Reports Table of Contents

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

With team members:

FPM group

WOODS HOLE GROUP

June 8, 2015

TABLE OF CONTENTS

The following Reports of the East Hampton Comprehensive Wastewater Management Plan begin at the pdf page listed below.

	PDF PAGE
Executive Summary	2
1. Community Profile	37
2. Wastewater Needs Analysis	159
3. Solutions Scenarios Development	248
4. Wastewater Management Alternatives	268
5. Financial Alternatives and User Charges	316
6. Management & Legislative Alternatives	337
7. Preferred Plan	TBD
8. Permitting & Grant/Loan Requirements of Preferred Plan	TBD
9. Scavenger Waste Facility	353
10. Water Quality Monitoring – outline Draft	432
11. Lot by Lot Analysis	441

Executive Summary

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

With team members:

FPM group

WOODS HOLE GROUP

September 9, 2014

TABLE OF CONTENTS

1 INTRODUCTION 3
Background 3
Nitrogen, Phosphorus & Bacterial Contamination 4
NON-STRUCTUAL RECOMMENDATIONS 4
STRUCTUAL RECOMMENDATIONS SUMMARY 5
2 SUMMARY OF WASTEWATER NEEDS 8
3 STRUCTUAL RECOMMENDATIONS 10
Montauk Center 10
3.2 The Docks 13
3.3 Ditch Plains 14
3.4 Camp Hero 16
3.5 Three Mile Harbor 17
3.6 Village Business Area 19
3.7 Georgica Pond 20
3.8 Hook Pond 22
3.9 Fort Pond 24
3.10 Summary 26
3.11 Costs 26
APPENDIX METHODOLOGY AND SUMMARY 31

List of Figures

Figure 1-1 Water Quality Restoration – Scientific & Legal Process 5
Figure 1-2 Nitrogen Loadings to Septic Systems and Groundwater – Surface Water 7
Figure 3-1 Montauk Study Area – Needs and Solution Candidate Sites 11
Figure 3-2 Montauk Center Study Area 12
Figure 3-3 The Docks Study Area 14
Figure 3-4 Ditch Plains Study Area 15
Figure 3-5 Camp Hero Study Area 16
Figure 3-6 Three Mile Harbor Watershed 18
Figure 3-7 Southern Three Mile Harbor Watershed 19
Figure 3-8 Village Business Area 20
Figure 3-9 Georgica Pond Watershed 21
Figure 3-10 Hook Pond Watershed 23
Figure 3-11 Fort Pond Watershed 25

List of Tables

Table 2-1 Summary of Wastewater Needs by Sub-Study Areas 9
Table 3-1 Georgia Pond Watershed Statistics 21
Table 3-2 Hook Pond Watershed Statistics 22
Table 3-3 Fort Pond Watershed Statistics 25
Table 3-4 Summary of Proposed Improvements – Phase I 26
Table 3-5 Cost Considerations 27
Table 3-6 EDU Equivalencies for Various Commercial Establishments 27
Table 3-7 Recommended Wastewater System & Pond Watershed Improvement Capital, Annual O&M and User Fee Cost Estimates 28
Table 3-8 Recommended Neighborhood Wastewater Systems and Comparison to Comparable Systems 30

1 INTRODUCTION

BACKGROUND

Lombardo Associates, Inc. (LAI) has been retained by the Town of East Hampton to prepare a Comprehensive Wastewater Management Plan (CWMP) consisting of:

Scavenger Waste Facility (SWF) Component
Wastewater Management Component
Water Quality Monitoring Component

The original contract was amended on April 24, 2014 to enable a lot by lot analysis for the Wastewater Management Component. The following Reports have been prepared and are posted at the project website www.EHWaterRestore.com:

1.	Community Profile	December 17, 2013
2.	Wastewater Needs Analysis	January 8, 2014
3.	Solutions Scenarios Development	December 30, 2013
4.	Wastewater Management Alternatives	November 27, 2013
5.	Financial Alternatives and User Charges	December 4, 2013
6.	Management & Legislative Alternatives	December 4, 2013
7.	Preferred Plan – completed after Town Board selection of Preferred Plan	
8.	Permitting & Grant/Loan Requirements of Preferred Plan – completed after Town Board selection of Preferred Plan	
9.	Scavenger Waste Facility	January 9, 2014
10.	Water Quality Monitoring – outline Draft	December 11, 2013
11.	Lot by Lot Analysis	August 28, 2014

The Town Board adopted at its May 15, 2014 public hearing acceptance of the ***January 9, 2014 Scavenger Waste Facility Evaluation Report*** to close the SWF by November 30, 2014. This action terminates an approximate $600,000 annual financial loss that the Town has been incurring for 12+ years at the SWF, resulting in millions of dollars of future savings for the Town.

Some of the Water Quality Monitoring Component (WQMC) efforts were redirected to the SWF Evaluation for the following reasons as directed by the Town. Significant obstacles arose in the conduct of the Scavenger Waste Facility portion of the CWMP. LAI recommended and our recommendations were approved by Town staff and Board members during October through November 2013 project meetings, that LAI further investigate the situation as there were serious concerns about SWF financial and operational matters. This was in part due to the lack of a Town management staff member responsible for the SWF. The obstacles included:

1. Conflicting and scattered (no centralized data) information on SWF quantities. The Town's database was in gross error and could not be resolved by the Town's IT Dept. despite numerous attempts. Following numerous efforts by LAI and Town staff to determine the cause, the Town's Budget officer was notified. He understood the problem and had it corrected.

2. No reconciliation between financial payments for quantities removed from the SWF and quantities received existed. This was a matter of serious concern.

3. No financial summary on the operations of the SWF existed that could be used for the SWF evaluation efforts. To address this matter, LAI worked for weeks with Town Budget staff, using raw financial data, to create the pro-forma that is the financial backbone of the SWF analysis - Table 8-1

Consequently due to the lack of receipt of the needed water quality data for the WQMC, the remaining water quality efforts were placed on hold and budget was used to address the serious inadequacies of the SWF.

The wisdom of this project performance adjustment by Town Board members, as directed and approved by the Town resulted in:

1. The comprehensive / unequivocal determination by Lombardo Associates, Inc. (LAI) that the SWF had incurred an annual financial loss of $600,000+ for the last 12 year period of analysis.
2. The adoption of LAI's recommendation to close the SWF will result in millions of dollars of savings to the Town

The Town gained significantly from these decisions made in October – November 2013. Public meetings were not held after the initial August 26, 2013 meeting as they were not scheduled by the Town Board.

This Report is an Executive Summary of the Recommendations of the Wastewater Management Component of the CWMP for consideration of adoption by the East Hampton Town Board. The recommendations are organized as follows and described herein:

NITROGEN, PHOSPHORUS & BACTERIAL CONTAMINATION

Nitrogen discharges to the ground and surface waters of East Hampton have adversely affected the water quality of the Town's surface waters, in particular the saline waters. Wastewater nitrogen is the primary nitrogen source. Phosphorus discharges from septic systems, stormwater and legacy practices have also impaired East Hampton's surface waters, in particular Georgica, Hook and Fort Ponds. Bacterial contamination from malfunctioning septic systems and stormwater have also impaired East Hampton's surface waters and led to shellfish closures and bathing ban at south Lake Montauk. Unfortunately the scientific studies to determine the levels of nitrogen and phosphorus that must be removed to restore water quality have not been performed. These are referred to as Total Maximum Daily Loads (TMDL) studies as required by federal law for impaired water bodies. Figure 1-1 illustrates the scientific – legal process for designating and restoring impaired waters.

In lieu of these detailed TMDL studies, the CWMP has relied upon simplistic analytical models and importantly the scant water quality that exists. Unfortunately the water quality data collection in East Hampton by SCDHS is limited in only one station per harbor. Fortunately recent water quality data collected for the East Hampton Trustees provides some valuable insights on current water quality.

RECOMMENDATIONS

The CWMP recommendations are presented below.

NON-STRUCTUAL RECOMMENDATIONS

1. Enforce the existing Town Code requirement for a septic system inspection every three (3) years (§ 210-5-1**)** and by requiring such prior to property transfer. Additionally all properties within the Harbor Protection District need to certify compliance with § 255-3-75C.

2. The Scavenger Waste District, Town Code Chapter 210, should be replaced (after existing debts are paid) or supplemented by a Watershed Protection District or similar entity as provided in Town Law Article 12, 12-A and 12-C. Options include:

   - ✓ § 190-g Water quality treatment districts;
   - ✓ § 190-e Wastewater disposal districts
   - ✓ Watershed Protection Improvement Districts

with the Watershed Protection Improvement District being the recommended vehicle

3. A Wastewater Management and Water Quality Improvement Advisory Committee should be established as soon as possible to provide oversight and recommendations to the Supervisor/Town Board and facilitate public participation.

4. Wastewater and Water Quality Program Managers (External and Internal) to the Town needs to be appointed to report to the Advisory Committee and Supervisor/Town Board. Given the complexities of the Plan, the external role is usually performed by the project's retained professional engineer. The internal role is performed by a Town staff person designated responsible for the Plan's implementation.

Figure 1-1 Water Quality Restoration – Scientific & Legal Process

- **Water Use/Body – Water Quality Standards**
- **Water Quality Impairment Designation**
- **Total Maximum Daily Loads (TMDL) Determination**
  - ✓ **Budget is established of max. amounts of constituents that can be discharged & still maintain standards. Amount of pollutants that must be removed quantified**
- **Municipality Required to Develop & Implement Plan to Achieve TMDL Requirements**

STRUCTUAL RECOMMENDATIONS SUMMARY

Recommendations for structural improvements are outlined below.

I. ***Neighborhood Wastewater Systems to serve areas with malfunctioning – Problematic Septic Systems.*** This category applies to the properties that require an off-site solution that would be served by a cluster-neighborhood wastewater system. Areas that are recommended for new or improved neighborhood wastewater systems are:

1. Montauk Center
2. The Docks
3. Ditch Plains
4. Camp Hero
5. Three Mile Harbor
6. Village Business Area

II. **Watersheds -** The following watersheds need further scientific studies to refine the levels of needed wastewater and nutrient reduction efforts. However the Plan provides initial recommendations on actions needed to at least arrest deteriorated water quality conditions:

7. Georgica Pond
8. Hook Pond
9. Fort Pond

Groundwater treatment via a Nitrex™ Permeable Reactive Barrier (PRB), at strategically important locations, can achieve the desired nitrogen and/or phosphorus reductions at a significantly lower cost than wastewater system improvements. Importantly the positive impacts on the surface body's water quality will be noticeable in a shorter time period with the PRB vs. wastewater improvements due to the long groundwater travel time in parts of the watersheds. This option is proposed for Georgica and Hook Pond watersheds.

III. **Individual Properties –** addresses those properties throughout the Town where the solutions are either repair of the wastewater system on-site or in a very small neighborhood system, say 2 – 4+ houses.

10. Individual properties

Options in this category will primarily be:

a. On Property Upgrades to Septic Systems to Avoid Bacterial Contamination

This category applies to properties that have malfunctioning septic systems, which can be upgraded on-site.

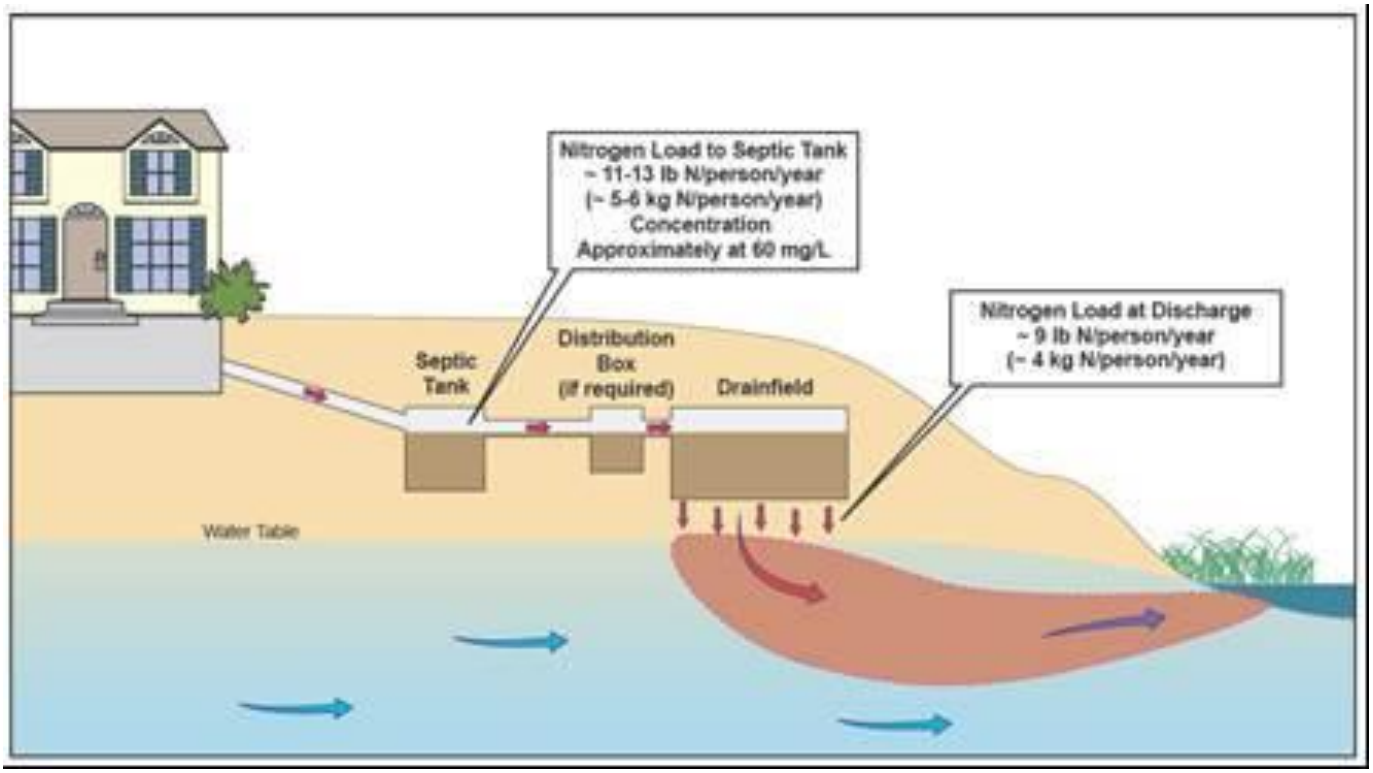
b. Upgrades to Septic Systems to achieve Advanced Tertiary Treatment (AWT)

This category applies to properties that are required by Town/County/State code and/or in environmentally sensitive areas that require additional nitrogen or phosphorus removal than a conventional septic system.

Alternately, groundwater treatment via the Nitrex™ Permeable Reactive Barrier (PRB), if technically feasible at the desired locations, can achieve the desired nitrogen and/or phosphorus reductions at a significantly lower cost than septic system upgrades

The typical nitrogen discharges from septic systems is illustrated on the US EPA prepared Figure 1-2 which shows that nitrogen load to a septic system is 11 – 13 lb./person/year.

