss of coastal

vegetation as a result of nitrogen impacts and there's a harmful algae bloom map on the top left side. All three estuary systems are considered impaired.

This is a photo we use to grab people's attention but for people out of the east end, this is nothing new. This is a fish kill that occurred in the Peconic in 2015, very large one. And those of you in the room mostly are familiar with the fact that fish kills do occur as a result of natural conditions with predator fish chasing the smaller fish into areas where they deplete the oxygen and then suffocate.

This particular kill which is a high profile kill was attributed, at least in part to increased nitrogen, in surface water in a report that was generated by DEC in cooperation with Suffolk County Department of Health Services in the wake of this kill. And that bar graph -- I'm sorry, the circle pie graph in the center, that's data that was drawn from the study

of the south shore estuary that just gives an idea of the magnitude of the impact of the septic and cesspool systems as a nitrogen source compared to other sources.

The difference between the cesspools and septics obviously is that sewage treatment plants actually treat effluent and the septic and cess pools are not really designed to do that. So I mentioned briefly the Suffolk County Comprehensive Board of Resources Management Plan which was issued in March of 2015, I tell people who aren't familiar with the process that it's kind of a good news and bad news document. The bad news is that it documented continued degradation of water quality in Suffolk County over the last 10 years. The good news is that it offers a series of recommendations aimed at addressing that problem. It's kind of a guide for moving forward and it has some key recommendations that are the subject of this Sub-watersheds Plan and Draft

Environmental Impact Statement.

Another illustrative map that shows the impact of the 360,000 onsite sewage disposal systems. It's a residential number only. There's a whole other universe of unsewered commercial parcels that we need to address. 209,000 of these systems are what staff preliminary have identified as priority areas pending results of Sub-watershed work that we're doing with the line app project and the Sub-watersheds Plan, and approximately 253, just a little under that, predate the 1973 requirement that was added that requires a septic tank in addition to just a cesspool but it's not really a meaningful difference since neither of those systems is designed to treat for nitrogen.

So we have a multifaceted effort under way on parallel tracks preparing for this evolution towards active treatment in Suffolk County, and this is part of that. On the left side following me from left to

right, we're moving forward with the use of innovative onsite systems in Suffolk County. We have the second phase of a pilot program underway now. The first phase has been under way for over a year. Originally the staff went to the community of manufacturers who create these new technologies and indicated that Suffolk County is planning to move away from nonperforming systems, that there's potentially a major market out here, and asked whether they would be interested in donating some of their systems and put them in the ground and test them to see whether or not they would work as advertised.

It's an important part of the process for us. Those 19 systems are in the ground. What the County is looking for is six months of steady state data, operating data showing systems capable of removing nitrogen down to a level of below 19 milligrams per liter. Once we see that, Health Department is comfortable providing

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a provisional certification for the use of that technology in Suffolk County. Two systems have been certified for use here.

One of the parallel tracks is the technology itself. The second track is preparing the industry, because unlike the cesspools and septic systems, these systems are operational. And it's not a matter of just showing up at a house with a backhoe digging a hole, throwing a ring in and piping into the house, these systems need to be maintained.

And to the County's credit long before I got there, they were engaged in a discussion with the wastewater industry on Long Island telling them that we're going to prepare for a change, that we needed people who were trained and certified to install and maintain these systems. And well before we certified the first systems, we had the industry ready.

Suffolk County Legislature in December of 2015 enacted a licensing law that was developed by the County in

consultation with the industry. It took effect in June of 2015 and shortly thereafter we began offering training for the industry to make sure that they were prepared for this evolution.

And as we certify these new technologies, the licensing law requires that each manufacturer offer a training in the County at least once a year for the industry, so we have that prepared.

State public health regulations require that we have a designated responsible management entity in Suffolk County to regulate the installation and maintenance of these systems. And the Suffolk County Legislature earlier this year enacted Article 19, a new article in our sanitary code. That piece is in place.

We are working on code amendments. Suffolk County sanitary code as it relates to residential properties has not been updated significantly in decades. Portions of it are woefully outdated. And

we're involved now in a process with a working group on an update to articles five and six which has benefitted from participation by both Legislature Fleming and Legislator Krupski. And we're hopeful to have some draft updates of those regulations for people to review early next year.

And then the issue of getting these technologies working in Suffolk County. Initially, I guess we'll be looking towards requiring these technologies be used with new development, respective development. Hopefully that will be the easiest step for policy makers to take. But then we'll be looking at in what situations it makes sense to require people to change out the systems that they already have even if they have not failed, to replace them with these new systems.

Two things going on right now. One is, we are to working identify through sub-watershed delineation what areas of the County it would be most important for

these systems to be put in place where the most benefit for the cost would be derived, and that's the subject of the work that we're doing here tonight. And as both our Comprehensive Water Resources Management Plan and the IBM Smarter Cities Challenge Report made clear, the cost of these systems is such that it's not realistic to expect the individual property owner if you implement the requirement that they change it out to simply reach into their pocket and pull out the $15,000 or $16,000 required to do the retrofit.

You need to provide a funding mechanism, both to assist with the evolution towards the use of these IA systems and, on the other side of the equation, an issue that is not so important on the east end but maybe on the west end, in situations where it does make sense to connect people to an existing sewer system, the economics of that are just as significant.

It's not a one time expense of $16,000 but it very often could be if you connect a home to a sewer system, I'm thinking about Oakdale, West Sayville, Sayville, areas that are right on the Great South Bay and clearly require advanced treatment, those homes could face a charge of 3500 or $4,000 a year over 30 years which is not an acceptable burden, so finding a mechanism to fund these improvements is an important part of the overall plan.

Some policy decisions that are upcoming. We'll be taking in the months ahead about banning cesspools and septics. Something that was initially broached in Suffolk County in the late 1960s and early 1970s that never did happen. A phaseout law. Will we take it a step further and require upon failure to replace, things of that nature. Potentially retrofit requirements as I mentioned earlier. And finally, where will the resources come from to assist us in making all this hard

work payoff with the actual installation of these systems in the ground.

At this point I think I'll turn it over to the staff. And thank you again on behalf of the County Executive for being with us. We have made a lot of progress over the past three years in creating momentum and preparing a plan to address a problem which historically has evaded policy makers, but make no mistake we have a tremendous amount of work left to do. Thanks for being here tonight. I look forward to hearing your comments. I would like to introduce Ken Zegel.

MR. ZEGEL: Thank you, Peter. I am going to keep things very short and sweet. We had a few slides prepared for everybody. I think most of the audience has seen the information that I had prepared already from previous stakeholder meetings. Maryanne has an excellent presentation pulled together that's going to talk about the Sub-watersheds Plan, the proposed action, and the draft scoping

document. So I'm going to skip some of these background ones.

I'll introduce myself to those who don't know me. I'm Ken Zegel, Suffolk County Department of Health Project Manager for the Sub-watersheds Plan. I always encourage everyone if you have questions specifically on a plan, you're welcome to contact me directly at any time for questions on status or some of the elements of the plan.

I also wanted to mention Walter Widiak (phonetic) who I was hoping to come down tonight, our director, but he couldn't make it due to a family emergency. So he also wanted to thank everybody for coming down on behalf of the Health Services Division of Environmental Quality. Couple of highlights and there's a lot of things going on right now, Peter mentioned some of them before.

It's an exciting time for me, it's an exciting time for anybody that is here. Change is finally coming. Peter mentioned

the Comprehensive Water Resources Management Plan before. We also recently received five and a half million dollar grant from the New York State DEC to help support our Reclaim our Waters initiative. That's in a big part what's funding the Sub-watersheds Plan and this Generic Environmental Impact Statement.

Peter mentioned the innovative alternative onsite treatment demonstration programs that we have going right now, we have two of them going right now. He also mentioned that we established Article 19 which gives us the right to and gives everybody in the County the right to install these systems and sets up the responsible management entity within the County.

So some things that are actually happening right now are the Sub-watersheds mapping and Wastewater Plan, that's why we're all here. We're evaluating our Phase One Demo Systems. Peter mentioned before we actually have two systems that

are approved right now for professional use in the County, that's the hydro action and the repro singular systems.

We're also starting our Phase Two Program right now. I believe we started construction of some of Phase Two systems and we're going to continue that through the winter and next spring. We also have some experimental systems that are in the works right now. We're working in can tandem with the Stony University Center for Clean Water Technology.

And we're starting to look at shower and drain fields as an alternative leeching mechanism for leeching pools. We have established our residential standards and adopted residential standards for innovative alternative systems that define the requirements for design, installation of those systems.

We're also working on upgrading our data base and digitizing all of the wastewater files that we have in our office. It's a lot of files, goes back

for a lot of years. But that's going to help us identify these grandfathered sites. That's going to help us identify the ole denite (phonetic) systems that failed back in the 89s and help us identify other priority areas for commercial sites.

So I'm not going to spend much more time. Most of you have heard this already. The primary goal of the Sub-watersheds Plan is to help provide us a blueprint for wastewater in the County. Help us describe where, when, what methods to implement for actually mitigating nitrogen from wastewater sources. Peter mentioned before, this is actually going to be -- there's been a lot of great work done in the County, in individual estuary programs identifying nitrogen sources and load distributions for different estuary programs.

This will be the first time that actually we're doing a comprehensive look County wide establishing a uniform set of

consistent assumptions, boundary conditions for the different models that we're going to be using. So this will be the first time we're doing that since the 208 study in the 1970s. This is going to help us, again, as Peter mentioned before, bridge the gap from our septic demo program.

How do we go from pilot testing these innovative systems to implementing something full scale? This is going to help us provide us some answers into the best way to do that, including identifying trigger points for upgrade, sensitive areas, where these systems should go from a cost benefit perspective. And to that side, it's also going to give us some cost estimating information on the County's goal of creating a County wide wastewater district to help us support the financing for these programs.

And we're going to look at different -- as part of the cost benefit analysis, look at different ways to implement things

in terms of funding, streaming and the best way to implement things to get the most bang for our buck in terms of nitrogen removal when the program moves forward.

And really that's all I had to say other than, again, thank everybody again for coming out and supporting the programs. It's very much appreciated. It helps the process, makes it a better process from I want this and everybody wants to be all of our plan.

So, with that, I'm going to pass things over to our consultant Maryanne who has the meeting of our summary today.

MS. TAYLOR: Thank you. Thanks, Ken. Okay. So, I have about 20 slides here. I'm just going to review the proposed action, provide and overview of the Wastewater Plan and go over the proposed GEIS scope and the project schedule.

The proposed action is an implementation of the Wastewater Management Plan. The idea is that we are

going to be identifying the priority areas where nitrogen reduction is required, establishing the goals, the nitrogen reduction goals for each of the priority areas, and then identifying a recommended approach in terms of wastewater management to achieve those goals.

There's a number or components of that. The first is the innovative onsite wastewater treatment systems that Peter and Ken were speaking about for the residential applications. The appendix A, cluster decentralized systems, the advanced pilot study that the County is doing and then establishment of the water quality protection district to establish the funding source and the responsible management entity that's going to evaluate the systems, approve them, establish the construction requirements, overseeing the installation, oversee the monitoring, make sure that they are maintained and that data is collected and maintain and reviewed to make sure that they are

functioning properly.

Ken Zegel has put together this graphic that kind of pulls all the pieces of the Sub-watersheds Plan together and shows how it ties in. It's just one component of the County's Reclaim Our Water Initiative and the State's Long Island Nitrogen Action Plan.

So we have the innovative onsite systems, the Appendix A systems, and we're going to be looking and things like maybe increasing those flows up to 30,000 gallons per day. Possibly changing the separation distances, streamlining the approval process. Things like that are all incorporated as part of the Plan.

You know what, I should mention too, the sewage plant component is limited just to those sewage treatment plants, either new ones or expansions that DPW is currently looking at. There's no new sewage treatment plants that are being introduced as part of this project.

Ken has also put together this

graphic that kind of pulls -- shows you the breadth of the expertise that we're tapping to help develop the plan. It's an early action element of a Long Island Nitrogen Action Plan and there's a number of stakeholders that are all contributing their expertise and their experience and their guidance along the way.

So it's not just us and County working together, it's a much broader collaboration of groups. So we speak regularly with the State, the EPA, Department of State, the estuary programs are involved in lending their data and information. Stony Brook, Chris Gobler from Marine and Atmospheric Sciences and then the Center for Clean Water Technology are lending their information.

The idea is, this is supposed to be an early action element using existing tools and existing data and moving forward as fast as we can to move the project, the process, forward. And so to that end, we really need everybody's best advice and

everybody's input and help to move forward.

I want to mention the Advisory Committee as stakeholders because so far they have been really useful and very helpful in advancing the process. The Wastewater Plan Advisory Committee and then a number of focus area work groups that are comprised of experts from the regulatory agencies, the estuary programs, Stony Brook, the Nature Conservancy is involved, the USGS.

And we speak to them regularly. They review the work products as we are going along and are helping to guide the assumptions and information that are being used to develop the models and apply them. These are the tasks comprising the scope of the Sub-watershed wastewater plan itself. People have recognized for years and years and years of the need to protect our groundwater supply, our sole source of potable water, these little blue ares are the source water areas for our community

supply wells.

We also recognize the need to protect our estuaries as well. And as Ken was talking about before, this is kind of integrating them together. In recent decades, it's become more apparent that we really can't improve surface water quality unless we improve groundwater quality. Because groundwater provides the base flow or the end flow to many of our surface -- our fresh and marine surface water resources.

So this is just a figure that probably most of you have seen before. The County delineated the areas contributing groundwater base flow or underflow to our surface waters. Now we're doing this on a very discreet basis. Starting with the State's priority water body list, we have 189 Sub-watershed we're delineating the contributing area and travel time each of those sub-watersheds specifically.

I also want a mention that there's a

number of fresh water ponds, not just marine water bodies. Most of those were actually identified by the advisory committee. I guess Towns, right, town representation on the advisory committee.

As we're getting all of those done, then we're overlying planning criteria such as land use, areas where the depth of water is less than 10 feet. Criteria that are going to be important from a prioritization process and understanding where advanced wastewater treatment is most required.

We're doing a similar process for the potable water supplies. We're using the exist framework of the County's ground water model but we have added considerable discretization. And the reason why I mention that, there's almost a million elements here in the main body flow alone, is that we need that discretization to support parcel specific nitrogen load estimates that are going to be used to estimate the nitrogen load contributing to

each of the sub-water sheds.

This is also probably a good spot to mention the participation of one of the focus area work groups that the County has established. We have been working with Cornell Cooperative Extension, the Nature Conservancy, the USGS, EPA, DEC. Have I left anybody out of this focus area work group?

We have been having workshops, conference calls. Every assumption along the way is being vetted. Everybody is sharing information and it's not like we're doing this in a vacuum. So the components of nitrogen loading that are incorporated into parcel specific County wide models right now are sanitary wastewater, nitrogen load from fertilizer both residential and agriculture, atmospheric deposition, and pet waste and avian contributions.

So we are compiling the nitrogen loading and the pieces of the nitrogen loading to each sub-water shed. And it's

kind of -- surface waters are more challenging to assess the impact of nitrogen loading than groundwater.

So concurrently what we're doing is assembling a lot of surface water quality data, dissolved oxygen, chlorophyll A, clarity, presence or absence of harmful algal blooms or submerged aquatic vegetation. We're compiling that along with the nitrogen loading and then one of the characteristics of the surface water that's important to consider is residence time or flushing time.

So to that end, New York State has retained the services of HDR who is using the FDC, THE environmental fluids dynamics code to model the residents time of each sub-watershed individually. This is just one of their example grids. As we're doing that and we're going to be relating nitrogen loads to the desired endpoint, this is just one of the draft work products that Ken had mentioned, or maybe it was Peter, that the County had put

together back actually before we started, in terms of identifying priority areas.

But the stream -- the sub-watersheds are all going to be ranked and priorities for nitrogen reduction assigned. Meanwhile, on yet another track, we're going to be looking at the different treatment alternatives to see how we can achieve those nitrogen load reductions. While the presumptive approach is the innovative alternative system, we'll also be looking at the Appendix As. And we'll be doing a batch of cost benefit analyses to see would it be more beneficial to require a higher level of treatment in a smaller area, perhaps in coastal zones, or maybe a less stringent level of nitrogen reduction or treatment over a broader area.

All of that will be summarized in the Sub-watersheds Plan. We'll have a section that will identify each step along the way and describe the approach that was used. We have estuary specific sections within

say the section four, we'll identify all the sub-watersheds within the Long Island Sound estuary, the nitrogen loads contributing to each, the priority water bodies and the proposed approach will all be how summarized in the plan.

There will be a section describing implementation and that will include the funding and the phasing, whether it be grandfathered sites or new developments or priority areas yet to be determined. And then remember we said that is this is all based on existing information? We're sure there's going to be areas where further study is required or more data is requires.

So we'll be identifying where additional evaluation or assessments are needed as part of the State's Long Island Nitrogen Action Plan. And here we have the draft scope of the GEIS. This is based on the environmental assessment form or the topics that were identified in the environmental assessment form. So we'll

start with an executive summary that will provide a concise description of the proposed action and the impacts. We'll have an existing environmental setting that will include land use, ground and surface water resources, plant and animal communities, historic and archeological resources, noise, odors, human health and consistency with community plans and character.

We'll identify impacts of the proposed action on each of those categories, on each of those topics that we just identified as well as environmental justice. Short term construction impacts. Cumulative impacts. We identified three cumulative impacts for evaluation. One is water export, it's the recommended alternative to transport water out of one sub-watershed into another, what would that do on water levels, on down gradient surface water resources as well as water supply? Potential for growth inducement and because most of

these systems are not passive systems, there's some energy required, the greenhouse gas impact.

Unavoidable adverse impacts. Irreversible and achievable commitment of resources, mitigation measures, the alternative analysis. We have identified five.

One is the no action alternative. That is if we do nothing and leave things the way they are. The second is looking to our neighbors to the west, the Nassau County and New York City models, County wide, centralized sewer districts and collection and treatment systems. County wide increase in lot size. Purchase of priority area parcels for preservation and then dual plumbing, dual water systems.

Let's see, transfer of development rights. And then there are a number of -- let's see, I'm sorry I'm jumping around here. There are a number of individual projects that would not be covered by this GEIS. They would be triggered by if

somebody proposed a new or expansion of an existing sewer district. So a new sewage treatment plant, additional sanitary code changes that aren't identified here. And individual TDR programs, things like that.

And someone thought it would be important to just to call out what's not going to be included in this GEIS specifically. And there's a batch of other nitrogen reduction or mitigation measures that are not associated with wastewater that are being evaluated as part of the State's Long Island Nitrogen Action Plan.

So we don't have information on those yet. So fertilizer reduction, BMPs, agriculture, those are not topics that are going to be specifically addressed in this GEIS. Schedule, we're in the middle of public scoping right now. We're planning to complete a draft of the Sub-watershed Wastewater Plan by the end of June with the draft GEIS to follow shortly thereafter, we're preparing them kind of

concurrently.

There's a 60 day review period with a public meeting in the middle at that end of next summer. Final GEIS will be prepared and posted. There will be an approximately 15 day comment period on the final document. And the finding statement will be prepared sometime next November. And with that, I think we are at up to public comments.

MR. KAUFMAN: Okay. We're going to ask for the public scoping part of the presentation. I have two cards and one legislator, so maybe I'll give everybody a few more minutes. The first gentleman to be called up is Kevin McDonald from the Nature Conservancy.

MR. MCDONALD: Kevin McDonald. I'm with the Nature Conservancy. We'll be submitting formal comments before the 13th. A couple of general observations. Obviously we support the general strategy over sub-watershed by sub-watershed nitrogen reduction strategies. Before you

can do that, you have to know, you know, what your load is, where they are coming from and your alternatives. So a couple of general comments. There is a fair amount of detail committed to the term grandfathering and the terms for legacy contamination. And in an effort to simplify this, it's the very existence of onsite base disposal systems and their current technology that is responsible for the problem we have.

Making distinctions between all these technologies is probably a distinction without a difference. So, simplify this a little bit and just say all these things cause all these problems and now they need to be mitigated, that's one. The second is, I was pleased to see that the scoping document has a couple of areas where you will be doing existing conditions and potential build out.

And the other thing I would ask you consider in the context of your plan while you're doing this with the municipalities

is ask them where they want to have growth centers and tell everybody that up front so that everybody else going forward should assume that the zoning in their communities is in fact what it should be going forward and you can build a model for the present zoning that maybe there. I understand that's a loaded question to ask, but I think the public has a right to know that.

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And then a final major comment is for the, you know, the ecological standards that you have identified we fully support that. I know there's a series of different people having conversations about how to articulate that based on work in other parts of the county which is great. But getting those targets with a measure of safety or a measure -- an additional measure of safety in case you -- you can't measure right up to one pound per acre applied and be comfortable knowing that's right. So the EPA typically has an error bar that you need

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to have in there to assure success and it would be great to have some discussion on that.

And I wish you all well in your pursuit. This is really important. This is something the Peconic Estuary Program has been looking to do for a while. I understand this is being integrated and that's great. And I look forward to working with everybody here and the good product that we hope will be produced at the end of the day. Thank you.

MR. KAUFMAN: Thank you, Kevin. We appreciate your comments. I have a Cy Consella (phonetic), Wainscott Citizens.

MR. CONSELLA: I'm representing a number of residents from Wainscott. Wainscott has two important areas of environmental significance; namely, Georgica Pond and Wainscott Pond. You may have read a lot about Georgica Pond in the press over the last year or so. Sarah Davis, who is a colleague of mine that sits on the environmental subcommittee of

the Wainscott Citizens Advisory Committee, is also here. Sarah has been president of the Friends of Georgica Pond.

Where we are in Wainscott, the cesspool system is incredibly important to us. Give you an idea, my home was built 225 years ago and last year we had to replace our cesspool system. I don't believe it was built 225 years ago, it was probably built 100 years ago. But it was pretty close to collapse. Cost quite a bit of money for us to put in. And when we did it, we wanted to put in a nitrogen reducing system because we were fully aware of all the problems that were happening with nitrogen load in Wainscott an Georgica Pond, and also around the broader area, you know, the massive fish kills due to hypoxia, the turtles that have died through toxins, et cetera.

So what we're talking about is incredibly important. I don't know whether any of you can see that map there, but that's water flow district of

Wainscott. There's Georgica Pond and that's Wainscott Pond there.

There's a lot of fishing that goes on, especially crabbing, in Georgica Pond. The last two years Georgica Pond has been closed to that activity. When I first moved up to this part of the world 10 years ago, we used to go fishing for white perch and ate it straight out of the pond, it was delicious, and the crabs of course, but you can't do that anymore due to saxitoxin.

Wainscott Pond, the smaller pond here is a wildlife refuge. Nobody goes there, it's just given over to the birds and things. There are otters there, snapping turtles, terrapins, all sorts of migrating birds et cetera. All of that is at risk because there too much nitrogen in the system. But it's worst than that because there's also the evidence of cyanobacteria in the groundwater for the first time that I have known, first time that I think Dr. Gobler knows of as well.

So that's creating a new dynamic. We don't know whether that's a result from salt water intrusion or too much irrigation or to much phosphorus or whatever it results from. But what we do know is that we need to study it further to find out exactly what's happening in the pond, exactly the impact of what we're putting into the ponds.

We use to have a saying in Australia where I grew up, don't shit in your own backyard. And I hate to say it, but that's what we're doing too much of.

MR. KAUFMAN: I thought you were from Brooklyn.

MR. CONSELLA: We have got to think of a way to live in our environment in a more friendly way because there are more of us that live there. The only other -- I won't talk too much, but the only other thing that I'll bring to your attention is this graph here. I know you won't be able to read it but hopefully see some of the lines. I just want to point out two lines

on this graph.

You can see down at the bottom of this graph there's a red line down the bottom. That red line is the New York State DEC threshold for cyanobacteria in the water for recreational activities, 20 parts, 20 micrograms per liter. This line here goes up to here. That's the cyanobacteria that's being detected in Wainscott Pond just this last summer.

It's peaked at about 500 micrograms per liter which is 25 times the New York State DEC limit for recreational activities. What I was worried about and what Dr. Gobler and myself and Sarah's group have been working on, is trying to avoid a massive die off in the ponds, especially Wainscott Pond.

Georgica Pond is suffering but I think it will come back. Wainscott Pond, I simply don't know what's going to happen next year. The wild life I believe is in a desperate state. Also the quality of our drinking water because the ground

water ponds are a lot of private wells. And whatever we doing to the surface, whatever all the residents are doing around the ponds, it makes its way into the private wells.

MR. KAUFMAN: Sir, you time just about up.

MR. CONSELLA: I would like to thank very much the Suffolk County Executive for taking this so seriously and putting together those plans. And if there's anything that we can do to help, we will. But we also need your help to solve the problem.

MR. KAUFMAN: That's what we're here for. Okay. Legislature Al Krupski. I normally give everybody three minutes. You get 180 seconds.

MR. KRUPSKI: Thank you. I just want to compliment everybody who is involved in this and putting it together. It's really, I think it's very comprehensive and it shows a lot of work and a lot of acknowledgement of the input that you have

received so far and I think that's really important.

If you could add under Section, though, if I could suggest adding under Section Two, there's a place here where it says recommended wastewater management

Pg.3 strategy. And I think if you add recon-

struction to that list I think it would be appropriate. Under cesspool failure, infrastructure, property transfer, I think that wouldn't be such a bad thing.

And then just to urge you when you -- it does say using all the under existing environmental settings make sure that you

Pg.7 use the most current data. That's really important. I know there's a lot of reference to different modelling. But, you know, if you put bad information in the model, it's going to be very inaccurate and misleading. So it's really important to use the most recent testing and data for that. Thank you. Thank you for your efforts though, it's a very nice draft.

MR. KAUFMAN: I have one more card unless anyone else has any other cards. I have a Mr. Kevin McCallister, Defend H20.

MR. MCCALLISTER: Good evening, everyone. Let me start by saying I'm very pleased with the scope. I think it's extremely comprehensive. I know obviously the capability of the consultant on looking at the sub-watershed analysis. Very likely you have covered this and in looking at the scope document, I know you have. But I would like to fill in some blanks or at least emphasize a few points.

The evaluation of the end loading, you have covered all the inputs, fertilizer, wastewater of course. I think it's important to look at various scenarios of the current conditions, what is that load? With Article 19 we have the striving for the 19 milligram per liter threshold. You know, what does that mean across the board? A below 10 milligram per liter, I think we need to flesh out the commercial input versus the



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residential input.

So, you know, to have all these scenarios laid out with respect to what the various loads. Surface water sensitivity, you have covered it but I am a strong proponent of numeric nutrient standards. I know that is State driven. Back in 1987 there was an EPA directive to the states to move away from a narrative standard which is very subjective to a numeric standard.

Unfortunately that is not part of this. I realize that is a State directive that has to happen. We know what those numbers are. I believe they need to be assigned and promulgated into law.

Cost benefit analysis; I know this factors into the IA systems, sewering, et cetera. But I do think that you really -- the science has to be at least initially de-coupled from the cost benefit analysis. You know, let's define the loading and the various scenarios, the various remedies. Put aside the cost benefit and then

ultimately bring that in obviously as we're developing policy and what the meaningful actions would be.

Triggers for the upgrades; mandates, time of property transfer. You know, all these scenarios, of course, will be considered. And I think it should go a step further actually identifying what the reductions would be based on what the reasonable timelines are. We probably

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have an idea of what the property transfer is. I recall some years ago and I don't know if it's a national level, but every serve years was a property transfer.

What is that in Suffolk County and how quickly do we, I guess, achieve the goals in nitrogen reduction? Grandfathering, you know, this is in my opinion a, you know, the 500 pound gorilla in the room. We really need to address it. I know it's being discussed. The

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County is examining it. But ultimately, you know, goal has to be to eliminate grandfathering to ensure that, again, we

are striving for the greatest reduction possible.

This maybe an omission, perhaps not, sea level rise and coastal inundation. That has to be factored in into these areas. Using the various projections from the State, they have these in place. They have not been promulgated into law, there's been a delay unfortunately. But, you know, ultimately as we're dealing with, you know, particularly that zero to two year travel time, what does mean in 20 years does?

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It make sense to be really installing these various systems? What type of systems need to go into those zones? So I think that's a really important element that needs to be incorporated. And lastly sewering. And I know that's, again, one of the strategies with IA systems.

What are the build out scenarios? And I know, Maryanne, you did disclose that as part of it. But let's not look at a static system and say, well, we

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incorporated sewer district in this particular watershed, here's our reduction. Well, what does what mean for ultimate build out for potential increased density? So that has to be factored in when we are considering, you know, what the appropriate approach is for nitrogen reduction in these various watersheds.

And lastly I would say an excellent job, I'm very pleased and I'm pleased that there is a tight timeline that this is moving along and that's wonderful news. And I realize there's, you know, a great deal of work here, great deal of expertise is contributing to this process and I'm very optimistic that, you know, when we reach the final product we'll have a real strategy to reclaim our waters. Thank you.

MR. KAUFMAN: Right under the deadline. Okay, anybody else?

MS. GLASS: My name is Barbara Blass, B-L-A-S-S. I'm a resident of Jamesport and I'm much less technical. Just a very

brief comment, as you know, the five east end towns recently adopted the Community Preservation Fund and part of that amendment or an amendment to it, part of the amendment was an authorization to allow up to 20 percent for water quality improvement projects. And as a result of that, each of the Towns adopted their local law and part had to identify projects within their towns and Action Plans for priority areas. And the project themselves involved with nitrogen reduction.

And I guess my comment is loosely related to consistency with local adopted plans. Each of the five east end towns has a loose plan where they have

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identified priority areas and projects which would be eligible to receive monies through the CPF. And I'm just wondering how they are going to interface with your priority areas and just a general understanding of how it's going to work together.

MR. KAUFMAN: We can't answer that question at this point in time, but it is something that will be answered in the Scope when it's finally prepared after the Health Department and the consultant go over it and try and figure out the answer.

MS. BLASS: Thank you so much.

MR. KAUFMAN: Okay. Anybody else? Going once, going twice, sold. Okay. My duty now is to officially close the public scoping on behalf of the Council on Environmental Quality. And we're closed, we're finished. Thank you. Thank you everyone for coming.

(Time noted: 7:04 p.m.)

o0o

CERTIFICATION

STATE OF NEW YORK )
) ss
COUNTY OF SUFFOLK )

I, JANICE L. ANTOS, a Shorthand Reporter and Notary Public within and for the State of New York, do hereby certify:

THAT the foregoing transcript is a true and accurate transcript of my original stenographic notes.

IN WITNESS WHEREOF, I have hereunto set my hand this 3rd day of January, 2017.

Janice Antos

JANICE L. ANTOS

Electronically signed by Janice Darling (501-157-395-8040) f62f7850-46c1-4c7b-aacb-63652aa68ad2

**ATTACHMENT B**

----------x

SEQRA PUBLIC SCOPING HEARING

re:

DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT

SUFFOLK COUNTY SUBWATERSHEDS WASTEWATER PLAN

----------x

260 Motor Parkway
Hauppauge, New York

November 29, 2016
5:57 p.m.

Stenographically recorded and transcribed by Donna C. Gilmore, a Notary Public within and for the State of New York.

1

2 A P P E A R A N C E S:

3 Michael Kaufman, Vice Chairman
Suffolk County Council on Environmental Quality

4

Rob Carpenter, Council Member

5 Suffolk County Council on Environmental Quality

6 John Corral, Senior Planner
Suffolk County Planning Department

7

Peter Scully, Deputy Suffolk County Executive

8

Walter Dawydiak, Director

9 Suffolk County Division of Environmental Quality

10 Maryanne Taylor
CDM Smith

11

AUDIENCE PARTICIPANTS:

12

Jefferson Murphree

13

Dan Gulizio

14

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11/29/2016 Public Scoping Hearing

MR. KAUFMAN: We are going to start off with the Pledge of Allegiance to the Flag, led by Mr. Carpenter.