Figure 1-2 Nitrogen Loadings to Septic Systems and Groundwater – Surface Water



2 SUMMARY OF WASTEWATER NEEDS

The various wastewater and nutrient management needs categories for the Town, including Village of East Hampton, are:

1. Nitrogen & Phosphorus – Water Quality TMDL considerations
2. Bacterial public health
3. Impermeable/Hydric Soils
4. Malfunctioning systems considerations .
5. Setback requirements
6. Private water supply considerations
7. Public water supply considerations
8. Town & County Code & State Law considerations
9. Cost Considerations
10. Economic sustainability issues
11. Space availability

Table 2-1 presents a summary of the wastewater and nutrient management needs by the ten (10) sub-study areas

Table 2-1 Summary of Wastewater Needs by Sub-Study Areas

Study Sub-Area	# of Dev. Prop.	WW Design Flow (gpd)	1. Nitrogen and Phosphorus TMDL considerations	2. Bacterial public health	3. Impermeable/Hydric Soils[1]	4. Malfunctioning systems considerations	5. Setback requirements	6. Private water supply considerations	7. Public water supply considerations	8. Town & County Code & State Law considerations			9. Cost Considerations	10. Economic sustainability issues	11. Space availability	# With WW Needs	% With WW Needs
										Comm. w/Cess	SPDES	>1,000-gpd					
1. Montauk Center	114	124,745	*See Watershed Studies*	7	0	0	4	25	0	66	4	49			49	90	78.9%
2. The Docks	64	186,720		40	21	0	37	1	0	34	8	11			11	58	90.6%
3. Ditch Plains	276	77,275		50	237	0	0	8	0	0	0	77			77	214	77.5%
4. Camp Hero	28	8,237		0	5	28	0	0	0	0	0	0			0	28	100.0%
5. South 3-Mile	61	25,012		38	31	0	46	2	0	6	1	4			4	59	96.7%
6. Village Business	325	157,209		14	2	0	0	42	0	126	8	110			110	207	63.7%
7. Georgica Pond Watershed	1,335	574,892		36	31	0	50	141	0	78	1	114			114	267	20.0%
8. Hook Pond Watershed[2]	1,960	711,707		85	33	0	18	56	0	36	4	72			72	218	11.1%
9. Fort Pond Watershed[3]	250	149,790		49	39	0	90	17	0	33	1	33			33	134	53.6%
10. Individual Onsite[4]	3,051	1,797,160		960	801	0	564	789	111	201	19	997			997	3,051	100.0%
Totals	**7,464**	**3,812,746**	**1,279**	**1,200**	**28**		**809**	**1,081**	**111**	**580**	**46**	**1,467**			**1,467**	**4,326**	**58.0%**

1. Soils data is area-wide data that may not accurately reflect the actual soils where the dispsal system is located

2. Data from Village Business area not included to avoid double counting

3. Data from portion of Montauk Center that is within Fort Pond Watershed not included to avoid double counting

4. Data from pond watershed areas not included to avoid double counting

3 STRUCTUAL RECOMMENDATIONS

The recommended structural wastewater and nitrogen management solutions for the ten (10) sub-study areas are presented below. Please note that these are Master Plan level recommendations and refinements are normal as projects move to implementation. The steps for implementation of a structural recommendation are:

1. Master Plan adoption by Town Board
2. Preparation of Map & Plan for specific wastewater / nutrient reduction system(s).
    a. Explicit Engineering Plan prepared with project user charges
    b. Public meetings with affected participants to finalize flows and District boundaries
    c. Detailed site testing of proposed sites is performed. Due to site complexities due to clay and silts, especially in Montauk, and for environmentally sensitive areas, computer modeling of groundwater discharges will be necessary.
3. Adoption of the Map & Plan by the Town Board, with adoption being subject to permissive referendum.
4. Bonding for project costs. Map & Plan is legal document used as basis for Bonding.
5. Preparation of Construction Documents (Plans & Specifications)
6. Construction
7. Start-up
8. Long-Term Operations & Maintenance

MONTAUK STUDY AREA

The locations of the Needs Areas of Montauk Center, The Docks, Ditch Plains and Fort Pond along with candidate treatment and disposal sites are shown on Figure 3-1. These Needs Areas can all be addressed with a single wastewater treatment system located at the properties of:

- Montauk Manor treatment & disposal site (MM has verbally stated its interest in conveying the treatment / disposal system and being part of the areawide solution)
- Fire Department property
- SCWA Edgemere Street Well property (SCWA has expressed interest in abandoning the site and preferably trading the site for another location in East Hampton)

- Effluent reuse at the Montauk Downs Golf Course
- As a back-up for excess purified water flows and in case salts entering wastewater system are greater than acceptable levels for golf course, a disposal system could potentially be located at Fire Dept. SCWA Edgemere Well site.

It is noted based upon a preliminary analysis that the Montauk Golf Course could use all of the Montauk area wastewater, with its seasonal peaks in concert with the golf course's seasonal demand, for irrigation resulting in potentially complete purified wastewater reuse or minimal discharge.

MONTAUK CENTER

The Montauk Center study area includes the commercial center of Montauk located between the southern tip of Fort Pond and the Atlantic Ocean. This area consists of mostly commercial properties, consisting of hotels, restaurants and other retail properties. Figure 3-2 presents the preliminary boundaries of the Montauk Center study area.

Figure 3-1 Montauk Study Area – Needs and Solution Candidate Sites

While treatment and disposal sites are potentially available in or close proximity to the Center, the lands are challenged by being in or near areas impacted by Sea, Lake and Overland Surges from Hurricanes (SLOSH). The Montauk Manor-Fire Dept. site, being approximate 5,500 feet from the center and at an elevation above SLOSH, is the recommended option, at least for Master Planning and budgeting purposes. For the scenario of:

- Wastewater Collection from the 207 properties
- Transmission to Montauk Manor-Fire Dept. treatment site
- Disposal at Fire Dept. SCWA well site
- Allowance of share of costs for Golf Course irrigation

Figure 3-2 Montauk Center Study Area

3.2 THE DOCKS

The Docks sub study area of Montauk is the heavy commercial area along the northwest area of Lake Montauk and Star Island, with properties primarily along Star Island Road and on West Lake Drive north starting at Star Island Road, as shown on Figure 3-3.

The candidate properties for a Docks Neighborhood wastewater system are:

- Flamingo Avenue Town owned site corner of Flamingo Ave and Culliden Place, approximately 2,000 feet from Docks study area.
- Under parking lots in the area commercial area. Concerns that high groundwater will increase construction costs and SCDHS variances will be needed
- East Airport – accesses by pipeline under inlet to Lake Montauk
- Montauk Manor-Fire Dept.-SCWA well site, approximately 8,300 feet from Docks

The only treatment and disposal sites in or close proximity to the Docks are the parking lots and the vacant Harrington Property Associates at 543 West Lake Drive. The lands are challenged by being impacted by Sea, Lake and Overland Surges from Hurricanes (SLOSH) and shallow depth to groundwater would make construction expensive. The Flamingo Ave. site and Montauk Manor-Fire Dept. site are at an elevation above SLOSH. As the viability of the Flamingo Avenue site is contingent on site testing, the Montauk Manor-Fire Dept. site is the recommended option, at least for Master Planning and budgeting purposes. The regional scenario would consist of:

- Wastewater Collection from the Dock properties
- Transmission to Montauk Manor-Fire Dept. treatment site
- Disposal at Fire Dept. SCWA well site
- Allowance of share of costs for Golf Course irrigation

Figure 3-3 The Docks Study Area

3.3 DITCH PLAINS

The Ditch Plains development area is a dense development of 265 houses and commercial establishments between the southern end of Lake Montauk and the Atlantic Ocean, as shown on Figure 3-4. A portion of Ditch Plains is located over a former a wetland, and hydric soils or soils with restrictive layers are dominant throughout Ditch Plains. Based upon Lombardo Associates, Inc.'s (LAI) review of soils in Ditch Plains and the Lake's water quality data, it is

LAI's opinion that the preponderance of data suggest that a large number of septic systems in Ditch Plains:

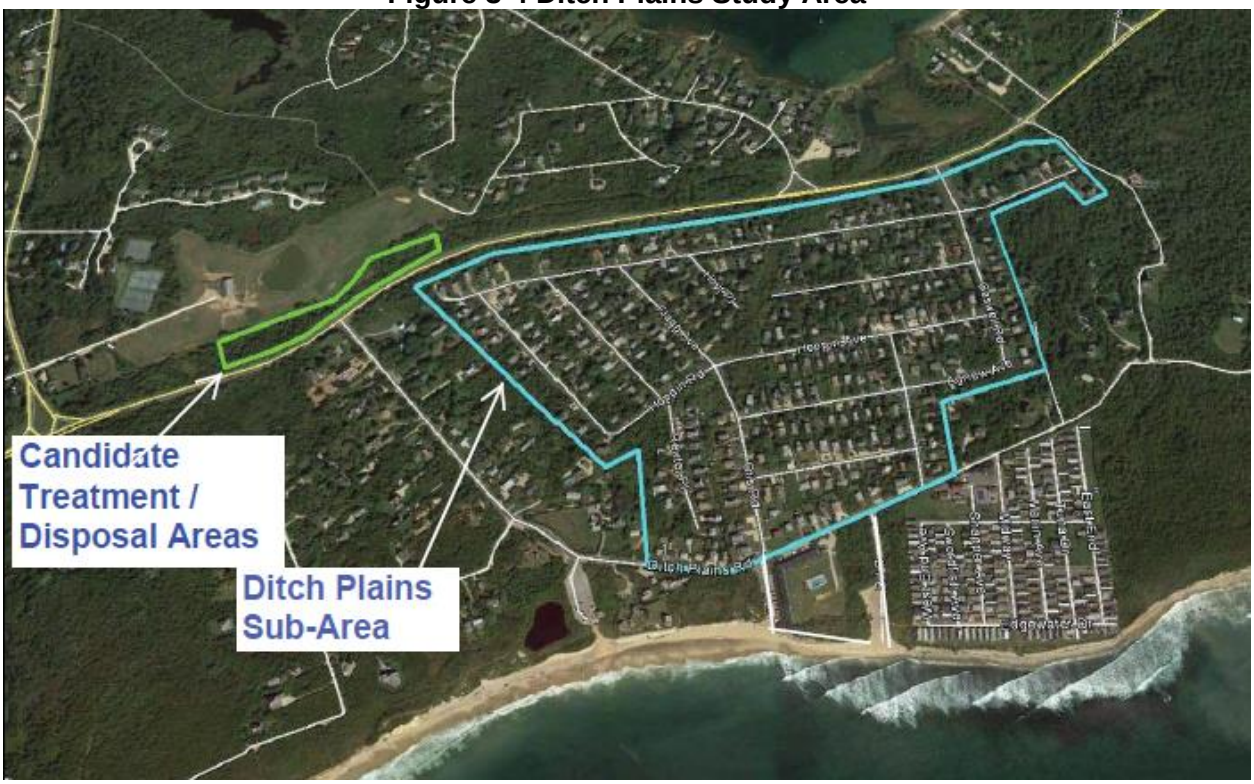
- become flooded during storm events;
- lose the minimum 2 feet of separation, if it even exists, between the bottom of leaching pools to groundwater that is required for bacterial purification;
- would not remove bacterial indicators of pathogenic organisms

Consequently in our opinion, Ditch Plains wastewater systems, in particular those along the wetland that drains Ditch Plains to Lake Montauk, are the most probable cause of bacterial contamination of Lake Montauk and closure of the South Lake Montauk beach.

To determine which Ditch Plains properties contributing to the bacterial contamination of Lake Montauk will require groundwater elevation monitoring and site studies. While the candidate site north of Ditch Plains appears should have the capacity as a treatment site and may have the potential as a disposal site, for Master Planning and budgeting purposes only use of the Montauk Manor-Fire Dept. site is assumed. Using a design flow of 300-gpd per house, the design flow for the development is ~ 80,000-gpd. The regional scenario would consist of:

- Wastewater Collection from the Ditch Plains properties
- Transmission to Montauk Manor-Fire Dept. treatment site
- Disposal at Fire Dept.- SCWA well site
- Allowance of share of costs for Golf Course irrigation

Figure 3-4 Ditch Plains Study Area



3.4 CAMP HERO

The Camp Hero wastewater collection and disposal system is understood to have been acquired by the Town to serve the Camp Hero Estates which were formerly housing for the Montauk Air Force Base. The Camp Hero Sewer System is Special Assessment District #41. Each of the 26 properties connected to the Camp Hero Wastewater System are assessed an approximate annual of $550 fee for operations, maintenance and repair.

According to the 1982 As Built Plans, the wastewater system serves 26 houses with a wastewater collection system that drains to two pump stations that discharge to septic tanks with effluent flowing to 10 12-foot deep leaching pools, each 10-ft in diameter. It is understood that some the collection system consists of "orangeburg pipe", which is known to have deformation and collapsing problems and is considered a substandard material. Orangeburg pipe is no longer used in wastewater collection systems.

Figure 3-5 Camp Hero Study Area

The Camp Hero wastewater system deficiencies are primarily:

- Wastewater overflows at leaching pools, pump station and pipe connection. Leaching Pools on South side are failing
- Require SCWA assistance regarding electricity to lower Pump Station
- No emergency power generators
- One of the two pumps at each lower & upper P.S. is inoperable
- Orangeburg pipe in collection system is inferior – subject to collapse at any time.
- System design will likely contribute to premature failure.
- Entire system is past its useful life

The options considered for system repair are:

1. Repair major deficiencies with minimum expenditures
2. Repair major deficiencies & protect leaching pools
3. Replace entire system with no pre-treatment system
4. Replace entire system with pre-treatment

3.5 THREE MILE HARBOR

The entire Three Mile Harbor and the southern area in particular are demonstrating signs of excessive nitrogen loadings. The nitrogen loading analysis has identified it as a likely problem area. The southern area has recently experienced harmful algae concentrations that can be toxic (see section 3.2.3) based upon data collected by Gobler and the nitrogen loading analysis performed by the CWMP.

The estimated watershed for the entire watershed and southern Three Mile Harbor is presented on Figure 3-6 and 3-7 respectively.

Due to the harmful algae in the southern area of the Harbor, it is recommended that remediation efforts begin in that area.

The following corrective actions are recommended to address the eutrophic conditions in southern 3 Mile Harbor. The blend of the options that achieves the desired water quality at the lowest cost needs to be determined.

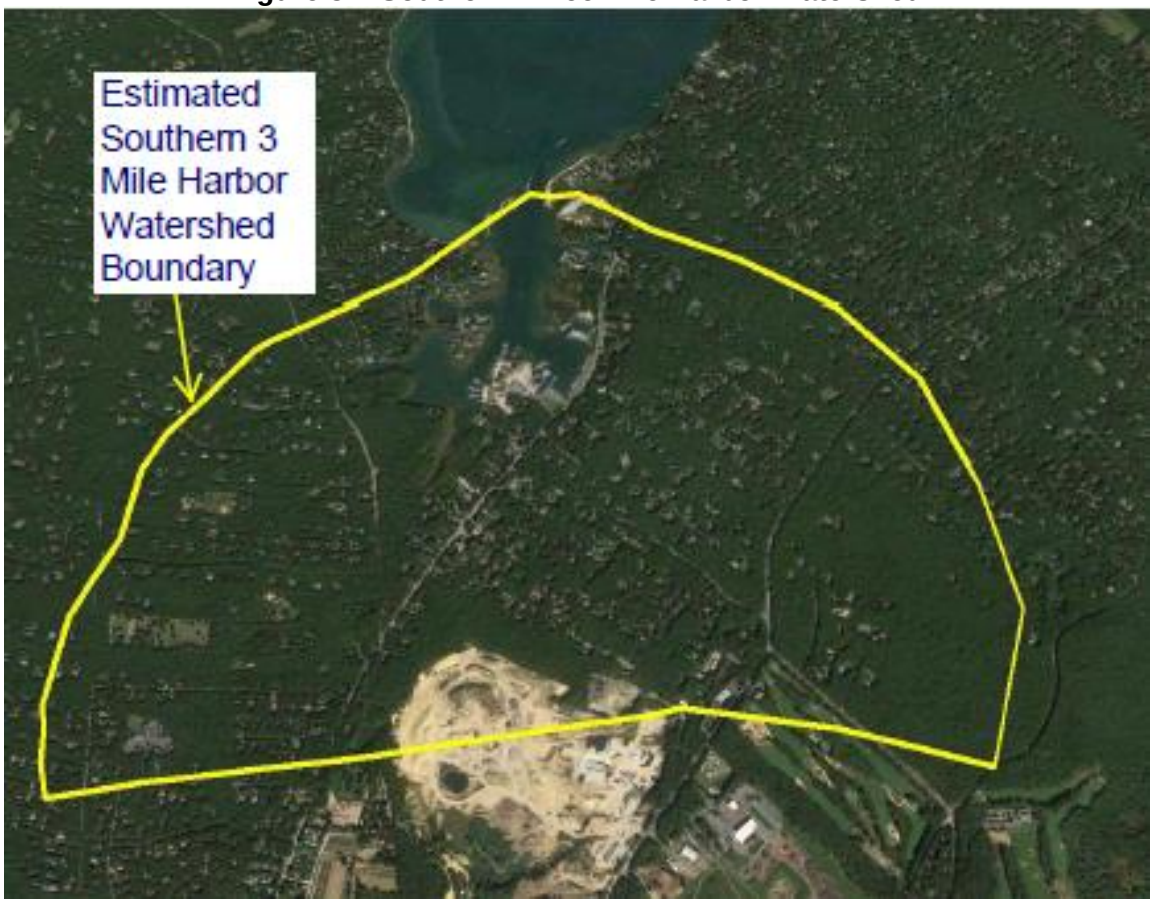
- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen removal in the following areas:

    a. Three Mile Harbor Road - where it is estimated the PRB could remove significant proportion of nitrogen being discharged from properties in the eastern portion of the Harbor's watershed
    b. Springs Bank Road where it is estimated the PRB could removal significant proportion of nitrogen being discharged from properties in the western portion of the Harbor's watershed.

2. Demonstration projects on the use of oyster/shellfish aquaculture as a nitrogen removal tool
3. Individual on-site nitrogen removal systems and sewering with nitrogen removal for neighborhood/areawide systems may be needed to supplement the other options
4. Require the use of organic fertilizers in the watershed
5. Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality

Figure 3-6 Three Mile Harbor Watershed

Figure 3-7 Southern Three Mile Harbor Watershed



3.6 VILLAGE BUSINESS AREA

The Village Business Area is a small area within the Village where commercial properties are concentrated. This area is within the Hook Pond watershed, and is included in areas under consideration for a neighborhood collection, treatment and disposal system.

Figure 3-8 presents the Village Business District. There appear to be numerous potential sites for purified water reuse, including two school ballfields within the sub-study area and a golf course to the south on Hook Pond. In addition, there are nurseries adjacent to the area immediately to the northwest. Locating a treatment site that complies with the 200-ft setback to buildings may be challenging for this needs area or may require setback variances. With variances, the numerous parking lots could be used for treatment and disposal.

Figure 3-8 Village Business Area

PONDS

Georgica Pond, Hook Pond and Fort Pond have been identified as having water quality degradation due to excessive nutrients. As no watershed studies have been performed on these Ponds to serve as a basis for determining the amount of nutrients that need to be removed so that the proper corrective actions can be developed, only very preliminary analysis can be made at this time. Simplistic Total Maximum Daily Load (TMDL) estimates have been made as an initial approximation on the amount of nitrogen and phosphorus removal that may be required.

3.7 GEORGICA POND

The groundwater watershed for Georgica Pond is presented on Figure 3-9. Table 3-1 presents a summary of developed and total properties and shoreline length within the Village and Town.

Figure 3-9 Georgica Pond Watershed

Table 3-1 Georgia Pond Watershed Statistics

Georgia Pond & Watershed											
Area	No. of Properties			Total Area (acres)				Pond Shoreline Length (ft.)	Design Wastewater Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
	Dev.	Undev.	Total	Dev.	Undev.	Water	Total				
Town	1,111	312	1,423	1,813	1,187	294	3,293	14,216			
Village	224	78	302	511	141	10	663	30,700			
Total	**1,335**	**390**	**1,725**	**2,324**	**1,328**	**304**	**3,956**	**44,916**	574,892	5,977,015	9.62%
	77%	23%		59%	34%	8%					

The following corrective actions are recommended to address the eutrophic conditions in Georgica Pond:

- Require the use of organic fertilizers in the watershed
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality
- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen and phosphorus removal in the following areas:

a. Stone Road & Goose Creek Lane - where it is estimated the PRB could remove significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed
b. Georgica Road and Georgica Close Road where it is estimated the PRB could removal significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed. It is noted that In this area The Nature Conservancy owns lands that may be appropriate for the PRB application.

As these areas are within the two (2) year travel time to the Pond, the positive impact of the use of the PRB on the Pond's water quality could be noticed fairly quickly.

- Installation of shoreline buffers with native vegetation and infiltration systems to minimize direct runoff into the Pond.
- Septic system upgrades with nutrient removal as best as practical. ***It is noted that the use of the PRB may obviate the need for septic nutrient removal and consequently be very cost-effective.***

Additionally ongoing scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond

Quantitatively refine nutrient removal requirements

3.8 HOOK POND

The groundwater watershed for Hook Pond is presented on Figure 3-10. Table 3-2 presents a summary of developed and total properties within the Village and Town.

Table 3-2 Hook Pond Watershed Statistics

Hook Pond Watershed										
Area	No. of Properties & %			Total Area (acres) & % of				Design Wastewater Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
	Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
Town	1,114	252	1,366	901	218	84	1,203			
Village	1,171	109	1,280	953	213		1,166			
Total	**2,285**	**361**	**2,646**	**1,854**	**431**	**84**	**2,369**	868,916	3,739,140	23.24%
	86%	14%		78%	18%	4%				

Figure 3-10 Hook Pond Watershed

The following corrective actions are recommended to address the eutrophic conditions in Hook Pond:

- Require the use of organic fertilizers in the watershed
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality
- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen and phosphorus removal in the following areas:

a. Maidstone Lane where it is estimated that the PRB could removal significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed.

b. Village owned properties to the west of Egypt Lane that would treat flows from central portion of the watershed

As these areas are within the two (2) year travel time to the Pond, the positive impact of the use of the PRBs on the Pond's water quality could be noticed fairly quickly.

- Village Business Area Wastewater System will remove significant quantities of nitrogen and phosphorus from the Pond's watershed, as the area drains to Hook Pond
- Maidstone Golf Course maintenance need to ensure grass clippings do not enter Pond and fertilizer are properly being applied
- Septic system upgrades with nutrient removal as best as practical. ***It is noted that the use of the PRB should reduce the need for septic nutrient removal***

Additionally, concurrent scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond
- Quantitatively refine nutrient removal requirements

3.9 FORT POND

The groundwater watershed for Fort Pond is presented on Figure 3-11. Table 3-3 presents a summary of Fort Pond watershed statistics.

The following corrective actions are recommended to address the eutrophic conditions in Fort Pond:

- Require the use of organic fertilizers in the watershed, especially at ballfields
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality
- Septic system upgrades with nutrient removal especially for commercial properties, such as Surf Lodge, which is on the Pond's shoreline. Montauk school wastewater system may be discharging to Fort Pond and could be a large nutrient source. Sewerage system with discharge outside of watershed may be necessary.
- Montauk Center Wastewater System will remove significant quantities of nitrogen and phosphorus from the Pond's watershed

Additionally ongoing scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond
- Quantitatively refine nutrient removal requirements

Figure 3-11 Fort Pond Watershed

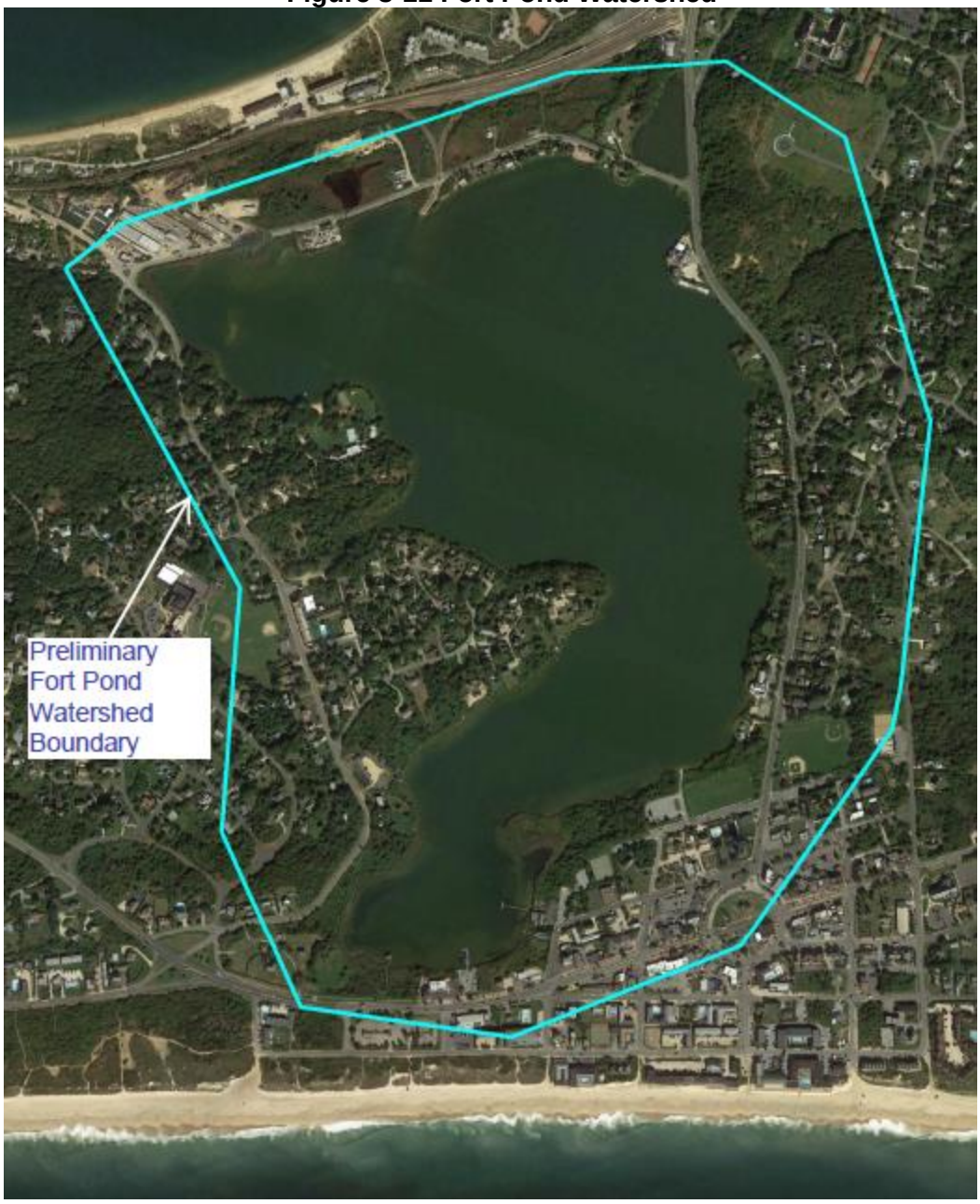


Table 3-3 Fort Pond Watershed Statistics

Fort Pond Watershed									
No. of Properties & % of Total			Total Area (acres) & % of Total				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
288	92	380	330	46	180	556	191,330	614,768	31.12%
76%	24%		59%	8%	32%				

3.10 SUMMARY

A summary of proposed improvements by study sub-area for Phase I are presented on Table 3-4. As a result of the watershed studies and demonstration projects, additional improvements, especially for the Ponds, are expected will be necessary.

Table 3-4 Summary of Proposed Improvements – Phase I

Study Sub-Area	# of Dev. Prop.	Description of Basic Improvements		Flow as % of Total	
				Top 10	Top 20
1. Montauk Center	114	Alternative small diameter collection system	Treatment & disposal locally or at Montauk Manor-Fire Dept. site, with prospective golf course irrigation reuse	39%	63%
2. The Docks	64			61%	80%
3. Ditch Plains	276				
4. Camp Hero	28	Wastewater System Improvements			
				Top 5	**Top 10**
5. South 3-Mile	61	Alternative small diameter collection system	Treatment & disposal locally with irrigation reuse integrated	39%	45%
				Top 10	**Top 20**
6. Village Business	325			30%	44%
7. Georgica Pond Watershed	1,335	Baseline In-Pond & Watershed Studies / PRB demonstration Projects		21%	29%
8. Hook Pond Watershed	1,960				
9. Fort Pond Watershed	250				
10. Individual Onsite	3,928	Repair / replace malfunctioning systems			
Totals	**8,341**				

3.11 COSTS

The numerous variables that affect project and user charges are listed on Table 3-5. The relationship between an Equivalent Dwelling Unit (EDU) (= 1 Residential Unit = 300 gpd) and other types of wastewater generators is presented on Table 3-6.

Table 3-7 presents the preliminary cost estimates for community wastewater systems that achieve the highest level of nitrogen removal (i.e. effluent Total Nitrogen 3 mg/l) for:

1. Montauk Center
2. Docks
3. Ditch Plains

} Opportunity for reuse of purified water at golf course

4. Southern Three Mile Harbor
5. Village Business District - opportunity for water reuse

Combined amortized capita costs and annual O&M costs are provided for the financing options of:

20 years @ 2.7% interest rate and 30 years @ 2.7% interest rate

Table 3-5 Cost Considerations

Wastewater Management Systems - Cost Considerations	
	Comments
Capital Costs ($/EDU)	CWMP project costs include property connection - not included in conventional systems & comparables
Annual O&M ONLY ($/EDU)	At some point, need to include equipment replacement funding
Grants / Cost sharing by others	Cost sharing local decision
% of Capital Costs Paid at Connection	Local decision
% of Capital Costs to be Amortized	Balance to be mortgaged
Amortization Period (yrs)	usually 20 or 30 years
Interest Rate	Town rate of 2.7% very competitive

Table 3-6 EDU Equivalencies for Various Commercial Establishments

1 EDU=300 gpd		Units Per EDU
Restaurant / seats		10
Store Floor Area	**Wet Goods / 100 ft^2**	20
	Dry Goods / 100 ft^3	100
Per Motel unit	**> 400 sf w/o kitchenette**	2
	> 400 sf w/kitchenette	1.33
Per Apart. / condo 601 - 1,200 sf		1.33

Table 3-7 Recommended Wastewater System & Pond Watershed Improvement Capital, Annual O&M and User Fee Cost Estimates

Montauk Center Wastewater System - Preliminary Cost Estimates & User Charges - No grants								
416	Total	Per EDU 1 EDU=300 gpd	Restaurant / seat	Store Floor Area		Per Motel unit		Per Apart. / condo 601 - 1,200 sf
# of EDU in SubArea				Wet Goods / 100 ft^2	Dry Goods / 100 ft^3	> 400 sf w/o kitchenette	> 400 sf with kitchenette	
Capital Costs	$ 15,585,000	$ 37,464	$ 3,746	$ 1,873	$ 375	$ 18,732	$ 28,168	$ 28,168
Annual O&M Costs	$ 240,994	$ 579	$ 58	$ 29	$ 6	$ 290	$ 436	$ 436
Combined Amortized Capital Costs (@20 yrs. & 2.7%) & Annual O&M		$ 3,028	$ 303	$ 151	$ 30	$ 1,514	$ 2,277	$ 2,277
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 2,417	$ 242	$ 121	$ 24	$ 1,209	$ 1,818	$ 1,818

Montauk Docks Wastewater System - Preliminary Cost Estimates & User Charges - No grants								
622	Total	Per EDU 1 EDU=300 gpd	Restaurant / seat	Store Floor Area		Per Motel unit		Per Apart. / condo 601 - 1,200 sf
# of EDU in SubArea				Wet Goods / 100 ft^2	Dry Goods / 100 ft^3	> 400 sf w/o kitchenette	> 400 sf with kitchenette	
Capital Costs	$ 18,083,000	$ 29,072	$ 2,907	$ 1,454	$ 291	$ 14,536	$ 21,859	$ 21,859
Annual O&M Costs	$ 251,988	$ 405	$ 41	$ 20	$ 4	$ 203	$ 305	$ 305
Combined Amortized Capital Costs (@20 yrs. & 2.7%) & Annual O&M		$ 2,305	$ 231	$ 115	$ 23	$ 1,153	$ 1,733	$ 1,733
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 1,831	$ 183	$ 92	$ 18	$ 916	$ 1,377	$ 1,377

Ditch Plains Wastewater System - Preliminary Cost Estimates & User Charges - No grants		
258	Total	Per EDU 1 EDU=300 gpd
# of EDU in SubArea		
Capital Costs	$ 10,633,000	$ 41,213
Annual O&M Costs	$ 144,624	$ 561
Combined Amortized Capital Costs (@20 yrs. & 2.7%) & Annual O&M		$ 3,254
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 2,583

Village Business Area Wastewater System - Preliminary Cost Estimates & User Charges - No grants								
524	Total	Per EDU 1 EDU=300 gpd	Restaurant / seat	Store Floor Area		Per Motel unit		Per Apart. / condo 601 - 1,200 sf
# of EDU in SubArea				Wet Goods / 100 ft^2	Dry Goods / 100 ft^3	> 400 sf w/o kitchenette	> 400 sf with kitchenette	
Capital Costs	$ 19,875,000	$ 37,929	$ 3,793	$ 1,896	$ 379	$ 18,965	$ 28,518	$ 28,518
Annual O&M Costs	$ 249,228	$ 476	$ 48	$ 24	$ 5	$ 238	$ 358	$ 358
Combined Amortized Capital Costs (@20 yrs. & 2.7%) & Annual O&M		$ 2,955	$ 295	$ 148	$ 30	$ 1,477	$ 2,222	$ 2,222
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 2,336	$ 234	$ 117	$ 23	$ 1,168	$ 1,757	$ 1,757

South 3 Mile Harbor Wastewater System - Preliminary Cost Estimates & User Charges - No grants		
83	Total	Per EDU 1 EDU=300 gpd
# of EDU in SubArea		
Capital Costs	$ 4,426,000	$ 53,325
Annual O&M Costs	$ 61,525	$ 741
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 4,227
Combined Amortized Capital Costs (@30 yrs. & 2.7%) & Annual O&M		$ 3,357

Georgica, Hook & Fort Ponds Placeholder Budgets				
		Georgica	Hook	Fort
Watershed Studies	Basic	$ 150,000	$ 150,000	$ 75,000
	TMDL	$ 300,000	$ 250,000	$ 125,000
PRB Demonstration Projects		$1,000,000 +/-	$1,000,000 +/-	n/a
Wastewater Improvements		TBD	TBD	TBD
Others		TBD	TBD	TBD

Watershed and TMDL studies are needed to determine the required nitrogen & phosphorus removal requirements. These are the basis for determining the required removals and optimal means to achieve the requirements. PRBs are less costly than wastewater improvements for Nitrogen or phosphorus removal and demonstration projects are strongly recommended. Budgets for demonstration projects require a min. of $500,000 and can be as large as desired.

Table 3-8 presents a summary of the **initial** proposed neighborhood wastewater system improvements and comparison to recent SCDPW wastewater projects.

Table 3-8 Recommended Neighborhood Wastewater Systems and Comparison to Comparable Systems

						Per EDU Costs		Proposed EH Costs as % of Comparable	
Sub-Study Area	**Flow**	**EDUs**	**# of Dev. Properties**	**Capital Cost**	**Annual O&M Cost**	**Capital Cost**	**Annual O&M**	**Capital Cost**	**Annual O&M**
Montauk Center	124,745	416	114	$15,585,000	$240,994	$37,500	$580	52%	62%
Montauk Docks	186,720	622	64	$18,083,000	$251,988	$29,100	$410	40%	44%
Ditch Plains	77,275	258	276	$10,633,000	$144,624	$41,300	$570	57%	61%
Village Business Area	157,209	524	325	$19,875,000	$249,228	$38,000	$480	52%	51%
South 3-Mile Harbor	25,012	83	61	$4,426,000	$61,525	$53,100	$740	73%	79%
Nearby Comparable Systems Developed by SCDPW									
Village of Southhampton	120,000	400	99	$29,000,000	$348,500	$72,500	$880		
Village of Bellport	160,000	533	128	$38,900,000	$525,000	$73,000	$990		

In addition to the Table 3-7 recommended wastewater system improvements, funding is recommended for:

1. Georgica, Hook & Fort Ponds nitrogen and phosphorus removal demonstration projects and watershed and TMDL studies with recommended budgets presented on table 3-6.