(FOLLOWING THE PLEDGE OF ALLEGIANCE, THE DRAFT GENERIC ENVIRONMENTAL IMPACT PUBLIC SCOPING HEARING WAS CALLED TO ORDER BY MICHAEL KAUFMAN AT 5:57 P.M.)

MR. KAUFMAN: This is a public hearing regarding the scoping of the Draft Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan, which will be described in greater detail in a few minutes.

This public hearing is being held so that Suffolk County can receive comments on the development of the EIS for the plan.

My name is Michael Kaufman. I'm vice chairman of the Council on Environmental Quality. We're the manager of the SEQRA issues in the EIS and we review the EIS once it's finished, for the Legislature. We're not, as it

11/29/2016 Public Scoping Hearing happens, employees of Suffolk County, we're not paid, we're citizen appointees with SEQRA experience.

The project initiator and sponsor is the Suffolk County Department of Health. They, along with a consultant, CDM, Camp Dresser McGee, will be preparing the DGEIS for our review. The Suffolk County Legislature is the SEQRA lead agency. They will be making all final determinations once the GEIS process is completed.

Let's see. The scope. The scope is the initial part of preparation of an EIS. It's mandated by state law and Suffolk County regulations. It is the public's chance, as citizens, to review and comment. Public comments will be taken today and again on Thursday, December 1st, at 6 p.m., at Suffolk County Community College Culinary Arts and Hospitality Center in Riverhead.

Written comments may be submitted to the Suffolk County Department of Health Services and CEQ until December 13, 2016.

11/29/2016 Public Scoping Hearing

Now, to give everyone a chance to speak, we will ask each speaker to keep their comments to three minutes, and we would ask that you fill out cards with names and addresses so that we can respond properly.

Let's see. There's a little bit of housekeeping that goes along with this.

Public notices. In connection with this public hearing, notice has been served with the official papers of Suffolk County, as well as posted on the New York State DEC Environmental Notice Bulletin and the Suffolk County CEQ website. In addition, this public hearing notice has been sent to all known involved agencies, as well as the Suffolk County Department of Health Services list of interested agencies and parties.

We're asking you, again, to, whoever is going to be speaking, sign in, and we will do our best to keep you informed as actions proceed. The Suffolk County CEQ web page will continue to post relevant

1 11/29/2016 Public Scoping Hearing
2 SEQRA documents related to this review as
3 they become available.
4 The procedure that we're going to be
5 undertaking today is that there's going
6 to be an introduction by Peter Scully,
7 the Deputy Suffolk County Executive, of
8 this particular plan, so that everyone
9 will sort of have an idea of where we're
10 going. Suffolk County Department of
11 Health will be giving a presentation, and
12 also I believe Maryanne Taylor of CDM
13 will also do a presentation, and that
14 will be stuff up on the screen up there.
15 As part of the scoping, because we
16 like to hear from the public as to their
17 concerns, their comments, et cetera, CEQ
18 and the Suffolk County Health staff will
19 not be taking any questions and answers
20 or engaging in explanations or anything
21 like that. You get three minutes, you
22 talk, whatever is on your mind about this
23 particular plan you bring forth. If you
24 have questions or if you want to submit
25 more testimony or further written

11/29/2016 Public Scoping Hearing comments, you have until December 13th to do so.

So that pretty much completes what I have to say.

This is Rob Carpenter. He is also a member of CEQ. This is John Corral. He's one of the staffers for CEQ out of the Suffolk County Planning Department.

That's basically what I have to say. Now to the main event. I'd like to introduce Peter Scully, Deputy County Executive.

DEPUTY EXECUTIVE SCULLY: Thanks.

I'll be very brief. We had prepared a PowerPoint. The first two slides were to be utilized by me to provide some context, but given who I see out here, I think I'm going to rely instead on some knowledge I have regarding the process, just to say that this is an important step in an overall effort that we have in place in Suffolk County to set the stage for a movement away from the use of nonconforming cesspools and septic

1 11/29/2016 Public Scoping Hearing
2 systems to systems that are capable of
3 reducing nitrogen pollution, which is our
4 number one goal.
5 This subwatersheds GEIS will serve
6 as a basis for a move away from a pilot
7 testing program that we have underway to
8 make sure that these systems work as
9 they're advertised before we certify them
10 for use in Suffolk County to a broader
11 effort, to see them used across the
12 county. It's going to provide important
13 information to allow policymakers to make
14 science-based decisions about priority
15 areas where the systems will have the
16 most beneficial effect. And we see this
17 as a great opportunity for folks to both
18 learn more about the process and to
19 provide information that's going to be of
20 use to the county as we move forward in
21 that regard.
22 So on behalf of County Executive
23 Steve Bellone, I want to thank each and
24 every one of you for turning out tonight,
25 and I think I'll turn it over to Walt for

11/29/2016 Public Scoping Hearing

the purpose of making a presentation.

MR. DAWYDIAK: Walter Dawydiak, Director of Environmental Quality, Suffolk County Health Department.

It's great to be here today. I'll go over a few key points very, very quickly, just to give a little bit of background. We're going to be going over the proposed action, the scope, and Maryanne Taylor will be giving you more detail about the scope of the action and looking for public comments.

Again, this place is like no other place that we've found on the East Coast or anywhere else in America; a million and a half people, over 900 square miles, 74 percent unsewered, legacy problem with nitrogen that nobody has come to terms with until recently with the Comprehensive Water Resources Management Plan, the IBM Smarter Cities Plan, the Department of Economic Development Planning, working with public works and health to come up with a cooperative

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approach to deal with the problem of nitrogen pollution as an early action, the Long Island Nitrogen Action Plan.

We're very excited. This is the first time that all three estuary programs have had a synoptic, integrated, comprehensive look at the groundwater contributing areas, at the loads in a consistent uniform manner and impacts and points and reduction goals and means of implementation. So we think that we've scoped out a really solid plan for a first early action LINAP plan, Long Island Nitrogen Action Plan. Our consultant, CDM, has done a wonderful job carrying the ball forward to getting this set up. If anybody wants more information about the plan itself or on the process, contact Ken Zegel. His contact information is out there on the handout materials. He's here in the audience, and feel free to reach out to us any time with questions or comments.

I don't want to take up any more of

1 11/29/2016 Public Scoping Hearing
2 CDM's time on this. Again, it's great
3 that we've gotten to this point. The
4 Generic Environmental Impact Statement is
5 going to set a framework for future
6 actions. It's really unprecedented and
7 historic in the county under the county
8 executive's leadership.
9 Mary?
10 MS. TAYLOR: Thank you.
11 I'm going to jump ahead there.
12 All right. Can you hear me if I
13 don't use the microphone in the back?
14 Can you hear me?
15 AUDIENCE MEMBERS: Yes.
16 MS. TAYLOR: Good. Okay. So I'm
17 going to talk about these three, the
18 proposed action. I'm going to give you
19 an overview of the Subwatersheds
20 Wastewater Plan scope, and follow that
21 with the proposed GEIS scope and also the
22 project schedule before we turn it over
23 to the reason why everybody came, really,
24 to provide comments.
25 So the proposed action is

1 11/29/2016 Public Scoping Hearing
2 implementation of the county
3 Subwatersheds Wastewater Plan. The
4 subwatersheds plan has a number of parts;
5 identification of a wastewater management
6 strategy to reduce nitrogen loading,
7 identifying the priority areas where
8 nitrogen reduction needs to happen,
9 establishing the goals, the nitrogen
10 reduction goals for those priority areas,
11 and identifying appropriate means of
12 wastewater treatment to achieve those
13 goals.
14 The strategy has a number of
15 components, focused on innovative onsite
16 wastewater treatment systems for the
17 approximately 360,000 residences that are
18 not sewered at this point in time,
19 Appendix A systems,
20 clustered/decentralized systems, sewage
21 treatment plants at only, these are
22 limited to those that are currently being
23 evaluated by the Department of Public
24 Works, as part of their ongoing projects.
25 The scope includes a number of advanced

1 11/29/2016 Public Scoping Hearing
2 wastewater treatment pilot areas that the
3 county is evaluating, establishment of a
4 water quality protection district to
5 provide a mechanism for funding these
6 upgrades, and establishment of a
7 responsible management entity, the
8 Department of Health Services, to
9 evaluate the alternative technologies, to
10 approve them, to supervise their
11 installation, to register them, and to
12 make sure that they're maintained and
13 monitored and functioning as intended.
14 Ken Zegel has put together all of
15 this information into a single graphic
16 here, kind of showing how the
17 Subwatershed Wastewater Plan is a subset
18 of the county's Reclaim Our Water
19 Initiative, and it's also an early action
20 light on from the Long Island Nitrogen
21 Action Plan.
22 This graphic illustrates all the
23 parts, the innovative alternative onsite
24 systems, the decentralized systems.
25 We'll be looking at the potential to

1 11/29/2016 Public Scoping Hearing
2 increase the flows for those systems up
3 to 30,000 gallons per day, maybe
4 different separation distances, maybe
5 under some situations modifying the
6 approval process to streamline it a
7 little bit, the existing sewage treatment
8 plant studies that are being implemented
9 by DPW, and the innovative alternative
10 onsite systems.
11 Ken has been, in the spirit of a
12 picture is worth a thousand words here,
13 Ken has summarized, again, a lot of the
14 information onto this graphic, and
15 there's only a couple of key points that
16 I want to make.
17 Number one is that the Subwatersheds
18 Wastewater Plan is an early action plan
19 using existing information, existing
20 tools, existing data, and as such, we
21 really have to bring in the expertise and
22 the experience and the information that
23 all these collaborators can provide. So
24 it's not something that Ken and Walt and
25 I and Annette are sitting together doing

1 11/29/2016 Public Scoping Hearing
2 in a room by ourselves. We're integrated
3 with the Long Island Nitrogen Action
4 Plan, DEC and the Long Island Regional
5 Planning Commission is involved on pretty
6 much a weekly basis. We're working with
7 EPA, Department of State, the three
8 estuary programs are sharing their
9 information and data and expertise.
10 Stony Brook University School of Marine
11 and Atmospheric Sciences and the Center
12 for Clean Water Technology are sharing
13 their expertise and information. And
14 what I really kind of wanted to highlight
15 here is the role of the advisory
16 committees and the stakeholders. The
17 county has assembled a wastewater plan
18 advisory committee, who has been very
19 helpful so far, and a couple of the towns
20 in particular, you see the overlap here,
21 have been very generous in sharing
22 information and their thoughts and
23 guidance, and it's been very helpful as
24 we go through.
25 In order to build this plan and make

it as robust and as implementable and as useful as possible, if everybody comes together and kind of shares what they know and what they have, we're going to end up with a much better plan.

So here's a scope of work on the subwatersheds management plan. I'm not going to go through each of the tasks, I'm just going to hit a few of the highlights of how we're going to accomplish the goals. We've known, seems like forever, right, that we need to protect our groundwater quality, our sole source aquifer, our source of potable supply. We also know we need to protect our surface waters, the Sound, Peconic, the South Shore Estuary Reserve, but in this study we're kind of integrating them all together. It's become increasingly apparent that in order to protect and improve surface water quality, we really have to start with the groundwater quality, because the groundwater provides the base flow or the underflow for our

1 11/29/2016 Public Scoping Hearing
2 surface water resources.
3 So to that end, we're starting on,
4 this is a regional depiction that the
5 county developed of areas contributing
6 groundwater base flow or underflow to our
7 surface waters. Working together with
8 the state and the EPA and a whole batch
9 of stakeholders and starting with the
10 state's priority water body lists, we've
11 identified 189 subwatersheds that are
12 going to be specifically delineated so
13 that the contributing area and travel
14 times to those subwatersheds are being
15 developed right now.
16 Once we have those, we're overlaying
17 some planning criteria, including land
18 use areas where the depth to groundwater
19 is less than 10 feet, because that's
20 going to be really important, right, in
21 terms of identifying an appropriate
22 wastewater treatment technology to have
23 that saturated zone -- unsaturated zone,
24 excuse me.
25 Similarly, we're taking the same

1 11/29/2016 Public Scoping Hearing
2 approach with groundwater protection and
3 supply well protection, so these are the
4 areas contributing, these are the source
5 water areas for our community supply
6 wells. We're using the existing Suffolk
7 County model frameworks, but on a much
8 more highly dispertized [phonetic] basis.
9 This main body flow model now has almost
10 a million elements. And the reason why I
11 say that is because we need that level of
12 detail to support the parcel specific
13 nitrogen loading estimates that we're
14 going to be doing on a county-wide basis.
15 This is a good, probably a good
16 opportunity to mention the contributions
17 of the focus area workgroups that the
18 county has established. So we're not
19 doing this in a vacuum, we're working
20 with members of EPA, DEC, The Nature
21 Conservancy, Stony Brook, USDS -- I'm
22 sure I'm forgetting some people. But
23 they are all contributing their
24 information, their data, their ideas,
25 their expertise, and the whole process is

very transparent and collaborative, so that it's not just us sitting in a room coming up with these. Everybody is reviewing, vetting and approving the decisions that we make.

So the nitrogen loads include nitrogen loading from sanitary wastewater, fertilizer, atmospheric deposition, pets, birds. And so we're identifying the nitrogen loads to each of those subwatersheds and the percent contributions from each of these components.

Simultaneously, we're assembling a batch of water quality data so we know what our endpoints look like; dissolved oxygen, chlorophyll a, presence or absence of harmful aquatic blooms or submerged aquatic vegetation. And we're compiling all of this, we're looking at it with respect to the nitrogen load and the subwatershed characteristics to kind of define how nitrogen load results in our endpoints that we want to see. One

of the most important factors we think is the residence time or the flushing rate of these surface waters. Some of the subwatersheds can assimilate a lot more nitrogen load because they're well-flushed. To that end, HDR is working under contract to New York State, they're simulating using EFDC, the Environmental Fluid Dynamics Code, to estimate the residence time or the flushing time for each of these subwatersheds. So that work is ongoing as we speak.

All that information is going to be compiled to help us prioritize, we're going to identify the nitrogen loads pretty much on a unit basis, and then we'll be able to prioritize the areas where the nitrogen loads have to be reduced, and also hopefully to give some first-order estimates of by how much they have to be reduced in order to achieve the ecological endpoints that we want to see.

Meanwhile, on the third tract, we've started looking at the different treatment alternatives that can help us to achieve those target nitrogen load reductions. This is just one of the innovative alternative systems that the county has recently approved. We're going to be looking at pilot data that the county is developing and we're going to be doing a series of cost benefit type analyses to see does it make more sense to require a higher level of treatment in an area maybe along the coastline, a smaller area, or maybe a lesser level of treatment more widespread across the county. We'll be looking at areas in particular where the depth to water is relatively shallow, where you have a shallow water table, where the soils may not be good. There's a whole host of factors that we'll be considering there.

Finally, it will all be documented in final report. We'll have a section that identities how we accomplished each

of the evaluations, we'll have estuary specific chapters that will identify the subwatersheds, the nitrogen loads, the nitrogen load reductions that are required and the recommended approaches. The same for drinking water and aquifer protection. All of it will be summarized in one section documenting a plan. There will be a chapter talking about implementation, and that will probably address the phasing, whether these are implemented when a property is sold, when a septic system fails, maybe it will be priority areas, we'll talk about funding. And then because, remember we said that this is a first-order evaluation based on existing information, we'll have a section identifying recommendations for further evaluation.

And then finally, we get to the environmental impact statement on this plan. This scope, the outline of the EIS is based on the environmental assessment form that was submitted. So we'll start

1 11/29/2016 Public Scoping Hearing
2 with an executive summary, a concise
3 description of the overall project.
4 There will be a description of the
5 proposed action purpose and need, and
6 then -- I'm not going to read this whole
7 thing to you, but these italicized
8 sections kind of prompt me where I want
9 to go into a little bit more detail.
10 So the existing environmental
11 setting, the physical environment will
12 include land use, ground and surface
13 water resources, plant and animal
14 communities, historic and archeological
15 resources, noise, odors, human health,
16 consistency with community plans and
17 character. Potential impacts of the
18 proposed action will include all those
19 topics, as well as environmental justice.
20 We'll have short-term construction
21 related impacts, cumulative impacts.
22 We've identified three that we think need
23 to be evaluated in detail: So there's
24 water export, if we move water from one
25 subwatershed to another, what is that

1 11/29/2016 Public Scoping Hearing
2 going to do to the surface water
3 resources downgradient as well as the
4 water supply; potential for growth
5 inducement; and because most of these
6 technologies are not passive systems, the
7 greenhouse gas impact.
8 Let's go back for a second. We have
9 the unavoidable adverse impacts,
10 mitigation measures, the alternatives
11 analysis. So we've identified five
12 alternatives: There's the no action
13 alternative, things just moving along as
14 they are today; looking further to our
15 neighbors to the west, Nassau County and
16 New York City, centralized county-wide
17 sewer districts; increase in lot size
18 county wide; purchase of priority area
19 properties for preservation; and then
20 dual plumbing, dual water systems.
21 There's a few things that are not
22 specifically addressed in this GEIS.
23 This GEIS is focused on nitrogen
24 reduction by way of wastewater
25 management. The long-term nitrogen --

sorry -- the Long Island Nitrogen Action Plan that the planning commission and the state are implementing are looking at fertilizer reduction, BMPs, aquaculture, things like that. So if you wanted to check on some of those things you could look at the Long Island Nitrogen Action Plan scope of work online and you'll get a better idea of what's going to be handled there.

We'll also have a section identifying triggers for projects or actions that would require their own draft or final environmental impact statement, or supplemental, and those would include things like siting a new sewage treatment plant or establishing a new sewer district.

The schedule for this GEIS, we are right in the middle of scoping here. We have a two-month scoping period. As Mike mentioned, the comment period will close December 13th. We're working on the draft subwatershed management plan right

now, plan to finish that up the end of June with the draft GEIS to follow. There's an approximately 60-day review time of the draft GEIS late in the summer, including another public meeting. The final GEIS will be posted for public review. There's an approximately 15-day comment period after that, findings statement prepared, and the SEQRA concluded sometime next fall.

And that's pretty much what I have. So Mike, you want to take over for me?

MR. KAUFMAN: Okay. So we'll start taking public comment now. Basically the lectern is up here, there is a microphone, your comments will be recorded so that we can have them analyzed by the consultant and by the Department of Health, and we're here to basically listen to the public and hear what they have to say.

So if anyone has any cards?

The silence is deafening.

Come on, public, say something.

MR. MURPHREE: My comments have nothing to do with the questions specific to the document or the process, it's a separate -- you've got a lot of information on this PowerPoint. Is this PowerPoint available online or as a handout?

MR. KAUFMAN: I think it's on CEQ's website.

MR. CARROL: We can make it available.

MR. KAUFMAN: Yeah, we'll try to make it available and put it on the CEQ website.

MR. MURPHREE: Okay. And then, because you've got a couple of really good maps, one was the subwatershed map, one was a nitrogen load estimates map. Are those available to the public?

MR. KAUFMAN: They should be.

MS. TAYLOR: They're a work in progress, but they will be when they're completed. Right?

MR. KAUFMAN: Preliminary data, I'm

11/29/2016 Public Scoping Hearing

guessing, is not, if it's working data it's not going to be released until we have a firmer handle on everything.

MR. MURPHREE: Okay.

MR. KAUFMAN: Does anyone want to say anything?

I've really scared all of you off. Okay.

AUDIENCE MEMBER: This is a lot of information and a lot to digest for all of us, so it's a little education for us to hear all of it when it goes forward.

MR. KAUFMAN: Well, what I'm going to do in about a minute is close the public hearing at this point in time. We will be reconvening in Riverhead, where hopefully people will actually speak and give us further information as to what they think about all of this, and that will be on Thursday, December 1st, 6 p.m., at Suffolk County Community College Culinary Arts Center, 20 Main Street, I believe it is.

If we've scared you off, you can

11/29/2016 Public Scoping Hearing

provide, as I stated earlier, you can provide written comments based upon what you've seen here, you can provide them until December 13th.

AUDIENCE MEMBER: Who do we send them to?

MR. KAUFMAN: Officially, comments can come into CEQ and they'll be forwarded on to the consultant and to Ken, but technically, it should go, most of them should go to Ken. He's the direct point of contact at this point in time. And he happens to be here today, raising his hands, several times. And if you have other comments that you want to give to him right now, that's okay.

Going once, going twice.

I recognize Dan Gulizio.

MR. GULIZIO: I just have one question. You said this was a subcomponent of the County's Reclaim Our Waters initiative, and there are ongoing amendments to the Sanitary Code right now, Article 5 and 6, and 19 just

1 11/29/2016 Public Scoping Hearing
2 occurred. How is that all being assessed
3 cumulatively in terms of the
4 environmental review? Is there one
5 document that's going to be looking at
6 all that?
7 MR. KAUFMAN: Really, what you
8 should do is come up and provide public
9 comment. I don't know at this point in
10 time, because the meeting's still not
11 been fully closed at this point in time,
12 I don't know that we really want to as
13 part of the scoping get into that. You
14 can ask, if you want to, when the meeting
15 is closed, you can have those technical
16 questions. You can talk to Ken or
17 Maryanne, or make your comment, if you
18 want to, and then talk afterwards.
19 Again, we're not supposed to engage in
20 conversation at this point in time and
21 answer questions, et cetera.
22 I'm going to close the meeting then.
23 So let the record reflect that the
24 scoping meeting is now closed, and we
25 will reconvene in Riverhead in two days'

1 11/29/2016 Public Scoping Hearing
2 time.
3 Thank you, very much, for coming, we
4 appreciate it. And show up in Riverhead.
5 (Time Noted: 6:28 p.m.)
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2 CERTIFICATION

3

4 STATE OF NEW YORK )

) ss

5 COUNTY OF SUFFOLK )

6

7 I, DONNA C. GILMORE, a Shorthand Reporter

8 and Notary Public within and for the State of New

9 York, do hereby certify:

10 THAT the foregoing transcript is a true

11 and accurate transcript of my original stenographic

12 notes.

13 IN WITNESS WHEREOF, I have hereunto set my

14 hand this 29th day of December, 2016.

15

16

17 _____

18 DONNA C. GILMORE

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25

**ATTACHMENT C**

Town of

Brookhaven

Long Island

**Edward P. Romaine,** Supervisor

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980
Ken.zegel@suffolkcountyny.gov

December 13, 2016

Dear Mr. Zegel:

I commend the County on moving ahead with the Suffolk County Subwatersheds Wastewater Plan. The Town agrees with the approach to SEQRA compliance of the completion of a Generic Environmental Impact Statement. Below please find comments on the Draft Scoping Document for the Generic Environmental Impact Statement being completed for the Suffolk County Subwatersheds Wastewater Plan.

Comment 1. On page 2, Section 2.0, #1 Recommended Wastewater Management Strategy an additional point should be added that states: "Identify surface water numeric nutrient standard for nitrogen". Numeric nutrient standards for surface waters vary depending on a variety of factors (freshwater, salt water, nutrient poor ecosystem). The NYSDEC is in the process of developing numeric nutrient standards for New York surface waters. pg. 17

Comment 2. On page 2, Section 2.0 #1 There is a list indicating activities that will prompt wastewater treatment upgrades. Consider adding a category of "Illegal Rental Properties". These properties often house a disproportionately large number of people and so may have substantially higher nitrogen loading than similarly sized non-rental properties. There may be an opportunity to work with the Towns to require installation of I/A systems at these properties as part of legal settlements. pg. 17

Comment 3. On page 5, Section 3.0 Purpose and Need – Consider adding a sentence noting that reducing nitrogen loading is necessary to enhance coastal resiliency including storm and flood protection offered by marshes. pg. 6

Comment 4. On page 6, Section 4.0, #3 Existing Environmental Setting – consider adding official New York State projections for sea level rise to the list of data sources to be consulted. pg. 7

**Planning, Environment and Land Management**
**Tullio Bertoli, AICP, Commissioner**
**Brenda Prusinowski, AICP, Chief Deputy Commissioner**
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Comment 5. On page 7, Section 4.0, #4 – Consider adding Long Island Regional Economic Development Council's Strategic Economic Development Plan for the Long Island Region to the list. In general this document makes a strong case for Long Island's economy being directly tied to maintaining high water quality. Pg. 7

Comment 6. Page 8, Section 4.0 Item Plants and Animals – the potential for water tables to be affected by sewering should be identified. Data from Nassau County should be used to identify potential impacts to ecological communities from sewering. In addition the potential for salt water intrusion to the aquifer should be examined. Pg. 9

Sincerely,

Anthony Graves
Chief Environmental Analyst

Edward P. Romaine
Supervisor

**Planning, Environment and Land Management**
**Tullio Bertoli, AICP, Commissioner**
**Brenda Prusinowski, AICP, Chief Deputy Commissioner**
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ATTACHMENT C

*Via U.S. Mail and email to: ken.zegel@suffolkcountyny.gov*

CENTRAL PINE BARRENS JOINT PLANNING & POLICY COMMISSION

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December 13, 2016

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services
Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

**Re: Draft Scope for the Draft Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan**

Dear Mr. Zegel:

On November 14, 2016, the Central Pine Barrens Commission office received an email notification of the public hearings scheduled to receive comments on the Draft Scoping Document for the preparation of a Draft Generic Environmental Impact Statement (DGEIS) for the County's Subwatersheds Wastewater Plan.

Comments are offered on the Draft Scoping document dated November 2016 as they relate to the goals and objectives of the Central Pine Barrens Comprehensive Land Use Plan and Environmental Conservation Law Article 57.

**1. Section 2.0. Proposed Action. Subsection I. Recommended Wastewater Management Strategy.**

(a) What impact, if any, will the Plan have on the Pine Barrens Credit (PBC) program, specifically the standards allowing the redemption of PBCs to increase sanitary flow treated in a typical septic system? pg. 16

(b) Please explain the methodology used to "evaluate surface water sensitivity," and define the term "sensitivity" as it is used. pg. 13

(c) Please explain the methodology to be used in the plan to "evaluate nitrogen loading to groundwater and surface water." For example, will the plan examine the existing and build out development potential of all communities in the County to evaluate the expected nitrogen loading to groundwater and surface water resources? What benchmark will be used to determine maximum nitrogen loading to water resources and what are the acceptable limits? pg. 13

(d) Please elaborate on how and for whom the costs and benefits of wastewater management alternatives will be evaluated. Will the analysis of benefits be in regard to those that accrue to property owners, Towns, and developers or benefits to that accrue to ecological and water resources or a combination thereof? pg. 13

(e) The scope of the plan's consideration of activities that will prompt wastewater treatment upgrades under various scenarios should include financial and other costs incurred by property owners, including the expenditure of time when properties are sold and purchased by new owners. The potential cost that will be passed on to new owners or included in sales should be assessed. A timeframe for compliance and enforcement provisions should be provided. pg. 17

2. **Subsection 2. Water Quality Protection District and Responsible Management Entity.**

(a) Please identify the timeframe for and the triggers that will require installation of an alternative treatment system and modifications to a property, such as when new construction is proposed or in an application to build an expansion of 50% or more of a structure. Please also identify the application phase(s) when it will be required, such as site plan review, subdivision review, Zoning Board of Appeal variance application, building permit phase, etc. pg. 13

(b) The installation of a new treatment system may require other potentially significant modifications to a property, other than the replacement of one system with another, including, but not limited to, plumbing and waste line realignment, rerouting and installation; shoring up of structures; site disturbance; potential clearing on a property encumbered by covenants or easements and alterations to existing structures and property. Costs to a property owner may be a limiting factor. Therefore, please identify funding mechanisms and compliance and enforcement staffing, fees, and fines to implement the plan. pg. 13

3. **Subsection 5. Sewage Treatment Plants.**

(a) Although this section states "New STPs and/or expansion of existing STPs will be completed…," it is not clear how facilities will be funded and where they will be sited. It is worth noting in the Central Pine Barrens Comprehensive Land Use Plan, Standard 5.3.3.1.2, Sewage treatment plant discharge states, "*Where deemed practical by the County or State, sewage treatment plant discharge shall be outside and downgradient of the Central Pine Barrens. Denitrification systems that are approved by the New York State Department of Environmental Conservation or the Suffolk County Department of Health Services may be used in lieu of a sewage treatment plant.*" It would be helpful to review preliminary plans or assessments of potential new sewage treatment plants (STPs) or upgrades, if any, that are proposed to occur in the Central Pine Barrens region. pg. 16

(b) Please examine the feasibility of and cost to develop a STP to connect existing properties without increases in land use density or intensity. If new or expanded STPs were developed with capacity to support increases in development beyond current zoning and health department standards and limitations it would defeat the purpose and goal of reducing nitrogen loading in water resources. pg. 16

(c) Please explain how the goals and objectives of the plan are met if new or expanded STPs are not designed and constructed. pg. 14

**4. Part 3.0 Purpose and Need.**

Please identify the Long Island Commission on Aquifer Protection (LICAP) as another recent initiative to review and assess groundwater quality and quantity in Long Island including Suffolk County. pg. 7

**5. Part 4.0 Generic Environmental Impact Statement Outline**

*(a) Subsection 4.0 Potential Impacts of the Proposed Action*

Land Use, Community Plans and Character

This section identifies the Long Island Pine Barrens Protection Act. Please add the Central Pine Barrens Comprehensive Land Use Plan to this section as well. pg. 8

Groundwater and Surface Water

- This section discusses improving groundwater and surface water quality. Please identify how "improvement" will be measured and what standard or standards will be applied to measure improvement including, but not limited to, drinking water quality standards, ecological standards, recreational activity standards, etc. Are public water suppliers involved in the project to measure potential "improvement", if applicable, to drinking water supplies? pg. 9, pg. 14
- This section discusses assessing "groundwater impacts." Please identify the type of impacts to which the plan is referring to and how the impacts will be alleviated or mitigated. pg. 9
- This section indicates the potential presence/reduction of other wastewater constituents such as pharmaceuticals and personal care products (PPCPs) will also be acknowledged. Please identify how PPCPs will be remedied and will new systems provide a remedy and to what extent, if any? pg. 14
- The scope states "surface water impacts will include potential impacts from changes to groundwater baseflow." Please identify or define "groundwater baseflow" and how it is impacted and altered. pg. 12

Plants and Animals

- Please identify proximity and disturbance to wetlands and travel time. pg. 14
- How and in what context will ecological habitats and species be analyzed? Will they be impacted by installation, and to what extent? And if not, why study? Or are they studying to monitor how environment will improve after the system installation? pg. 9

Historic and Archaeological Resources

Please elaborate on the reasoning to include this section. Please identify specific elements or sites, if any, that may be examined and potentially impacted by the plan to give purpose for including this section. pg. 9

Noise and Odors

Provide information and analysis on the levels of noise and odor from existing facilities to compare with the proposed facilities and indicate if the proposed facilities will improve noise and odor levels, worsen them or result in no change. pg. 10

Economics

- The scope should refer to the results of the recent Health Impact Assessment (HIA) conducted by the County and the U.S. Environmental Protection Agency to examine various pathways and impacts of potential wastewater treatment and code modifications. pg. 10

- This section should define in greater detail the proposed "Water Quality District," what it is, who is in it, where it is, how it will be funded, and compliance and enforcement procedures to be established in a Water Quality District. pg. 14

(b) *Subsection 5. Short-term or Construction Impacts*

Please identify impacts that are expected to occur from new installations including redesign costs and assessment, reorientation of dwellings and facilities for pipes and other infrastructure to facilitate new systems and/or to connect to sewage treatment plants where applicable. pg. 11

(c) *Subsection 10.0 Alternatives*

*i.* The No Action Alternative refers to a "*patchwork of wastewater collection and treatment systems that currently exist within the County*." The Suffolk County Department of Health Services regulates and approves sanitary wastewater treatment facilities and oversees their construction and installation and conformance to discharge standards. Although privately and publicly owned and operated plants, facilities, and sewer districts exist throughout the County, ultimately, systems are required to conform to State and Federal laws delegated to the County to implement standards and discharge concentrations. Therefore, please clarify that although separate public and private entities may own and manage facilities in the County, the SCDHS is the regulatory authority responsible for implementing the Sanitary Code for approval and compliance of facilities. It may also be the case or the scope may state that recently it has come to light that system designs are being examined to improve conditions, effectiveness, and protection of public health, safety, and environmental resources. pg. 18

ii. The scope should identify alternatives and existing conditions and processes that may not be capturing opportunities for improvement and identify potential modifications in practices or review processes that could occur to improve environmental conditions. Will the plan make recommendations to other involved agencies regarding zoning or changes to development standards that may improve conditions? Will the plan recommend changes that would require the retirement of Development Rights or Pine Barrens Credits, or land preservation in instances of nonconforming subdivisions or increases in land use density or intensity to offset potential environmental impacts? pg. 16

iii. Prior to implementing requirements for 360,000 properties to comply with new regulations, please consider a short term alternative for voluntary participation or potentially entirely new development including new residential subdivisions and commercial and industrial site plans. pg. 14

iv. An alternative that requires retirement of a development right, flow credit, or Pine Barrens Credit, in cases of substandard subdivisions, increases in density or land use intensity, should be considered prior to implementing regulations that require alternative treatment systems. pg. 17

v. In the potential alternative for the County to acquire land through open space funding in the defined "priority area," please consider referring to recent amendments to the Community Preservation Fund (CPF) that allow a percentage of funds to be used toward water quality improvement initiatives. Clarify if funds in the CPF would be available for use in this project. In addition, please consider a recommendation to or alternative for municipalities, including Towns and Villages in the County where a CPF does not exist, to explore and consider establishing a CPF to manage the acquisition of priority areas. This may provide a revenue source to acquire land in priority areas and minimize financial impacts to residents in priority areas. pg. 15

*(d) Subsection 12.0 Project/Site-Specific D/FEIS Requirements*

The DGEIS should develop thresholds for potential impacts that may trigger site specific SEQRA analyses. pg. 12

Thank you for the opportunity to comment on the Draft Scope. If you have any questions, please do not hesitate to contact me at (631) 218-1192.

Sincerely,

Julie Hargrave

Julie Hargrave
Principal Environmental Planner

cc: John W. Pavacic, Executive Director, CPBJP & Policy Commission
Judith Jakobsen, Policy and Planning Manager, CPBJP & Policy Commission
John Milazzo, Counsel to the Commission

ATTACHMENT C

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December 12, 2016

Ken Zegel, PE, Associate Public Health Engineer
Suffolk County Department of Health Services, Office of Ecology
360 Yaphank Avenue, Suite 2B
Yaphank, NY 11980

Re: Draft Scoping Document, Suffolk County Subwatersheds Wastewater Plan

Dear Ken:

The Draft Scoping Document for the pending Subwatersheds Wastewater Plan GEIS is continued evidence of Suffolk County's recognition that reduction of nitrogen-loading to groundwater and surface waters is imperative for economic, public health, environmental, and quality of life reasons. The Nature Conservancy applauds the investments that Suffolk County has committed to solving this issue. We appreciate the work that that has gone into preparing the Draft Scoping Document. This letter represents The Nature Conservancy's comments on the draft document; we hope that you will incorporate these comments concerning the draft scoping document. We look forward to continuing our collaborative efforts with Suffolk County as this work continues to progress.

**Introduction, Section 1.0**

pg. 1

The Draft Scoping Document (DSD) states that "Changes to the County Sanitary Code will enable the Suffolk County Department of Health Services (SCDHS) to implement the wastewater treatment technologies required to achieve the nitrogen reduction goals."

This should be rephrased. It is important for the County to acknowledge that it alone does not bear either the full responsibility or full ability to "achieve the nitrogen reduction goals" that will be necessary to end the scourge of harmful algae blooms and other water quality problems caused by excess nitrogen.

While action by the County is necessary "to achieve the nitrogen reduction goals," it will not be sufficient, because 1) the needed reductions are so great that they exceed the reductions that can be achieved through wastewater technology upgrades subject to County jurisdiction (e.g., wastewater reductions by state and federal entities not subject to the County's jurisdiction; fertilizer reductions by farmers, landscapers, homeowners, and businesses; water reuse projects; wetland restoration; greater use of buffers; Nassau County and CT actions; etc.); 2) for the County's proposed technology upgrades to be effective, community and stakeholder input and cooperation will be essential; and 3) whether or not the County creates the proposed Subwatersheds Plan, there will be independent actions taken by other governmental entities such as Suffolk's ten towns, especially now that five of those towns have an independent source of funding for water quality improvement projects (the Community Preservation Fund), not to mention EPA-driven efforts such as the Long Island Sound and Peconic Estuary TMDLs.

Once again, thank you for the opportunity to provide public comments on these draft reports. Since the days just prior to Sandy the Department of Interior staff from several agencies have done fantastic work in both managing the park during challenging times, as well as compiling a pool of multi-agency monitoring and assessment data that has been critical in this process. We thank you for your efforts and look forward to working with you moving forward.

While we realize that the Scoping Document applies in the first instance to proposed County action, it is important to place this action in the broader context because that context gives distinctive meaning to the alternatives that the GEIS must address. Jumping ahead to that point, while the County may take "no action," other governments and private entities certainly will take action, which is a factual situation that must be taken into account in the GEIS. Key roles the County can play are to inspire and coordinate other actions, make them more efficient, and reduce conflicts among jurisdictions that would present burdens for technology suppliers and maintenance providers, businesses, and homeowners. There is really no such thing as a "no action" alternative. It should more accurately be termed an "action by others without County leadership" alternative.

In sum, the Introduction should recognize that County action is but a part of a comprehensive, multi-level nitrogen reduction effort that will go on in some form whether or not the County creates the proposed Subwatersheds Plan.

**Proposed Action, Section 2.0**
Recommended Wastewater Management Strategy, Section 1

All of the discussions to date concerning the need for a Subwatersheds Plan have stressed that it is part of a broad strategy to bring about significant and meaningful nitrogen reductions throughout the County, beginning with priority zones. The ultimate goal, however, is for the use of I/A technology including shallow drainfields to be the new norm everywhere in Suffolk County. The DSD and GEIS should make this clear.

While we understand that the main focus is on the three wastewater management alternatives mentioned in this section – "Innovative/alternative onsite wastewater treatment systems (I/A OWTS); Clustered/decentralized ("Appendix A") systems; and, Sewage Treatment Plants (STPs), to include only currently proposed projects," we urge a broad construction of the phrase "currently proposed projects." A project should be considered "proposed" if it has been seriously discussed, including, for example, the proposed expansion of the Oakdale STP and Greenport STP. These projects should not be subject to a separate process if conditions allow them to move forward.

Pg. 17

The section lists the following "scenarios":

- Cesspool failure;
- New construction;
- Property transfer;
- Grandfathered residential sites with legacy cesspools;
- Grandfathered residential sites with lot sizes below current Sanitary Code requirements;
- Grandfathered Other Than Single Family Residential sites including grandfathered SPDES and failed denitrification system sites; and,
- Phased upgrades within the tiered priority area boundaries defined in the SWP.

A few of these terms warrant revision and definition.

First, the problem with cesspools is not "failure." Cesspools contribute to nitrogen pollution whether or not they have technically "failed." Numerous scientists, town governments, and county documents have recognized this fact. Conventional septic systems are only marginally better than cesspools when it comes to nitrogen reduction from wastewater inputs. It is important for the County to be a strong voice on this key point, which is often misunderstood by the media and others. We ask that you replace "cesspool failure" with the following two items:

Pg. 3

- Homes and businesses with cesspools
- Homes and businesses with conventional septic systems

replacement of "failing" systems. All cesspools and conventional septic systems should be defined as substandard with respect to nitrogen emissions.

Innovative/Onsite Wastewater Treatment Systems, Section 3

We recommend the following changes:

Pg. 4
- Replace "will likely be" with "is expected to be" in the following sentence: "The use of I/A OWTS will likely be expanded to Other Than Single Family Residential properties that meet the allowable flow/design limitations of approved technologies."

Pg. 14
- Include discussion of shallow drainfields as a necessary component of I/A systems, with a variance being required in the future for a leaching pool if a site is completely limiting. Once standards are drafted for drainfields, attention can be given to issues such as setbacks.

Clustered/Decentralized Systems, Section 4

Pg. 12 As stated above, use of the phrase "grandfathered sites" is too vague and should be clarified. Is the DSD referring to establishments whose flows were previously grandfathered, or to future applicants for grandfathered flow? And, the question whether to require better nitrogen reduction treatment at grandfathered sites (past or future) is a separate matter. Per the 2005 internal memo, the County already has the power to do that.

Advanced Wastewater Treatment Pilot Areas, Section 6

Pg. 15 In this section, we recommend adding other somewhat novel approaches to nitrogen reduction, including, but not limited to, water re-use, resource recovery from waste water (e.g. efforts to use macro algae as fertilizer), urine-diversion and composting toilets, botanical treatment projects, wetland restoration, and buffers along water bodies, especially at agricultural sites. There is potential to utilize wastewater for irrigation in a way that both reduces pumping of potable water and adds extra treatment to waste water, thus reducing pollution.

Pg. 5 In the bullet points, expand "New York State and Suffolk County owned parks" to "state, county and other municipally owned properties, including parks" because it is not only parks where there is the potential for the County to work with other levels of government, and on properties that are not privately owned.
Also, include reference to other taxable districts and uses such as libraries, fire districts, school districts, etc.

**Purpose and Need, Section 3.0**

Pg. 5-6 There is a strong public health component to the nitrogen-reduction effort given that 1) excess nitrogen is a known direct cause of blue baby syndrome, 2) cyanobacteria caused by excess nitrogen has been documented to cause a variety of human health problems from rashes to respiratory problems to kidney failure to death, and 3) consumption of shellfish affected by toxic algae can lead to sickness and even paralysis, among other health problems. Research is ongoing into linkages between toxic algae, cancer, and muscular degenerative diseases.

Accordingly, the Purpose and Need section should include public health. Further, although mentioned at the bottom of page 7 and top of page 8, it is worth highlighting in Section 3.0 that the goal is also to reduce contamination of drinking and surface waters from other constituents of wastewater, such as pathogens, pharmaceuticals, and personal care products.

**Generic Environmental Impact Statement Outline, Section 4.0**

To the extent that the issues mentioned in this section can be addressed in a general way, they should be. It will help for the public to see that the County has considered a variety of factors, with reference being made to the site-specific issues that would need to be addressed in supplemental SEQRA reviews. The GEIS could do a good service

# ATTACHMENT C

Grandfathering

pg. 12 We have a number of comments regarding "grandfathering" or non-conforming, preexisting usages. Grandfathering is a fuzzy concept that should be used minimally and with care. People use the word to mean different things, such that clarity is extremely important in the GEIS.

We support the County's proposal to eliminate grandfathering of all kinds and require nitrogen-reducing technology for previously grandfathered properties. We understand that there may be a gradual process of narrowing the scope of grandfathering for commercial properties in the process of getting to complete elimination of this automatic variance from current standards and requirements.

There are different types of grandfathering as set forth in Article 6, section 609(B), and there are further variations when one includes decisions made through the variance process. Residential "grandfathering" differs from commercial "grandfathering" in that most residential "grandfathering" results from a pre-1981 lot. Accordingly, we do not see what is gained by referring to such residences as "Grandfathered residential sites with legacy cesspools." Virtually all cesspools in the County are "legacy" in that they are not currently authorized under the County's wastewater standards. Why is the word "legacy" needed or useful here? If the County is concerned that equity should not require replacement of a recently installed cesspool (which would only have been allowed as a replacement-in-kind of an older cesspool), that can be handled with a separate provision.

With respect to commercial grandfathering, it is important to state whether the County is referring to existing commercial establishments operating with flows previously grandfathered, or future applicants for grandfathered flow. The County has elsewhere proposed to narrow and potentially eliminate the grandfathering allowance set forth in Article 6, and it should consider in the GEIS the complete elimination of grandfathering. That, of course, would apply prospectively, not retroactively. However, the use of better technology or a cluster system can be required both prospectively for any newly grandfathered usage, and retroactively for any previously grandfathered establishment. We believe the County's 2005 internal memorandum concerning grandfathering makes this clear, and no new regulations beyond the approvals the County has already authorized would be necessary—though it is certainly prudent to document the requirement and announce the policy clearly.

pg. 17 The phrase "failed denitrification system sites" requires elaboration in the bullet point "Grandfathered Other Than Single Family Residential sites including grandfathered SPDES and failed denitrification system sites." The phrase should be defined. The GEIS should say where these sites are and how they have been measured.

pg. 3 There are other categories that should be included, such as all existing non-residential establishments with cesspools or conventional septic systems, and also the category of large-capacity cesspools which the EPA has considered illegal for over ten years yet remain throughout the County.

pg. 14 Finally, the use of shallow drainfields should be included, in place of cesspits.

Water Quality Protection District and Responsible Management Entity, Section 2

pg. 3 For the reasons stated above, the words "failed" and "legacy" should be removed from the following bullet point:

- Provide a funding mechanism, such as low interest loans or grants, for the replacement of legacy cesspools or failed conventional sanitary systems by I/A OWTS;

There is a difference between reactive and proactive upgrades of cesspools and conventional septic systems. A "reactive" approach would tell a homeowner with a "failed" system – either cesspool or septic—that s/he must install an I/A system in its place. A proactive approach will mandate upgrades, perhaps in priority areas at first, but overtime becoming the norm. A "funding mechanism" is necessary only with respect to the proactive upgrades to the extent that individual homeowners cannot afford the cost of the upgrade. Proactive upgrades are absolutely necessary if there is to be nitrogen reduction at a scale that makes a difference to our groundwater and surface waters—and funding assistance should not be limited to "legacy" cesspools or

by giving a general outline of what is already known, the policy actions that logically respond to the problems, and the issues and specific questions that need to be answered in the supplemental SEQRA processes.

Existing Environmental Setting

Add to the first set of bullet points:

pg. 7 • Suffolk County Water Authority information, data, forecasts, etc.

pg. 7 • Relevant data from non-profits and academic institutions, such as nitrogen-load models and studies of nitrogen impacts on wetlands and seagrass

Add to the "Physical Environment" bullet points:

pg. 8 • Water withdrawal from public and private wells

pg. 18 • Sediment characteristics

Potential Impacts of Proposed Action

pg. 7 • Under "Land Use," the list of "regional and county water protection programs" should include the Long Island Committee for Aquifer Protection (LICAP)

pg. 9 • In the discussion of "Groundwater and Surface Water," we recommend making more of the fact that better wastewater treatment of nitrogen will also have benefits by reducing pathogens and other contaminants. The extent to which this is true will depend on the technology and contaminant, but in general there should be more awareness that several water quality gains can be achieved through better water cycle and wastewater management.

pg. 9 • The impacts of pumping water from one subwatershed and discharging it into another subwatershed may also be something that needs to be considered.

pg. 10 • Regarding the section entitled "Human Health (Contaminant Exposure/Hazardous Materials)," the human health impacts are far greater than spills, as noted above. The human health section should not be limited to "contaminant exposure/hazardous materials" but should include the range of diseases from direct ingestion of nitrogen to contact with toxic algae caused by excess nitrogen, either through recreational contact, shellfish and fish consumption, or other means.

pg. 15 • "Economics" is outlined in unjustifiably narrow terms. Water quality undergirds Long Island's economy in many respects: some 40% of the island's businesses are considered water-dependent—either freshwater or surface waters. Real estate values are influenced by water quality. That means property tax revenues depend on water quality, as does the multi-billion-dollar tourist industry of Long Island. If water quality deteriorates further, all of these economic indices will suffer. Accordingly, the costs of not acting to reduce nitrogen to necessary levels must be considered in addition to the "potential economic benefits" of improved water quality.

pg. 15 In terms of economic benefits, there should also be consideration given to the economic gains that will arise from a more professionalized wastewater industry that is client-focused and requires better maintenance and monitoring and potentially pumping. This new industry will create jobs from design to permitting to installation and maintenance workers.

Alternatives Analysis

pg. 18 As referenced in our introductory paragraph, the "no action alternative" does not really exist. It implies that if the County does not act, no one else will—and that is simply incorrect. The County has already approved Section 19 of the sanitary code and has authorized new I/A technology, such that towns may require use of these systems, and individuals may install them voluntarily. Further, the Long Island Nitrogen Action Plan will propose certain actions, if not require them, and the same can be said with the Long Island Sound and Peconic Estuary TMDLs. (And additional TMDLs may be created in Suffolk County related to nitrogen on the basis of the State's compliance with the federal Clean Water Act.) Accordingly, "no action" is not really possible. The "no action" alternative here is really no action of the sort proposed, or no additional action at this time, but what exactly does that mean? No

subwatersheds delineated, no goals set, no amendment to Articles 5 and 6, no attempts at uniform implementation, etc.—or the undertaking of these tasks by other entities? The absence of active County involvement while others act is a separate alternative that must be addressed in the GEIS.

In conclusion, The Nature Conservancy offers its appreciation to Suffolk County for your leadership in advancing solutions to the islands water quality crisis. Moving forward, The Nature Conservancy is committed to as well as continue working with the county and others as these efforts progress.

Sincerely,

Kevin McDonald
Conservation Policy Advisor
The Nature Conservancy, Long Island Chapter

cc
Peter Scully

## Taylor, Maryanne

**From:** Sara Davison <Sara@friendsofgeorgicapond.org>
**Sent:** Friday, December 02, 2016 10:10 AM
**To:** Zegel, Ken
**Subject:** Wastewater Scoping Session

pg. 16

Dear Ken,
I learned alot and was very impressed with the detail of your scoping session and document. Friends of Georgica Pond Foundation will submit brief written statements by Dec 13. At your suggestion, I will work with Bridget Fleming and Kim Shaw, to get all the Georgica Pond data to them for consideration in your planning. Our preliminary thinking is that we want to advocate for voluntary upgrade of septic systems (+/- 75) around the pond in the coming year and the look for partnerships with the Town CPF and County within critical areas of the watershed, especially the commercial district of Wainscott.
Let me know if this makes sense!
So nice to meet you.

Sara Davison
Executive Director
Friends of Georgica Pond Foundation, Inc.
"To preserve the Georgica Pond ecosystem for future generations through science-based, watershed-wide policy and restoration"

FRIENDS OF
GEORGICA POND
FOUNDATION

ATTACHMENT C

**Taylor, Maryanne**

**From:** Dan Gulizio <dan@peconicbaykeeper.org>
**Sent:** Monday, December 12, 2016 1:19 PM
**To:** Zegel, Ken
**Cc:** Taylor, Maryanne
**Subject:** DRAFT Scoping Document - GEIS Suffolk County Subwatersheds Wastewater Plan
**Attachments:** PastedGraphic-1.tiff

Ken,

Pg. 18

Below please find public comments related to the County's recently released DRAFT Scoping Document associated with the Generic Environmental Impact Statement (GEIS) for the Suffolk County Subwatersheds Wastewater Plan. Please incorporate these comments into the public record for the GEIS.

SEQRA mandates that a lead agency identify the relevant areas of environmental concern, take a "hard look" at any potential impacts and provide a reasoned elaboration for its conclusions. In the process, the lead agency is obligated to consider a variety of potential impacts including short-term, long-term, primary, secondary and cumulative impacts. Cumulative impacts include any potential impacts associated with "reasonably related" actions. In this case, there are a host of reasonably related actions that should be considered in conjunction with the GEIS for the subwatersheds wastewater plan. In addition to the County's water resources management plan, this should include as a minimum the following:

- Reclaim Our Waters Initiative - The Subwatersheds Study was described as a "sub-component" of the County Executive's Reclaim Our Waters Initiative. As such, the potential impacts assessed in the GEIS should include all reasonably related actions contained within the broader policy document referred to as the Reclaim Our Waters Initiative.

- Comprehensive Water Resources Management Plan - The County has recently released a "Comprehensive Water Resources Management Plan" which has served as the foundation for initiatives like the Subwatersheds study. However, the Water Resources Management Plan has never been adopted by the County, nor have the potential environmental impacts of its recommendations been reviewed under the State Environmental Quality Review Act (SEQRA). Resource management plans are defined as Type I Actions under SEQRA. As such, if the County's water resources management plan is to be used to support amendments to the sanitary code or studies such as the subwatersheds wastewater plan, it should be analyzed under SEQRA in conjunction with the subwatersheds study.

- The Sanitary Code - Recent and ongoing updates to the Suffolk County Sanitary Code are a direct result of the information prepared and analyzed as a part of the comprehensive water resources management plan. Segmentation is inconsistent with SEQRA and the division of reasonably related actions like the update of the sanitary code, the release of the water resources management plan and the subwatersheds wastewater plan represents an impermissible segmentation of these reasonably related actions.

- Sewer Capacity Study - The County has previously prepared a sewer capacity study that analyzed the expansion of existing sewage treatment plants and the potential development of new systems. Sewer capacity and the permitting of innovative alternative on-site wastewater systems are also reasonably related actions to the subwatersheds study. Accordingly, the impacts of these plans should be considered in conjunction with the subwatersheds study.

- County Comprehensive Plan - The County recently adopted a new comprehensive plan. Land use plans are Type I Actions under SEQRA. Despite this fact, the County deemed the adoption of the plan a Type II Action. Since resource management is a necessary component of a properly prepared comprehensive plan, the recently released water resources management plan should be considered a component of the County's Comprehensive Plan. The potential environmental impacts of the comprehensive plan should be considered in conjunction with the GEIS for the subwatersheds study.

- County Regional Transportation and Development Plan - The County recently released a "Regional Transportation and Development Plan" which details infrastructure needs and potential economic development opportunities. This study, the comprehensive plan, the updates to the sanitary code and the sewer capacity study are all reasonably related actions under SEQRA. Accordingly, all associated potential impacts including cumulative impacts, should be considered at this time.

- Bergen Point Expansion - The County recently approved a 10 million gallon per day expansion of the Bergen Point STP. In addition, the County is currently considering a 7-mile main extension from the Bergen Point Plant to the project known as the Ronkonkoma Hub. This project also includes a second main for the connection of both existing and proposed development along Veterans Memorial Highway. These are also reasonably related actions under SEQRA, the cumulative impact of which has never been assessed. Accordingly, the GEIS for the subwatersheds study should incorporate these actions as well.

In summary, the County is in the process of expanding sewering, implementing innovative on-site wastewater systems and updating the sanitary code. All of these reasonably related actions will impact water resources throughout the County. The County has an obligation to assess the

cumulative impact of these reasonably related actions and, in particular, development-related impacts resulting from increased wastewater capacity. To date, it has failed to do so. The subwatersheds wastewater plan represents an opportunity to secure compliance with SEQRA. We recommend that the scope of the GEIS be expanded to consider the full range of potential environmental impacts consistent with SEQRA.

Thank you for the opportunity to provide comments.

Sincerely,
Dan Gulizio

Your Clear Voice for Clean Water



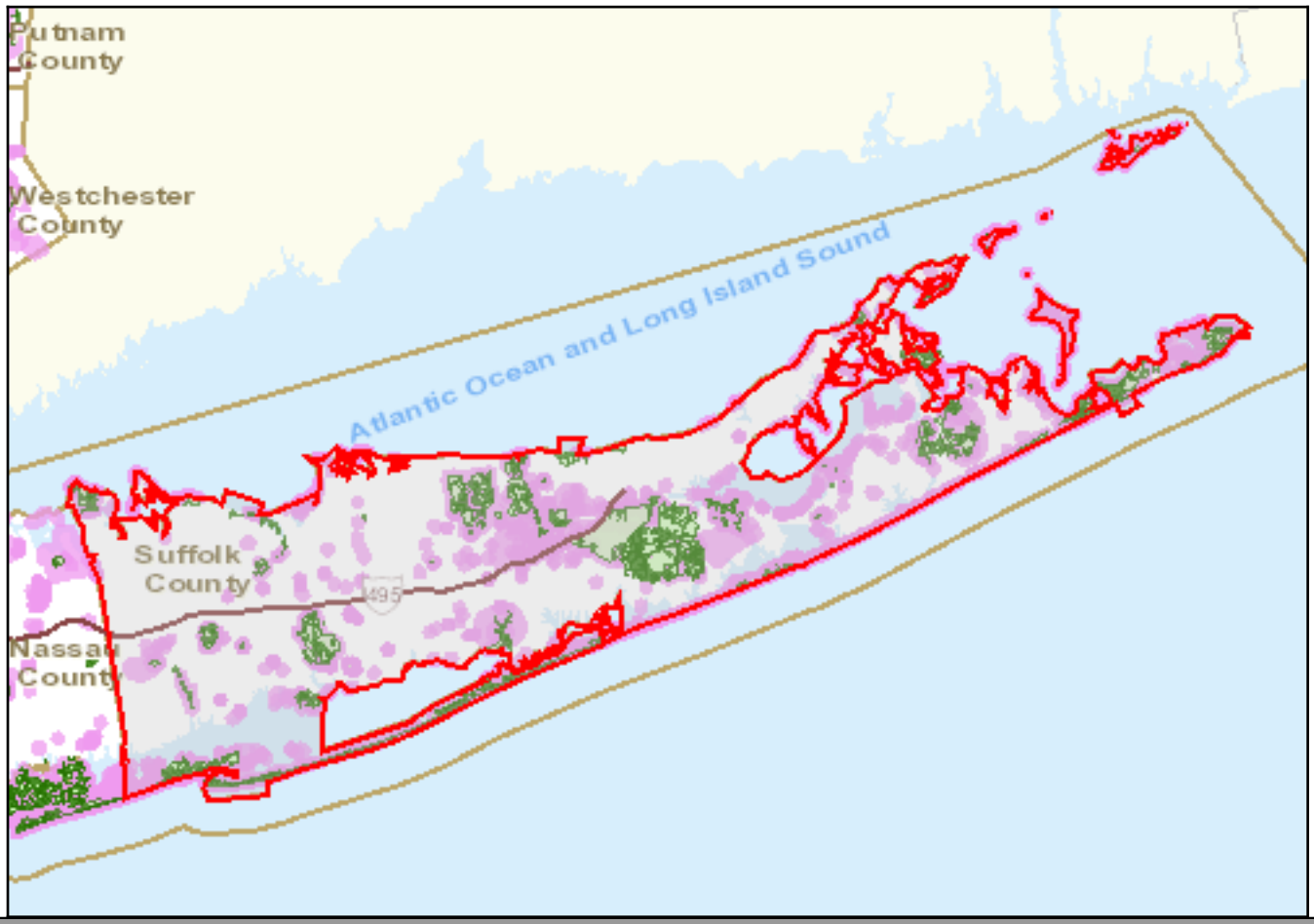
ATTACHMENT C

# Appendix D

# Natural Resources Queries

# New York Nature Explorer
# County Results Report

Criteria: County: Suffolk; State Protection Status: Endangered, Threatened




| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status State | Protection Status Federal | Conservation Rank State | Conservation Rank Global |
|---|---|---|---|---|---|---|---|
| **County: Suffolk** | | | | | | | |
| **Animal: Mammals** | | | | | | | |
| Northern Long-eared Bat *Myotis septentrionalis* | Bats | Recently Confirmed | 2016 | Threatened | Threatened | S1 | G1G2 |
| **Animal: Birds** | | | | | | | |
| Bald Eagle *Haliaeetus leucocephalus* | Hawks, Falcons, Eagles, Vultures | Recently Confirmed | 2015 | Threatened | | S2S3B,S2N | G5 |
| Black Rail *Laterallus jamaicensis* | Rails, Coots and Cranes | Recently Confirmed | 2000 | Endangered | | S1B | G3G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Common Tern<br>*Sterna hirundo* | Gulls, Terns, Plovers, Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G5 |
| Least Bittern<br>*Ixobrychus exilis* | Herons, Bitterns, Egrets, Pelicans | Recently Confirmed | 2011 | Threatened | | S3B,S1N | G5 |
| Least Tern<br>*Sternula antillarum* | Gulls, Terns, Plovers, Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G4 |
| Northern Harrier<br>*Circus cyaneus* | Hawks, Falcons, Eagles, Vultures | Recently Confirmed | 2005 | Threatened | | S3B,S3N | G5 |
| Peregrine Falcon<br>*Falco peregrinus* | Hawks, Falcons, Eagles, Vultures | Recently Confirmed | 2008 | Endangered | | S3B | G4 |
| Pied-billed Grebe<br>*Podilymbus podiceps* | Grebes | Recently Confirmed | 2000 | Threatened | | S3B,S1N | G5 |
| Piping Plover<br>*Charadrius melodus* | Gulls, Terns, Plovers, Shorebirds | Recently Confirmed | 2016 | Endangered | Endangered/Threatened | S3B | G3 |
| Roseate Tern<br>*Sterna dougallii* | Gulls, Terns, Plovers, Shorebirds | Recently Confirmed | 2015 | Endangered | Endangered | S1B | G4 |
| Sedge Wren<br>*Cistothorus platensis* | Wrens | Historically Confirmed | 1932 | Threatened | | S3B | G5 |
| Short-eared Owl<br>*Asio flammeus* | Owls | Recently Confirmed | 2008 | Endangered | | S2 | G5 |
| Upland Sandpiper<br>*Bartramia longicauda* | Gulls, Terns, Plovers, Shorebirds | Recently Confirmed | 2000 | Threatened | | S3B | G5 |

## Animal: Reptiles

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Eastern Mud Turtle<br>*Kinosternon subrubrum* | Turtles | Recently Confirmed | 2007 | Endangered | | S1 | G5 |

## Animal: Amphibians

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Northern Cricket Frog<br>*Acris crepitans* | Frogs and Toads | Historically Confirmed | 1932 | Endangered | | S1 | G5 |
| Tiger Salamander<br>*Ambystoma tigrinum* | Salamanders | Recently Confirmed | 2014 | Endangered | | S1S2 | G5 |

## Animal: Fish

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Banded Sunfish *Enneacanthus obesus* | Darters and Sunfishes | Recently Confirmed | 2007 | Threatened | | S1 | G5 |
| Swamp Darter *Etheostoma fusiforme* | Darters and Sunfishes | Recently Confirmed | 2006 | Threatened | | S1 | G5 |

## Animal: Butterflies and Moths

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Frosted Elfin *Callophrys irus* | Butterflies and Skippers | Recently Confirmed | 2006 | Threatened | | S1S2 | G3 |
| Hessel's Hairstreak *Callophrys hesseli* | Butterflies and Skippers | Recently Confirmed | 1986 | Endangered | | S1 | G3G4 |
| Persius Duskywing *Erynnis persius persius* | Butterflies and Skippers | Historically Confirmed | 1966 | Endangered | | S1 | G5T1T3 |
| Regal Fritillary *Speyeria idalia* | Butterflies and Skippers | Recently Confirmed | 1988 | Endangered | | SH | G3 |

## Animal: Dragonflies and Damselflies

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Little Bluet *Enallagma minusculum* | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G4 |
| Pine Barrens Bluet *Enallagma recurvatum* | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G3 |
| Scarlet Bluet *Enallagma pictum* | Damselflies | Recently Confirmed | 2009 | Threatened | | S2 | G3 |

## Animal: Beetles

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| American Burying Beetle *Nicrophorus americanus* | Carrion Beetles | Historically Confirmed | 1937 | Endangered | Endangered | SH | G2G3 |
| Northeastern Beach Tiger Beetle *Cicindela dorsalis dorsalis* | Tiger Beetles | Extirpated | 1945 | Threatened | Threatened | SX | G3G4T2 |

## Animal: Other Animals

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Henslow's Sparrow *Ammodramus henslowii* | Other Animals | Recently Confirmed | | Threatened | | S3B | G4 |