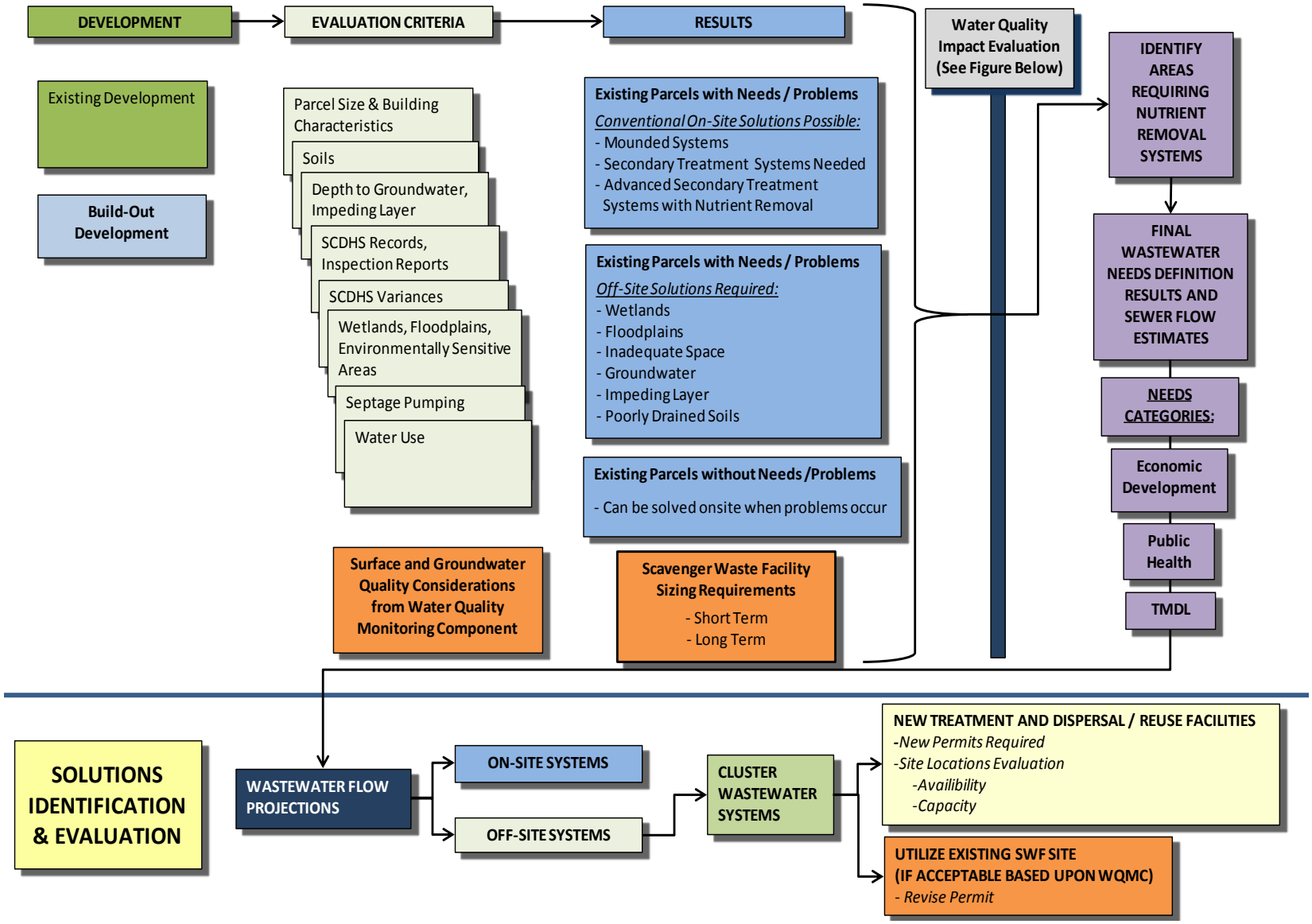
2. Individual system upgrades

3. Establishment of a Town wastewater management entity

APPENDIX METHODOLOGY AND SUMMARY

- Project Methodology
- Final Solutions Scorecard Matrix by Sub-study Area

Project Methodology



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Final Solutions Scorecard Matrix by Sub-study Area

Study Area	Sub-Area	Water Quality Issues	Proposed Solution(s)	Sub-Area	No. of Properties	Flow (gpd)	Capital Budget	Comments / Notes
Montauk	Montauk Center	Nitrogen & phosphorus contamination of Fort Pond, Excess Septic Pumping - Public Health	Neighborhood wastewater system	**Montauk Center**	**114**	**124,745**	**$ 15,585,000**	
	Ditch Plains	Lake Montauk - south, bathing ban. Nitrogen & Bacterial contamination	Neighborhood wastewater system	**Ditch Plains**	**276**	**$ 77,275**	**$ 10,633,000**	
	Docks	Nitrogen & Bacterial contamination of Lake Montauk. Excessive septic pumping - public health hazard	Neighborhood wastewater system	**Docks**	**64**	**$ 186,720**	**$ 18,083,000**	
	Camp Hero	Malfunctioning wastewater system.	Upgrade required					
Accabonac Harbor	Entire harbor, shoreline properties in particular	Nitrogen & Bacterial contamination	Septic system upgrades required. Spring School largest wastewater & nitrogen source. Good candidate for demo project for advanced denit system & PRB for nitrogen removal					
3 Mile Harbor	Southern Harbor, in particular	Nitrogen contamination	Neighborhood wastewater system. Boat / marina discharges suspected	**Southern 3 Mile Harbor**	**61**	**$ 25,012**	**$ 4,426,000**	
Northwest Harbor	Northeast area - NW Landing Road	Bacterial contamination suspected to be from waterfowl						
Springs	a. Gardiner's Avenue from Springs Fireplace Rd to Three Mile Harbor Rd b. Fort Pond Blvd from Springs Fireplace Road to Three Mile Harbor Road and continuing to Maidstone Park Road /Gardiners Bay c. Areas downgradient of SWF / Landfill encompassing Harbor View Avenue on south side,	Nitrogen contamination of 3 Mile Harbor and Accabonac Harbor. Lack of 100 foot separation between wells and septic	TBD					
Hook Pond	Village Business Area	Nitrogen & phosphorus contamination	Village Business Area wastewater system.	**Village Business Area**	**325**	**157,209**	**$ 19,875,000**	
	Properties on Egypt Lane		PRB for nitrogen & phosphorus removal - demonstration project	PRB demonstration project	$ 1,000,000	These are placeholders amounts		
			Pond scientific studies	Pond scientific studies	$ 400,000			
Georgica Pond	Entire watershed	Nitrogen, phosphorus & bacterial contamination	Watershed Management Plan	Watershed Plan	$ 300,000	These are placeholders amounts		
			PRB for nitrogen & phosphorus removal	PRB demonstration project	$ 1,000,000			
		Flooding	Pond scientific studies		$ 150,000			

Study Area	Sub-Area	Water Quality Issues	Proposed Solution(s)	Sub-Area	No. of Properties	Flow (gpd)	Capital Budget	Comments / Notes
Fort Pond	Entire watershed	Phosphorus contamination	Watershed Management Plan	Watershed Plan	$ 75,000	These are placeholders amounts		
			Montauk School and major commercial properties likely significant phosphorus contributors. Good candidiates for upgrades/demo projects	PRB demonstration project	TBD			
			Pond scientific studies		$ 125,000			
SPDES Permit Upgrades	112 candidate properties							
Cesspool Upgrades	Properties serving 20+ people must upgrade. Federal law required upgrades as of 2005							
Town-wide	Areas with substandard systems that can be upgraded on-site.	Nitrogen, Phosphorus & Bacterial contamination	Septic System Inspection & Repair on Property Transfer					

WORKING DRAFT

Task Report

Community Profile Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

December 17, 2013

With team members:

FPM group

WOODS HOLE GROUP

5.2 Assessor's Data 98
5.3 Parcel Attributes 99
6 WASTEWATER MANAGEMENT PRACTICES 101
6.1 Historical Practices in East Hampton 101
6.2 Existing Wastewater Treatment Systems & Large Septic Systems 102
6.3 Camp Hero Wastewater System 107
6.4 Grease Traps 108
7 SCAVENGER WASTE MANAGEMENT 109
7.1 Scavenger Waste Background 109
7.2 Scaveneger Waste Pumping Fees 109
7.3 Historical & Existing Flows 109
7.4 Scavenger Waste Carters 113
7.5 Alternate Scavenger Waste Treatment Facilities 113
8 MARINA PUMPOUTS 114
8.1 Marina Pumpout Facilities 114
8.2 Marina Pumpout Quantities 114
9 RELEVANT GOVERNMENTAL ENTITIES 116
9.1 Trustees 116
9.2 Suffolk County Department of Health Services 116
9.3 NYSDEC 116
10 TOWN OF EAST HAMPTON MANAGEMENT STRUCTURE 118
10.1 Management Organization 118
11 FINDINGS 120
12 RECOMMENDATIONS 122

List of Figures

Figure 2-1 East Hampton Existing Land Use, July 2013 8
Figure 2-2 Percent of Occupied and Vacant Housing by School District 11
Figure 2-3 East Hampton Zoning Map 15
Figure 2-4 Critical Environmental Areas 16
Figure 2-5 Recommended CPF Acquisition Properties - 2011 18
Figure 2-6 East Hampton Harbor Protection District 31
Figure 3-1 East Hampton Soils Categorization 47
Figure 3-2 East Hampton Surficial Geology 48
Figure 3-3 East Hampton Topography 51
Figure 3-4 FEMA Floodplains in East Hampton 52
Figure 3-5 SLOSH Areas in East Hampton 53
Figure 3-6 DEC Wetlands in East Hampton 54
Figure 3-7 Long Island Water Cycle & Generalized Groundwater Flow Directions 55
Figure 3-8 East Hampton Groundwater Elevations & Peconic – Atlantic Ocean Boundary 58
Figure 3-9 East Hampton Major Groundwater Watershed Boundaries 59
Figure 3-10 East Hampton Groundwater Travel Times 60
Figure 3-11 Depth to Groundwater 61
Figure 3-12a Fireplace-Springs Road Landfill & SWF GW Monitoring Well – Locations & Data 65
Figure 3-12b SWF - Landfill Modelled Groundwater Pathways 66
Figure 3-12c East Hampton Wells & Nitrate Concentrations 69
Figure 3-13 East Hampton Water Susceptibility Rating for VOCs 69
Figure 3-14 East Hampton Landfills & Scavenger Waste Facility Locations 70
Figure 3-15a Coastal Waters Sampling Locations-2010 SCDHS Report 71
Figure 3-15b Coastal Waters Sampling Locations-Nov. 2012 SCDHS Report 71

Working Draft

Figure 3-16 Peconic Estuary Watersheds with Pathogen Impairment 77
Figure 4-1 East Hampton SCWA Public Water Supply Distribution Water Mains 85
Figure 4-2 East Hampton properties Served by SCWA Public Water 86
Figure 4-3 East Hampton properties Served by Private Wells 87
Figure 4-4 East Hampton Properties with Multiple Water Meters 90
Figure 7-1 SWF Layout & Groundwater Monitoring Wells 110
Figure 10-1 Town of East Hampton Organizational Chart 119

List of Tables

Table 2-1 East Hampton Land Use Codes and Descriptions 6
Table 2-2 East Hampton Land Use Totals & by School District 6
Table 2-3 East Hampton 1970 -2010 Population and Demographics 7
Table 2-4a East Hampton Housing Information 1970 -2010 7
Table 2-4b East Hampton Housing Units 1990–2010 by Census Area 9
Table 2-5 East Hampton 2010 Housing Units – Occupied, Vacant & Seasonal 10
Table 2-6 East Hampton Residential Buildout 2005 & 2011 10
Table 2-7 East Hampton Median Home Prices, Median Household Income & Household Income Brackets 11
Table 2-8 Mean Household Size by School District 12
Table 2-9 East Hampton Zoning Categories & Districts 13
Table 2-10 East Hampton Non-Conforming Land Use Information 13
Table 2-11 CPF Revenues 17
Table 2-12 East Hampton Tax & Revenue Data- 2012 & 2013 Budget 19
Table 2-13 East Hampton Financial Metrics 20
Table 2-14 East Hampton Financial Capability Score 23
Table 2-15 Major Employers in the Town of East Hampton 24
Table 2-16 East Hampton Lot Sizes – Existing Developed Properties 39
Table 2-17 East Hampton Lot Sizes – Buildout Developed Properties* 39
Table 3-1 Soils Categories and Proposed Wastewater Management Solution 42
Table 3-2 Soils Types and Needs/Solutions Categories 43
Table 3-3 Soils Categories by School District 46
Table 3-4 East Hampton Surficial Geology 46
Table 3-5 East Hampton Groundwater Watershed Water Balances 57
Table 3-6 Projected Sea Level Rise on Long Island 62
Table 3-7a Groundwater Quality – SWF & Landfill Areas 64
Table 3-7b SWF Groundwater Sampling Results – Oct. 16, 2013 73
Table 3-8 SWF Deep Groundwater Well Log 74
Table 3-9 SWF Leaching Pool Chemical Analysis – Oct. 16, 2013 75
Table 3-10 East Hampton Impaired Waterbodies 76
Table 3-11 Georgica Pond Subwatersheds Fecal Coliform Sources and TMDL Required Removal Summary 79
Table 3-12 East Hampton Subwatersheds Fecal Coliform Sources and TMDL Required Removal Summary 80
Table 3-13 NYS Fresh and Marine Water Classifications 81
Table 3-14 Surface Water Quality Evaluation Criteria 81
Table 4-1 Parcels on Public Water & Individual Wells 83
Table 4-2 Parcels with Water Service and Average Daily Water Use by District 83
Table 4-3a Water Use by Land Use 84
Table 4-3b Number of Parcels in Water Use Ranges 84
Table 4-4 SCWA Raw Water Use Data 88
Table 4-5 Average Daily Water Use by Period 91

Working Draft

Table 4-6 Average Summer Water Use (gpd) 92
Table 5-1 Sources for Project GIS Data 97
Table 5-2 Parcel Attributes 100
Table 6-1 Assessor's Building Age Data and Assumed Disposal System Type 102
Table 6-3 Sewer Systems & Wastewater Treatment Systems in East Hampton 103
Table 6-2 SPDES Permits in East Hampton 104
Table 7-1 SWF Flows 2004 – 2013 111
Table 7-2 SWF Annual Flows Town & STES Data and July – August 2011 – 2013 Daily Flows 112
Table 8-1 EH Marina Pump Out Facilities 114
Table 8-2 Trustees Boats Pump Out Quantities 2010 115
Table 10-1 Key Wastewater-Scavenger Waste Management Activities & Responsible EH Town Departments 118
Table 11-1 Community Profile Recommendations 122

YELLOWED HIGHLIGHTED ITEMS ARE PLACEHOLDERS AND/OR ITEMS REQUIRING UPDATING

Working Draft

1 INTRODUCTION

This community profile provides a summary of the social, economic and environmental issues specific to East Hampton that effect or are affected by wastewater management practices. The purpose of the community profile is to provide background information and the proper context for the East Hampton Comprehensive Wastewater Management Plan which has the following components:

- ✓ Wastewater Management
- ✓ Scavenger Waste Facility
- ✓ Water Quality Monitoring Component.

The Community Profile is organized in the following sections of this Report:

2. Land Use & Demographics
3. Natural Resources
4. Water Supply
5. Wastewater Management Practices
6. GIS & Assessors data
7. Scavenger Waste Management – with a separate report on this issue
8. Marina Pumpouts
9. Relevant Government Entities
10. Town Management Structure
11. Recommendations

Full scale versions of project maps are accessible via the project website www.EHWaterRestore.com.

Working Draft

2 LAND USE AND DEMOGRAPHICS

2.1 LAND USE

The area of the Town of East Hampton, excluding surface waters and transportation areas, is approximately 38,720 acres or 60.4 square miles. Table 2-1 presents the general Land Use Codes and brief descriptions of each category. Table 2-2 presents the 2010 Land Use in East Hampton. Residential development is composed of the three classifications of low, medium and high density, and cumulatively represent 42% of the total Town area.