## Plant: Flowering Plants

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| American Ipecac<br>*Euphorbia ipecacuanhae* | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 |
| American Waterwort<br>*Elatine americana* | Other Flowering Plants | Recently Confirmed | 1974 | Endangered | | S1 | G4 |
| Angled Spike Rush<br>*Eleocharis quadrangulata* | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Annual Saltmarsh Aster<br>*Symphyotrichum subulatum var. subulatum* | Asters, Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2S3 | G5 |
| Autumnal Water-starwort<br>*Callitriche hermaphroditica* | Other Flowering Plants | Historically Confirmed | 1927 | Endangered | | S1 | G5 |
| Barratt's Sedge<br>*Carex barrattii* | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 |
| Bayard's Adder's Mouth<br>*Malaxis bayardii* | Orchids | Historically Confirmed | | Endangered | | S1 | G1G2 |
| Bent Sedge<br>*Carex styloflexa* | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 |
| Black-edge Sedge<br>*Carex nigromarginata* | Sedges | Recently Confirmed | 2008 | Threatened | | S2 | G5 |
| Blunt Mountain Mint<br>*Pycnanthemum muticum* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 |
| Brown Bog Sedge<br>*Carex buxbaumii* | Sedges | Recently Confirmed | 1986 | Threatened | | S2 | G5 |
| Bushy Rockrose<br>*Crocanthemum dumosum* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 |
| Bushy St. John's-wort<br>*Hypericum densiflorum* | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 |
| Button Sedge<br>*Carex bullata* | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5 |
| Carey's Smartweed<br>*Persicaria careyi* | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1S2 | G4 |
| Carolina Redroot<br>*Lachnanthes caroliniana* | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Carolina Whitlow Grass<br>*Tomostima reptans* | Other Flowering Plants | Historically Confirmed | 1926 | Threatened | | S2 | G5 |
| Cat-tail Sedge<br>*Carex typhina* | Sedges | Recently Confirmed | 2012 | Endangered | | S2 | G5 |
| Catfoot<br>*Pseudognaphalium micradenium* | Asters, Goldenrods and Daisies | Historically Confirmed | 1959 | Endangered | | SH | G4G5T3? |
| Clasping Bugleweed<br>*Lycopus amplectens* | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 |
| Clustered Bluets<br>*Oldenlandia uniflora* | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 |
| Clustered Sedge<br>*Carex cumulata* | Sedges | Historically Confirmed | 1967 | Threatened | | S2S3 | G4? |
| Coast Flatsedge<br>*Cyperus polystachyos* | Sedges | Recently Confirmed | 2015 | Endangered | | S2 | G5 |
| Coast Violet<br>*Viola brittoniana* | Other Flowering Plants | Recently Confirmed | 2015 | Endangered | | S1 | G4G5 |
| Coastal Fireweed<br>*Erechtites hieraciifolius var. megalocarpus* | Asters, Goldenrods and Daisies | Recently Confirmed | 2002 | Endangered | | S1 | G5T3 |
| Coastal Goldenrod<br>*Solidago latissimifolia* | Asters, Goldenrods and Daisies | Recently Confirmed | 2006 | Endangered | | S1 | G5 |
| Coastal Silverweed<br>*Potentilla anserina ssp. pacifica* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR |
| Collins' Sedge<br>*Carex collinsii* | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G4 |
| Comb-leaved Mermaid Weed<br>*Proserpinaca pectinata* | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 |
| Coppery St. John's-wort<br>*Hypericum denticulatum* | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 |
| Cranefly Orchid<br>*Tipularia discolor* | Orchids | Recently Confirmed | 2008 | Endangered | | S1 | G4G5 |
| Creeping Spike Rush<br>*Eleocharis ambigens* | Sedges | Recently Confirmed | 1997 | Endangered | | S1 | G4G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Creeping St. John's-wort<br>*Hypericum adpressum* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 |
| Cut-leaved Evening Primrose<br>*Oenothera laciniata* | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1 | G5 |
| Dark-green sedge<br>*Carex venusta* | Sedges | Recently Confirmed | 1999 | Endangered | | S1 | G4 |
| Downy Lettuce<br>*Lactuca hirsuta* | Asters, Goldenrods and Daisies | Historically Confirmed | 1936 | Endangered | | S1 | G5? |
| Dragon's Mouth Orchid<br>*Arethusa bulbosa* | Orchids | Recently Confirmed | 2010 | Threatened | | S2 | G5 |
| Dune Sandspur<br>*Cenchrus tribuloides* | Grasses | Recently Confirmed | 1996 | Threatened | | S2 | G5 |
| Dwarf Bulrush<br>*Cyperus subsquarrosus* | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 |
| Dwarf Glasswort<br>*Salicornia bigelovii* | Other Flowering Plants | Recently Confirmed | 2014 | Threatened | | S2S3 | G5 |
| Dwarf Hawthorn<br>*Crataegus uniflora* | Other Flowering Plants | Historically Confirmed | 1916 | Endangered | | SH | G5 |
| Early Frostweed<br>*Crocanthemum propinquum* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4 |
| Eastern Grasswort<br>*Lilaeopsis chinensis* | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5 |
| Eastern Silvery Aster<br>*Symphyotrichum concolor var. concolor* | Asters, Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | SH | G5T5 |
| Engelmann's Spike Rush<br>*Eleocharis engelmannii* | Sedges | Recently Confirmed | | Endangered | | S1 | G4G5 |
| False Hop Sedge<br>*Carex lupuliformis* | Sedges | Historically Confirmed | | Threatened | | S2 | G4 |
| Farwell's Water Milfoil<br>*Myriophyllum farwellii* | Other Flowering Plants | Possible but not Confirmed | 2008 | Threatened | | S2 | G5 |
| Featherfoil<br>*Hottonia inflata* | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Fernald's Sedge<br>*Carex merritt-fernaldii* | Sedges | Recently Confirmed | 2003 | Threatened | | S2S3 | G5 |
| Few-flowered Nut Sedge<br>*Scleria pauciflora* | Sedges | Recently Confirmed | 1996 | Endangered | | S1 | G5 |
| Fibrous Bladderwort<br>*Utricularia striata* | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4G5 |
| Field Beadgrass<br>*Paspalum laeve* | Grasses | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 |
| Field Dodder<br>*Cuscuta campestris* | Other Flowering Plants | Recently Confirmed | | Endangered | | S1 | G5 |
| Flax-leaf Whitetop<br>*Sericocarpus linifolius* | Asters, Goldenrods and Daisies | Recently Confirmed | 1997 | Threatened | | S2 | G5 |
| Fringed Boneset<br>*Eupatorium torreyanum* | Asters, Goldenrods and Daisies | Recently Confirmed | 2010 | Threatened | | S2 | G5T4T5 |
| Georgia Bulrush<br>*Scirpus georgianus* | Sedges | Recently Confirmed | 1994 | Endangered | | S1S2 | G5 |
| Globe-fruited Ludwigia<br>*Ludwigia sphaerocarpa* | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 |
| Golden Club<br>*Orontium aquaticum* | Other Flowering Plants | Recently Confirmed | 2004 | Threatened | | S2 | G5 |
| Golden Dock<br>*Rumex fueginus* | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 |
| Great Plains Flatsedge<br>*Cyperus lupulinus ssp. lupulinus* | Sedges | Recently Confirmed | 2002 | Threatened | | S1S2 | G5T5? |
| Green Milkweed<br>*Asclepias viridiflora* | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 |
| Green Parrot's Feather<br>*Myriophyllum pinnatum* | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5 |
| Green Rock Cress<br>*Borodinia missouriensis* | Other Flowering Plants | Historically Confirmed | | Threatened | | S2 | G5 |
| Heart Sorrel<br>*Rumex hastatulus* | Other Flowering Plants | Historically Confirmed | 1986 | Endangered | | SH | G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Hidden Dropseed<br>*Sporobolus clandestinus* | Grasses | Recently Confirmed | 1985 | Endangered | | S1 | G5 |
| Horned Beak Sedge<br>*Rhynchospora inundata* | Sedges | Recently Confirmed | 2005 | Threatened | | S1 | G4? |
| Hyssop-skullcap<br>*Scutellaria integrifolia* | Other Flowering Plants | Historically Confirmed | 1924 | Endangered | | S1 | G5 |
| Knotted Spike Rush<br>*Eleocharis equisetoides* | Sedges | Recently Confirmed | 2005 | Threatened | | S2 | G4 |
| Large Calyx Goosefoot<br>*Chenopodium berlandieri var. macrocalycium* | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1S2 | G5T4 |
| Large Grass-leaved Rush<br>*Juncus biflorus* | Rushes | Recently Confirmed | 1990 | Endangered | | S1 | G5 |
| Large Twayblade<br>*Liparis liliifolia* | Orchids | Historically Confirmed | | Endangered | | S1 | G5 |
| Large Yellow-eyed Grass<br>*Xyris smalliana* | Other Flowering Plants | Recently Confirmed | 1985 | Threatened | | S2 | G5 |
| Leggett's Pinweed<br>*Lechea pulchella* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Lined Sedge<br>*Carex striatula* | Sedges | Historically Confirmed | | Endangered | | SH | G4G5 |
| Little-leaf Tick Trefoil<br>*Desmodium ciliare* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 |
| Long-tubercled Spike Rush<br>*Eleocharis tuberculosa* | Sedges | Recently Confirmed | 1991 | Threatened | | S2 | G5 |
| Low Nut Sedge<br>*Scleria verticillata* | Sedges | Possible but not Confirmed | | Endangered | | S1 | G5 |
| Low St. John's Wort<br>*Hypericum stragulum* | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5T4 |
| Lowland Yellow Loosestrife<br>*Lysimachia hybrida* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Marsh Fimbry<br>*Fimbristylis castanea* | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Marsh Straw Sedge<br>*Carex hormathodes* | Sedges | Recently Confirmed | 2014 | Threatened | | S2S3 | G4G5 |
| Mexican Seaside Goldenrod<br>*Solidago mexicana* | Asters, Goldenrods and Daisies | Recently Confirmed | 2007 | Endangered | | S1 | G5T5? |
| Midland Sedge<br>*Carex mesochorea* | Sedges | Recently Confirmed | 1998 | Threatened | | S2 | G4G5 |
| Minute Duckweed<br>*Lemna perpusilla* | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5 |
| Mitchell's Sedge<br>*Carex mitchelliana* | Sedges | Recently Confirmed | 1999 | Endangered | | S1S2 | G4 |
| Muhlenberg's Nut Sedge<br>*Scleria muehlenbergii* | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 |
| Nantucket Juneberry<br>*Amelanchier nantucketensis* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G3Q |
| Narrow-leaf Sea Blite<br>*Suaeda linearis* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 |
| Narrow-leaved Blue-curls<br>*Trichostema setaceum* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Narrow-leaved Bush Clover<br>*Lespedeza angustifolia* | Other Flowering Plants | Recently Confirmed | 1986 | Threatened | | S2 | G5 |
| Northern Blazing Star<br>*Liatris scariosa var. novae-angliae* | Asters, Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2 | G5?T3 |
| Northern Bog Aster<br>*Symphyotrichum boreale* | Asters, Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 |
| Northern Dwarf Huckleberry<br>*Gaylussacia bigeloviana* | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1S2 | G5T4T5 |
| Northern Gama Grass<br>*Tripsacum dactyloides var. dactyloides* | Grasses | Recently Confirmed | 2007 | Threatened | | S2 | G5TNR |
| Northern Tansy-mustard<br>*Descurainia pinnata ssp. brachycarpa* | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5T5 |
| Nuttall's Milkwort<br>*Polygala nuttallii* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Nuttall's Tick Trefoil<br>*Desmodium nuttallii* | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 |
| Oakes' Evening Primrose<br>*Oenothera oakesiana* | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G4G5Q |
| Orange Crested Orchid<br>*Platanthera cristata* | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 |
| Orange Fringed Orchid<br>*Platanthera ciliaris* | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 |
| Orange Milkwort<br>*Polygala lutea* | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 |
| Ovate Spike Rush<br>*Eleocharis ovata* | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 |
| Pale Beak Sedge<br>*Rhynchospora pallida* | Sedges | Historically Confirmed | | Endangered | | SH | G3 |
| Pale Duckweed<br>*Lemna valdiviana* | Other Flowering Plants | Historically Confirmed | 1974 | Endangered | | S1 | G5 |
| Peanut Grass<br>*Amphicarpum amphicarpon* | Grasses | Recently Confirmed | 1992 | Endangered | | SH | G4 |
| Persimmon<br>*Diospyros virginiana* | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 |
| Pine Barren Bellwort<br>*Uvularia puberula* | Other Flowering Plants | Recently Confirmed | 2002 | Endangered | | S1 | G5 |
| Pink Wild Bean<br>*Strophostyles umbellata* | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 |
| Prairie Wedgegrass<br>*Sphenopholis obtusata* | Grasses | Historically Confirmed | 1912 | Endangered | | S1 | G5 |
| Primrose-leaved Violet<br>*Viola primulifolia var. primulifolia* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR |
| Purple Bluets<br>*Houstonia purpurea var. purpurea* | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 |
| Purple Milkweed<br>*Asclepias purpurascens* | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2S3 | G5? |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Pyxies<br>*Pyxidanthera barbulata* | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G4 |
| Quill-leaf Arrowhead<br>*Sagittaria teres* | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G3 |
| Rattlebox<br>*Crotalaria sagittalis* | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 |
| Red Pigweed<br>*Oxybasis rubra var. rubra* | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5 |
| Reflexed Sedge<br>*Carex retroflexa* | Sedges | Historically Confirmed | | Threatened | | S2S3 | G5 |
| Retrorse Flatsedge<br>*Cyperus retrorsus* | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 |
| Reznicek's Sedge<br>*Carex reznicekii* | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 |
| Riverweed<br>*Podostemum ceratophyllum* | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 |
| Roland's Sea Blite<br>*Suaeda rolandii* | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G1G2 |
| Rough Avens<br>*Geum virginianum* | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 |
| Rough Hedge Nettle<br>*Stachys hyssopifolia var. hyssopifolia* | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5T4T5 |
| Rough Pennyroyal<br>*Hedeoma hispida* | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 |
| Round-leaf Boneset<br>*Eupatorium rotundifolium* | Asters, Goldenrods and Daisies | Historically Confirmed | 1968 | Endangered | | SH | G5 |
| Rush Bladderwort<br>*Utricularia juncea* | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1 | G5 |
| Salt-marsh Spike Rush<br>*Eleocharis uniglumis* | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 |
| Salt-meadow Grass<br>*Diplachne fusca ssp. fascicularis* | Grasses | Recently Confirmed | 1998 | Endangered | | S1S2 | G5T5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Saltmarsh Bulrush<br>*Bolboschoenus novae-angliae* | Sedges | Recently Confirmed | 2007 | Endangered | | S1 | G5 |
| Saltmarsh Loosestrife<br>*Lythrum lineare* | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G5 |
| Sand Blackberry<br>*Rubus cuneifolius* | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 |
| Sandplain Gerardia<br>*Agalinis decemloba* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | Endangered | S1 | G3G4 |
| Sandplain Wild Flax<br>*Linum intercursum* | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4 |
| Scotch Lovage<br>*Ligusticum scoticum ssp. scoticum* | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5T4T5 |
| Screw-stem<br>*Bartonia paniculata ssp. paniculata* | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5T5 |
| Sea Pink<br>*Sabatia stellaris* | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5 |
| Sea Purslane<br>*Sesuvium maritimum* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Seabeach Amaranth<br>*Amaranthus pumilus* | Other Flowering Plants | Recently Confirmed | 2008 | Threatened | Threatened | S2 | G2 |
| Seacoast Angelica<br>*Angelica lucida* | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G5 |
| Seaside Bulrush<br>*Bolboschoenus maritimus ssp. paludosus* | Sedges | Recently Confirmed | 2009 | Threatened | | S2 | G5 |
| Seaside Crowfoot<br>*Ranunculus cymbalaria* | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 |
| Seaside Dock<br>*Rumex persicarioides* | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G3?Q |
| Seaside Gerardia<br>*Agalinis maritima var. maritima* | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2S3 | G5T5 |
| Seaside Orach<br>*Atriplex glabriuscula* | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1 | G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Seaside Plantain<br>*Plantago maritima var. juncoides* | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2S3 | G5T5 |
| Seaside Toad Rush<br>*Juncus ranarius* | Rushes | Recently Confirmed | 1994 | Endangered | | S1 | G5 |
| Sedge Rush<br>*Juncus scirpoides var. scirpoides* | Rushes | Recently Confirmed | 2009 | Endangered | | S1 | G5TNR |
| Serrate Round-leaf Boneset<br>*Eupatorium pubescens* | Asters, Goldenrods and Daisies | Recently Confirmed | 2009 | Endangered | | S1 | G5T5 |
| Sharp-tipped Blue-eyed Grass<br>*Sisyrinchium mucronatum* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Short's Sedge<br>*Carex shortiana* | Sedges | Historically Confirmed | | Endangered | | S1 | G5 |
| Short-beaked Beak Sedge<br>*Rhynchospora nitens* | Sedges | Recently Confirmed | 2016 | Threatened | | S2 | G4? |
| Short-fruited Rush<br>*Juncus brachycarpus* | Rushes | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 |
| Showy Aster<br>*Eurybia spectabilis* | Asters, Goldenrods and Daisies | Recently Confirmed | 2013 | Threatened | | S2 | G5 |
| Shrubby St. John's Wort<br>*Hypericum prolificum* | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5 |
| Side-oats Grama<br>*Bouteloua curtipendula var. curtipendula* | Grasses | Recently Confirmed | 1920 | Endangered | | S2 | G5T5 |
| Slender Blue Flag<br>*Iris prismatica* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4G5 |
| Slender Bulrush<br>*Schoenoplectus heterochaetus* | Sedges | Historically Confirmed | 1923 | Endangered | | S2 | G5 |
| Slender Crab Grass<br>*Digitaria filiformis var. filiformis* | Grasses | Recently Confirmed | 1999 | Endangered | | S1 | G5TNR |
| Slender Marsh Pink<br>*Sabatia campanulata* | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5 |
| Slender Nut Sedge<br>*Scleria minor* | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Slender Pinweed<br>*Lechea tenuifolia* | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 |
| Slender Spike Grass<br>*Chasmanthium laxum* | Grasses | Recently Confirmed | 2014 | Endangered | | S1 | G5 |
| Slender Spike Rush<br>*Eleocharis tenuis var. pseudoptera* | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5T5? |
| Small Floating Bladderwort<br>*Utricularia radiata* | Other Flowering Plants | Recently Confirmed | 2000 | Threatened | | S2 | G4 |
| Small White Snakeroot<br>*Ageratina aromatica* | Asters, Goldenrods and Daisies | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| Small Whorled Pogonia<br>*Isotria medeoloides* | Orchids | Historically Confirmed | 1923 | Endangered | Threatened | S1 | G2? |
| Small's Knotweed<br>*Polygonum buxiforme* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 |
| Smartweed Dodder<br>*Cuscuta polygonorum* | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 |
| Smooth Beggar-ticks<br>*Bidens laevis* | Asters, Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 |
| Smooth Tick Trefoil<br>*Desmodium laevigatum* | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 |
| Soapwort Gentian<br>*Gentiana saponaria* | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 |
| Southern Arrowwood<br>*Viburnum dentatum var. venosum* | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5T4T5 |
| Southern Bluets<br>*Houstonia purpurea var. calycosa* | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 |
| Southern Dodder<br>*Cuscuta obtusiflora var. glandulosa* | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1S2 | G5T4T5 |
| Southern Snailseed Pondweed<br>*Potamogeton diversifolius* | Other Flowering Plants | Historically Confirmed | 1938 | Endangered | | S1 | G5 |
| Southern Twayblade<br>*Neottia bifolia* | Orchids | Recently Confirmed | 2010 | Endangered | | S1S2 | G4 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Southern Wild Raisin<br>*Viburnum nudum var. nudum* | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5T5 |
| Southern Wood Violet<br>*Viola hirsutula* | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G4 |
| Southern Yellow Flax<br>*Linum medium var. texanum* | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5T5 |
| Spotted Pondweed<br>*Potamogeton pulcher* | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2 | G5 |
| Spreading Rush<br>*Juncus subcaudatus* | Rushes | Recently Confirmed | | Endangered | | S1 | G5 |
| Spring Ladies' Tresses<br>*Spiranthes vernalis* | Orchids | Recently Confirmed | 2015 | Endangered | | S1S2 | G5 |
| Stalked Bugleweed<br>*Lycopus rubellus* | Other Flowering Plants | Recently Confirmed | 1977 | Endangered | | S1 | G5 |
| Stargrass<br>*Aletris farinosa* | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 |
| Stiff Cowbane<br>*Oxypolis rigidior* | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 |
| Stiff Tick Trefoil<br>*Desmodium obtusum* | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G4G5 |
| Straw Sedge<br>*Carex straminea* | Sedges | Recently Confirmed | 1990 | Endangered | | S1 | G5 |
| Swamp Aster<br>*Eurybia radula* | Asters, Goldenrods and Daisies | Historically Confirmed | 1945 | Endangered | | SH | G5 |
| Swamp Cottonwood<br>*Populus heterophylla* | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2 | G5 |
| Swamp Lousewort<br>*Pedicularis lanceolata* | Other Flowering Plants | Historically Confirmed | 1871 | Threatened | | S2S3 | G5 |
| Swamp Oats<br>*Sphenopholis pensylvanica* | Grasses | Recently Confirmed | 1991 | Endangered | | S1 | G4 |
| Swamp Smartweed<br>*Persicaria setacea* | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1S2 | G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Swamp Sunflower<br>*Helianthus angustifolius* | Asters, Goldenrods and Daisies | Recently Confirmed | 2006 | Threatened | | S2 | G5 |
| Sweetbay Magnolia<br>*Magnolia virginiana var. virginiana* | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5TNR |
| Tall Bellflower<br>*Campanula americana* | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 |
| Tall Flat Panic Grass<br>*Coleataenia stipitata* | Grasses | Historically Confirmed | 1934 | Endangered | | SH | G5T4T5 |
| Terrestrial Starwort<br>*Callitriche terrestris* | Other Flowering Plants | Recently Confirmed | 1996 | Threatened | | S2S3 | G5 |
| Thicket Sedge<br>*Carex abscondita* | Sedges | Recently Confirmed | 1994 | Endangered | | S1 | G4G5 |
| Thickleaf Orach<br>*Atriplex dioica* | Other Flowering Plants | Historically Confirmed | 1920 | Endangered | | S1 | G5 |
| Three-ribbed Spike Rush<br>*Eleocharis tricostata* | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G4 |
| Tooth Cup<br>*Rotala ramosior* | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G5 |
| Torrey's Mountain Mint<br>*Pycnanthemum torreyi* | Other Flowering Plants | Possible but not Confirmed | | Endangered | | S1 | G2 |
| Trailing Pearlwort<br>*Sagina decumbens ssp. decumbens* | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G5T5 |
| Trinerved White Boneset<br>*Eupatorium subvenosum* | Asters, Goldenrods and Daisies | Recently Confirmed | 2004 | Threatened | | S2S3 | G5T4 |
| Velvet Panic Grass<br>*Dichanthelium scoparium* | Grasses | Recently Confirmed | 2008 | Endangered | | S1 | G5 |
| Velvety Bush Clover<br>*Lespedeza stuevei* | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G4? |
| Violet Wood Sorrel<br>*Oxalis violacea* | Other Flowering Plants | Recently Confirmed | | Threatened | | S2S3 | G5 |
| Virginia Bunchflower<br>*Melanthium virginicum* | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Virginia False Gromwell<br>*Lithospermum virginianum* | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | S1 | G4 |
| Virginia Ground Cherry<br>*Physalis virginiana var. virginiana* | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | SH | G5T5 |
| Virginia Three-seeded Mercury<br>*Acalypha virginica* | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 |
| Water Pigmyweed<br>*Crassula aquatica* | Other Flowering Plants | Recently Confirmed | 1988 | Endangered | | S1 | G5 |
| Weak Rush<br>*Juncus debilis* | Rushes | Recently Confirmed | 1983 | Endangered | | S1 | G5 |
| Whip Nut Sedge<br>*Scleria triglomerata* | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G5 |
| White Milkweed<br>*Asclepias variegata* | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 |
| White-bracted Boneset<br>*Eupatorium leucolepis* | Asters, Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | S1 | G5 |
| White-edge Sedge<br>*Carex debilis var. debilis* | Sedges | Recently Confirmed | 2012 | Threatened | | S2 | G5T5 |
| Whorled Marsh Pennywort<br>*Hydrocotyle verticillata var. verticillata* | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5T5 |
| Whorled Mountain Mint<br>*Pycnanthemum verticillatum var. verticillatum* | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1S2 | G5T5 |
| Wild Comfrey<br>*Andersonglossum virginianum* | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5T5 |
| Wild Pink<br>*Silene caroliniana ssp. pensylvanica* | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5T4T5 |
| Willow Oak<br>*Quercus phellos* | Other Flowering Plants | Extirpated | | Endangered | | S1 | G5 |
| Winter Grape<br>*Vitis vulpina* | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | S1 | G5 |
| Woodland Agrimony<br>*Agrimonia rostellata* | Other Flowering Plants | Historically Confirmed | 1932 | Threatened | | S2 | G5 |

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |
| Wright's Panic Grass *Dichanthelium wrightianum* | Grasses | Recently Confirmed | 2016 | Endangered | | S1S2 | G4 |
| Yellow Flatsedge *Cyperus flavescens* | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 |
| Yellow Giant-hyssop *Agastache nepetoides* | Other Flowering Plants | Possible but not Confirmed | | Threatened | | S2S3 | G5 |

## Plant: Conifers

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Atlantic White Cedar *Chamaecyparis thyoides* | Conifers | Recently Confirmed | 2005 | Threatened | | S2 | G4 |
| Shortleaf Pine *Pinus echinata* | Conifers | Extirpated | | Endangered | | S1 | G5 |
| Virginia Pine *Pinus virginiana* | Conifers | Possible but not Confirmed | 1878 | Endangered | | S1 | G5 |

## Plant: Ferns and Fern Allies

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Blunt-lobe Grape Fern *Botrychium oneidense* | Ferns | Recently Confirmed | 2003 | Threatened | | S2S3 | G4 |
| Carolina Clubmoss *Pseudolycopodiella caroliniana* | Clubmosses | Recently Confirmed | 2009 | Endangered | | S1 | G5T4 |
| Climbing Fern *Lygodium palmatum* | Ferns | Historically Confirmed | | Endangered | | S1 | G4 |
| Curlygrass Fern *Schizaea pusilla* | Ferns | Recently Confirmed | 2004 | Endangered | | S1 | G3G4 |
| Lowland Fragile Fern *Cystopteris protrusa* | Ferns | Historically Confirmed | 1919 | Endangered | | S1 | G5 |
| Meadow Horsetail *Equisetum pratense* | Horsetails | Historically Confirmed | 1937 | Threatened | | S2 | G5 |
| Northern Quillwort *Isoetes septentrionalis* | Quillworts | Historically Confirmed | | Endangered | | S1 | GNR |
| Southeastern Bracken *Pteridium aquilinum ssp. pseudocaudatum* | Ferns | Historically Confirmed | | Endangered | | SH | G5T5 |

# New York Nature Explorer

| Common Name | Subgroup | Distribution Status | Year Last Documente | Protection Status | | Conservation Rank | |
|---|---|---|---|---|---|---|---|
| | | | | State | Federal | State | Global |

This list only includes records from the databases of the NY Natural Heritage Program, the second NYS Breeding Bird Atlas Project, and the NY Amphibian and Reptile Atlas Project. This list is not a definitive statement about the presence or absence of all plants and animals, including rare or state-listed species, or of all significant natural communities.

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New England Cottontail | Sylvilagus transitionalis | Suffolk | Animal | Mammals | Rabbits and Hares | Extirpated | | Special Concern | | S1S2 | G3 | FALSE | FALSE | FALSE |
| Northern Long-eared Bat | Myotis septentrionalis | Suffolk | Animal | Mammals | Bats | Recently Confirmed | 2016 | Threatened | Threatened | S1 | G1G2 | FALSE | FALSE | TRUE |
| Silver-haired Bat | Lasionycteris noctivagans | Suffolk | Animal | Mammals | Bats | Historically Confirmed | | | | S2S3B | G3G4 | FALSE | FALSE | FALSE |
| Tri-colored Bat | Perimyotis subflavus | Suffolk | Animal | Mammals | Bats | Historically Confirmed | | | | S1 | G2G3 | FALSE | FALSE | FALSE |
| Acadian Flycatcher | Empidonax virescens | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S3B | G5 | FALSE | TRUE | FALSE |
| Alder Flycatcher | Empidonax alnorum | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| American Bittern | Botaurus lentiginosus | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2000-2005 | Special Concern | | S4 | G4 | FALSE | TRUE | FALSE |
| American Black Duck | Anas rubripes | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3B SNRN | G5 | FALSE | TRUE | FALSE |
| American Coot | Fulica americana | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3 | G5 | FALSE | TRUE | FALSE |
| American Crow | Corvus brachyrhynchos | Suffolk | Animal | Birds | Crows and Jays | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| American Goldfinch | Spinus tristis | Suffolk | Animal | Birds | Finches and Crossbills | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| American Kestrel | Falco sparverius | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| American Oystercatcher | Haematopus palliatus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S3 | G5 | FALSE | TRUE | FALSE |
| American Redstart | Setophaga ruticilla | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| American Robin | Turdus migratorius | Suffolk | Animal | Birds | Thrushes and Bluebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| American Woodcock | Scolopax minor | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5B | G5 | FALSE | TRUE | FALSE |
| Bald Eagle | Haliaeetus leucocephalus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2015 | Threatened | | S2S3B S2N | G5 | FALSE | FALSE | TRUE |
| Baltimore Oriole | Icterus galbula | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Bank Swallow | Riparia riparia | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Barn Owl | Tyto alba | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2003 | Protected Bird | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Barn Swallow | Hirundo rustica | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Barred Owl | Strix varia | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Belted Kingfisher | Megaceryle alcyon | Suffolk | Animal | Birds | Kingfishers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Black Rail | Laterallus jamaicensis | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000 | Endangered | | S1B | G3G4 | FALSE | FALSE | TRUE |
| Black Skimmer | Rynchops niger | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2008 | Special Concern | | S2 | G5 | FALSE | FALSE | FALSE |
| Black-and-white Warbler | Mniotilta varia | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Black-billed Cuckoo | Coccyzus erythropthalmus | Suffolk | Animal | Birds | Cuckoos | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Black-capped Chickadee | Poecile atricapillus | Suffolk | Animal | Birds | Chickadees and Titmice | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Black-crowned Night-Heron | Nycticorax nycticorax | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2000-2005 | Protected Bird | | S3 | G5 | FALSE | TRUE | FALSE |
| Black-throated Green Warbler | Setophaga virens | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Blue Grosbeak | Passerina caerulea | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | G5 | FALSE | TRUE | FALSE |
| Blue Jay | Cyanocitta cristata | Suffolk | Animal | Birds | Crows and Jays | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Blue-gray Gnatcatcher | Polioptila caerulea | Suffolk | Animal | Birds | Gnatcatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Blue-winged Teal | Anas discors | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S2S3B SNRN | G5 | FALSE | TRUE | FALSE |
| Blue-winged Warbler | Vermivora cyanoptera | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Boat-tailed Grackle | Quiscalus major | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S3B | G5 | FALSE | TRUE | FALSE |
| Bobolink | Dolichonyx oryzivorus | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Broad-winged Hawk | Buteo platypterus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Brown Creeper | Certhia americana | Suffolk | Animal | Birds | Creepers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Brown Thrasher | Toxostoma rufum | Suffolk | Animal | Birds | Mockingbirds and Thrashers | Recently Confirmed | 2000-2005 | Protected Bird | | S3S4B | G5 | FALSE | TRUE | FALSE |
| Brown-headed Cowbird | Molothrus ater | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Canada Goose | Branta canadensis | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Canada Warbler | Cardellina canadensis | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Carolina Wren | Thryothorus ludovicianus | Suffolk | Animal | Birds | Wrens | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Cattle Egret | Bubulcus ibis | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Historically Confirmed | 1970 | Protected Bird | | S2 | G5 | FALSE | FALSE | FALSE |
| Cedar Waxwing | Bombycilla cedrorum | Suffolk | Animal | Birds | Waxwings | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Chestnut-sided Warbler | Setophaga pensylvanica | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Chimney Swift | Chaetura pelagica | Suffolk | Animal | Birds | Hummingbirds and Swifts | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Chuck-will's-widow | Antrostomus carolinensis | Suffolk | Animal | Birds | Nightbirds | Recently Confirmed | 2012 | Protected Bird | | S1B | G5 | FALSE | FALSE | FALSE |
| Clapper Rail | Rallus crepitans | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000-2005 | Protected Bird | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Cliff Swallow | Petrochelidon pyrrhonota | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Common Eider | Somateria mollissima | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2015 | Protected Bird - Game with open season | | S1B S3?N | G5 | FALSE | FALSE | FALSE |
| Common Grackle | Quiscalus quiscula | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Common Loon | Gavia immer | Suffolk | Animal | Birds | Loons | Recently Confirmed | | Special Concern | | S4 | G5 | FALSE | FALSE | FALSE |
| Common Moorhen | Gallinula galeata | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3S4 | G5 | FALSE | TRUE | FALSE |
| Common Nighthawk | Chordeiles minor | Suffolk | Animal | Birds | Nightbirds | Recently Confirmed | 2000-2005 | Special Concern | | S2S3B | G5 | FALSE | FALSE | FALSE |
| Common Tern | Sterna hirundo | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Common Yellowthroat | Geothlypis trichas | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Cooper's Hawk | Accipiter cooperii | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2000-2005 | Special Concern | | S4 | G5 | FALSE | TRUE | FALSE |
| Double-crested Cormorant | Phalacrocorax auritus | Suffolk | Animal | Birds | Cormorants | Recently Confirmed | 2000-2005 | Protected Bird | | S3 | G5 | FALSE | TRUE | FALSE |
| Downy Woodpecker | Picoides pubescens | Suffolk | Animal | Birds | Woodpeckers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Eastern Bluebird | Sialia sialis | Suffolk | Animal | Birds | Thrushes and Bluebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Eastern Kingbird | Tyrannus tyrannus | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Eastern Meadowlark | Sturnella magna | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eastern Phoebe | Sayornis phoebe | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Eastern Screech-Owl | Megascops asio | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Eastern Wood-Pewee | Contopus virens | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| European Starling | Sturnus vulgaris | Suffolk | Animal | Birds | Starlings | Recently Confirmed | 2000-2005 | | | SNA | G5 | TRUE | TRUE | FALSE |
| Fish Crow | Corvus ossifragus | Suffolk | Animal | Birds | Crows and Jays | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S4 | G5 | FALSE | TRUE | FALSE |
| Forster's Tern | Sterna forsteri | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2003 | Protected Bird | | S1 | G5 | FALSE | FALSE | FALSE |
| Gadwall | Anas strepera | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3 | G5 | FALSE | TRUE | FALSE |
| Glossy Ibis | Plegadis falcinellus | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2007 | Protected Bird | | S2 | G5 | FALSE | FALSE | FALSE |
| Gray Catbird | Dumetella carolinensis | Suffolk | Animal | Birds | Mockingbirds and Thrashers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Great Black-backed Gull | Larus marinus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S4 | G5 | FALSE | TRUE | FALSE |
| Great Blue Heron | Ardea herodias | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | | Protected Bird | | S5 | G5 | FALSE | FALSE | FALSE |
| Great Crested Flycatcher | Myiarchus crinitus | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Great Horned Owl | Bubo virginianus | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Green Heron | Butorides virescens | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Green-winged Teal | Anas crecca | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3 | G5 | FALSE | TRUE | FALSE |
| Gull-billed Tern | Gelochelidon nilotica | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Historically Confirmed | 1984 | Protected Bird | | S1 | G5 | FALSE | FALSE | FALSE |
| Hairy Woodpecker | Picoides villosus | Suffolk | Animal | Birds | Woodpeckers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Harlequin Duck | Histrionicus histrionicus | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Historically Confirmed | | Protected Bird | | S1N | G4 | FALSE | FALSE | FALSE |
| Hermit Thrush | Catharus guttatus | Suffolk | Animal | Birds | Thrushes and Bluebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Herring Gull | Larus argentatus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Hooded Warbler | Setophaga citrina | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Horned Lark | Eremophila alpestris | Suffolk | Animal | Birds | Larks | Recently Confirmed | 2000-2005 | Special Concern | | S3S4B | G5 | FALSE | TRUE | FALSE |
| House Finch | Haemorhous mexicanus | Suffolk | Animal | Birds | Finches and Crossbills | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | G5 | TRUE | TRUE | FALSE |
| House Sparrow | Passer domesticus | Suffolk | Animal | Birds | Old World Sparrows | Recently Confirmed | 2000-2005 | | | SNA | G5 | TRUE | TRUE | FALSE |
| House Wren | Troglodytes aedon | Suffolk | Animal | Birds | Wrens | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Indigo Bunting | Passerina cyanea | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Kentucky Warbler | Geothlypis formosa | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2012 | Protected Bird | | S2B | G5 | FALSE | FALSE | FALSE |
| Killdeer | Charadrius vociferus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Laughing Gull | Leucophaeus atricilla | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2007 | Protected Bird | | S1 | G5 | FALSE | FALSE | FALSE |
| Lawrence's Warbler | Vermivora chrysoptera x cyanoptera | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | GNA | FALSE | TRUE | FALSE |
| Least Bittern | Ixobrychus exilis | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2011 | Threatened | | S3B S1N | G5 | FALSE | FALSE | TRUE |
| Least Tern | Sternula antillarum | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G4 | FALSE | FALSE | TRUE |
| Little Blue Heron | Egretta caerulea | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2007 | Protected Bird | | S2 | G5 | FALSE | FALSE | FALSE |
| Long-eared Owl | Asio otus | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2000-2005 | Protected Bird | | S2S3B SNRN | G5 | FALSE | TRUE | FALSE |
| Louisiana Waterthrush | Parkesia motacilla | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Mallard | Anas platyrhynchos | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Mallard x Am. Black Duck Hybrid | Anas platyrhynchos x rubripes | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | SNA | GNA | FALSE | TRUE | FALSE |
| Marsh Wren | Cistothorus palustris | Suffolk | Animal | Birds | Wrens | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Monk Parakeet | Myiopsitta monachus | Suffolk | Animal | Birds | Parrots and Parakeets | Recently Confirmed | 2000-2005 | | | SNA | G5 | TRUE | TRUE | FALSE |
| Mourning Dove | Zenaida macroura | Suffolk | Animal | Birds | Pigeons and Doves | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Mute Swan | Cygnus olor | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | G5 | TRUE | TRUE | FALSE |
| Northern Bobwhite | Colinus virginianus | Suffolk | Animal | Birds | Grouse Pheasants Turkeys | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S4 | G4G5 | FALSE | TRUE | FALSE |
| Northern Cardinal | Cardinalis cardinalis | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Northern Flicker | Colaptes auratus | Suffolk | Animal | Birds | Woodpeckers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Northern Harrier | Circus cyaneus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2005 | Threatened | | S3B S3N | G5 | FALSE | FALSE | TRUE |
| Northern Mockingbird | Mimus polyglottos | Suffolk | Animal | Birds | Mockingbirds and Thrashers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Northern Parula | Setophaga americana | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S3S4B | G5 | FALSE | TRUE | FALSE |
| Northern Rough-winged Swallow | Stelgidopteryx serripennis | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Orchard Oriole | Icterus spurius | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S4B | G5 | FALSE | TRUE | FALSE |
| Osprey | Pandion haliaetus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2000-2005 | Special Concern | | S4B | G5 | FALSE | TRUE | FALSE |
| Ovenbird | Seiurus aurocapilla | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Peregrine Falcon | Falco peregrinus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2008 | Endangered | | S3B | G4 | FALSE | FALSE | TRUE |
| Pied-billed Grebe | Podilymbus podiceps | Suffolk | Animal | Birds | Grebes | Recently Confirmed | 2000 | Threatened | | S3B S1N | G5 | FALSE | FALSE | TRUE |
| Pine Warbler | Setophaga pinus | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Piping Plover | Charadrius melodus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2016 | Endangered | Endangered/Threatened | S3B | G3 | FALSE | FALSE | TRUE |
| Prairie Warbler | Setophaga discolor | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Prothonotary Warbler | Protonotaria citrea | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000 | Protected Bird | | S2B | G5 | FALSE | FALSE | FALSE |
| Purple Finch | Haemorhous purpureus | Suffolk | Animal | Birds | Finches and Crossbills | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Purple Martin | Progne subis | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S4B | G5 | FALSE | TRUE | FALSE |
| Red-bellied Woodpecker | Melanerpes carolinus | Suffolk | Animal | Birds | Woodpeckers | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Red-breasted Merganser | Mergus serrator | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S3 | G5 | FALSE | TRUE | FALSE |
| Red-breasted Nuthatch | Sitta canadensis | Suffolk | Animal | Birds | Nuthatches | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Red-eyed Vireo | Vireo olivaceus | Suffolk | Animal | Birds | Vireos | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Red-headed Woodpecker | Melanerpes erythrocephalus | Suffolk | Animal | Birds | Woodpeckers | Recently Confirmed | 2009 | Special Concern | | S2?B | G5 | FALSE | FALSE | FALSE |
| Red-tailed Hawk | Buteo jamaicensis | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Red-winged Blackbird | Agelaius phoeniceus | Suffolk | Animal | Birds | Blackbirds and Orioles | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring-necked Pheasant | Phasianus colchicus | Suffolk | Animal | Birds | Grouse Pheasants Turkeys | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | SNA | G5 | TRUE | TRUE | FALSE |
| Rock Pigeon | Columba livia | Suffolk | Animal | Birds | Pigeons and Doves | Recently Confirmed | 2000-2005 | | | SNA | G5 | TRUE | TRUE | FALSE |
| Rose-breasted Grosbeak | Pheucticus ludovicianus | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Roseate Tern | Sterna dougallii | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2015 | Endangered | Endangered | S1B | G4 | FALSE | FALSE | TRUE |
| Ruby-throated Hummingbird | Archilochus colubris | Suffolk | Animal | Birds | Hummingbirds and Swifts | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Ruddy Duck | Oxyura jamaicensis | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Historically Confirmed | | Protected Bird - Game with open season | | S1 | G5 | FALSE | FALSE | FALSE |
| Ruffed Grouse | Bonasa umbellus | Suffolk | Animal | Birds | Grouse Pheasants Turkeys | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Rusty Blackbird | Euphagus carolinus | Suffolk | Animal | Birds | Blackbirds and Orioles | Historically Confirmed | | Protected Bird | | S2B | G4 | FALSE | FALSE | FALSE |
| Scarlet Tanager | Piranga olivacea | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Sedge Wren | Cistothorus platensis | Suffolk | Animal | Birds | Wrens | Historically Confirmed | 1932 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Short-eared Owl | Asio flammeus | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2008 | Endangered | | S2 | G5 | FALSE | FALSE | TRUE |
| Snowy Egret | Egretta thula | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2007 | Protected Bird | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Sora | Porzana carolina | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S4 | G5 | FALSE | TRUE | FALSE |
| Spotted Sandpiper | Actitis macularius | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Summer Tanager | Piranga rubra | Suffolk | Animal | Birds | Cardinals and Buntings | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | G5 | FALSE | TRUE | FALSE |
| Tree Swallow | Tachycineta bicolor | Suffolk | Animal | Birds | Swallows | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Tricolored Heron | Egretta tricolor | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2004 | Protected Bird | | S2 | G5 | FALSE | FALSE | FALSE |
| Tufted Titmouse | Baeolophus bicolor | Suffolk | Animal | Birds | Chickadees and Titmice | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| Upland Sandpiper | Bartramia longicauda | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Veery | Catharus fuscescens | Suffolk | Animal | Birds | Thrushes and Bluebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Virginia Rail | Rallus limicola | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Warbling Vireo | Vireo gilvus | Suffolk | Animal | Birds | Vireos | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Whip-poor-will | Antrostomus vociferus | Suffolk | Animal | Birds | Nightbirds | Recently Confirmed | 2000-2005 | Special Concern | | S3B | G5 | FALSE | FALSE | FALSE |
| White-breasted Nuthatch | Sitta carolinensis | Suffolk | Animal | Birds | Nuthatches | Recently Confirmed | 2000-2005 | Protected Bird | | S5 | G5 | FALSE | TRUE | FALSE |
| White-eyed Vireo | Vireo griseus | Suffolk | Animal | Birds | Vireos | Recently Confirmed | 2000-2005 | Protected Bird | | S4B | G5 | FALSE | TRUE | FALSE |
| Wild Turkey | Meleagris gallopavo | Suffolk | Animal | Birds | Grouse Pheasants Turkeys | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Willet | Tringa semipalmata | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S3B | G5 | FALSE | TRUE | FALSE |
| Willow Flycatcher | Empidonax traillii | Suffolk | Animal | Birds | Flycatchers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Wood Duck | Aix sponsa | Suffolk | Animal | Birds | Ducks Geese Waterfowl | Recently Confirmed | 2000-2005 | Protected Bird - Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Wood Thrush | Hylocichla mustelina | Suffolk | Animal | Birds | Thrushes and Bluebirds | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G4 | FALSE | TRUE | FALSE |
| Worm-eating Warbler | Helmitheros vermivorum | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S4B | G5 | FALSE | TRUE | FALSE |
| Yellow Warbler | Setophaga petechia | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Yellow-billed Cuckoo | Coccyzus americanus | Suffolk | Animal | Birds | Cuckoos | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Yellow-crowned Night-Heron | Nyctanassa violacea | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2000-2005 | Protected Bird | | S2 | G5 | FALSE | FALSE | FALSE |
| Yellow-throated Vireo | Vireo flavifrons | Suffolk | Animal | Birds | Vireos | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Yellow-throated Warbler | Setophaga dominica | Suffolk | Animal | Birds | Wood-Warblers | Recently Confirmed | 2000-2005 | Protected Bird | | SNA | G5 | FALSE | TRUE | FALSE |
| Common Gartersnake | Thamnophis sirtalis | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Common Musk Turtle | Sternotherus odoratus | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Dekay's Brownsnake | Storeria dekayi | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Diamondback Terrapin | Malaclemys terrapin | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Game with open season | | S3 | G4 | FALSE | TRUE | FALSE |
| Eastern Box Turtle | Terrapene carolina | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Special Concern | | S3 | G5 | FALSE | TRUE | FALSE |
| Eastern Hog-nosed Snake | Heterodon platirhinos | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Special Concern | | S3 | G5 | FALSE | TRUE | FALSE |
| Eastern Mud Turtle | Kinosternon subrubrum | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Eastern Ribbonsnake | Thamnophis sauritus | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S4 | G5 | FALSE | TRUE | FALSE |
| Eastern Wormsnake | Carphophis amoenus | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 2015 | Special Concern | | S2 | G5 | FALSE | FALSE | FALSE |
| Italian Wall Lizard | Podarcis sicula | Suffolk | Animal | Reptiles | Lizards | Recently Confirmed | 1990-1999 | | | SNA | G5 | TRUE | TRUE | FALSE |
| Milksnake | Lampropeltis triangulum | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Northern Watersnake | Nerodia sipedon | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Painted Turtle | Chrysemys picta | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Racer | Coluber constrictor | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S4 | G5 | FALSE | TRUE | FALSE |
| Red-bellied Snake | Storeria occipitomaculata | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Ring-necked Snake | Diadophis punctatus | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Slider | Trachemys scripta | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | | | SNA | G5 | TRUE | TRUE | FALSE |
| Smooth Green Snake | Opheodrys vernalis | Suffolk | Animal | Reptiles | Snakes | Recently Confirmed | 1990-1999 | Game with no open season | | S4 | G5 | FALSE | TRUE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Snapping Turtle | Chelydra serpentina | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Spotted Turtle | Clemmys guttata | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 1990-1999 | Special Concern | | S3 | G5 | FALSE | TRUE | FALSE |
| Atlantic Coast Leopard Frog | Lithobates kauffeldi | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1995 | | | S1S2 | G3G4 | FALSE | FALSE | FALSE |
| Blue-spotted Salamander | Ambystoma laterale | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Special Concern | | S4 | G5 | FALSE | TRUE | FALSE |
| Bullfrog | Lithobates catesbeianus | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Eastern Newt | Notophthalmus viridescens | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Eastern Spadefoot | Scaphiopus holbrookii | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 2008 | Special Concern | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Four-toed Salamander | Hemidactylium scutatum | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Fowler's Toad | Anaxyrus fowleri | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S4 | G5 | FALSE | TRUE | FALSE |
| Gray Treefrog | Hyla versicolor | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Green Frog | Lithobates clamitans | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Marbled Salamander | Ambystoma opacum | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Special Concern | | S3 | G5 | FALSE | TRUE | FALSE |
| Northern Cricket Frog | Acris crepitans | Suffolk | Animal | Amphibians | Frogs and Toads | Historically Confirmed | 1932 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Northern Two-lined Salamander | Eurycea bislineata | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Pickerel Frog | Lithobates palustris | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Redback Salamander | Plethodon cinereus | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Spotted Salamander | Ambystoma maculatum | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 1990-1999 | Game with no open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Spring Peeper | Pseudacris crucifer | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Tiger Salamander | Ambystoma tigrinum | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 2014 | Endangered | | S1S2 | G5 | FALSE | FALSE | TRUE |
| Wood Frog | Lithobates sylvaticus | Suffolk | Animal | Amphibians | Frogs and Toads | Recently Confirmed | 1990-1999 | Game with open season | | S5 | G5 | FALSE | TRUE | FALSE |
| Atlantic Needlefish | Strongylura marina | Suffolk | Animal | Fish | Needlefishes | Possible but not Confirmed | | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Atlantic Silverside | Menidia menidia | Suffolk | Animal | Fish | Silversides | Recently Confirmed | 2015 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Banded Sunfish | Enneacanthus obesus | Suffolk | Animal | Fish | Darters and Sunfishes | Recently Confirmed | 2007 | Threatened | | S1 | G5 | FALSE | FALSE | TRUE |
| Bridle Shiner | Notropis bifrenatus | Suffolk | Animal | Fish | Minnows  Shiners  Suckers | Recently Confirmed | 2011 | | | S2? | G3 | FALSE | FALSE | FALSE |
| Inland Silverside | Menidia beryllina | Suffolk | Animal | Fish | Silversides | Recently Confirmed | 1980 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Spotfin Killifish | Fundulus luciae | Suffolk | Animal | Fish | Killifishes | Historically Confirmed | | | | S1 | G4 | FALSE | FALSE | FALSE |
| Swamp Darter | Etheostoma fusiforme | Suffolk | Animal | Fish | Darters and Sunfishes | Recently Confirmed | 2006 | Threatened | | S1 | G5 | FALSE | FALSE | TRUE |
| A Geometrid Moth | Euchlaena madusaria | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1 | G4 | FALSE | FALSE | FALSE |
| A Prominent Moth | Heterocampa varia | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2005 | Special Concern | | S1S2 | G3G4 | FALSE | FALSE | FALSE |
| An Underwing Moth | Catocala umbrosa | Suffolk | Animal | Butterflies and Moths | Moths | Historically Confirmed | | | | SH | G5 | FALSE | FALSE | FALSE |
| Aureolaria Seed Borer | Pyrrhia aurantiago | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1989 | | | SU | G3G4 | FALSE | FALSE | FALSE |
| Barrens Dagger Moth | Acronicta albarufa | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1999 | | | S1 | G3G4 | FALSE | FALSE | FALSE |
| Barrens Itame | Speranza exonerata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | S1S3 | G3G4 | FALSE | FALSE | FALSE |
| Black-bordered Lemon Moth | Marimatha nigrofimbria | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2013 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Black-dotted Ruddy | Ilexia intractata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1 | GNR | FALSE | FALSE | FALSE |
| Black-eyed Zale | Zale curema | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Bridgham's Brocade | Oligia bridghamii | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Burgess's Apamea | Apamea burgessi | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Chain Fern Borer Moth | Papaipema stenocelis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1987 | | | S1? | G4 | FALSE | FALSE | FALSE |
| Chocolate Renia | Renia nemoralis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Coastal Barrens Buckmoth | Hemileuca maia ssp. 5 | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2016 | Special Concern | | S2 | G5T3 | FALSE | FALSE | FALSE |
| Coastal Heathland Cutworm | Abagrotis nefascia benjamini | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1S3 | G4T3 | FALSE | FALSE | FALSE |
| Doll's Merolonche | Acronicta dolli | Suffolk | Animal | Butterflies and Moths | Moths | Historically Confirmed | 1931 | | | SH | G3G4 | FALSE | FALSE | FALSE |
| Dune Sympistis | Sympistis riparia | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | SU | G4 | FALSE | FALSE | FALSE |
| Dusted Skipper | Atrytonopsis hianna | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 1996 | | | S2S3 | G4G5 | FALSE | FALSE | FALSE |
| Edwards' Hairstreak | Satyrium edwardsii | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 2003 | | | S3S4 | G5 | FALSE | FALSE | FALSE |
| Fawn Brown Dart | Euxoa pleuritica | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S2S3 | G4 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fringed Dart | Eucoptocnemis fimbriaris | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Frosted Elfin | Callophrys irus | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 2006 | Threatened | | S1S2 | G3 | FALSE | FALSE | TRUE |
| Golden Aster Flower Moth | Schinia tuberculum | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1999 | | | S2 | G4 | FALSE | FALSE | FALSE |
| Gordian Sphinx | Sphinx gordius | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1S3 | G4G5 | FALSE | FALSE | FALSE |
| Gray Woodgrain | Morrisonia mucens | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1S3 | G4G5 | FALSE | FALSE | FALSE |
| Hairy Hydraecia | Hydraecia stramentosa | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1995 | | | S1S3 | G4 | FALSE | FALSE | FALSE |
| Herodias or Pine Barrens Underwing | Catocala herodias gerhardi | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | Special Concern | | S1S2 | G3T3 | FALSE | FALSE | FALSE |
| Hessel's Hairstreak | Callophrys hesseli | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 1986 | Endangered | | S1 | G3G4 | FALSE | FALSE | TRUE |
| Imperial Moth | Eacles imperialis imperialis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G5T5 | FALSE | FALSE | FALSE |
| Irregular Apamea | Apamea inordinata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1 | GU | FALSE | FALSE | FALSE |
| Jersey Jair Underwing | Catocala jair ssp. 2 | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | Special Concern | | S1S2 | G4?T4? | FALSE | FALSE | FALSE |
| Marsh Fern Moth | Fagitana littera | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2012 | | | S1S3 | G4 | FALSE | FALSE | FALSE |
| Melsheimer's Sack Bearer | Cicinnus melsheimeri | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Mottled Duskywing | Erynnis martialis | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Historically Confirmed | 1966 | Special Concern | | S1 | G3 | FALSE | FALSE | FALSE |
| Northern Oak Hairstreak | Satyrium favonius ontario | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Possible but not Confirmed | | | | S2S4 | G4G5T4 | FALSE | FALSE | FALSE |
| Orange Holomelina | Virbia aurantiaca | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | SU | G5 | FALSE | FALSE | FALSE |
| Orange-striped Oakworm Moth | Anisota senatoria | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | SU | G5 | FALSE | FALSE | FALSE |
| Packard's Lichen Moth | Cisthene packardii | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | SU | G5 | FALSE | FALSE | FALSE |
| Pale Green Pinion Moth | Lithophane viridipallens | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2005 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Persius Duskywing | Erynnis persius persius | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Historically Confirmed | 1966 | Endangered | | S1 | G5T1T3 | FALSE | FALSE | TRUE |
| Pin-striped Slug Moth | Monoleuca semifascia | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Pine Barrens Zale | Zale lunifera | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G3G4 | FALSE | FALSE | FALSE |
| Pine Barrens Zanclognatha | Zanclognatha martha | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2013 | | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Pine Devil | Citheronia sepulcralis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1984 | | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Pine Tussock Moth | Dasychira pinicola | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | SU | G4 | FALSE | FALSE | FALSE |
| Pink Sallow | Psectraglaea carnosa | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2013 | | | S2 | G3 | FALSE | FALSE | FALSE |
| Pink Star Moth | Derrima stellata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Pitcher Plant Borer Moth | Papaipema appassionata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1987 | | | SU | G4 | FALSE | FALSE | FALSE |
| Plain Schizura | Schizura apicalis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G3G4 | FALSE | FALSE | FALSE |
| Projecta Gray | Cleora projecta | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2005 | | | SU | G4 | FALSE | FALSE | FALSE |
| Red-banded Hairstreak | Calycopis cecrops | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 2001 | | | SU | G5 | FALSE | FALSE | FALSE |
| Regal Fritillary | Speyeria idalia | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 1988 | Endangered | | SH | G3 | FALSE | FALSE | FALSE |
| Regal Moth | Citheronia regalis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | | | | S1 | G4G5 | FALSE | FALSE | TRUE |
| Richard's Fungus Moth | Metalectra richardsi | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | SU | G4 | FALSE | FALSE | FALSE |
| Sand Wainscot Moth | Apamea lintneri | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | SU | G4 | FALSE | FALSE | FALSE |
| Scribbled Sallow Moth | Sympistis perscripta | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Seaside Golden Borer Moth | Papaipema duovata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Sensitive Chytonix | Chytonix sensilis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1992 | | | S1S3 | G4 | FALSE | FALSE | FALSE |
| Slender Flower Moth | Schinia bifascia | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 1997 | | | S1 | G4Q | FALSE | FALSE | FALSE |
| Spinose Flower Moth | Schinia spinosae | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2015 | | | SU | G4 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spiny Oakworm Moth | Anisota stigma | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | SU | G5 | FALSE | FALSE | FALSE |
| Stinging Rose Caterpillar Moth | Parasa indetermina | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1 | G4 | FALSE | FALSE | FALSE |
| Switchgrass Dart | Dichagyris acclivis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S2S3 | G4G5 | FALSE | FALSE | FALSE |
| The Pink Streak | Dargida rubripennis | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2000 | | | SU | G3G4 | FALSE | FALSE | FALSE |
| Toothed Apharetra | Sympistis dentata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | S2S4 | G4 | FALSE | FALSE | FALSE |
| Umber Moth | Hypomecis umbrosaria | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Variable Sallow | Sericaglaea signata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2006 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Violet Dart | Euxoa violaris | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Waxed Sallow | Chaetaglaea cerata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | S1S3 | G3G4 | FALSE | FALSE | FALSE |
| White-m Hairstreak | Parrhasius m-album | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 2000 | | | SU | G5 | FALSE | FALSE | FALSE |
| Yellow-spotted Graylet | Hyperstrotia flaviguttata | Suffolk | Animal | Butterflies and Moths | Moths | Recently Confirmed | 2007 | | | SU | G4 | FALSE | FALSE | FALSE |
| Atlantic Bluet | Enallagma doubledayi | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Blackwater Bluet | Enallagma weewa | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Blue Corporal | Ladona deplanata | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2008 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Comet Darner | Anax longipes | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2009 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Common Sanddragon | Progomphus obscurus | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2008 | Special Concern | | S1 | G5 | FALSE | FALSE | FALSE |
| Cyrano Darner | Nasiaeschna pentacantha | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Possible but not Confirmed | | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Double-ringed Pennant | Celithemis verna | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2009 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Four-spotted Pennant | Brachymesia gravida | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2012 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Golden-winged Skimmer | Libellula auripennis | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2008 | | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Little Bluet | Enallagma minusculum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G4 | FALSE | FALSE | TRUE |
| Lyre-tipped Spreadwing | Lestes unguiculatus | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Mantled Baskettail | Epitheca semiaquea | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2008 | | | S2 | G5 | FALSE | FALSE | FALSE |
| Martha's Pennant | Celithemis martha | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2009 | | | S2 | G4 | FALSE | FALSE | FALSE |
| Needham's Skimmer | Libellula needhami | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2015 | | | S3 | G5 | FALSE | FALSE | FALSE |
| New England Bluet | Enallagma laterale | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2008 | | | S3 | G3G4 | FALSE | FALSE | FALSE |
| Pine Barrens Bluet | Enallagma recurvatum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G3 | FALSE | FALSE | TRUE |
| Rambur's Forktail | Ischnura ramburii | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2015 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Scarlet Bluet | Enallagma pictum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S2 | G3 | FALSE | FALSE | TRUE |
| Seaside Dragonlet | Erythrodiplax berenice | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2012 | | | S2 | G5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Southern Spreadwing | Lestes australis | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2005 | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Southern Sprite | Nehalennia integricollis | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Special Concern | | S1 | G5 | FALSE | FALSE | FALSE |
| Spatterdock Darner | Rhionaeschna mutata | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Recently Confirmed | 2008 | | | S2 | G4 | FALSE | FALSE | FALSE |
| Yellow-sided Skimmer | Libellula flavida | Suffolk | Animal | Dragonflies and Damselflies | Dragonflies | Historically Confirmed | 1926 | | | S1 | G5 | FALSE | FALSE | FALSE |
| Rusty-patched Bumble Bee | Bombus (Bombus) affinis | Suffolk | Animal | Bees Wasps and Ants | Bees | Historically Confirmed | 1997 | | | SH | G1 | FALSE | FALSE | FALSE |
| Yellow Bumble Bee | Bombus (Thoracobombus) fervidus | Suffolk | Animal | Bees Wasps and Ants | Bees | Recently Confirmed | 2011 | | | S1 | G4? | FALSE | FALSE | FALSE |
| American Burying Beetle | Nicrophorus americanus | Suffolk | Animal | Beetles | Carrion Beetles | Historically Confirmed | 1937 | Endangered | Endangered | SH | G2G3 | FALSE | FALSE | FALSE |
| Black Lordithon Rove Beetle | Lordithon niger | Suffolk | Animal | Beetles | Rove Beetles | Recently Confirmed | 1997 | | | S1 | GU | FALSE | FALSE | FALSE |
| Eastern Pinebarrens Tiger Beetle | Cicindela abdominalis | Suffolk | Animal | Beetles | Tiger Beetles | Historically Confirmed | 1917 | | | SH | G3G4 | FALSE | FALSE | FALSE |
| Hairy-necked Tiger Beetle | Cicindela hirticollis | Suffolk | Animal | Beetles | Tiger Beetles | Recently Confirmed | 2017 | | | S1S2 | G5 | FALSE | FALSE | FALSE |
| New Jersey Pine Barrens Tiger Beetle | Cicindela patruela consentanea | Suffolk | Animal | Beetles | Tiger Beetles | Historically Confirmed | 1952 | | | SH | G3T1T3 | FALSE | FALSE | FALSE |
| Nine-spotted Lady Beetle | Coccinella novemnotata | Suffolk | Animal | Beetles | Lady Beetles | Recently Confirmed | 2011 | | | S1 | G2 | FALSE | FALSE | FALSE |
| Northeastern Beach Tiger Beetle | Cicindela dorsalis dorsalis | Suffolk | Animal | Beetles | Tiger Beetles | Extirpated | 1945 | Threatened | Threatened | SX | G3G4T2 | FALSE | FALSE | FALSE |
| Colonial Waterbird Nesting Area | Colonial Waterbird Nesting Area | Suffolk | Animal | Animal Assemblages | Animal Assemblages | Recently Confirmed | 2004 | | | S3 | GNR | FALSE | FALSE | FALSE |
| Gull Colony | Gull Colony | Suffolk | Animal | Animal Assemblages | Animal Assemblages | Recently Confirmed | 2004 | | | SNR | GNR | FALSE | FALSE | FALSE |
| Seal Haul-out Site | Seal Haul-out Site | Suffolk | Animal | Animal Assemblages | Animal Assemblages | Recently Confirmed | 2015 | | | SNR | GNR | FALSE | FALSE | FALSE |
| Chipping Sparrow | Spizella passerina | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Eastern Towhee | Pipilo erythrophthalmus | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Field Sparrow | Spizella pusilla | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Grasshopper Sparrow | Ammodramus savannarum | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Special Concern | | S3B | G5 | FALSE | TRUE | FALSE |
| Henslow's Sparrow | Ammodramus henslowii | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | | Threatened | | S3B | G4 | FALSE | FALSE | TRUE |
| Saltmarsh Sharp-tailed Sparrow | Ammodramus caudacutus | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S3B | G4 | FALSE | TRUE | FALSE |
| Savannah Sparrow | Passerculus sandwichensis | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Seaside Sparrow | Ammodramus maritimus | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2002 | Special Concern | | S2S3B | G4 | FALSE | FALSE | FALSE |
| Song Sparrow | Melospiza melodia | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Swamp Sparrow | Melospiza georgiana | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S5B | G5 | FALSE | TRUE | FALSE |
| Turkey Vulture | Cathartes aura | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Protected Bird | | S4B | G5 | FALSE | TRUE | FALSE |
| Vesper Sparrow | Pooecetes gramineus | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Special Concern | | S3B | G5 | FALSE | TRUE | FALSE |
| Yellow-breasted Chat | Icteria virens | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | 2000-2005 | Special Concern | | S2?B | G5 | FALSE | FALSE | FALSE |
| Algae-like Pondweed | Potamogeton confervoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| American Bittersweet | Celastrus scandens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| American Ipecac | Euphorbia ipecacuanhae | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| American Phragmites | Phragmites americanus | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | | Rare | | S3 | G5T4 | FALSE | FALSE | FALSE |
| American Waterwort | Elatine americana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1974 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Angled Spike Rush | Eleocharis quadrangulata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Annual Saltmarsh Aster | Symphyotrichum subulatum var. subulatum | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Autumnal Water-starwort | Callitriche hermaphroditica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1927 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Barratt's Sedge | Carex barrattii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Bayard's Adder's Mouth | Malaxis bayardii | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | | Endangered | | S1 | G1G2 | FALSE | FALSE | TRUE |
| Beaked Panic Grass | Coleataenia anceps ssp. anceps | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | 1921 | | | SX | G5TNR | FALSE | FALSE | FALSE |
| Bent Sedge | Carex styloflexa | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Bird's-foot Violet | Viola pedata var. pedata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5TNR | FALSE | FALSE | FALSE |
| Black Crowberry | Empetrum nigrum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | 1924 | Rare | | S2 | G5 | FALSE | FALSE | FALSE |
| Black-edge Sedge | Carex nigromarginata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Black-fruited Spike Rush | Eleocharis melanocarpa | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Blackjack Oak | Quercus marilandica var. marilandica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5T4T5 | FALSE | FALSE | FALSE |
| Blunt Mountain Mint | Pycnanthemum muticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Bog Aster | Oclemena nemoralis | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bracted Yellow-eyed Grass | Xyris bracteicaulis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | | | | SX | GX | FALSE | FALSE | FALSE |
| Brown Bog Sedge | Carex buxbaumii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1986 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Bunched Beak Sedge | Rhynchospora cephalantha | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | | | | SX | G5 | FALSE | FALSE | FALSE |
| Bush's Sedge | Carex bushii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Bushy Rockrose | Crocanthemum dumosum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 | FALSE | FALSE | FALSE |
| Bushy St. John's-wort | Hypericum densiflorum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Butternut | Juglans cinerea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | | | S4 | G4 | FALSE | FALSE | FALSE |
| Button Sedge | Carex bullata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Carey's Smartweed | Persicaria careyi | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Carolina Redroot | Lachnanthes caroliniana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Carolina Whitlow Grass | Tomostima reptans | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1926 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Cat-tail Sedge | Carex typhina | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2012 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |
| Catfoot | Pseudognaphalium micradenium | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Historically Confirmed | 1959 | Endangered | | SH | G4G5T3? | FALSE | FALSE | FALSE |
| Clasping Bugleweed | Lycopus amplectens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Cloudberry | Rubus chamaemorus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirme | 1908 | | | SX | G5 | FALSE | FALSE | FALSE |
| Clustered Bluets | Oldenlandia uniflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Clustered Sedge | Carex cumulata | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | 1967 | Threatened | | S2S3 | G4? | FALSE | FALSE | FALSE |
| Coast Flatsedge | Cyperus polystachyos | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |
| Coast Violet | Viola brittoniana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Coastal Fireweed | Erechtites hieraciifolius var. megalocarpus | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2002 | Endangered | | S1 | G5T3 | FALSE | FALSE | FALSE |
| Coastal Goldenrod | Solidago latissimifolia | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2006 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Coastal Silverweed | Potentilla anserina ssp. pacifica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |
| Collins' Sedge | Carex collinsii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Comb-leaved Mermaid Weed | Proserpinaca pectinata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Coppery St. John's-wort | Hypericum denticulatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Cranefly Orchid | Tipularia discolor | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2008 | Endangered | | S1 | G4G5 | FALSE | FALSE | TRUE |
| Creeping Spike Rush | Eleocharis ambigens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1997 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Creeping St. John's-wort | Hypericum adpressum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 | FALSE | FALSE | FALSE |
| Cross-leaved Milkwort | Polygala cruciata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | | | S3? | G5 | FALSE | FALSE | FALSE |
| Curly-heads | Clematis ochroleuca | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | | | SX | G4 | FALSE | FALSE | FALSE |
| Cut-leaved Evening Primrose | Oenothera laciniata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Dark-green sedge | Carex venusta | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1999 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Dotted Horse Mint | Monarda punctata var. punctata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | | | S1 | G5T5? | FALSE | FALSE | FALSE |
| Downy Lettuce | Lactuca hirsuta | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Historically Confirmed | 1936 | Endangered | | S1 | G5? | FALSE | FALSE | FALSE |
| Dragon's Mouth Orchid | Arethusa bulbosa | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | TRUE |
| Dune Panic Grass | Panicum amarum var. amarum | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | | Rare | | S3 | G5T5? | FALSE | FALSE | FALSE |
| Dune Sandspur | Cenchrus tribuloides | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1996 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Dwarf Bulrush | Cyperus subsquarrosus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Dwarf Glasswort | Salicornia bigelovii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2014 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Dwarf Hawthorn | Crataegus uniflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1916 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dwarf Umbrella Sedge | Fuirena pumila | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Early Frostweed | Crocanthemum propinquum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Eastern Grasswort | Lilaeopsis chinensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Eastern Silvery Aster | Symphyotrichum concolor var. concolor | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Emmons' Sedge | Carex emmonsii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1984 | Rare | | S3 | G5T5 | FALSE | FALSE | FALSE |
| Engelmann's Spike Rush | Eleocharis engelmannii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Erect Knotweed | Polygonum erectum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | | | S2S3 | G5 | FALSE | FALSE | FALSE |
| False Hop Sedge | Carex lupuliformis | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Farwell's Water Milfoil | Myriophyllum farwellii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirme | 2008 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Featherfoil | Hottonia inflata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Fernald's Sedge | Carex merritt-fernaldii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Few-flowered Nut Sedge | Scleria pauciflora | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1996 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Fibrous Bladderwort | Utricularia striata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Field Beadgrass | Paspalum laeve | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Field Dodder | Cuscuta campestris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Five-angled Dodder | Cuscuta pentagona | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Flax-leaf Whitetop | Sericocarpus linifolius | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 1997 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Fragrant Flat Sedge | Cyperus odoratus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Fringed Boneset | Eupatorium torreyanum | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2010 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Georgia Bulrush | Scirpus georgianus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1994 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Globe Beak Sedge | Rhynchospora recognita | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | 1924 | | | SX | G5? | FALSE | FALSE | FALSE |
| Globe-fruited Ludwigia | Ludwigia sphaerocarpa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Golden Club | Orontium aquaticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Golden Dock | Rumex fueginus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Great Plains Flatsedge | Cyperus lupulinus ssp. lupulinus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2002 | Threatened | | S1S2 | G5T5? | FALSE | FALSE | FALSE |
| Green Milkweed | Asclepias viridiflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Green Parrot's Feather | Myriophyllum pinnatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Green Rock Cress | Borodinia missouriensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Hairy Angelica | Angelica venenosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Rare | | S1 | G5 | FALSE | FALSE | FALSE |
| Hairy Dwarf Umbrella Sedge | Fuirena squarrosa | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | | | | SX | G4G5 | FALSE | FALSE | FALSE |
| Hairy Wood Rush | Luzula bulbosa | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 2010 | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Hairy-awned Muhly | Muhlenbergia capillaris | Suffolk | Plant | Flowering Plants | Grasses | Extirpated | 1871 | | | SX | G5 | FALSE | FALSE | FALSE |
| Heart Sorrel | Rumex hastatulus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1986 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Hidden Dropseed | Sporobolus clandestinus | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1985 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Hiddenfruit Bladderwort | Utricularia geminiscapa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Horned Beak Sedge | Rhynchospora inundata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Threatened | | S1 | G4? | FALSE | FALSE | FALSE |
| Houghton's Flat Sedge | Cyperus houghtonii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4? | FALSE | FALSE | FALSE |
| Hyssop-skullcap | Scutellaria integrifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1924 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Illinois Pinweed | Lechea racemulosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Kearney's Threeawn | Aristida geniculata | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | | | | S1 | G5T5? | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney-leaved Mud Plantain | Heteranthera reniformis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Knotted Spike Rush | Eleocharis equisetoides | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Large Calyx Goosefoot | Chenopodium berlandieri var. macrocalycium | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1S2 | G5T4 | FALSE | FALSE | FALSE |
| Large Grass-leaved Rush | Juncus biflorus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Large Twayblade | Liparis liliifolia | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Large Yellow-eyed Grass | Xyris smalliana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1985 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Leggett's Pinweed | Lechea pulchella | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Lesser Bladderwort | Utricularia minor | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Lined Sedge | Carex striatula | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | SH | G4G5 | FALSE | FALSE | FALSE |
| Little-leaf Tick Trefoil | Desmodium ciliare | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Long-beaked Beak Sedge | Rhynchospora scirpoides | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Rare | | S2 | G4 | FALSE | FALSE | FALSE |
| Long-tubercled Spike Rush | Eleocharis tuberculosa | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1991 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Loose-headed Beak Sedge | Rhynchospora chalarocephala | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | 1932 | | | SX | G5 | FALSE | FALSE | FALSE |
| Low Nut Sedge | Scleria verticillata | Suffolk | Plant | Flowering Plants | Sedges | Possible but not Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Low St. John's Wort | Hypericum stragulum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5T4 | FALSE | FALSE | FALSE |
| Lowland Yellow Loosestrife | Lysimachia hybrida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Many-flowered Marsh Pennywort | Hydrocotyle umbellata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Marsh Fimbry | Fimbristylis castanea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Marsh Straw Sedge | Carex hormathodes | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2014 | Threatened | | S2S3 | G4G5 | FALSE | FALSE | FALSE |
| Maryland Milkwort | Polygala mariana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1939 | | | SX | G5 | FALSE | FALSE | FALSE |
| Meadow Beauty | Rhexia mariana var. mariana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | 1923 | | | SX | G5T5 | FALSE | FALSE | FALSE |
| Mexican Seaside Goldenrod | Solidago mexicana | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2007 | Endangered | | S1 | G5T5? | FALSE | FALSE | FALSE |
| Midland Sedge | Carex mesochorea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1998 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Minute Duckweed | Lemna perpusilla | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Mitchell's Sedge | Carex mitchelliana | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1999 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Mock Bishopweed | Ptilimnium capillaceum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Mudwort | Limosella australis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Muhlenberg's Nut Sedge | Scleria muehlenbergii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Muhlenberg's Veinless Sedge | Carex muehlenbergii var. enervis | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Rare | | S3 | G5T5 | FALSE | FALSE | FALSE |
| Nantucket Juneberry | Amelanchier nantucketensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G3Q | FALSE | FALSE | FALSE |
| Narrow-leaf Sea Blite | Suaeda linearis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Narrow-leaved Blue-curls | Trichostema setaceum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Narrow-leaved Bush Clover | Lespedeza angustifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1986 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Nodding Trillium | Trillium cernuum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | | | S3 | G5 | FALSE | FALSE | FALSE |
| Northern Blazing Star | Liatris scariosa var. novae-angliae | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2 | G5?T3 | FALSE | FALSE | FALSE |
| Northern Bog Aster | Symphyotrichum boreale | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Northern Dwarf Huckleberry | Gaylussacia bigeloviana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Northern Gama Grass | Tripsacum dactyloides var. dactyloides | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2007 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |
| Northern Sand Spurry | Spergularia canadensis var. canadensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | 1887 | | | SX | G5T5 | FALSE | FALSE | FALSE |
| Northern Tansy-mustard | Descurainia pinnata ssp. brachycarpa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuttall's Lobelia | Lobelia nuttallii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Nuttall's Milkwort | Polygala nuttallii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Nuttall's Tick Trefoil | Desmodium nuttallii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Oakes' Evening Primrose | Oenothera oakesiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G4G5Q | FALSE | FALSE | FALSE |
| Orange Crested Orchid | Platanthera cristata | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Orange Fringed Orchid | Platanthera ciliaris | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Orange Milkwort | Polygala lutea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Ovate Spike Rush | Eleocharis ovata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Pale Beak Sedge | Rhynchospora pallida | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | SH | G3 | FALSE | FALSE | FALSE |
| Pale Duckweed | Lemna valdiviana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1974 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Peanut Grass | Amphicarpum amphicarpon | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1992 | Endangered | | SH | G4 | FALSE | FALSE | FALSE |
| Pencil Flower | Stylosanthes biflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1914 | | | SX | G5 | FALSE | FALSE | FALSE |
| Perennial Saltmarsh Aster | Symphyotrichum tenuifolium var. tenuifolium | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Persimmon | Diospyros virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Pickering's Reed Grass | Calamagrostis pickeringii | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Pine Barren Bellwort | Uvularia puberula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2002 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Pine-barren Sandwort | Sabulina caroliniana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Pinebarren Death Camas | Stenanthium leimanthoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1929 | | | S1 | G4Q | FALSE | FALSE | FALSE |
| Pink Milkwort | Polygala incarnata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirme | 1915 | | | SX | G5 | FALSE | FALSE | FALSE |
| Pink Wild Bean | Strophostyles umbellata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Prairie Wedgegrass | Sphenopholis obtusata | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | 1912 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Prickly Hornwort | Ceratophyllum echinatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Rare | | S3 | G4? | FALSE | FALSE | FALSE |
| Primrose-leaved Violet | Viola primulifolia var. primulifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |
| Purple Bluets | Houstonia purpurea var. purpurea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Purple Everlasting | Gamochaeta purpurea | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | | | | S1 | G5 | FALSE | FALSE | FALSE |
| Purple Milkweed | Asclepias purpurascens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2S3 | G5? | FALSE | FALSE | FALSE |
| Pyxies | Pyxidanthera barbulata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Quill-leaf Arrowhead | Sagittaria teres | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G3 | FALSE | FALSE | FALSE |
| Rattlebox | Crotalaria sagittalis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Red Milkweed | Asclepias rubra | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirme | 1928 | | | SX | G4G5 | FALSE | FALSE | FALSE |
| Red Pigweed | Oxybasis rubra var. rubra | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Red-rooted Flat Sedge | Cyperus erythrorhizos | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Reflexed Sedge | Carex retroflexa | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Reticulated Nut Sedge | Scleria reticularis | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Retrorse Flatsedge | Cyperus retrorsus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Reznicek's Sedge | Carex reznicekii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| River Birch | Betula nigra | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Riverweed | Podostemum ceratophyllum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Robbins Spike Rush | Eleocharis robbinsii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Roland's Sea Blite | Suaeda rolandii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G1G2 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rose Coreopsis | Coreopsis rosea | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2016 | Rare | | S3 | G3 | FALSE | FALSE | FALSE |
| Rough Avens | Geum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Rough Hedge Nettle | Stachys hyssopifolia var. hyssopifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Rough Pennyroyal | Hedeoma hispida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Round-leaf Boneset | Eupatorium rotundifolium | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Historically Confirmed | 1968 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Rush Bladderwort | Utricularia juncea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Salt-marsh Spike Rush | Eleocharis uniglumis | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Salt-meadow Grass | Diplachne fusca ssp. fascicularis | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1998 | Endangered | | S1S2 | G5T5 | FALSE | FALSE | FALSE |
| Saltmarsh Bulrush | Bolboschoenus novae-angliae | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Saltmarsh Loosestrife | Lythrum lineare | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Sand Blackberry | Rubus cuneifolius | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Sandplain Gerardia | Agalinis decemloba | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | Endangered | S1 | G3G4 | FALSE | FALSE | FALSE |
| Sandplain Wild Flax | Linum intercursum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Scotch Lovage | Ligusticum scoticum ssp. scoticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5T4T5 | FALSE | FALSE | FALSE |
| Screw-stem | Bartonia paniculata ssp. paniculata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Sea Pink | Sabatia stellaris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Sea Purslane | Sesuvium maritimum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Seabeach Amaranth | Amaranthus pumilus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Threatened | Threatened | S2 | G2 | FALSE | FALSE | FALSE |
| Seabeach Knotweed | Polygonum glaucum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Rare | | S3 | G3 | FALSE | FALSE | FALSE |
| Seacoast Angelica | Angelica lucida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Seaside Bulrush | Bolboschoenus maritimus ssp. paludosus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2009 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Seaside Crowfoot | Ranunculus cymbalaria | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Seaside Dock | Rumex persicarioides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G3?Q | FALSE | FALSE | FALSE |
| Seaside Gerardia | Agalinis maritima var. maritima | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2S3 | G5T5 | FALSE | FALSE | FALSE |
| Seaside Orach | Atriplex glabriuscula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Seaside Plantain | Plantago maritima var. juncoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2S3 | G5T5 | FALSE | FALSE | FALSE |
| Seaside Toad Rush | Juncus ranarius | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1994 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Sedge Rush | Juncus scirpoides var. scirpoides | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 2009 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Serrate Round-leaf Boneset | Eupatorium pubescens | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2009 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Sessile Dodder | Cuscuta compacta | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Sharp-tipped Blue-eyed Grass | Sisyrinchium mucronatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Short's Sedge | Carex shortiana | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Short-beaked Beak Sedge | Rhynchospora nitens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Threatened | | S2 | G4? | FALSE | FALSE | FALSE |
| Short-fruited Rush | Juncus brachycarpus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Showy Aster | Eurybia spectabilis | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2013 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Shrubby St. John's Wort | Hypericum prolificum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Sickle-leaved Golden Aster | Pityopsis falcata | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | | | | S3 | G3G4 | FALSE | FALSE | FALSE |
| Side-oats Grama | Bouteloua curtipendula var. curtipendula | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1920 | Endangered | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Slender Blue Flag | Iris prismatica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Slender Bulrush | Schoenoplectus heterochaetus | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | 1923 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Slender Crab Grass | Digitaria filiformis var. filiformis | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1999 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Slender Knotweed | Polygonum tenue | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Slender Marsh Pink | Sabatia campanulata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Slender Nut Sedge | Scleria minor | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Slender Pinweed | Lechea tenuifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Slender Spike Grass | Chasmanthium laxum | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2014 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Slender Spike Rush | Eleocharis tenuis var. pseudoptera | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5T5? | FALSE | FALSE | FALSE |
| Slender Threeawn | Aristida longespica | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | | | | SH | G5 | FALSE | FALSE | FALSE |
| Small Floating Bladderwort | Utricularia radiata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Small White Snakeroot | Ageratina aromatica | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Small Whorled Pogonia | Isotria medeoloides | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | 1923 | Endangered | Threatened | S1 | G2? | FALSE | FALSE | FALSE |
| Small's Knotweed | Polygonum buxiforme | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Small-flowered Crowfoot | Ranunculus micranthus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Smartweed Dodder | Cuscuta polygonorum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Smooth Beggar-ticks | Bidens laevis | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Smooth Tick Trefoil | Desmodium laevigatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Soapwort Gentian | Gentiana saponaria | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Sooty Beak Sedge | Rhynchospora fusca | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3S4 | G4G5 | FALSE | FALSE | FALSE |
| Southern Arrowwood | Viburnum dentatum var. venosum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Southern Bluets | Houstonia purpurea var. calycosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Southern Dodder | Cuscuta obtusiflora var. glandulosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Southern Snailseed Pondweed | Potamogeton diversifolius | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1938 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Southern Twayblade | Neottia bifolia | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2010 | Endangered | | S1S2 | G4 | FALSE | FALSE | TRUE |
| Southern Wild Raisin | Viburnum nudum var. nudum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Southern Wood Violet | Viola hirsutula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G4 | FALSE | FALSE | FALSE |
| Southern Yellow Flax | Linum medium var. texanum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Spiny Wood Rush | Luzula echinata | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Spotted Pondweed | Potamogeton pulcher | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Spreading Rush | Juncus subcaudatus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Spring Ladies' Tresses | Spiranthes vernalis | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2015 | Endangered | | S1S2 | G5 | FALSE | FALSE | TRUE |
| Stalked Bugleweed | Lycopus rubellus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1977 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Stargrass | Aletris farinosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Stiff Cowbane | Oxypolis rigidior | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Stiff Tick Trefoil | Desmodium obtusum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Stiff Yellow Flax | Linum striatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Straw Sedge | Carex straminea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Swamp Agrimony | Agrimonia parviflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Swamp Aster | Eurybia radula | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Historically Confirmed | 1945 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Swamp Cottonwood | Populus heterophylla | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Swamp Lousewort | Pedicularis lanceolata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1871 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Swamp Oats | Sphenopholis pensylvanica | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1991 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Swamp Smartweed | Persicaria setacea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Swamp Sunflower | Helianthus angustifolius | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2006 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Sweetbay Magnolia | Magnolia virginiana var. virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Tall Beak Sedge | Rhynchospora macrostachya | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Tall Bellflower | Campanula americana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Tall Flat Panic Grass | Coleataenia stipitata | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | 1934 | Endangered | | SH | G5T4T5 | FALSE | FALSE | FALSE |
| Tall Thistle | Cirsium altissimum | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Historically Confirmed | 1929 | | | SX | G5 | FALSE | FALSE | FALSE |
| Terrestrial Starwort | Callitriche terrestris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1996 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Thicket Sedge | Carex abscondita | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1994 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Thickleaf Orach | Atriplex dioica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1920 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Thread-leaved Sundew | Drosera filiformis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G4 | FALSE | FALSE | FALSE |
| Three-ribbed Spike Rush | Eleocharis tricostata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Tooth Cup | Rotala ramosior | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Torrey's Beak Sedge | Rhynchospora torreyana | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | 1929 | | | SX | G4 | FALSE | FALSE | FALSE |
| Torrey's Mountain Mint | Pycnanthemum torreyi | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | S1 | G2 | FALSE | FALSE | FALSE |
| Trailing Bush Clover | Lespedeza repens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Trailing Pearlwort | Sagina decumbens ssp. decumbens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Trinerved White Boneset | Eupatorium subvenosum | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2004 | Threatened | | S2S3 | G5T4 | FALSE | FALSE | FALSE |
| Variable Sedge | Carex polymorpha | Suffolk | Plant | Flowering Plants | Sedges | Extirpated | 1929 | | | SX | G3 | FALSE | FALSE | FALSE |
| Velvet Panic Grass | Dichanthelium scoparium | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Velvety Bush Clover | Lespedeza stuevei | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G4? | FALSE | FALSE | FALSE |
| Violet Bush Clover | Lespedeza frutescens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Violet Wood Sorrel | Oxalis violacea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Virginia Bunchflower | Melanthium virginicum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Virginia False Gromwell | Lithospermum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Virginia Ground Cherry | Physalis virginiana var. virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Virginia Three-seeded Mercury | Acalypha virginica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Walter's Sedge | Carex striata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Rare | | S3 | G4G5 | FALSE | FALSE | FALSE |
| Water Pigmyweed | Crassula aquatica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1988 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Weak Rush | Juncus debilis | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1983 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Whip Nut Sedge | Scleria triglomerata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White Milkweed | Asclepias variegata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White-bracted Boneset | Eupatorium leucolepis | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White-edge Sedge | Carex debilis var. debilis | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2012 | Threatened | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Whorled Marsh Pennywort | Hydrocotyle verticillata var. verticillata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Whorled Milkweed | Asclepias verticillata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Whorled Mountain Mint | Pycnanthemum verticillatum var. verticillatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1S2 | G5T5 | FALSE | FALSE | FALSE |
| Wild Comfrey | Andersonglossum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Wild Lupine | Lupinus perennis ssp. perennis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5T4? | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wild Parsnip | Berula erecta | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | 1938 | | | SX | G4G5 | FALSE | FALSE | FALSE |
| Wild Pink | Silene caroliniana ssp. pensylvanica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Willdenow's Sedge | Carex willdenowii | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Rare | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Willow Oak | Quercus phellos | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Winter Grape | Vitis vulpina | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Wiry Panic Grass | Panicum flexile | Suffolk | Plant | Flowering Plants | Grasses | Possible but not Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Woodland Agrimony | Agrimonia rostellata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1932 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Wright's Panic Grass | Dichanthelium wrightianum | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2016 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Yellow Flatsedge | Cyperus flavescens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Yellow Giant-hyssop | Agastache nepetoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Yellow Thistle | Cirsium horridulum var. horridulum | Suffolk | Plant | Flowering Plants | Asters  Goldenrods and Daisies | Recently Confirmed | | | | S3 | G5T5 | FALSE | FALSE | FALSE |
| Zigzag Bladderwort | Utricularia subulata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Rare | | S3 | G5 | FALSE | FALSE | FALSE |
| Atlantic White Cedar | Chamaecyparis thyoides | Suffolk | Plant | Conifers | Conifers | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Shortleaf Pine | Pinus echinata | Suffolk | Plant | Conifers | Conifers | Extirpated | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Virginia Pine | Pinus virginiana | Suffolk | Plant | Conifers | Conifers | Possible but not Confirme | 1878 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Blunt-lobe Grape Fern | Botrychium oneidense | Suffolk | Plant | Ferns and Fern Allies | Ferns | Recently Confirmed | 2003 | Threatened | | S2S3 | G4 | FALSE | FALSE | TRUE |
| Carolina Clubmoss | Pseudolycopodiella caroliniana | Suffolk | Plant | Ferns and Fern Allies | Clubmosses | Recently Confirmed | 2009 | Endangered | | S1 | G5T4 | FALSE | FALSE | FALSE |
| Climbing Fern | Lygodium palmatum | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | | Endangered | | S1 | G4 | FALSE | FALSE | TRUE |
| Curlygrass Fern | Schizaea pusilla | Suffolk | Plant | Ferns and Fern Allies | Ferns | Recently Confirmed | 2004 | Endangered | | S1 | G3G4 | FALSE | FALSE | TRUE |
| Lowland Fragile Fern | Cystopteris protrusa | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | 1919 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Meadow Horsetail | Equisetum pratense | Suffolk | Plant | Ferns and Fern Allies | Horsetails | Historically Confirmed | 1937 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Northern Quillwort | Isoetes septentrionalis | Suffolk | Plant | Ferns and Fern Allies | Quillworts | Historically Confirmed | | Endangered | | S1 | GNR | FALSE | FALSE | FALSE |
| Southeastern Bracken | Pteridium aquilinum ssp. pseudocaudatum | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Southern Lady Fern | Athyrium asplenioides | Suffolk | Plant | Ferns and Fern Allies | Ferns | Recently Confirmed | | | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Coastal Oak-Beech Forest | Coastal oak-beech forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2004 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Coastal Oak-Heath Forest | Coastal oak-heath forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2010 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Coastal Oak-Hickory Forest | Coastal oak-hickory forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2016 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Coastal Oak-Holly Forest | Coastal oak-holly forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2010 | | | S1 | G2G3 | FALSE | FALSE | FALSE |
| Coastal Oak-Laurel Forest | Coastal oak-laurel forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2003 | | | S3 | G3G4 | FALSE | FALSE | FALSE |
| Dwarf Pine Plains | Dwarf pine plains | Suffolk | Natural Community | Uplands | Barrens and Woodlands | Recently Confirmed | 2013 | | | S1 | G1G2 | FALSE | FALSE | FALSE |
| Maritime Beach | Maritime beach | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2015 | | | S3S4 | G5 | FALSE | FALSE | FALSE |
| Maritime Beech Forest | Maritime beech forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2016 | | | S1 | G2 | FALSE | FALSE | FALSE |
| Maritime Bluff | Maritime bluff | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2015 | | | S2S3 | G4 | FALSE | FALSE | FALSE |
| Maritime Dunes | Maritime dunes | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2015 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Maritime Grassland | Maritime grassland | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2014 | | | S1 | G2G3 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maritime Heathland | Maritime heathland | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2010 | | | S1 | G3 | FALSE | FALSE | FALSE |
| Maritime Holly Forest | Maritime holly forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2000 | | | S1 | G1G2 | FALSE | FALSE | FALSE |
| Maritime Pitch Pine Dune Woodland | Maritime pitch pine dune woodland | Suffolk | Natural Community | Uplands | Barrens and Woodlands | Recently Confirmed | 2010 | | | S1 | G2G3 | FALSE | FALSE | FALSE |
| Maritime Post Oak Forest | Maritime post oak forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2010 | | | S2S3 | G3G4 | FALSE | FALSE | FALSE |
| Maritime Red Cedar Forest | Maritime red cedar forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 1999 | | | S1 | G3G4 | FALSE | FALSE | FALSE |
| Maritime Shrubland | Maritime shrubland | Suffolk | Natural Community | Uplands | Open Uplands | Recently Confirmed | 2010 | | | S4 | G4 | FALSE | FALSE | FALSE |
| Oak-Tulip Tree Forest | Oak-tulip tree forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2001 | | | S2S3 | G4 | FALSE | FALSE | FALSE |
| Pitch Pine-Oak Forest | Pitch pine-oak forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2013 | | | S4 | G4G5 | FALSE | FALSE | FALSE |
| Pitch Pine-Oak-Heath Woodland | Pitch pine-oak-heath woodland | Suffolk | Natural Community | Uplands | Barrens and Woodlands | Recently Confirmed | 2014 | | | S2S3 | G3G4 | FALSE | FALSE | FALSE |
| Pitch Pine-Scrub Oak Barrens | Pitch pine-scrub oak barrens | Suffolk | Natural Community | Uplands | Barrens and Woodlands | Recently Confirmed | 2004 | | | S1 | G2 | FALSE | FALSE | FALSE |
| Successional Maritime Forest | Successional maritime forest | Suffolk | Natural Community | Uplands | Forested Uplands | Recently Confirmed | 2010 | | | S3S4 | G4 | FALSE | FALSE | FALSE |
| Coastal Plain Atlantic White Cedar Swamp | Coastal plain Atlantic white cedar swamp | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Forested Peatlands | Recently Confirmed | 2004 | | | S1 | G3G4 | FALSE | FALSE | FALSE |
| Coastal Plain Pond Shore | Coastal plain pond shore | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Mineral Soil Wetlands | Recently Confirmed | 2013 | | | S2 | G3G4 | FALSE | FALSE | FALSE |
| Coastal Plain Poor Fen | Coastal plain poor fen | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Peatlands | Recently Confirmed | 2010 | | | S1 | G3? | FALSE | FALSE | FALSE |
| Highbush Blueberry Bog Thicket | Highbush blueberry bog thicket | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Peatlands | Recently Confirmed | 2011 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Maritime Freshwater Interdunal Swales | Maritime freshwater interdunal swales | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Mineral Soil Wetlands | Recently Confirmed | 2010 | | | S2 | G3G4 | FALSE | FALSE | FALSE |
| Pine Barrens Shrub Swamp | Pine barrens shrub swamp | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Mineral Soil Wetlands | Recently Confirmed | 2004 | | | S3 | G5 | FALSE | FALSE | FALSE |
| Red Maple-Blackgum Swamp | Red maple-blackgum swamp | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Forested Mineral Soil Wetlands | Recently Confirmed | 2011 | | | S2 | G3G4 | FALSE | FALSE | FALSE |
| Red Maple-Hardwood Swamp | Red maple-hardwood swamp | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Forested Mineral Soil Wetlands | Recently Confirmed | 2001 | | | S4S5 | G5 | FALSE | FALSE | FALSE |
| Red Maple-Swamp White Oak Swamp | Red maple-swamp white oak swamp | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Forested Mineral Soil Wetlands | Recently Confirmed | 2013 | | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Sea Level Fen | Sea level fen | Suffolk | Natural Community | Freshwater Nontidal Wetlands | Open Peatlands | Recently Confirmed | 2015 | | | S1 | G1G2 | FALSE | FALSE | FALSE |
| Coastal Plain Pond | Coastal plain pond | Suffolk | Natural Community | Lakes and Ponds | Natural Lakes and Ponds | Recently Confirmed | 2010 | | | S2 | G3G4 | FALSE | FALSE | FALSE |
| Brackish Interdunal Swales | Brackish interdunal swales | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2007 | | | S1S2 | G3G4 | FALSE | FALSE | FALSE |
| Brackish Intertidal Shore | Brackish intertidal shore | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2004 | | | S1S2 | G3G4 | FALSE | FALSE | FALSE |
| Brackish Meadow | Brackish meadow | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2010 | | | S1S2 | G2G3 | FALSE | FALSE | FALSE |
| Brackish Tidal Marsh | Brackish tidal marsh | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 1998 | | | S3S4 | G4 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coastal Salt Pond | Coastal salt pond | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2010 | | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Freshwater Tidal Marsh | Freshwater tidal marsh | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 1998 | | | S2 | G3G4 | FALSE | FALSE | FALSE |
| High Salt Marsh | High salt marsh | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2016 | | | S3S4 | G4 | FALSE | FALSE | FALSE |
| Low Salt Marsh | Low salt marsh | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2010 | | | S3S4 | G4 | FALSE | FALSE | FALSE |
| Salt Panne | Salt panne | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2004 | | | S3 | G3G4 | FALSE | FALSE | FALSE |
| Salt Shrub | Salt shrub | Suffolk | Natural Community | Tidal Wetlands | Intertidal Wetlands | Recently Confirmed | 2010 | | | S4 | G5 | FALSE | FALSE | FALSE |
| Saltwater Tidal Creek | Saltwater tidal creek | Suffolk | Natural Community | Tidal Wetlands | Subtidal Wetlands | Recently Confirmed | 2004 | | | S3 | G4 | FALSE | FALSE | FALSE |
| Marine Eelgrass Meadow | Marine eelgrass meadow | Suffolk | Natural Community | Marine | Marine Subtidal | Recently Confirmed | 2015 | | | S3 | G5 | FALSE | FALSE | FALSE |
| Marine Intertidal Gravel/Sand Beach | Marine intertidal gravel/sand beach | Suffolk | Natural Community | Marine | Marine Intertidal | Recently Confirmed | 2010 | | | S3 | G5 | FALSE | FALSE | FALSE |
| Marine Rocky Intertidal | Marine rocky intertidal | Suffolk | Natural Community | Marine | Marine Intertidal | Recently Confirmed | 2015 | | | S1S2 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northern Long-eared Bat | Myotis septentrionalis | Suffolk | Animal | Mammals | Bats | Recently Confirmed | 2016 | Threatened | Threatened | S1 | G1G2 | FALSE | FALSE | TRUE |
| Bald Eagle | Haliaeetus leucocephalus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2015 | Threatened | | S2S3B S2N | G5 | FALSE | FALSE | TRUE |
| Black Rail | Laterallus jamaicensis | Suffolk | Animal | Birds | Rails Coots and Cranes | Recently Confirmed | 2000 | Endangered | | S1B | G3G4 | FALSE | FALSE | TRUE |
| Common Tern | Sterna hirundo | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Least Bittern | Ixobrychus exilis | Suffolk | Animal | Birds | Herons Bitterns Egrets Pelicans | Recently Confirmed | 2011 | Threatened | | S3B S1N | G5 | FALSE | FALSE | TRUE |
| Least Tern | Sternula antillarum | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2013 | Threatened | | S3B | G4 | FALSE | FALSE | TRUE |
| Northern Harrier | Circus cyaneus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2005 | Threatened | | S3B S3N | G5 | FALSE | FALSE | TRUE |
| Peregrine Falcon | Falco peregrinus | Suffolk | Animal | Birds | Hawks Falcons Eagles Vultures | Recently Confirmed | 2008 | Endangered | | S3B | G4 | FALSE | FALSE | TRUE |
| Pied-billed Grebe | Podilymbus podiceps | Suffolk | Animal | Birds | Grebes | Recently Confirmed | 2000 | Threatened | | S3B S1N | G5 | FALSE | FALSE | TRUE |
| Piping Plover | Charadrius melodus | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2016 | Endangered | Endangered/Threatened | S3B | G3 | FALSE | FALSE | TRUE |
| Roseate Tern | Sterna dougallii | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2015 | Endangered | Endangered | S1B | G4 | FALSE | FALSE | TRUE |
| Sedge Wren | Cistothorus platensis | Suffolk | Animal | Birds | Wrens | Historically Confirmed | 1932 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Short-eared Owl | Asio flammeus | Suffolk | Animal | Birds | Owls | Recently Confirmed | 2008 | Endangered | | S2 | G5 | FALSE | FALSE | TRUE |
| Upland Sandpiper | Bartramia longicauda | Suffolk | Animal | Birds | Gulls Terns Plovers Shorebirds | Recently Confirmed | 2000 | Threatened | | S3B | G5 | FALSE | FALSE | TRUE |
| Eastern Mud Turtle | Kinosternon subrubrum | Suffolk | Animal | Reptiles | Turtles | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Northern Cricket Frog | Acris crepitans | Suffolk | Animal | Amphibians | Frogs and Toads | Historically Confirmed | 1932 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Tiger Salamander | Ambystoma tigrinum | Suffolk | Animal | Amphibians | Salamanders | Recently Confirmed | 2014 | Endangered | | S1S2 | G5 | FALSE | FALSE | TRUE |
| Banded Sunfish | Enneacanthus obesus | Suffolk | Animal | Fish | Darters and Sunfishes | Recently Confirmed | 2007 | Threatened | | S1 | G5 | FALSE | FALSE | TRUE |
| Swamp Darter | Etheostoma fusiforme | Suffolk | Animal | Fish | Darters and Sunfishes | Recently Confirmed | 2006 | Threatened | | S1 | G5 | FALSE | FALSE | TRUE |
| Frosted Elfin | Callophrys irus | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 2006 | Threatened | | S1S2 | G3 | FALSE | FALSE | TRUE |
| Hessel's Hairstreak | Callophrys hesseli | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 1986 | Endangered | | S1 | G3G4 | FALSE | FALSE | TRUE |
| Persius Duskywing | Erynnis persius persius | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Historically Confirmed | 1966 | Endangered | | S1 | G5T1T3 | FALSE | FALSE | TRUE |
| Regal Fritillary | Speyeria idalia | Suffolk | Animal | Butterflies and Moths | Butterflies and Skippers | Recently Confirmed | 1988 | Endangered | | SH | G3 | FALSE | FALSE | FALSE |
| Little Bluet | Enallagma minusculum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G4 | FALSE | FALSE | TRUE |
| Pine Barrens Bluet | Enallagma recurvatum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S1 | G3 | FALSE | FALSE | TRUE |
| Scarlet Bluet | Enallagma pictum | Suffolk | Animal | Dragonflies and Damselflies | Damselflies | Recently Confirmed | 2009 | Threatened | | S2 | G3 | FALSE | FALSE | TRUE |
| American Burying Beetle | Nicrophorus americanus | Suffolk | Animal | Beetles | Carrion Beetles | Historically Confirmed | 1937 | Endangered | Endangered | SH | G2G3 | FALSE | FALSE | FALSE |
| Northeastern Beach Tiger Beetle | Cicindela dorsalis dorsalis | Suffolk | Animal | Beetles | Tiger Beetles | Extirpated | 1945 | Threatened | Threatened | SX | G3G4T2 | FALSE | FALSE | FALSE |
| Henslow's Sparrow | Ammodramus henslowii | Suffolk | Animal | Other Animals | Other Animals | Recently Confirmed | | Threatened | | S3B | G4 | FALSE | FALSE | TRUE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| American Ipecac | Euphorbia ipecacuanhae | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| American Waterwort | Elatine americana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1974 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Angled Spike Rush | Eleocharis quadrangulata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Annual Saltmarsh Aster | Symphyotrichum subulatum var. subulatum | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Autumnal Water-starwort | Callitriche hermaphroditica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1927 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Barratt's Sedge | Carex barrattii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Bayard's Adder's Mouth | Malaxis bayardii | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | | Endangered | | S1 | G1G2 | FALSE | FALSE | TRUE |
| Bent Sedge | Carex styloflexa | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Black-edge Sedge | Carex nigromarginata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Blunt Mountain Mint | Pycnanthemum muticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Brown Bog Sedge | Carex buxbaumii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1986 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Bushy Rockrose | Crocanthemum dumosum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 | FALSE | FALSE | FALSE |
| Bushy St. John's-wort | Hypericum densiflorum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Button Sedge | Carex bullata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Carey's Smartweed | Persicaria careyi | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Carolina Redroot | Lachnanthes caroliniana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Carolina Whitlow Grass | Tomostima reptans | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1926 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Cat-tail Sedge | Carex typhina | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2012 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |
| Catfoot | Pseudognaphalium micradenium | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Historically Confirmed | 1959 | Endangered | | SH | G4G5T3? | FALSE | FALSE | FALSE |
| Clasping Bugleweed | Lycopus amplectens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Clustered Bluets | Oldenlandia uniflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Clustered Sedge | Carex cumulata | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | 1967 | Threatened | | S2S3 | G4? | FALSE | FALSE | FALSE |
| Coast Flatsedge | Cyperus polystachyos | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |
| Coast Violet | Viola brittoniana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coastal Fireweed | Erechtites hieraciifolius var. megalocarpus | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2002 | Endangered | | S1 | G5T3 | FALSE | FALSE | FALSE |
| Coastal Goldenrod | Solidago latissimifolia | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2006 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Coastal Silverweed | Potentilla anserina ssp. pacifica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |
| Collins' Sedge | Carex collinsii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Comb-leaved Mermaid Weed | Proserpinaca pectinata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Coppery St. John's-wort | Hypericum denticulatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Cranefly Orchid | Tipularia discolor | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2008 | Endangered | | S1 | G4G5 | FALSE | FALSE | TRUE |
| Creeping Spike Rush | Eleocharis ambigens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1997 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Creeping St. John's-wort | Hypericum adpressum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G3 | FALSE | FALSE | FALSE |
| Cut-leaved Evening Primrose | Oenothera laciniata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Dark-green sedge | Carex venusta | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1999 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Downy Lettuce | Lactuca hirsuta | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Historically Confirmed | 1936 | Endangered | | S1 | G5? | FALSE | FALSE | FALSE |
| Dragon's Mouth Orchid | Arethusa bulbosa | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | TRUE |
| Dune Sandspur | Cenchrus tribuloides | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1996 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Dwarf Bulrush | Cyperus subsquarrosus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Dwarf Glasswort | Salicornia bigelovii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2014 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Dwarf Hawthorn | Crataegus uniflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1916 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Early Frostweed | Crocanthemum propinquum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Eastern Grasswort | Lilaeopsis chinensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Eastern Silvery Aster | Symphyotrichum concolor var. concolor | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Engelmann's Spike Rush | Eleocharis engelmannii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| False Hop Sedge | Carex lupuliformis | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Farwell's Water Milfoil | Myriophyllum farwellii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | 2008 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Featherfoil | Hottonia inflata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Fernald's Sedge | Carex merritt-fernaldii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Few-flowered Nut Sedge | Scleria pauciflora | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1996 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Fibrous Bladderwort | Utricularia striata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Field Beadgrass | Paspalum laeve | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Field Dodder | Cuscuta campestris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Flax-leaf Whitetop | Sericocarpus linifolius | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 1997 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Fringed Boneset | Eupatorium torreyanum | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2010 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Georgia Bulrush | Scirpus georgianus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1994 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Globe-fruited Ludwigia | Ludwigia sphaerocarpa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Golden Club | Orontium aquaticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Golden Dock | Rumex fueginus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Great Plains Flatsedge | Cyperus lupulinus ssp. lupulinus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2002 | Threatened | | S1S2 | G5T5? | FALSE | FALSE | FALSE |
| Green Milkweed | Asclepias viridiflora | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Green Parrot's Feather | Myriophyllum pinnatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Green Rock Cress | Borodinia missouriensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Heart Sorrel | Rumex hastatulus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1986 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Hidden Dropseed | Sporobolus clandestinus | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1985 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Horned Beak Sedge | Rhynchospora inundata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Threatened | | S1 | G4? | FALSE | FALSE | FALSE |
| Hyssop-skullcap | Scutellaria integrifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1924 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Knotted Spike Rush | Eleocharis equisetoides | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Large Calyx Goosefoot | Chenopodium berlandieri var. macrocalycium | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1990 | Endangered | | S1S2 | G5T4 | FALSE | FALSE | FALSE |
| Large Grass-leaved Rush | Juncus biflorus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Large Twayblade | Liparis liliifolia | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Large Yellow-eyed Grass | Xyris smalliana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1985 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Leggett's Pinweed | Lechea pulchella | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Lined Sedge | Carex striatula | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | SH | G4G5 | FALSE | FALSE | FALSE |
| Little-leaf Tick Trefoil | Desmodium ciliare | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Long-tubercled Spike Rush | Eleocharis tuberculosa | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1991 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Low Nut Sedge | Scleria verticillata | Suffolk | Plant | Flowering Plants | Sedges | Possible but not Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Low St. John's Wort | Hypericum stragulum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5T4 | FALSE | FALSE | FALSE |
| Lowland Yellow Loosestrife | Lysimachia hybrida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Marsh Fimbry | Fimbristylis castanea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Marsh Straw Sedge | Carex hormathodes | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2014 | Threatened | | S2S3 | G4G5 | FALSE | FALSE | FALSE |
| Mexican Seaside Goldenrod | Solidago mexicana | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2007 | Endangered | | S1 | G5T5? | FALSE | FALSE | FALSE |
| Midland Sedge | Carex mesochorea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1998 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Minute Duckweed | Lemna perpusilla | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Mitchell's Sedge | Carex mitchelliana | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1999 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Muhlenberg's Nut Sedge | Scleria muehlenbergii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Nantucket Juneberry | Amelanchier nantucketensis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G3Q | FALSE | FALSE | FALSE |
| Narrow-leaf Sea Blite | Suaeda linearis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Narrow-leaved Blue-curls | Trichostema setaceum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Narrow-leaved Bush Clover | Lespedeza angustifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1986 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Northern Blazing Star | Liatris scariosa var. novae-angliae | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2015 | Threatened | | S2 | G5?T3 | FALSE | FALSE | FALSE |
| Northern Bog Aster | Symphyotrichum boreale | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Northern Dwarf Huckleberry | Gaylussacia bigeloviana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Northern Gama Grass | Tripsacum dactyloides var. dactyloides | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2007 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Northern Tansy-mustard | Descurainia pinnata ssp. brachycarpa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Nuttall's Milkwort | Polygala nuttallii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Nuttall's Tick Trefoil | Desmodium nuttallii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Oakes' Evening Primrose | Oenothera oakesiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G4G5Q | FALSE | FALSE | FALSE |
| Orange Crested Orchid | Platanthera cristata | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Orange Fringed Orchid | Platanthera ciliaris | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Orange Milkwort | Polygala lutea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Ovate Spike Rush | Eleocharis ovata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Pale Beak Sedge | Rhynchospora pallida | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | SH | G3 | FALSE | FALSE | FALSE |
| Pale Duckweed | Lemna valdiviana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1974 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Peanut Grass | Amphicarpum amphicarpon | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1992 | Endangered | | SH | G4 | FALSE | FALSE | FALSE |
| Persimmon | Diospyros virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Pine Barren Bellwort | Uvularia puberula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2002 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Pink Wild Bean | Strophostyles umbellata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Prairie Wedgegrass | Sphenopholis obtusata | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | 1912 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Primrose-leaved Violet | Viola primulifolia var. primulifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5TNR | FALSE | FALSE | FALSE |
| Purple Bluets | Houstonia purpurea var. purpurea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Purple Milkweed | Asclepias purpurascens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2S3 | G5? | FALSE | FALSE | FALSE |
| Pyxies | Pyxidanthera barbulata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Quill-leaf Arrowhead | Sagittaria teres | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Endangered | | S1 | G3 | FALSE | FALSE | FALSE |
| Rattlebox | Crotalaria sagittalis | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Red Pigweed | Oxybasis rubra var. rubra | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Reflexed Sedge | Carex retroflexa | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Retrorse Flatsedge | Cyperus retrorsus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Reznicek's Sedge | Carex reznicekii | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2008 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Riverweed | Podostemum ceratophyllum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Roland's Sea Blite | Suaeda rolandii | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G1G2 | FALSE | FALSE | FALSE |
| Rough Avens | Geum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Rough Hedge Nettle | Stachys hyssopifolia var. hyssopifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Rough Pennyroyal | Hedeoma hispida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Round-leaf Boneset | Eupatorium rotundifolium | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Historically Confirmed | 1968 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Rush Bladderwort | Utricularia juncea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Salt-marsh Spike Rush | Eleocharis uniglumis | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Salt-meadow Grass | Diplachne fusca ssp. fascicularis | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1998 | Endangered | | S1S2 | G5T5 | FALSE | FALSE | FALSE |
| Saltmarsh Bulrush | Bolboschoenus novae-angliae | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Saltmarsh Loosestrife | Lythrum lineare | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Sand Blackberry | Rubus cuneifolius | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Sandplain Gerardia | Agalinis decemloba | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | Endangered | S1 | G3G4 | FALSE | FALSE | FALSE |
| Sandplain Wild Flax | Linum intercursum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Scotch Lovage | Ligusticum scoticum ssp. scoticum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5T4T5 | FALSE | FALSE | FALSE |
| Screw-stem | Bartonia paniculata ssp. paniculata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2016 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Sea Pink | Sabatia stellaris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Sea Purslane | Sesuvium maritimum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Seabeach Amaranth | Amaranthus pumilus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2008 | Threatened | Threatened | S2 | G2 | FALSE | FALSE | FALSE |
| Seacoast Angelica | Angelica lucida | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seaside Bulrush | Bolboschoenus maritimus ssp. paludosus | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2009 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Seaside Crowfoot | Ranunculus cymbalaria | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Seaside Dock | Rumex persicarioides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G3?Q | FALSE | FALSE | FALSE |
| Seaside Gerardia | Agalinis maritima var. maritima | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2S3 | G5T5 | FALSE | FALSE | FALSE |
| Seaside Orach | Atriplex glabriuscula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Seaside Plantain | Plantago maritima var. juncoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2S3 | G5T5 | FALSE | FALSE | FALSE |
| Seaside Toad Rush | Juncus ranarius | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1994 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Sedge Rush | Juncus scirpoides var. scirpoides | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 2009 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Serrate Round-leaf Boneset | Eupatorium pubescens | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2009 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Sharp-tipped Blue-eyed Grass | Sisyrinchium mucronatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Short's Sedge | Carex shortiana | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Short-beaked Beak Sedge | Rhynchospora nitens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Threatened | | S2 | G4? | FALSE | FALSE | FALSE |
| Short-fruited Rush | Juncus brachycarpus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 2010 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Showy Aster | Eurybia spectabilis | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2013 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Shrubby St. John's Wort | Hypericum prolificum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Side-oats Grama | Bouteloua curtipendula var. curtipendula | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1920 | Endangered | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Slender Blue Flag | Iris prismatica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G4G5 | FALSE | FALSE | FALSE |
| Slender Bulrush | Schoenoplectus heterochaetus | Suffolk | Plant | Flowering Plants | Sedges | Historically Confirmed | 1923 | Endangered | | S2 | G5 | FALSE | FALSE | FALSE |
| Slender Crab Grass | Digitaria filiformis var. filiformis | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1999 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Slender Marsh Pink | Sabatia campanulata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2006 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Slender Nut Sedge | Scleria minor | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2010 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Slender Pinweed | Lechea tenuifolia | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Slender Spike Grass | Chasmanthium laxum | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2014 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Slender Spike Rush | Eleocharis tenuis var. pseudoptera | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2001 | Endangered | | S1 | G5T5? | FALSE | FALSE | FALSE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Small Floating Bladderwort | Utricularia radiata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2000 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Small White Snakeroot | Ageratina aromatica | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Small Whorled Pogonia | Isotria medeoloides | Suffolk | Plant | Flowering Plants | Orchids | Historically Confirmed | 1923 | Endangered | Threatened | S1 | G2? | FALSE | FALSE | FALSE |
| Small's Knotweed | Polygonum buxiforme | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Smartweed Dodder | Cuscuta polygonorum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Smooth Beggar-ticks | Bidens laevis | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Possible but not Confirmed | | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Smooth Tick Trefoil | Desmodium laevigatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1962 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Soapwort Gentian | Gentiana saponaria | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1933 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Southern Arrowwood | Viburnum dentatum var. venosum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Southern Bluets | Houstonia purpurea var. calycosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Southern Dodder | Cuscuta obtusiflora var. glandulosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Southern Snailseed Pondweed | Potamogeton diversifolius | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1938 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Southern Twayblade | Neottia bifolia | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2010 | Endangered | | S1S2 | G4 | FALSE | FALSE | TRUE |
| Southern Wild Raisin | Viburnum nudum var. nudum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1995 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Southern Wood Violet | Viola hirsutula | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G4 | FALSE | FALSE | FALSE |
| Southern Yellow Flax | Linum medium var. texanum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Threatened | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Spotted Pondweed | Potamogeton pulcher | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1991 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Spreading Rush | Juncus subcaudatus | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Spring Ladies' Tresses | Spiranthes vernalis | Suffolk | Plant | Flowering Plants | Orchids | Recently Confirmed | 2015 | Endangered | | S1S2 | G5 | FALSE | FALSE | TRUE |
| Stalked Bugleweed | Lycopus rubellus | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1977 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Stargrass | Aletris farinosa | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Stiff Cowbane | Oxypolis rigidior | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stiff Tick Trefoil | Desmodium obtusum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Straw Sedge | Carex straminea | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1990 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Swamp Aster | Eurybia radula | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Historically Confirmed | 1945 | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Swamp Cottonwood | Populus heterophylla | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2012 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Swamp Lousewort | Pedicularis lanceolata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1871 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Swamp Oats | Sphenopholis pensylvanica | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 1991 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Swamp Smartweed | Persicaria setacea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1992 | Endangered | | S1S2 | G5 | FALSE | FALSE | FALSE |
| Swamp Sunflower | Helianthus angustifolius | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2006 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Sweetbay Magnolia | Magnolia virginiana var. virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2001 | Endangered | | S1 | G5TNR | FALSE | FALSE | FALSE |
| Tall Bellflower | Campanula americana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Tall Flat Panic Grass | Coleataenia stipitata | Suffolk | Plant | Flowering Plants | Grasses | Historically Confirmed | 1934 | Endangered | | SH | G5T4T5 | FALSE | FALSE | FALSE |
| Terrestrial Starwort | Callitriche terrestris | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1996 | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Thicket Sedge | Carex abscondita | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 1994 | Endangered | | S1 | G4G5 | FALSE | FALSE | FALSE |
| Thickleaf Orach | Atriplex dioica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1920 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Three-ribbed Spike Rush | Eleocharis tricostata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2005 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Tooth Cup | Rotala ramosior | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2005 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Torrey's Mountain Mint | Pycnanthemum torreyi | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | S1 | G2 | FALSE | FALSE | FALSE |
| Trailing Pearlwort | Sagina decumbens ssp. decumbens | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2003 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Trinerved White Boneset | Eupatorium subvenosum | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2004 | Threatened | | S2S3 | G5T4 | FALSE | FALSE | FALSE |
| Velvet Panic Grass | Dichanthelium scoparium | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2008 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Velvety Bush Clover | Lespedeza stuevei | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2007 | Threatened | | S2 | G4? | FALSE | FALSE | FALSE |
| Violet Wood Sorrel | Oxalis violacea | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Virginia Bunchflower | Melanthium virginicum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Endangered | | SH | G5 | FALSE | FALSE | FALSE |
| Virginia False Gromwell | Lithospermum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | S1 | G4 | FALSE | FALSE | FALSE |
| Virginia Ground Cherry | Physalis virginiana var. virginiana | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1929 | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Virginia Three-seeded Mercury | Acalypha virginica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Water Pigmyweed | Crassula aquatica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1988 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Weak Rush | Juncus debilis | Suffolk | Plant | Flowering Plants | Rushes | Recently Confirmed | 1983 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Whip Nut Sedge | Scleria triglomerata | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2016 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White Milkweed | Asclepias variegata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2010 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White-bracted Boneset | Eupatorium leucolepis | Suffolk | Plant | Flowering Plants | Asters Goldenrods and Daisies | Recently Confirmed | 2001 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| White-edge Sedge | Carex debilis var. debilis | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2012 | Threatened | | S2 | G5T5 | FALSE | FALSE | FALSE |
| Whorled Marsh Pennywort | Hydrocotyle verticillata var. verticillata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2004 | Endangered | | S1 | G5T5 | FALSE | FALSE | FALSE |
| Whorled Mountain Mint | Pycnanthemum verticillatum var. verticillatum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 1997 | Endangered | | S1S2 | G5T5 | FALSE | FALSE | FALSE |
| Wild Comfrey | Andersonglossum virginianum | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |
| Wild Pink | Silene caroliniana ssp. pensylvanica | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Recently Confirmed | 2015 | Threatened | | S2 | G5T4T5 | FALSE | FALSE | FALSE |
| Willow Oak | Quercus phellos | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Extirpated | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Winter Grape | Vitis vulpina | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1925 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Woodland Agrimony | Agrimonia rostellata | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Historically Confirmed | 1932 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Wright's Panic Grass | Dichanthelium wrightianum | Suffolk | Plant | Flowering Plants | Grasses | Recently Confirmed | 2016 | Endangered | | S1S2 | G4 | FALSE | FALSE | FALSE |
| Yellow Flatsedge | Cyperus flavescens | Suffolk | Plant | Flowering Plants | Sedges | Recently Confirmed | 2003 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Yellow Giant-hyssop | Agastache nepetoides | Suffolk | Plant | Flowering Plants | Other Flowering Plants | Possible but not Confirmed | | Threatened | | S2S3 | G5 | FALSE | FALSE | FALSE |
| Atlantic White Cedar | Chamaecyparis thyoides | Suffolk | Plant | Conifers | Conifers | Recently Confirmed | 2005 | Threatened | | S2 | G4 | FALSE | FALSE | FALSE |
| Shortleaf Pine | Pinus echinata | Suffolk | Plant | Conifers | Conifers | Extirpated | | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Virginia Pine | Pinus virginiana | Suffolk | Plant | Conifers | Conifers | Possible but not Confirmed | 1878 | Endangered | | S1 | G5 | FALSE | FALSE | FALSE |
| Blunt-lobe Grape Fern | Botrychium oneidense | Suffolk | Plant | Ferns and Fern Allies | Ferns | Recently Confirmed | 2003 | Threatened | | S2S3 | G4 | FALSE | FALSE | TRUE |
| Carolina Clubmoss | Pseudolycopodiella caroliniana | Suffolk | Plant | Ferns and Fern Allies | Clubmosses | Recently Confirmed | 2009 | Endangered | | S1 | G5T4 | FALSE | FALSE | FALSE |