Table 2-1 East Hampton Land Use Codes and Descriptions

Code	Title	Description
100	Agricultural	Property used for the production of crops or livestock.
200	Residential	Property used for human habitation. Living accommodations such as hotels, motels, and apartments are in the Commercial category
300	Vacant Land	Property that is not in use, is in temporary use, or lacks permanent improvement.
400	Commercial	Property used for the sale of goods and/or services.
500	Recreation & Entertainment	Property used by groups for recreation, amusement, or entertainment.
600	Community Services	Property used for the well being of the community.
700	Industrial	Property used for the production and fabrication of durable and nondurable man-made goods
800	Public Services	Property used to provide services to the general public.
900	Wild, Forested, Conservation Lands & Public Parks	Reforested lands, preserves, and private hunting and fishing clubs

Table 2-2 East Hampton Land Use Totals & by School District

(Source: East Hampton Planning Dept, 2013)

Land Use	
Physical Characteristics	**2010**
Land Area (acres)	38,720
Total Residential Lots	18,382
Mean Residential Lot Size (acres)	1.01
Land Use Type	Percentage
Residential	42%
Commercial, Industrial & Institutional	4%
Recreational Open Space	42%
Agricultural	4%
Vacant	8%

Land Use (by School Districts)

Land Mass			Land Use							
			Residential			Commercial		Open Space	Agricultural	Vacant
School District	Area (acres)	Total Lots	Total # of Res. Lots	Mean Res. Lot Size (acres)	% Res. Land Area	Total # of Com., Ind. & Inst. Lots	% Com., Ind. & Inst. Land Area	% Open Space Land Area	% Agricultural Land Area	% Vacant Land Area
Amagansett	5,886	2,859	2,118	1.04	37%	120	3%	47%	6%	7%
East Hampton	14,334	9,389	7,128	1.08	54%	454	4%	29%	5%	8%
Montauk	9,937	5,184	3,878	0.55	22%	358	3%	70%	<1%	5%
Springs	4,818	5,478	4,383	0.69	63%	73	6%	21%	<1%	9%
Wainscott	3,745	1,341	875	1.46	34%	106	7%	36%	9%	11%
Town-Wide	**38,720**	**24,251**	**18,382**	**1.01**	**42%**	**1111**	**4%**	**42%**	**4%**	**8%**

Figure 2-1 presents East Hampton Land Use on a parcel by parcel basis as prepared by the Town and is current as of June 2013. Table 2-3 presents historical and 2010 Populations and Demographics as prepared by the East Hampton Planning Department based upon the 2010 U.S. Census. Table 2-4a presents Town wide housing information with Table 2-4b presenting the data by the various Town census areas.

Table 2-3 East Hampton 1970 -2010 Population and Demographics

Population & Demographics	1970"	1980"	1990*	2000**	2010***
Year-Round Population	10,980	14,029	16,132	19,719	21,457
Percentage of Population Under the Age of 18					
Amagansett			NA	18%	17%
East Hampton			NA	22%	22%
Montauk			NA	20%	17%
Springs			NA	22%	22%
Wainscott			NA	19%	20%
Town Average:			*20%*	*21%*	*20%*
Total Number of Families			4,342	5,038	5,257
Number of Families with Children <18 yo			NA	2,180	2,220
Mean Family Size			2.32	2.97	3.05
Percentage Black or African American (only)			4%	4%	3%
Percentage Hispanic or Latino (only)^			5%	15%	26%
Percentage White (only)			90%	78%	69%
Percentage All Other Races (combined)			1%	3%	2%

Table 2-4a East Hampton Housing Information 1970 -2010

Housing	1970"	1980"	1990*	2000**	2010***
Total Housing Units	7,945	12,971	17,068	19,640	22,874
Percentage Occupied (1),		58%	40%	41%	40%
Percentage Vacant (2),		42%	60%	59%	60%
Occupied Housing Units (1)			6882	8101	8943
Owner Occupied			93%	90%	90%
Renter Occupied			7%	10%	10%
Vacant Housing Units (2)			10,186	11,539	13,931
Percentage Seasonal			87%	93%	90%
Percentage All Other			13%	7%	10%
Total Registered Affordable Housing Units (3)			NA	NA	330

Figure 2-1 East Hampton Existing Land Use, July 2013

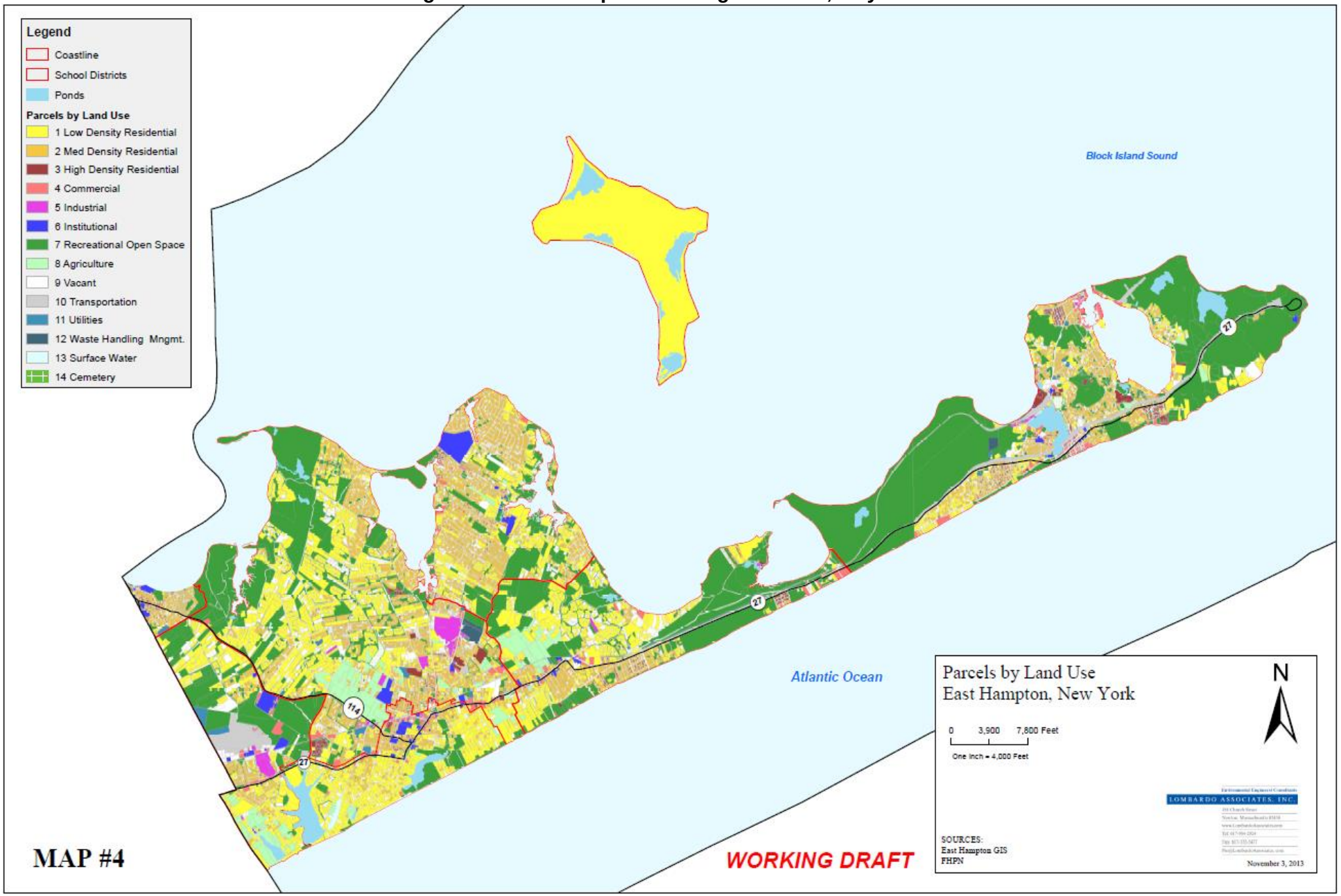


Table 2-4b East Hampton Housing Units 1990–2010 by Census Area

Area	# Housing Units in 1990	# Housing Units in 2000	# Housing Units in 2010	Additonal Housing Units 2000-2010	% Change
East Hampton Town (entire)	**17,068**	**19,640**	**22,874**	**3,234**	**14.1%**
Sag Harbor Village	782	848	1,941	**1,093**	**56.3%**
East Hampton Village	1,684	1,745	1,836	**91**	**5.0%**
Amagansett	1,504	1,664	1,790	**126**	**7.0%**
East Hampton North	1,889	2,251	2,545	**294**	**11.6%**
Montauk	3,996	4,815	4,666	**-149**	**-3.2%**
Napeague	803	624	762	**138**	**18.1%**
Northwest Harbor	2,310	3,008	3,394	**386**	**11.4%**
Springs	3,459	3,878	4,340	**462**	**10.6%**
Wainscott	631	764	876	**112**	**12.8%**
Remainder of Town	10	43	724	**681**	**94.1%**

(Source: US Census Data, 2010)

Table 2-2 presents the following Town demographics, from US Census, which are relevant to wastewater and scavenger waste management planning:

- Average household size in East Hampton was 2.54.
- 29.0 % of all households were single-person households
- 27.2 % of all households had at least one person 65 years old and over
- Number of housing units identified as vacant and used seasonally was 10,693
- Percent of Families Below Poverty Level was 6.7 %

Table 2-5 presents 2010 data on occupied, vacant and seasonally used housing units by Village and School District. As can be seen, 54.2% of East Hampton's housing units are seasonally used.

Table 2-6 presents residential buildout projections by School District as of 2005 and 2011 as prepared by the EH Planning Department. As shown on Table 2-6 there has been a 49% reduction in residential buildout from 2005 to 2011. 2011 residential buildout of 2,743 units represents approximately 11.5% of the Town's maximum buildout housing units.

According to the Town's Planning Department, the 2013 total number of potential additional buildout housing units is 2,871 (including Village) and 2,260 (excluding Village). The Village buildout is expected to be revised down upon detailed analysis. The 2,260 buildout is approximately a 17% reduction from the 2011 Table 2-6 estimates and is approximately 10% of the existing housing units.

Figure 2-2 presents the Percent of Occupied and Vacant Housing by School District

Working Draft

Table 2-5 East Hampton 2010 Housing Units – Occupied, Vacant & Seasonal

Area	Average Household Size	Single-person Households	Households with at least one person over 65	Households Vacant and Used Seasonably	Households w/ at least 1 person over 65 as % of All Households	Single Family Housholds as % of All Housholds
East Hampton Town (excluding incorporated Village)	2.54	2,442	2,843	11,366	29.8%	25.6%
East Hampton Village	2.03	207	268	1,168	2.8%	38.8%
Sag Harbor Village	2.15	392	360	823	3.8%	70.3%
Totals		**2,649**	**3,111**	**13,357**	**32.6%**	**27.8%**

School District	Total Households	Total Housing Units	Occupied Housing Units	Total Vacant Housing Units	Vacant Seasonal Housing Units	Seasonal Housing as % of All Housing Units
East Hampton	3,381	7,772	3,381	4,391	3,932	50.6%
Amagansett	620	2,552	620	1,932	1,783	69.9%
Montauk	1,422	4,666	1,422	3,244	2,942	63.1%
Springs	2,318	4,342	2,318	2,024	1,783	41.1%
Wainscott	269	913	269	644	577	63.2%
East Hampton Village	533	1,836	533	1,303	1,168	63.6%
Sag Harbor Village	1,000	1,941	1,000	941	823	42.4%
	9,543	**24,022**	**9,543**	**14,479**	**13,008**	**54.2%**

(Source: US Census Data, 2010)

Table 2-6 East Hampton Residential Buildout 2005 & 2011

Potential Residential Build-Out

2005*

School District	Non-Divisible Vacant Units	Potential Units from UR Maps	Potential Units from Vacant Divisible	Total Potential Res. Build-Out
East Hampton	758	365	460	1,583
Wainscott	144	27	177	348
Amagansett	377	28	353	758
Springs	639	209	829	1,677
Montauk	658	260	102	1,020
Total	**2,576**	**889**	**1,921**	**5,386**

2011**

School District	Non-Divisible Vacant Units	Potential Units from UR Maps	Potential Units from Vacant Divisible	Total Potential Res. Build-Out	Existing Housing Units***	Potential Maximum Number of Housing Units
East Hampton	596	235	77	908	8,604	9,512
Wainscott	144	10	24	178	876	1,054
Amagansett	283	26	94	403	2,552	2,955
Springs	487	117	27	631	4,340	4,971
Montauk	444	149	30	623	4,666	5,289
Total	**1,954**	**537**	**252**	**2,743**	**21,038**	**23,781**
Change	622	352	1,669	2,643		
% Change	24%	40%	87%	**49%**		

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Figure 2-2 Percent of Occupied and Vacant Housing by School District

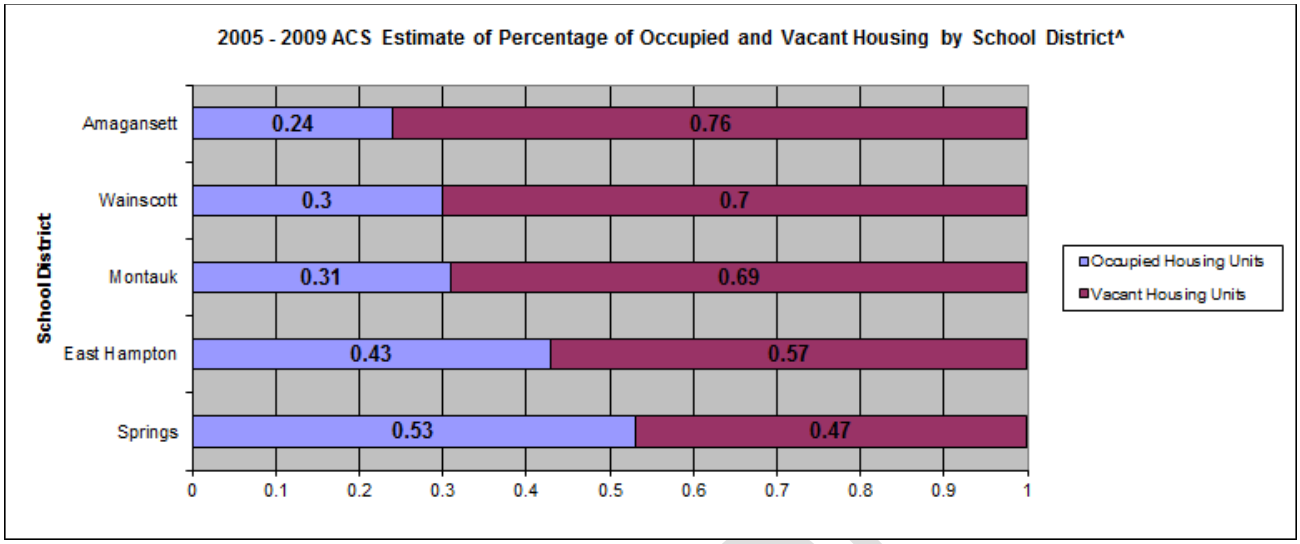


Table 2-7 presents data provided by the East Hampton Planning Department of median home prices, median household income and household income by income brackets, by School Districts and Town average. According to the US Census, the 2011 East Hampton median household income is $76,054. Mean household size by School District is presented on Table 2-8. Property is assessed at approximately 0.73% of valuation. 2013 property taxes are computed based upon the mil rate of $286.81/ $1,000 of assessed valuation.

Table 2-7 East Hampton Median Home Prices, Median Household Income & Household Income Brackets

Affordability

Median Home Price	Amagansett	East Hampton	Montauk	Springs	Wainscott	Town Average
1990*	NA	NA	NA	NA	NA	$222,200
2000**	$449,624	$360,537	$290,400	$230,300	$464,100	$293,300
2005 - 2009***	$957,344	$916,404	$822,400	$669,200	1,000,000 +	$823,000

Median Yearly Household Income	Amagansett	East Hampton	Montauk	Springs	Wainscott	Town Average
1990*	NA	NA	NA	NA	NA	$40,063
2000**	$54,296	$53,568	$42,329	$57,038	$55,714	$52,510
2005 - 2009***	$86,647	$89,959	$72,012	$69,020	$99,219	$81,055

Households by Income Bracket***	Amagansett	East Hampton	Montauk	Springs	Wainscott	TOTAL	% of Total
$25K or less	78	482	206	257	13	1036	12%
$25K - $50K	82	659	307	590	32	1,670	20%
$50K - $75K	66	408	210	432	16	1,132	14%
$75K - 100K	90	452	177	448	48	1,215	14%
$100K or more	209	1,840	530	653	104	3,336	40%

Table 2-7 (cont.)

East Hampton, NY			
INCOME AND BENEFITS (IN 2011 INFLATION-ADJUSTED DOLLARS)	**US Census - 2011**		
Total households	8,734	8,734	Cum %
Less than $10,000	299	3.4%	3.4%
$10,000 to $14,999	172	2.0%	5.4%
$15,000 to $24,999	548	6.3%	11.7%
$25,000 to $34,999	806	9.2%	20.9%
$35,000 to $49,999	1,061	12.1%	33.0%
$50,000 to $74,999	1,438	16.5%	49.5%
$75,000 to $99,999	1,104	12.6%	62.1%
$100,000 to $149,999	1,370	15.7%	77.8%
$150,000 to $199,999	798	9.1%	87.0%
$200,000 or more	1,138	13.0%	100.0%
Total	8,734	100%	
Median household income (dollars)	$ 76,054		
Mean household income (dollars)	$ 118,191		

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL	
All families	3.7%
With related children under 18 years	7.4%
With related children under 5 years only	5.5%
Married couple families	1.7%
With related children under 18 years	3.0%
With related children under 5 years only	0.0%
Families with female householder, no husband present	23.3%
With related children under 18 years	39.1%
With related children under 5 years only	63.2%
All people	7.6%
Under 18 years	9.4%
Related children under 18 years	9.4%
Related children under 5 years	10.7%
Related children 5 to 17 years	9.1%
18 years and over	7.2%
18 to 64 years	8.1%
65 years and over	4.2%
People in families	5.3%
Unrelated individuals 15 years and over	16.7%

Table 2-8 Mean Household Size by School District

School District	Mean Family Size
East Hampton	3.07
Amagansett	2.75
Montauk	2.81
Springs	3.27
Wainscott	2.91
Town Wide	3.05

Working Draft

2.2 ZONING

Table 2-9 presents the zoning categories for East Hampton. Figure 2-3 is a Town-wide Zoning Map with detailed zoning maps, consisting of 10 sheets, available from http://www.ehamptonny.gov/HtmlPages/ZoningMaps.html. Town website maps are available at http://www.ehamptonny.gov/HtmlPages/TownMaps.html.