| Common Name | Scientific Name | Location | Type | Group | Subgroup | Distribution Status | Year Last Documented | State Protection Status | Federal Protection Status | State ConservationRank | Global Conservation Rank | Non Native | Common | Restricted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Climbing Fern | Lygodium palmatum | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | | Endangered | | S1 | G4 | FALSE | FALSE | TRUE |
| Curlygrass Fern | Schizaea pusilla | Suffolk | Plant | Ferns and Fern Allies | Ferns | Recently Confirmed | 2004 | Endangered | | S1 | G3G4 | FALSE | FALSE | TRUE |
| Lowland Fragile Fern | Cystopteris protrusa | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | 1919 | Endangered | | S1 | G5 | FALSE | FALSE | TRUE |
| Meadow Horsetail | Equisetum pratense | Suffolk | Plant | Ferns and Fern Allies | Horsetails | Historically Confirmed | 1937 | Threatened | | S2 | G5 | FALSE | FALSE | FALSE |
| Northern Quillwort | Isoetes septentrionalis | Suffolk | Plant | Ferns and Fern Allies | Quillworts | Historically Confirmed | | Endangered | | S1 | GNR | FALSE | FALSE | FALSE |
| Southeastern Bracken | Pteridium aquilinum ssp. pseudocaudatum | Suffolk | Plant | Ferns and Fern Allies | Ferns | Historically Confirmed | | Endangered | | SH | G5T5 | FALSE | FALSE | FALSE |