Table 2-9 East Hampton Zoning Categories & Districts

Zoning Code	Description	Minimum Lot Size (SF)	Maximum Lot Impervious Coverage
455	Urban Renewal Map Residence (as zoned)		
A	A Residence	40,000	40%
A2	A2 Residence	84,000	35%
A3	A3 Residence	125,000	30%
A5	A5 Residence	200,000	30%
A10	A10 Residence	425,000	18%
B	B Residence	20,000	50%
CB	CB Central Buisness	3,000	80%
CL	CI Commercial / Industrial		
CS	CS Commercial / Service		
MF	Multi-Family		
NB	NB Neighborhood Busniess		
PC	PC Park & Conservation		
RS	Resort	84,000	75%
WF	Waterfront	20,000	75%

Overlay Districts	
AHO	Afordable Housing Overlay District
AGO	Agricultural Overlay District
WRO	Water Recharge Overlay District
HPOD	Harbor Protection Overlay District
ROD	Recreational Overlay District
Historical Districts	
Amagansett Historic District	
Bluff Road Historic District	
Springs Historic District	
Montauk Historic District Association	

Table 2-10 presents a preliminary summary analysis of non-conforming land uses in East Hampton as prepared by the EH Planning Department. Caution needs to be exercised in use of the information, as the analysis is preliminary and requires further field analysis/verification.

Table 2-10 East Hampton Non-Conforming Land Use Information

Preliminary Non-Conforming Land Use in East Hampton as of June 2012 [1]				
School District	Commercial / Industrial Land Uses In Residential Zoning Districts		Residential Land Use In Commercial / Industrial Zoning Districts	
	No. Parcels	Acres	No. Parcels	Acres
East Hampton	46	196.4	18	6.3
Amagansett	25	59.1	7	2.3
Springs	11	19.1	17	17.0
Wainscott	6	10.7	1	0.4
Montauk	30	56.7	6	2.2
Total	118	341.9	49	28.1

[1] Information provided by East Hampton Planning Dept. Sept. 2013

Working Draft

2.3 CRITICAL ENVIRONMENTAL AREAS

Under NYS SEQRA, state and local agencies may designate specific geographic areas within their boundaries as Critical Environmental Areas (CEAs). The potential impact of any Type 1 or Unlisted Action on the environmental characteristics of the CEA is a relevant area of environmental concern and must be evaluated in the determination of significance under SEQRA.

CEAs in the Town of East Hampton have been designated by both Suffolk County and the Town of East Hampton and are listed on the NYSDEC website http://www.dec.ny.gov/permits/6184.html. Each of these CEAs appears to have been established, at least in part, due to groundwater concerns. The CEAs are presented on Figure 2-4, with the reasons for their listing presented below.

- **Montauk Addition,** designated by Suffolk County 2-10-88 to benefit human health and protect drinking water;

  Hither Woods, designated by Suffolk County 2-10-88 to benefit human health and protect drinking water;

- **Accabonac Harbor,** designated by Suffolk County 2-10-88 to benefit human health and protect drinking water;

- **Hither Hills Special Groundwater Protection Area,** designated by Suffolk County 4-18-93 to protect groundwater;

- **South Fork Special Groundwater Protection Area,** designated by Suffolk County 4-18-93 to protect groundwater; and

- **Water Recharge Overlay District** designated by Town of East Hampton 2-12-88 to protect groundwater and drinking water.

All of these areas are special areas under SEQR. Following designation the potential impact of any type of listed or unlisted action is a relevant area of environmental concern and must be evaluated in the determination of significance pursuant to SEQR.

The Town codes that govern certain Overlay Districts are:

- ✓ Water Recharge Overlay District: §255-3-60
- ✓ Harbor Protection Overlay District: §255-3-70

Working Draft

Figure 2-3 East Hampton Zoning Map

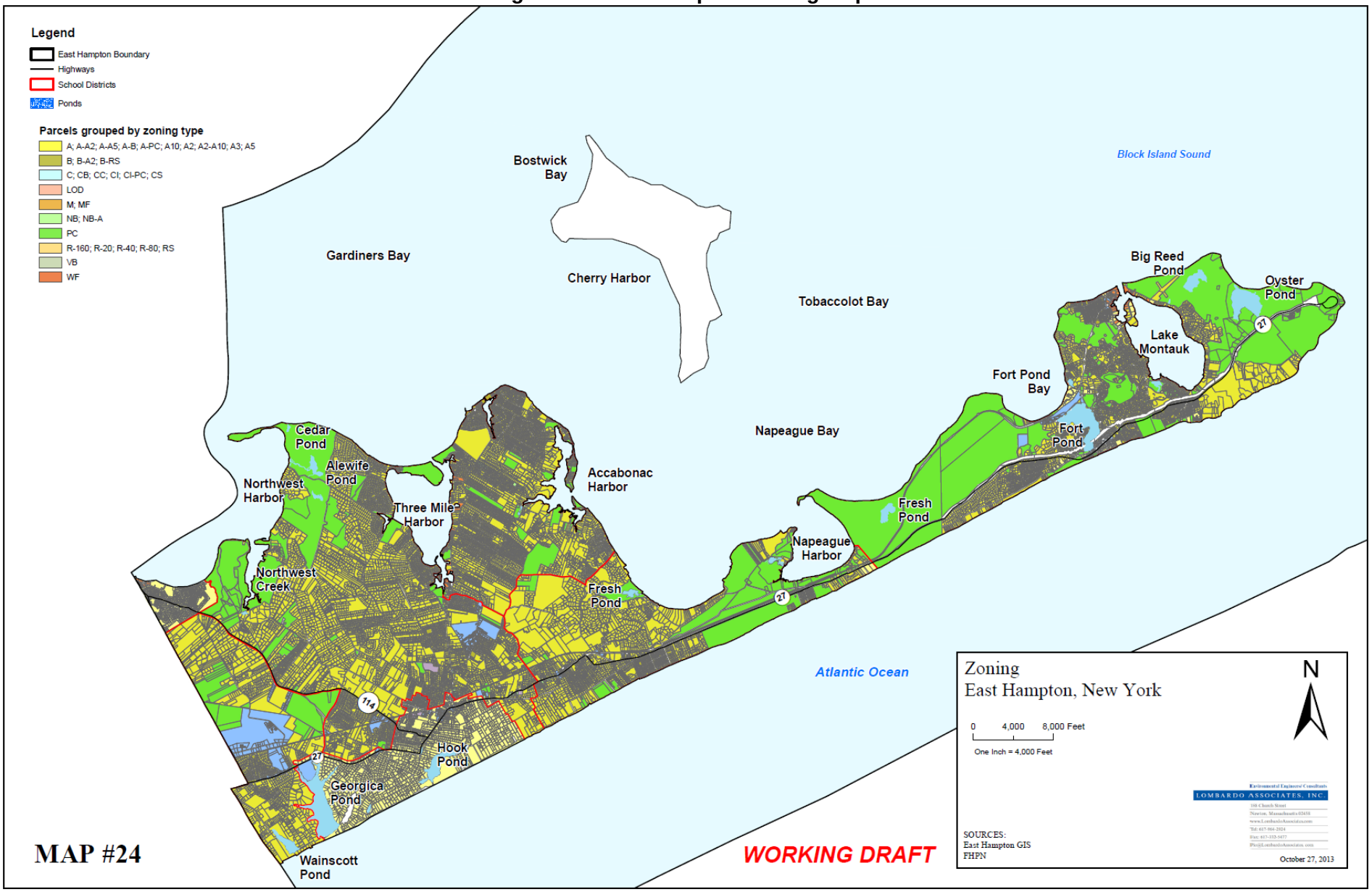
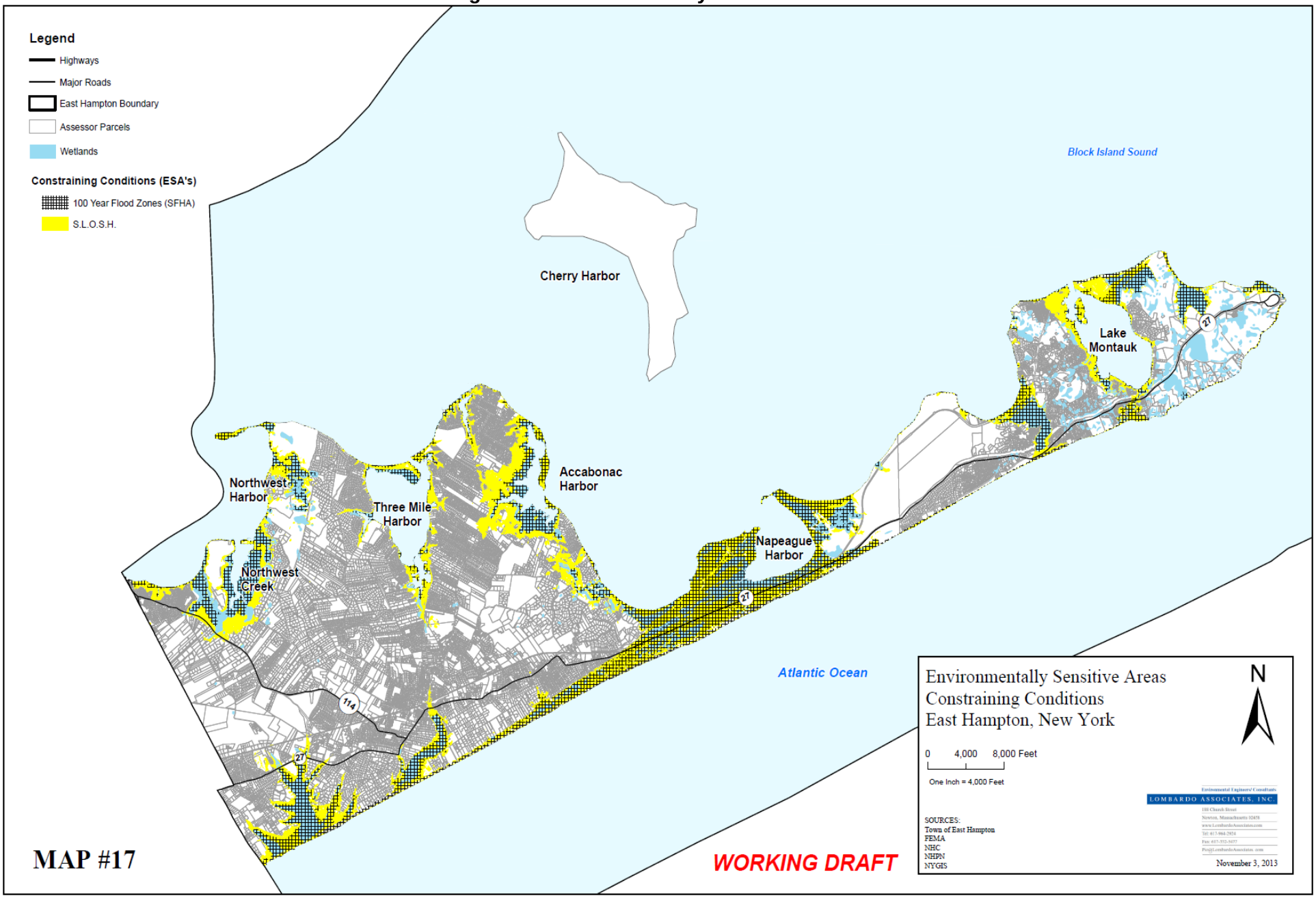


Figure 2-4 Environmentally Sensitive Areas



2.4 COMMUNITY PRESERVATION PROJECT PLAN

In 1998 the Town adopted Town Board Resolution 803 which established a Local Law imposing a two percent (2%) real estate transfer tax on the conveyance of interests in real property in the Town, with the revenues derived from this tax to be deposited in tile East Hampton Community Preservation Fund for the purpose of preserving open space and historic places within the Town. The Town recently prepared and adopted a July 11, 2011 Community Preservation Project Plan that identified candidate properties, as illustrated on Figure 2-5, for acquisition through use of Community Preservation Funds (CPF). Officially called the Peconic Bay Region Community Preservation Fund, the program is generally referred to as the CPF. (The CPF should not be confused with the Peconic Land Trust. The Peconic Land Trust is a private organization which is funded privately, not through taxation of any sort.)

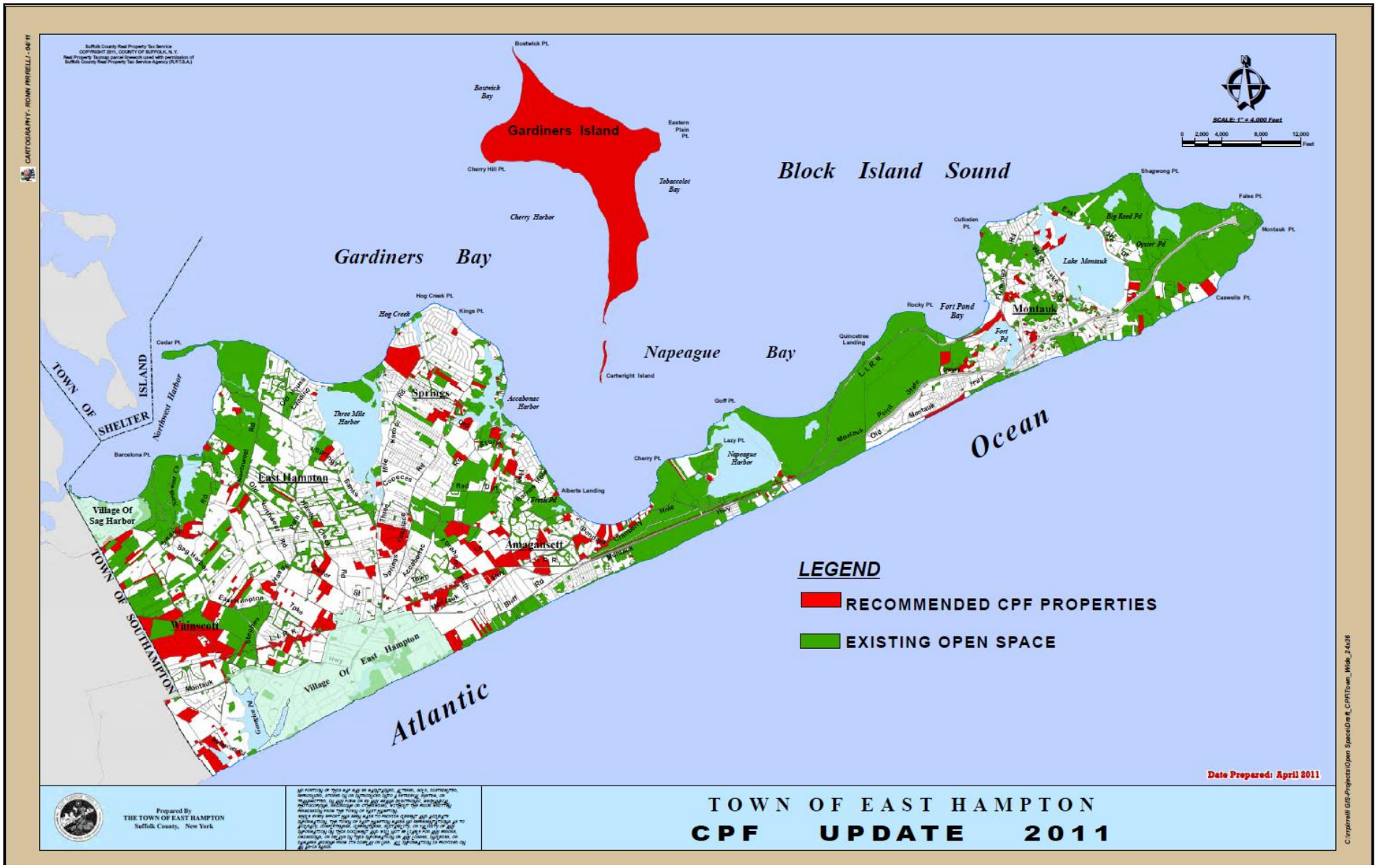
It is the buyer who pays the transfer tax, not the seller. The tax is not collected from general tax revenues such as real estate and school taxes. In East Hampton, the tax is levied on the sale of houses and buildings whose purchase price is $250,000 or more (the first $250,000 is exempt from the tax) and on unimproved land sold for $100,000 or more (the first $100,000 is exempt as well). By voter referendum, the CPF expires in the year 2030. Nearly 40 percent of East Hampton's 70 square miles are now in public ownership – most of it preserved as open space. The recent revenues by the CPF are presented on Table 2-11. It is understood that the CPF has a $32 million on hand as of summer 2013.