**IPaC** Information for Planning and Consultation **U.S. Fish & Wildlife Service**

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Suffolk County, New York

## Local office

Long Island Ecological Services Field Office

(631) 286-0485
(631) 286-4003

340 Smith Road
Shirley, NY 11967-2258

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

| NAME | STATUS |
|---|---|
| Northern Long-eared Bat *Myotis septentrionalis*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/9045 | Threatened |

## Birds

| NAME | STATUS |
|---|---|
| Piping Plover *Charadrius melodus*<br>There is **final** critical habitat for this species. Your location is outside the critical habitat.<br>https://ecos.fws.gov/ecp/species/6039 | Threatened |
| Red Knot *Calidris canutus rufa*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/1864 | Threatened |
| Roseate Tern *Sterna dougallii dougallii*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/2083 | Endangered |

## Flowering Plants

| NAME | STATUS |
|---|---|
| Sandplain Gerardia *Agalinis acuta*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/8128 | Endangered |
| Seabeach Amaranth *Amaranthus pumilus*<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/8549 | Threatened |

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

# Migratory birds

NOT FOR CONSULTATION

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.) |
|---|---|
| American Oystercatcher *Haematopus palliatus*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/8935 | Breeds Apr 15 to Aug 31 |
| Arctic Tern *Sterna paradisaea*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds May 20 to Aug 15 |
| Bald Eagle *Haliaeetus leucocephalus*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>https://ecos.fws.gov/ecp/species/1626 | Breeds Oct 15 to Aug 31 |
| Black Guillemot *Cepphus grylle*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds May 15 to Sep 10 |
| Black Rail *Laterallus jamaicensis*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/7717 | Breeds Mar 1 to Sep 15 |
| Black Scoter *Melanitta nigra*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Black Skimmer *Rynchops niger*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/5234 | Breeds May 20 to Sep 15 |
| Black-billed Cuckoo *Coccyzus erythropthalmus*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9399 | Breeds May 15 to Oct 10 |
| Black-legged Kittiwake *Rissa tridactyla*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Bobolink *Dolichonyx oryzivorus*<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 20 to Jul 31 |
| Bonaparte's Gull *Chroicocephalus philadelphia*<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |

NOT FOR CONSULTATION

Bridled Tern Onychoprion anaethetus — Breeds Apr 15 to Sep 20
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Brown Pelican Pelecanus occidentalis — Breeds Jan 15 to Sep 30
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6034

Buff-breasted Sandpiper Calidris subruficollis — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9488

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cerulean Warbler Dendroica cerulea — Breeds Apr 29 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/2974

Clapper Rail Rallus crepitans — Breeds Apr 10 to Oct 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Common Eider Somateria mollissima — Breeds Jun 1 to Sep 30
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Loon gavia immer — Breeds Apr 15 to Oct 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4464

Common Murre Uria aalge — Breeds Apr 15 to Aug 15
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Common Tern Sterna hirundo — Breeds May 10 to Sep 10
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/4963

Cory's Shearwater Calonectris diomedea — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Double-crested Cormorant phalacrocorax auritus — Breeds Apr 20 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/3478

Dovekie Alle alle — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/6041

Dunlin Calidris alpina arcticola — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Evening Grosbeak Coccothraustes vespertinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds elsewhere
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Golden-winged Warbler Vermivora chrysoptera — Breeds May 1 to Jul 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8745