Table 2-11 CPF Revenues

Year	Fund Contributions
2003	$ 11,502,934
2004	$ 20,737,093
2005	$ 27,134,485
2006	$ 24,908,882
2007	$ 31,852,185
2008	$ 15,057,783
2009	$ 10,374,417
2010	$ 18,194,405
2011	$ 14,178,311
2012	$ 22,051,267
2013 (through Sept.)	$ 19,012,134
Average	$ 19,545,809

Working Draft

Figure 2-5 Recommended CPF Acquisition Properties - 2011



2.5 TOWN FINANCIAL INFORMATION

Table 2-12 presents Town financial data as stated in the Town's Financial Statement associated with its August 29, 2013 Bond Prospectus and its 2013 Budget.

Table 2-12 East Hampton Tax & Revenue Data- 2012 & 2013 Budget

		2012	2013 Budget
Town wide	Total Revenues	$ 28,167,268	$ 28,500,000
	Real Property Taxes	$ 19,541,503	$ 17,746,993
	R.E. taxes as % of Revenues	69%	62%
Part Town	Total Revenues	$ 22,186,057	$ 23,382,589
	Real Property Taxes	$ 19,305,992	$ 20,470,089
	R.E. taxes as % of Revenues	87%	88%
Grand Total	Total Revenues	$ 50,353,325	$ 51,882,589
	Real Property Taxes	$ 38,847,495	$ 38,217,082
	R.E. taxes as % of Revenues	77%	74%
	Equalization Rate	0.0080	0.0073
	Assessed Value	$ 197,488,643	$ 197,800,000
	Full Value	$ 24,686,080,375	$ 27,095,890,411
	Tax Rate for Town Purposes (1)	$ 243.38	$ 259.34
	Tax Levy for Town Purposes	$ 42,984,688	$ 43,112,163
	Computed Tax Rate	0.2177	0.2180

(1) Tax Rate per $1,000 assessed value, exclusive of solid waste & Recycling ; Scavenger wastewater and Airport Funds

Gross Debt	$ 120,037,422
Debt Limit	$ 1,937,594,278
% of Debt Limit used	6.2%

2013 Tax Rates and Budgeted Tax Revenue		
2013 Budget Tax Rates	per $100 A.V.	Tax Revenue
General Town (outside Village)	22.626	$ 38,760,725
General Town (inside Village)	8.967	$ 4,287,694
Highway (outside Village)	3.271	$ 4,895,081
Solid Waste/Recycling	1.602	$ 3,208,444
Scavenger Waste	0.374	$ 746,950
Airport	0	$ -
Total		
Outside Village	27.873	$ 47,611,200
Inside Village	10.943	$ 4,287,694
		$ 51,898,894

Working Draft

Current debt on the Scavenger Waste Facility is $45,000 as of 12/31/12 and is scheduled to be completely paid by July 15, 2015.

Table 2-13 presents financial metrics for the Town as stated in the Town's Financial Statement associated with its August 29, 2013 Bond Prospectus and as updated by the Town's Budget Officer. These metrics are used for US EPA guidelines for affordability analysis as described below and in the Financial and User Charge Analysis Report.

Table 2-13 East Hampton Financial Metrics

Indicator	No.	Description	East Hampton, NY
Debt	1	**Bond rating (Moody's)**	Aa3
		Overall net debt *($ million)*	$ 118,918,205
		Full market value of taxable property ($ million)	$27,844,868,055
	2	**Overall net debt** *(as % of full market value of taxable property)*	0.43%
SocioEconomic	3	**Unemployment Rate**	6.2%
		National Unemployment Rate	7.3%
		New York State Unemployment Rate	7.6%
	4	**Median Household Income** *2010*	$72,800
		Median Household Income *2011*	$76,054
		National MHI (2010), 2010 dollars	$52,762
		Median household income *(2010)* **– as a percentage of national MHI**	138%
		Per Capita Income, 2010 dollars	$28,889
		Persons per household (2010)	2.52
		Persons below poverty level, percent *(2011)*	3.7%
Financial Management	5	**Property tax collection rate**	100.0%
		Property tax revenues ($ million)	$48.3 million
		Median Taxable Property Value *(Year = 2013)*	
		Per Property Taxes AVG TOWN TAXES	$1,947
		Millage Rate *($1 per assessed thousand)*	286.81
	6	**Property tax revenues** *(as % of full market value of taxable property)*	0.18%
		Sales Tax Rate	8.75%

Working Draft

US EPA (1997) developed guidelines to assess the affordability of wastewater fees using a two-phased approach, (See Environmental Protection Agency, Office of Water, Office of Wastewater Management, "Combined Sewer Overflows— Guidance for Financial Capability Assessment and Schedule Development," EPA 832-B-97-004, February 1997).

Phase 1 determines the Residential Indicator using the projected fees as a percent of the local median household income (MHI). EPA's guidance on the affordability of investment in wastewater systems uses an average household rate of 2 percent of MHI. The indicator characterizes whether the costs impose a low, mid-range or high financial impact on residential users.

EPA's criteria compare the revenues collected by a water/wastewater system to the median household income (MHI) in a service area, not to individual household income, see Congressional Budget Office Study 2002 at http://www.cbo.gov/doc.cfm?index=3983&type=0&sequence=7. It is recognized that there can/will be hardships on low income households. How these issues can be addressed is discussed in the Financial Analysis and User Charge Report.

The 2nd Phase analysis develops the Financial Capability Indicators using six (6) indicators to evaluate the three categories of:

- Debt;
- Socio-Economic conditions;
- Financial conditions

These metrics are used to serve the 2nd phase analysis to characterize the municipalities' financial capability as weak, mid-range or strong.

The six Financial Capability Indicators are:

1) Bond rating
2) Overall net debt as a percentage of full market value of taxable property
3) Unemployment rate
4) Median household income – as a percentage of state median income
5) Property tax revenue collection rate
6) Property tax revenues as a percentage of full market value of taxable property

and, along with supplemental/supporting indicators, are presented on Table 3-4.

For each of the indicators, a score is assigned based upon the Benchmarks described below and the following:

Benchmark	Score
Weak	1
Mid-Range	2
Strong	3

Then an overall average Financial Capability determined. Although the analysis should reflect existing conditions, pending changes should be considered in the development of

Working Draft

the second phase indicators (EPA, 1997). How each East Hampton Financial Indicator is scored is described below.

Debt

Financial data that illustrates existing and projected debt burden and remaining debt issuing capacity are also important indicators.

Bond Rating

When a Bond Rating is not available, this indicator is excluded from the analysis. The rating agencies categories and associated ratings are listed below.

Moody's Investor Services Category	Rating
Weak	Ba, B, Caa, Ca, C
Mid-Range	Baa
Strong	Aaa, AA, A

Overall Net Debt as % of Full Market Property Value

Overall net debt is debt repaid by property taxes and excludes debt which is repaid by special user fees, with benchmarks listed below.

Overall net debt (as % of full market value of taxable property) Benchmarks	
Weak	> 5.0 %
Mid-Range	2.0 - 5.0
Strong	< 2.0 %

SocioEconomic

Unemployment Rate

The unemployment rate and its comparison to national average is used as a socioeconomic indicator to assess the general economic well-being of residential users in the service area. Benchmarks are presented below:

Unemployment as compared to National Average	
Weak	> 1.0 %
Mid-Range	+/-1. %
Strong	< 1.0 %

Median Household Income as % of National Average

Benchmarks for MHI as compared to National averages are:

Working Draft

Mean Household Income as % of National Average	
Weak	> 25 % below
Mid-Range	+/-25 %
Strong	< 25 above %

Property Tax Revenues as % of Full Market Property Value

This indicator is referred to as the Property Tax Burden since it indicates the funding capacity available to support debt based upon the wealth of a community. It also reflects the effectiveness of management in providing community services (EPA, 1997).

Property Tax Revenues as % of Full Market Property Value	
Weak	> 4.0 %
Mid-Range	2.0 - 4.0
Strong	< 2.0 %

Property Tax Revenue Collection Rate

The Property Tax Revenue Collection Rate benchmarks are:

Property Tax Revenue Collection Rate	
Weak	<94 %
Mid-Range	94 -98%
Strong	> 98%

Based upon the East Hampton financial metrics as presented on Table 2-13, the Town's Secondary Financial Capability Score is strong, the highest possible, as shown on Table 2-14.

Table 2-14 East Hampton Financial Capability Score

Financial Capability Indicators Score	
Category	East Hampton
Bond Rating (Moody's)	3
Overall net debt (as % of full	3
Unemployment as compared to National Average	3
Mean Household Income as % of	3
Property Tax Revenues as % of Full	3
Property Tax Revenue Collection	3
Average	3.00

Working Draft

2.6 MAJOR EMPLOYERS IN TOWN

According to the August 2013 Official Statement for the Town's Bond Prospectus, the major employers in the Town of East Hampton are:

Table 2-15 Major Employers in the Town of East Hampton

Name of Employer	Number of Employees[1]	Nature of Business
Town of East Hampton	665	Municipality
Public Schools (4 Districts)	533	Education
Gurney's Inn	250	Restaurant & Hotel
Village of East Hampton	165	Municipality
Riverhead Building Supply	59	Construction Supplies
United States Post Office	38	Post Office
East Hampton STAR Newspaper	35	Media

(1) May include seasonal or part-time employees.

2.7 LEGAL – TOWN CODE & STATE/FEDERAL LAW

The important sections of Town Code that affect wastewater and scavenger waste management are Chapter 210 Scavenger Waste and Chapter 255, Zoning, Article III, Overlay Districts, § 255-3-70. Harbor Protection Overlay District. The below sections present the key components of those Chapters that are of importance for this project. **(all bold emphasis added by LAI)**. Also New York State and Federal law issues as opined by the Peconic Baykeeper are presented below.

2.7.1 CHAPTER 210 SCAVENGER WASTE

Chapter 210. SCAVENGER WASTE

§ 210-1-2. Purpose.

- The purpose of this chapter is to provide for the funding and proper operation of the East Hampton town scavenger waste treatment plant and to assure the proper siting, construction and maintenance of all individual on-site wastewater disposal systems (septic tanks, cesspools, leaching fields, etc.) and sewage treatment plants in the Town of East Hampton Wastewater Disposal District which the scavenger waste treatment plant is designed to serve.

§ 210-1-3. Applicability.

- The provisions of this chapter shall apply to all properties located in the Town of East Hampton Wastewater Disposal District established by resolution of the East Hampton Town Board on September 16, 1983, and the order of the State Comptroller dated April 26, 1983, as amended.

§ 210-1-4. Definitions.

HIGH-FREQUENCY SYSTEM

Working Draft

An on-site wastewater disposal system of any configuration which is pumped out more than one time in any thirty-day period.
Article II. Transportation

§ 210-2-1. License required.

No person shall engage in the pumping, removal, transport or subsequent disposal of scavenger waste from any on-site wastewater disposal system, or sludge from any sewage treatment plant, located within the Town of East Hampton Wastewater Disposal District unless he shall possess a currently valid scavenger waste carter's license issued by the Town Clerk.

§ 210-2-2. Application for scavenger waste carter's license.

Each applicant for a scavenger waste carter's license shall file a sworn statement with the Town Clerk on the form prescribed by the Town Board stating the name and address of the applicant, the type, model and capacity (in gallons) of all vehicles to be used in the applicant's carting operations and any and all such other information as may be requested of him on the approved town application form. In addition, such form shall contain the following statement:

"I, _____, being duly sworn, state and depose that I am familiar with the requirements of the East Hampton Town Scavenger Waste Law; that I will report the address and exact location of all septic tanks, cesspools, on-site wastewater disposal systems and sewage treatment plants pumped by me or my business within the East Hampton Town Wastewater Disposal District as required by said law, and that I will in all other respects abide by each of the terms and provisions of said law. I understand that failure to so comply will result in the assessment of a civil penalty against me of $500 for each such failure and that each violation of said law may also result in criminal prosecution and/or suspension or revocation of my scavenger waste carter's license."

§ 210-2-4. Pump-out reports.

A. With every delivery of scavenger waste to the scavenger waste plant, each carter of scavenger waste licensed pursuant to this chapter shall file with the Superintendent of the scavenger waste plant a report or reports stating the address and exact location of each cesspool, septic tank, on-site wastewater disposal facility or sewage treatment plant from which waste contained in the vehicle in question has been removed. Said report(s) shall be on a form approved by the Town Board. Such form shall, with regard to each pump-out operation performed, at least include:

(1) The name and address of the property owner.

(2) The name and address of the system owner, if different.

(3) The date of the pump-out.

(4) The approximate quantity of the pump-out.

(5) The type of waste pumped.

(6) The signature of the customer (property owner or system owner).

Working Draft

B. Failure of any licensed carter to file any such required report, or to include on any such filed report one or more facilities pumped by a carter during the period covered by the report, shall constitute a violation of this chapter subject to the provisions of Article VII hereof.

Article III. Construction of Disposal Systems and Treatment Plants

§ 210-3-1. Building permit required.

No person shall construct, alter, modify, repair or replace any on-site wastewater disposal system as defined herein (including any septic tank or cesspool) or any sewage treatment plant as defined herein, or any part of either such facility, located within the Town of East Hampton Wastewater Disposal District, **without having first obtained from the East Hampton Town Building Inspector a building permit for such work.** Such permit shall state the exact location and address of the work in the manner and form specified by the Building Inspector. No such permit shall be issued until the proposed work has been approved by the Suffolk County Department of Health Services.

§ 210-3-3. Exception for repair or replacement.

Notwithstanding anything in the preceding section nor any provision to the contrary in Chapter 255, Zoning, of the Town Code, a building permit obtained solely for the purpose of repairing or replacing, in place and in kind, all or part of an existing on-site wastewater disposal system or sewage treatment plant, which facility complies in all respects with the current standards of the Suffolk County Sanitary Code and meets all current setbacks for such systems in the Town Code, may be issued without town site plan review, special permit review or other local review and approval which might be a prerequisite to issuance of other similar building permits on the particular property in question, provided that all other conditions for issuance of the requested building permit, including approval by the Suffolk County Department of Health Services, have been met by the applicant to the satisfaction of the Building Inspector. This section shall not apply to proposed expansions of existing on-site disposal systems or sewage treatment plants nor to any other new work whatsoever.

Article IV. District Operation

§ 210-4-1. Individual operating permits not required.

No town or district operating permit shall be required for use of any on-site wastewater disposal system or sewage disposal system, or part thereof, **for which a building permit** has been obtained pursuant to Article III of this chapter and other applicable provisions of the Town Code, or for use of any such facility, or part thereof, which existed and was in use on the effective date of this chapter. However, all applicable federal, state, county and local rules concerning operation and maintenance of such facilities shall at all times be adhered to.

§ 210-4-2. Disposal of scavenger waste and sludge.

Except as provided for herein, **no scavenger waste** removed from any cesspool, septic tank, on-site waste disposal system and no sludge removed from any sewage treatment plant within the Town of East Hampton Wastewater Disposal District **shall be dumped, pumped out or otherwise disposed** of at any location within the Town of East Hampton **except at the**

Working Draft

scavenger waste treatment plant. **Disposal of scavenger waste or sludge at any other location, unless such disposal has been specifically authorized in writing by both the Superintendent of the scavenger waste plant and the Director of Environmental Protection, shall constitute a violation of this chapter subject to the provisions of Article VII hereof.**

§ 210-4-5. Fees for use of scavenger waste facility.

Fees shall generally be structured on a volume basis and shall be calculated in all cases on full-tank capacity per load delivered to the facility. The Board may maintain differing rates for different classes of users of the scavenger waste treatment plant reasonably related to the economic, mechanical and biological impacts on the operation of the plant which each class represents, including but not limited to separate fee schedules for:

A. Scavenger waste from on-site wastewater disposal systems with different residential and commercial rates if deemed appropriate.

B. Wastes from high-frequency systems, as defined herein, with a sliding scale of fees based upon frequency, volume or content of deliveries from such systems, if deemed appropriate.

§ 210-4-6. Tax rate.

The town shall each year establish the tax rate required to cover the cost of debt service on the scavenger waste treatment plant, as well as future capital purchases and administrative costs incurred by the Town of East Hampton Wastewater Disposal District. Operating and maintenance costs of the scavenger waste treatment plant itself shall ordinarily be met through the collection of permit fees and user fees as prescribed herein.

§ 210-4-7. Costs and expenses.

All costs and expenses incurred by the district in connection with any inspection or enforcement activities undertaken with regard to specific systems or specific properties pursuant to provisions of this chapter shall be assessed against the land in question, and a statement of such expenses shall be presented to the owner of the property. If the property owner cannot be ascertained or located, then such statement shall be posted in a conspicuous place on the premises. Such assessment shall constitute a lien upon the land

Article V. Inspections

§ 210-5-1. Required inspections.

The town shall require inspection of every on-site wastewater disposal system and sewage treatment plant at least once every three years by qualified persons employed by or for the town. Inspections shall also be required and may be made at anytime when the Sanitation Inspector has reason to believe a system or plant is malfunctioning, has been illegally modified or expanded or is being operated beyond its design limits, or for other similar good cause shown.