Great Black-backed Gull Larus marinus — Breeds Apr 15 to Aug 20
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

NOT FOR CONSULTATION

| | |
|---|---|
| Great Shearwater Puffinus gravis<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Gull-billed Tern Gelochelidon nilotica<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9501 | Breeds May 1 to Jul 31 |
| Herring Gull Larus argentatus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Apr 20 to Aug 31 |
| Hudsonian Godwit Limosa haemastica<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Kentucky Warbler Oporornis formosus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 20 to Aug 20 |
| King Rail Rallus elegans<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/8936 | Breeds May 1 to Sep 5 |
| Leach's Storm-petrel Oceanodroma leucorhoa<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds May 15 to Nov 20 |
| Least Tern Sterna antillarum<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds Apr 20 to Sep 10 |
| Lesser Yellowlegs Tringa flavipes<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9679 | Breeds elsewhere |
| Long-eared Owl asio otus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/3631 | Breeds elsewhere |
| Long-tailed Duck Clangula hyemalis<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.<br>https://ecos.fws.gov/ecp/species/7238 | Breeds elsewhere |
| Manx Shearwater Puffinus puffinus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Apr 15 to Oct 31 |
| Nelson's Sparrow Ammodramus nelsoni<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 15 to Sep 5 |
| Northern Fulmar Fulmarus glacialis<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Northern Gannet Morus bassanus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Parasitic Jaeger Stercorarius parasiticus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Pomarine Jaeger Stercorarius pomarinus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Prairie Warbler Dendroica discolor<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 1 to Jul 31 |
| Prothonotary Warbler Protonotaria citrea<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 1 to Jul 31 |
| Purple Sandpiper Calidris maritima<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |

NOT FOR CONSULTATION

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|---|---|
| Razorbill Alca torda<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Jun 15 to Sep 10 |
| Red Phalarope Phalaropus fulicarius<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Red-breasted Merganser Mergus serrator<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Red-headed Woodpecker Melanerpes erythrocephalus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Sep 10 |
| Red-necked Phalarope Phalaropus lobatus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Red-throated Loon Gavia stellata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Ring-billed Gull Larus delawarensis<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Roseate Tern Sterna dougallii<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds May 10 to Aug 31 |
| Royal Tern Thalasseus maximus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Apr 15 to Aug 31 |
| Ruddy Turnstone Arenaria interpres morinella<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Rusty Blackbird Euphagus carolinus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Saltmarsh Sparrow Ammodramus caudacutus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 15 to Sep 5 |
| Seaside Sparrow Ammodramus maritimus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Aug 20 |
| Semipalmated Sandpiper Calidris pusilla<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Short-billed Dowitcher Limnodromus griseus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |
| Snowy Owl Bubo scandiacus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds elsewhere |
| Sooty Tern Onychoprion fuscatus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Mar 10 to Jul 31 |
| South Polar Skua Stercorarius maccormicki<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Surf Scoter Melanitta perspicillata<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Thick-billed Murre Uria lomvia<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Apr 15 to Aug 15 |
| Whimbrel Numenius phaeopus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9483 | Breeds elsewhere |

NOT FOR CONSULTATION

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|---|---|
| White-winged Scoter Melanitta fusca<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Willet Tringa semipalmata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 20 to Aug 5 |
| Wilson's Storm-petrel Oceanites oceanicus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds elsewhere |
| Wood Thrush Hylocichla mustelina<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Aug 31 |

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

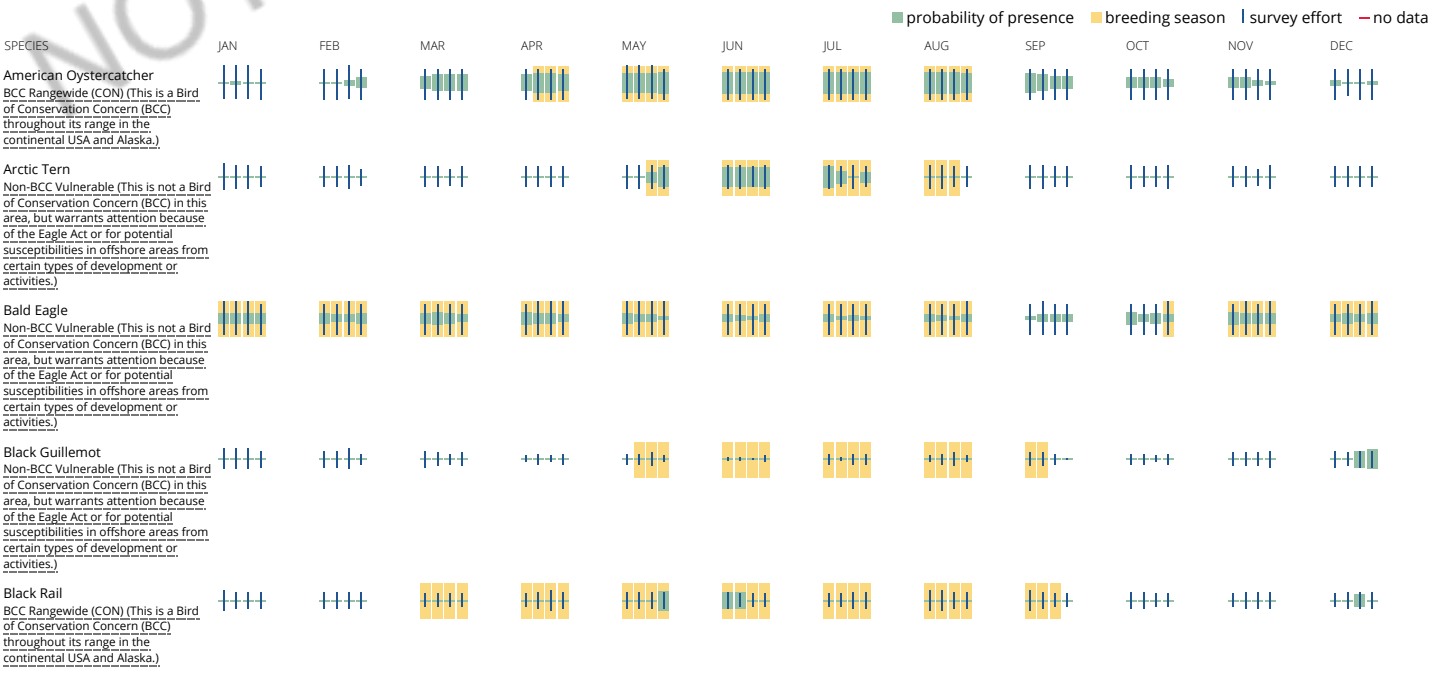
**Breeding Season** (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

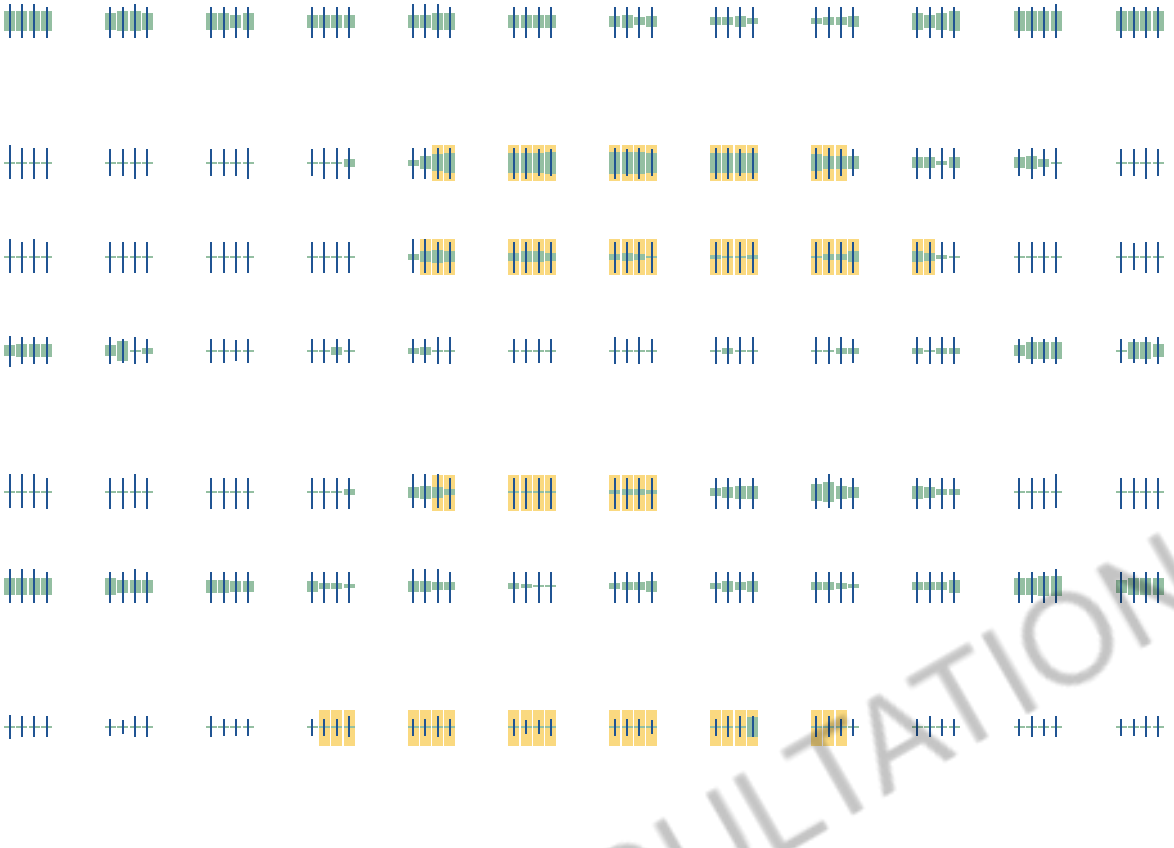
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.




NOT FOR CONSULTATION



Black Scoter
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Black-billed Cuckoo
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Black-legged Kittiwake
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Bobolink
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Bonaparte's Gull
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Bridled Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

| SPECIES | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

Brown Pelican
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Buff-breasted Sandpiper
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Canada Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Cerulean Warbler
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Clapper Rail
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Common Eider
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Common Loon
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Common Murre
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Common Tern
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

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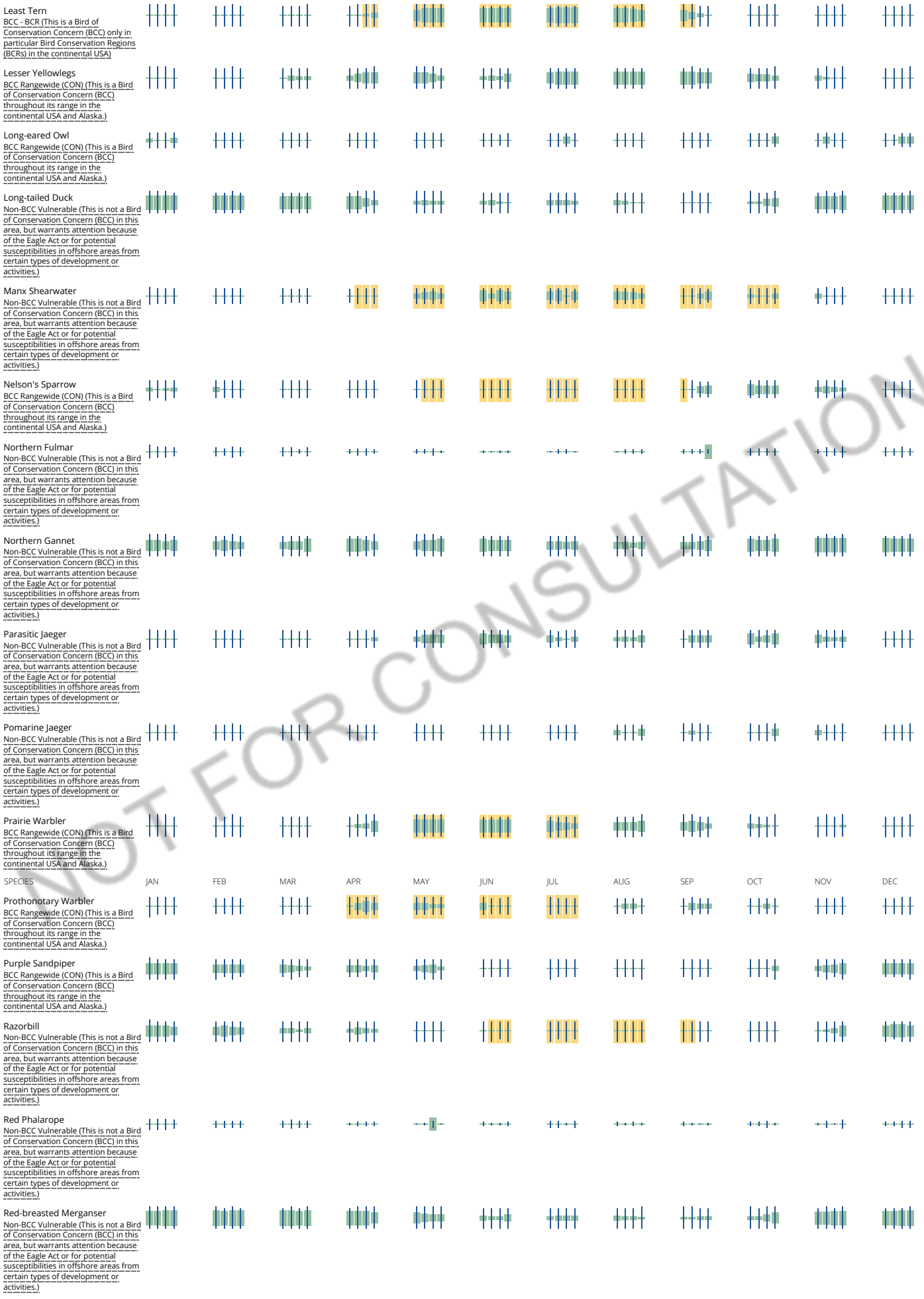
Cory's Shearwater
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Double-crested Cormorant
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

Dovekie
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

| SPECIES | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dunlin<br>BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA) | | | | | | | | | | | | |
| Eastern Whip-poor-will<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| Evening Grosbeak<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| Golden Eagle<br>Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) | | | | | | | | | | | | |
| Golden-winged Warbler<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| Great Black-backed Gull<br>Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) | | | | | | | | | | | | |
| Great Shearwater<br>Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) | | | | | | | | | | | | |
| Gull-billed Tern<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| Herring Gull<br>Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) | | | | | | | | | | | | |
| Hudsonian Godwit<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| Kentucky Warbler<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| King Rail<br>BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.) | | | | | | | | | | | | |
| SPECIES | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| Leach's Storm-petrel<br>Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) | | | | | | | | | | | | |

NOT FOR CONSULTATION

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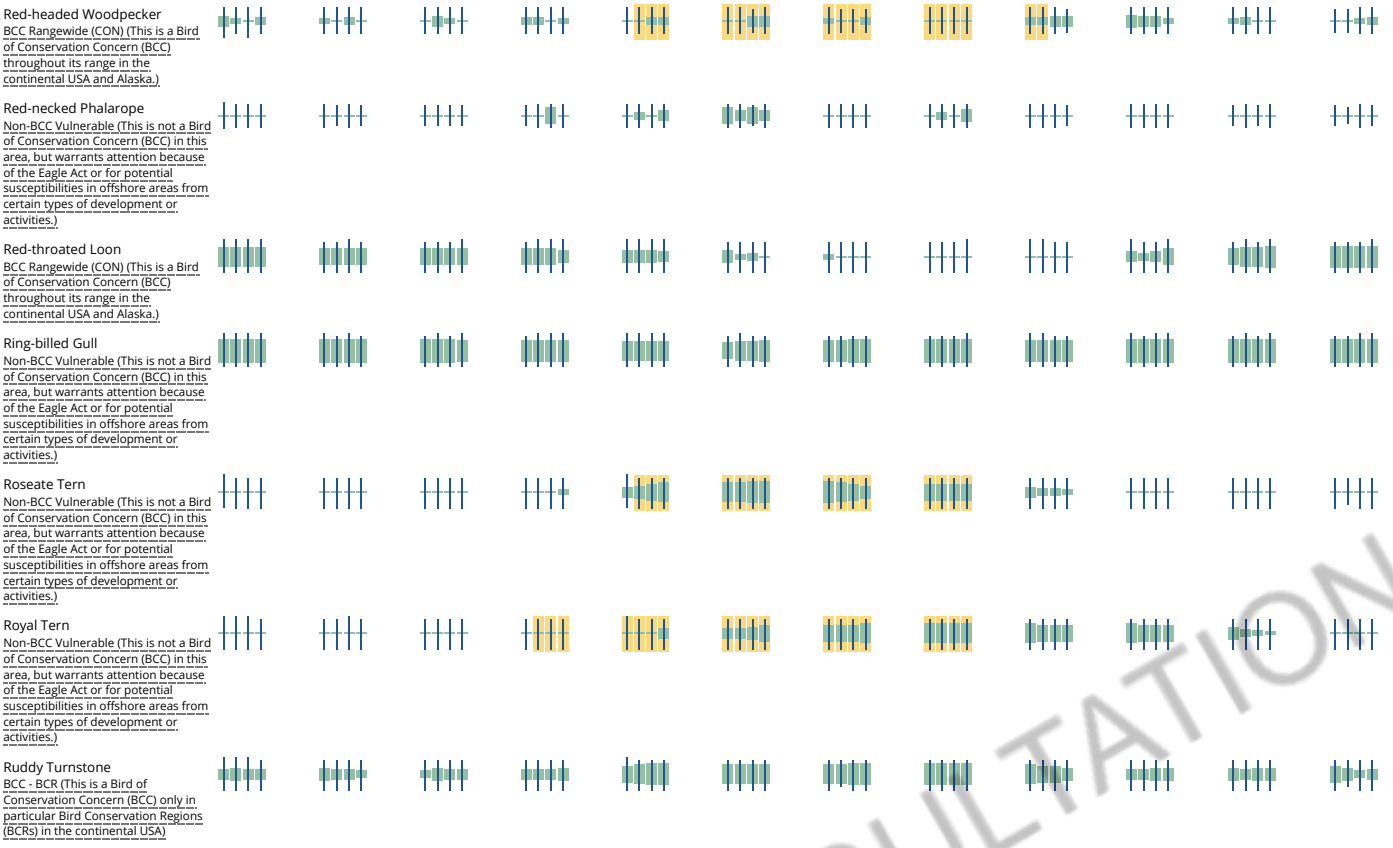


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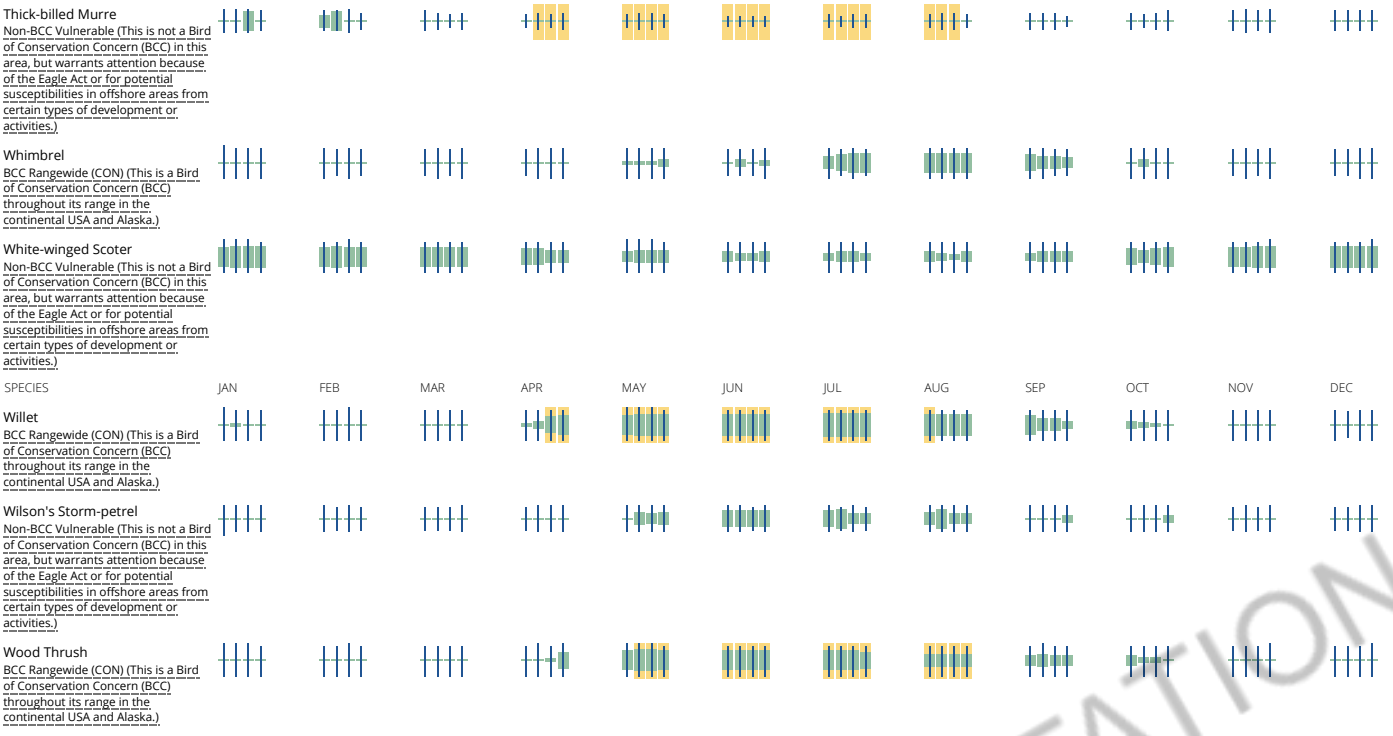



**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the E-bird Explore Data Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

NOT FOR CONSULTATION

**What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

**Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

| LAND | ACRES |
|---|---|
| Amagansett National Wildlife Refuge | 40.31 acres |

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
Atlantic Ave
Amagansett, NY 11930-2230

https://www.fws.gov/refuges/profiles/index.cfm?id=52562

| | |
|---|---|
| Conscience Point National Wildlife Refuge | 61.41 acres |

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
North Sea Road
North Sea, NY 11968

https://www.fws.gov/refuges/profiles/index.cfm?id=52564

| | |
|---|---|
| Elizabeth Alexandra Morton National Wildlife Refuge | 177.54 acres |

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
Noyac Road
Sag Harbor, NY 11963

https://www.fws.gov/refuges/profiles/index.cfm?id=52566

NOT FOR CONSULTATION

Seatuck National Wildlife Refuge 211.22 acres

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
500 St. Marks Lane
Islip, NY 11751

https://www.fws.gov/refuges/profiles/index.cfm?id=52565

Target Rock National Wildlife Refuge 78.34 acres

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
12 Target Rock Road
Huntington, NY 11743

https://www.fws.gov/refuges/profiles/index.cfm?id=52568

Wertheim National Wildlife Refuge 2,656.8 acres

(631) 286-0485
(631) 286-4003

MAILING ADDRESS
C/o Long Island Nwr Complex
340 Smith Road
Shirley, NY 11967-2258

PHYSICAL ADDRESS
340 Smith Road
Shirley, NY 11967-2245

https://www.fws.gov/refuges/profiles/index.cfm?id=52561

NOT FOR CONSULTATION

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

# Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

The area of this project is too large for IPaC to load all NWI wetlands in the area. The list below may be incomplete. Please contact the local U.S. Fish and Wildlife Service office or visit the NWI map for a full list.

ESTUARINE AND MARINE DEEPWATER
- E1AB3L
- E1AB1L
- E1UBLx
- E1ABL
- E1UB4L
- E1UBL

ESTUARINE AND MARINE WETLAND
- E2EM1Pd
- E2EM1N
- E2EM1P

E2EM1Nd
E2EM1/SS4Pd
E2EM5Pd

FRESHWATER EMERGENT WETLAND

PEM1C
PEM1A

FRESHWATER FORESTED/SHRUB WETLAND

PFO1C
PFO1/4E

FRESHWATER POND

PUBH
PUBHx

RIVERINE

R2UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

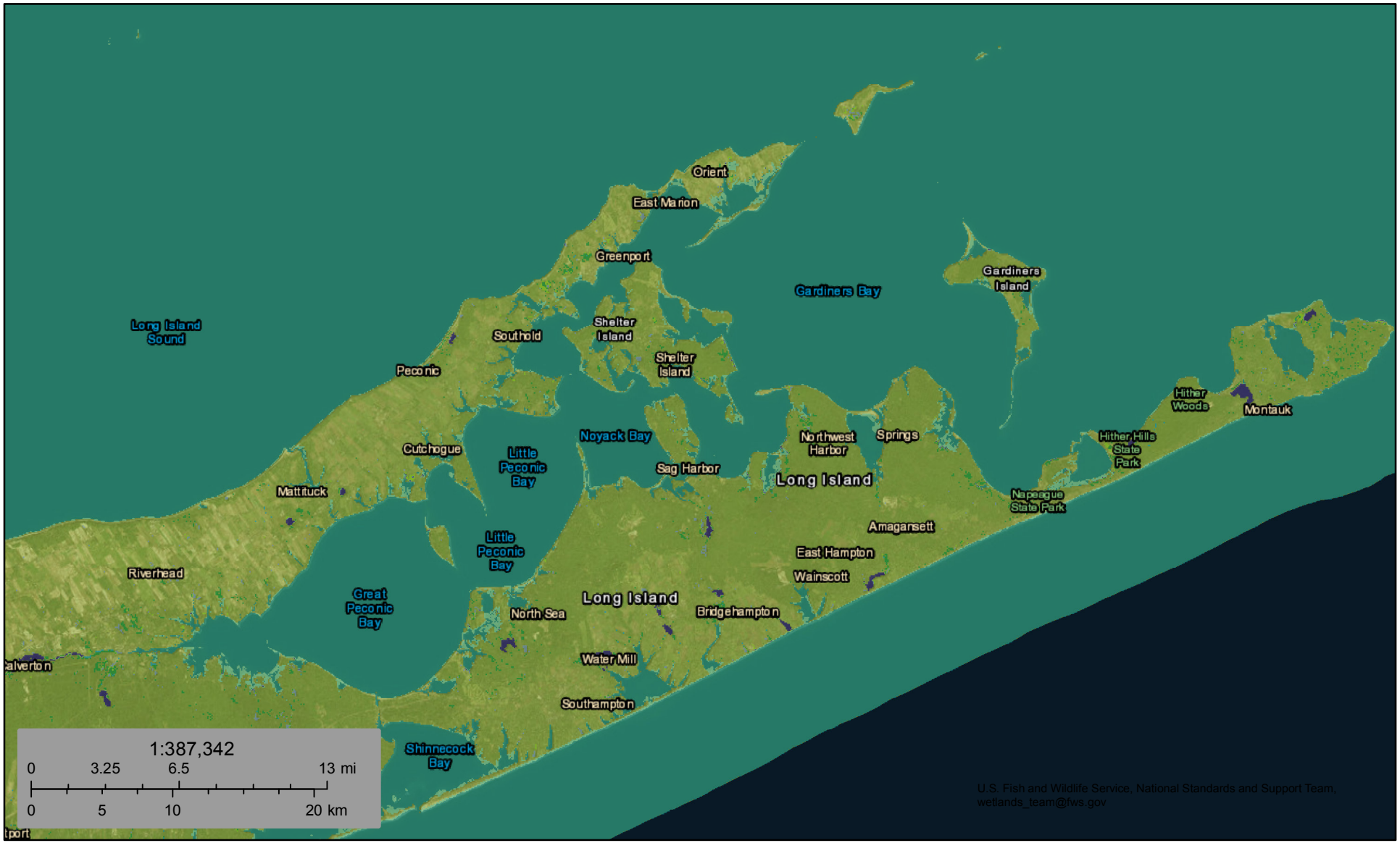
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

U.S. Fish and Wildlife Service

# National Wetlands Inventory

## East Suffolk County




December 5, 2018

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

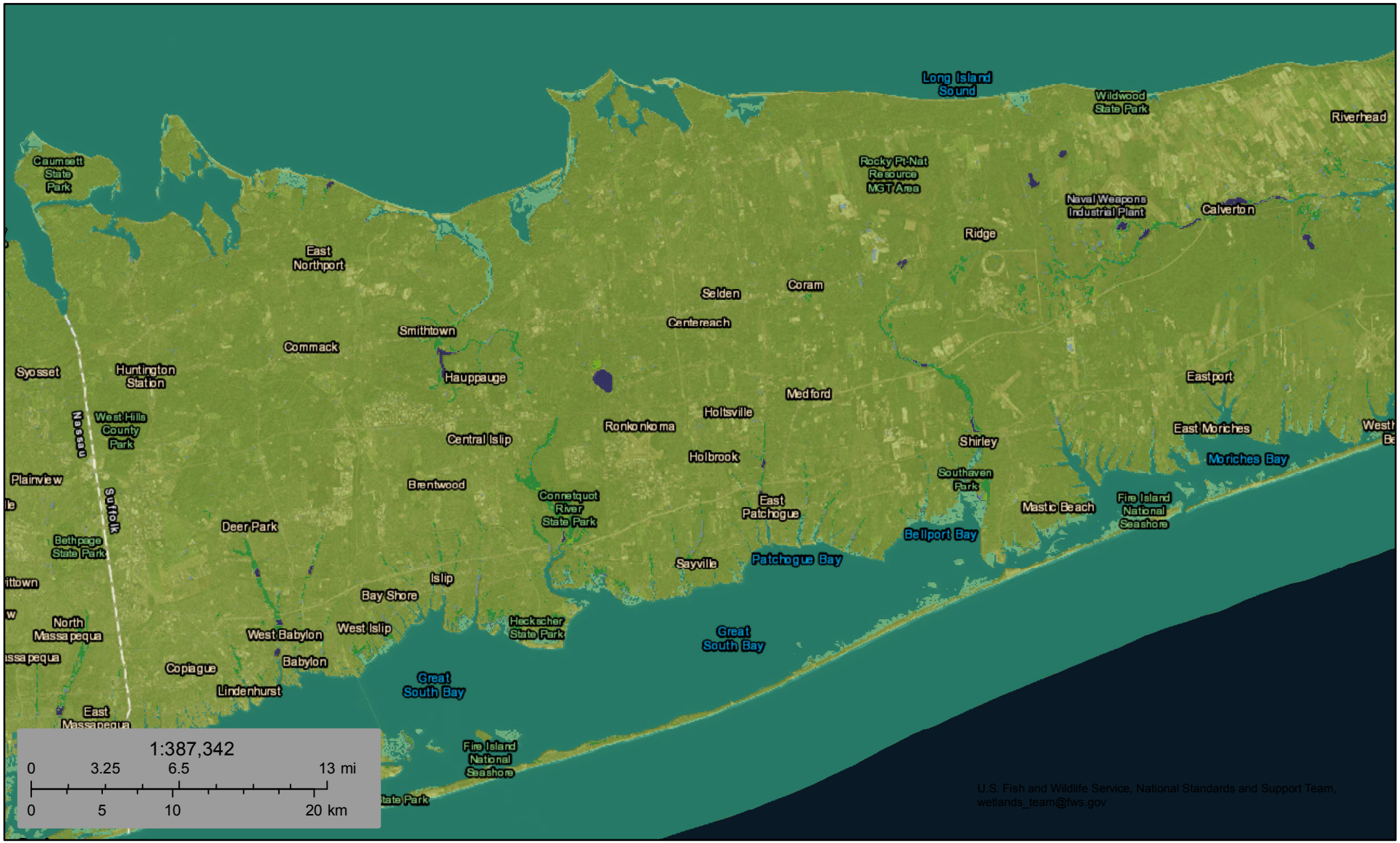
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

# National Wetlands Inventory

## West Suffolk County

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# Appendix E

# Key Single Page Document Figures

(provided as a separate PDF file attachment)