Article VI. Maintenance

§ 210-6-1. Required maintenance.

Working Draft

Every owner of an on-site wastewater disposal system constructed after the effective date hereof shall have the same pumped or cleaned out at least once every three years, unless such system shall have been specifically exempted in writing by the Sanitation Inspector.

Article VII. Administration and Enforcement

§ 210-7-1. Sanitation Inspector.

The Town Board shall appoint a Sanitation Inspector who shall be primarily responsible for the administration and enforcement of this chapter.

§ 210-7-3. Additional enforcement officers.

In addition to enforcement by the Sanitation Inspector, the provisions of this chapter may be enforced by the Town Building Inspector and the Town Director of Environmental Protection, whether or not either is serving as Sanitation Inspector.

§ 210-7-5. Penalties for offenses.

Any carter, owner, occupant, builder, architect, contractor, agent or other person who commits, takes part in or assists in a violation of this chapter shall be liable upon conviction for a fine not to exceed $500 (or any lesser amount which may be specified herein for a particular violation) or imprisonment for a period not to exceed 15 days, or both. Each day on which such violation shall occur or be maintained shall constitute a separate additional offense.

2.7.2 CHAPTER 255, ARTICLE III-70 HARBOR PROTECTION OVERLAY DISTRICT

§ 255-3-70. Harbor Protection Overlay District. [Added 10-6-1995 by L.L. No. 12-1995]

§ 255-3-71. Purpose. [Added 10-6-1995 by L.L. No. 12-1995]

The purpose of the Harbor Protection Overlay District is to maintain or improve surface water quality in East Hampton's major harbors, creeks and ponds, including Accabonac Creek, Fort Pond (including the arm of Fort Pond north of Industrial Road), Georgica Pond, Great Pond (Lake Montauk), Hog Creek, Napeague Harbor, Northwest Creek, Northwest Harbor, Steppingstones Pond, Three Mile Harbor, Tuthill Pond and Wainscott Pond. The Harbor Protection Overlay District will help prevent the entry of stormwater runoff into the Town's waters; **gradually require the upgrading of out-moded or inoperable septic systems;** ….

§ 255-3-73. Boundaries. [Added 10-6-1995 by L.L. No. 12-1995]

The boundaries of the Harbor Protection Overlay District shall be as shown on the Use District Map – see Figure 2-6.

§ 255-3-75. Regulations. [Added 10-6-1995 by L.L. No. 12-1995]

B.New sanitary septic systems. The following regulations shall govern the installation of all septic systems after this date, except for septic systems which are installed to replace legally preexisting septic systems:

Working Draft

(1)No such septic system shall be installed or constructed unless it is set back a minimum of 200 feet from the surface waters of Accabonac Creek, Fort Pond (including the arm of Fort Pond north of Industrial Road), Georgica Pond, Great Pond (Lake Montauk), Hog Creek, Napeague Harbor, Northwest Creek, Northwest Harbor, Steppingstones Pond, Three Mile Harbor, Tuthill Pond and/or Wainscott Pond and from the upland boundary of any wetlands contiguous to the foregoing bodies of water. To the extent that any provision of Article IV imposes a lesser wetland setback for septic systems, the requirements of this subsection shall be controlling with respect to lands within the Harbor Protection Overlay District.

(2)No septic system leaching pool shall hereafter be installed unless the bottom of the leaching pool is situated a minimum of four feet above the groundwater table.

C. Existing sanitary septic systems. Any septic system which legally exists on a residential property on January 1, 1996, shall be replaced or upgraded in the following circumstances and to the following extent:

(1)Every septic system regulated by this subsection shall be replaced or upgraded if:

(a)A natural resources special permit is required for work to be performed on the lot or parcel containing the septic system;

(b)The work to be performed will increase the habitable floor area of a principal building on the lot or will increase the number of bathrooms within a building on the lot; and

(c)The septic system in question does not meet the minimum requirements of the Suffolk County Department of Health Services for vertical separation to groundwater, for setback to surface waters or for septic system capacity, or in that it lacks a septic tank.

(2)Where this subsection requires that an existing septic system be replaced or upgraded, the new or upgraded septic system shall meet the following requirements:

(a)It shall comply with the requirements of the Suffolk County Department of Health Services for new septic systems and shall be installed under the supervision of the Sanitation Inspector; and

(b)It shall be set back a minimum of 150 feet from the upland boundary of all tidal wetlands (including tidal surface waters) or, if that is not feasible, it shall be set back the maximum practicable distance from the surface waters of Accabonac Creek, Fort Pond (including the arm of Fort Pond north of Industrial Road) Georgica Pond, Great Pond (Lake Montauk), Hog Creek, Napeague Harbor, Northwest Creek, Northwest Harbor, Steppingstones Pond, Three Mile Harbor, Tuthill Pond and/or Wainscott Pond and from the upland boundary of any wetlands contiguous to the foregoing bodies of water, taking into consideration such factors as the physical constraints of the site and the location of nearby water supply wells.

§ 255-3-79. Surveys and other information. [Added 10-6-1995 by L.L. No. 12-1995]

Working Draft

In order to ensure compliance with the regulations of the Harbor Protection Overlay District, every application for a building permit to construct or erect a building or structure within said district shall be accompanied by a survey which has been prepared by a licensed surveyor and which depicts the following:

A.Clearing: the areas of the lot which are proposed to be cleared and a calculation of the percentage of lot area which will be cleared, including all portions of the lot previously cleared.

B.Depth to groundwater: for projects involving the installation of septic system discharge devices …… require the installation of catchment basins, the mean depth to groundwater in the areas proposed for any septic system, swimming pool or catchment basin.

2.7.1 SEPTIC SYSTEMS REBATES - HPOD

Although this rebate program expired on December 31, 2010, the Town may wish to reactivate and expand it. Only two (2) rebates of $2,500 each were issued.

Chapter 208:Substandard Sanitary Systems In Harbor Protection Overlay Districts [HISTORY: Adopted by the Town Board of the Town of East Hampton 10-5-2007 by L.L. No. 31-2007. Amendments noted where applicable.] For the purposes of this chapter, the following terms shall have the following meanings:

APPLICANT An eligible entity as defined herein.

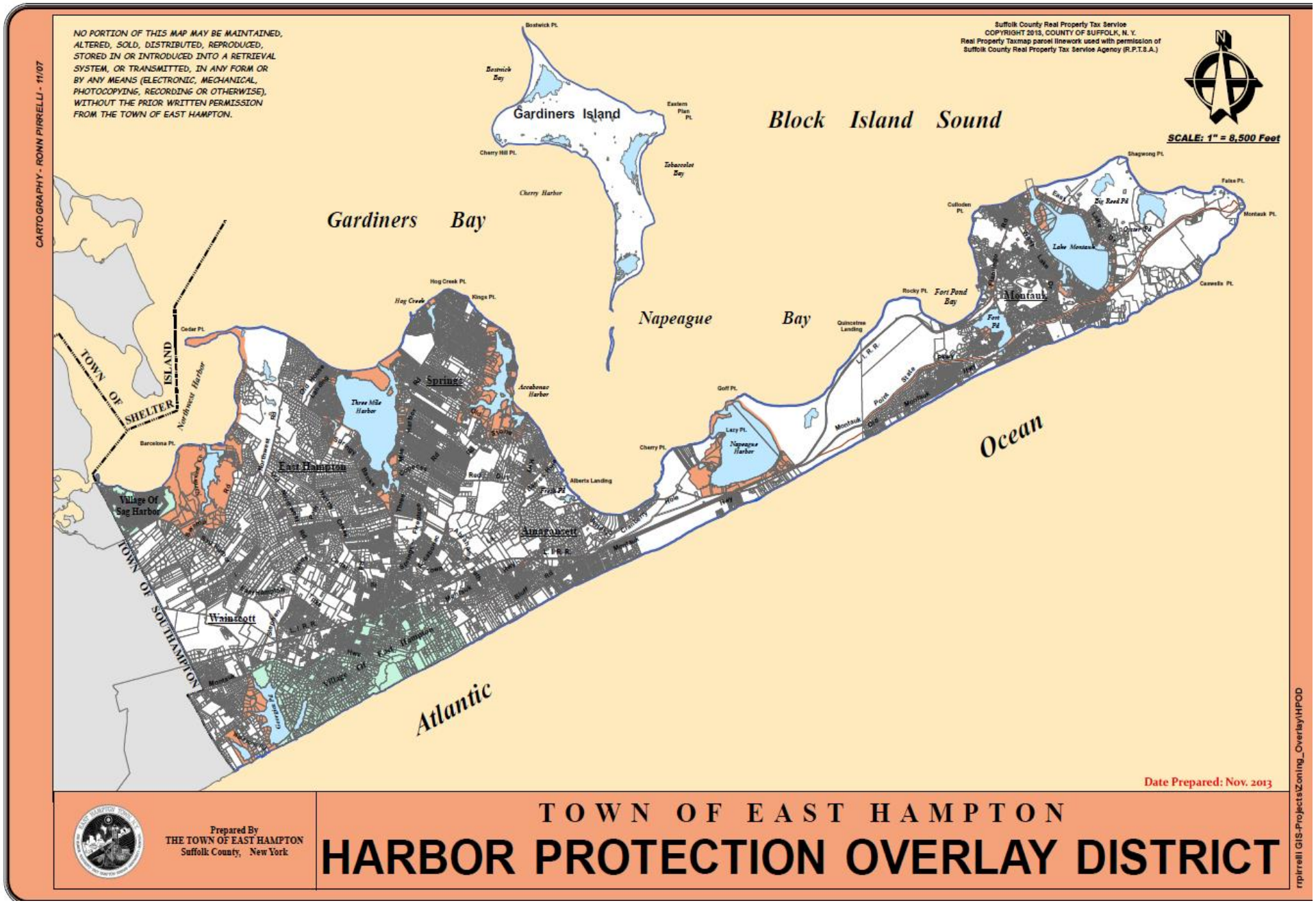
COSTS
Includes all costs associated with the removal or repair and upgrade of an existing sanitary system, including but not limited to, costs for labor and materials, and site restoration. "Costs" shall not include financing or interest charges.

ELIGIBLE ENTITY
Any person, estate, trust, beneficiaries of an estate or trust, partnership, or member of a limited liability corporation, a corporation or other legal entity which owns residential or commercial property that is eligible for the rebate established by this section for the costs of upgrading the sanitary system on the premises to current standards.

SUBSTANDARD SANITARY SYSTEM
Any sanitary system located in a Harbor Protection Overlay District of the Town of East Hampton and constructed prior to January 1, 1981, which system has not been upgraded or repaired to meet the current requirements of the East Hampton Town Code for sanitary systems located in a Harbor Protection Overlay District as set forth in Chapter 255 (Zoning) of the East Hampton Town Code, and the upgrade of which is not required pursuant to an approval of the Town Zoning Board of Appeals or Suffolk County Department of Health Services. (See "eligibility" below.)

Working Draft

Figure 2-6 East Hampton Harbor Protection District



SUBSTANTIAL RECONSTRUCTION

Construction work on improvements other than the sanitary system which would require the issuance of a building permit under the East Hampton Town Code.

UPGRADE

To repair or replace an existing substandard sanitary system with a system which meets the current Suffolk County Department of Health Services, and, to the extent possible, Town of East Hampton requirements for sanitary systems for the specific premises which the system services.

§ 208-2 Rebate and incentive program.

A. Eligibility.

(2) The rebate shall not be available in the case of the installation of a new sanitary system installed in connection with new construction or the substantial reconstruction of an existing building ….

(4) Where the applicant owns more than one eligible property, there shall be authorized one rebate for each eligible sanitary system upgrade.

B. Procedure for rebate.

(1) In order to claim the rebate established by this section, the applicant must:

(a) Submit a building permit application for the sanitary upgrade to the Town Building Inspector.

(b) Obtain an inspection of the existing sanitary system by the Town Sanitation Inspector prior to commencement of any upgrade work, in order to certify that the applicant's existing system is a "substandard sanitary system" as the same is defined herein.

(c) Obtain an inspection of the upgraded sanitary system by the Town Sanitation Inspector prior to backfilling, in order to certify that the applicant has performed the work necessary to upgrade the substandard sanitary system.

(2) Upon issuance of the compliance letter by the Building Inspector, the applicant shall provide the Town Building Inspector with a notarized certification representing that the upgraded sanitary system will be maintained in proper operating condition from the date of installation, and further acknowledging the requirements that repairs, alterations, modifications or future replacements shall meet the then-applicable Town and Suffolk County standards.

(3) The eligible individual shall then file a voucher with the Town to claim the rebate established by this section, in a manner prescribed by the Town Finance Department. The applicant shall document all costs associated with the upgrade. A copy of the compliance letter from the Town

Working Draft

Building Inspector together with the applicant's certification shall also be attached to the voucher.

(4) Payment of the rebate shall be made to the applicant after approval of the voucher by the Town Board and Town Finance Department.

C. Amount of rebate. The rebate authorized for the upgrade of an existing sanitary system pursuant to the terms of this local law shall be $2,500 for upgrades to existing residential systems completed before 1981, and $4,000 for upgrades to existing systems installed before 1981 on commercial property.

D. Rebate expiration date. The rebate established pursuant to this § 208-2 shall be paid to eligible individuals for the upgrade of sanitary systems completed on or before December 31, 2010.

§ 208-3 Fund established.

The Town Board of the Town of East Hampton hereby establishes a HPOD sanitary system upgrade capital project fund, for the purposes enumerated in this section. Deposits into the fund may include revenues of the Town from whatever source, including but not limited to, a) indebtedness or obligations incurred pursuant to the local finance law to effectuate the purposes of this section, b) general fund balances or surpluses, or c) any state or federal grants received by the Town. Interest accrued by monies deposited into the fund shall be credited to the fund. In no event shall monies deposited into the fund be transferred to any other account. Payment of the rebate shall be subject to appropriation.

§ 208-4 Applicability.

The provisions of this local law shall be applicable to all properties in the Town of East Hampton within the Harbor Protection Overlay District (HPOD) containing sanitary systems installed prior to 1981, excluding properties within incorporated villages.

2.7.2 ENVIRONMENTAL PRESERVATION FUND

Chapter 22: ENVIRONMENTAL PRESERVATION FUND

[HISTORY: Adopted by the Town Board of the Town of East Hampton 11-5-1993 by L.L. No. 30-1993. Amendments noted where applicable.]

§ 22-1 Environmental Preservation Fund established.

A. The Town Board of the Town of East Hampton hereby establishes a separate fund to be known as the "Environmental Preservation Fund."

B. There shall be paid into the Environmental Preservation Fund:

Working Draft

(1) Such amounts contributed to the town as a gift pursuant to § 22-2 of this chapter.

(2) Amounts from other governments, public entities or private sources contributed to the town to effectuate the purposes set forth in this chapter.

(3) Such other amounts as may be legally appropriated.

C. The amounts paid into the Environmental Preservation Fund shall be used exclusively for the following purposes:

(3) The costs relating to town-approved projects to control or remediate pollution to town surface waters. Said projects shall be determined to be innovative and necessary to protect a critically important natural resource. Costs to maintain or repair existing infrastructure or relating to normal operation and maintenance of town facilities shall not be eligible.

D. The Town Board may establish a citizens advisory committee of five to seven members for the purpose of evaluating and recommending eligible projects under the provision of this chapter. However, only the Town Board, by formal resolution, may authorize an expenditure from the Environmental Preservation Fund.

F. The Supervisor shall account for the Environmental Preservation Fund separate and apart from all other funds of the town. Such accounting shall show the source, date and the amount of each sum paid into the Environmental Preservation Fund; the interest earned by the fund; capital gains or losses resulting from the sale of investments of the fund; the order, source thereof, date and amount of each payment from the fund; the assets of the fund indicating cash balance and a schedule of investments. The Supervisor, within 60 days of the end of each fiscal year, shall furnish a detailed report of the operation and condition of the Environmental Preservation Fund to Town Board.

2.7.3 TOWN CODE ENFORCEMENT

It is LAI's understanding that the East Hampton Chief Building Inspector Tom Preiato approves replacement for failed systems only, with all other approvals performed by SCDHS.

The EH Planning Department has advised us that HPOD regulations are enforced via NRSP's, which are special permits required when building or clearing near waterbodies, wetlands, natural features, etc.

2.7.4 STATE AND FEDERAL LAW

2.7.4.1 FEDERAL LAW – LARGE CAPACITY SEPTIC SYSTEMS

A septic system is considered a Large Capacity Septic System (LCSS) if it receives ***solely sanitary waste*** either from ***multiple dwellings*** or from a ***non-residential establishment*** and the system has the capacity to ***serve 20 or more persons per day***.

Working Draft

The majority of Class V wells, including LCSSs, are "authorized by rule" provided they meet the following minimum federal requirements:

- The owner or operator must submit basic inventory information, form available at http://water.epa.gov/type/groundwater/uic/class5/upload/2007_12_12_uic_class5_form_uic_7520-16.pdf, to the permitting authority, and

- The injectate cannot endanger underground sources of drinking water (USDWs).

A Class V well is typically a shallow on-site disposal system used to place various non-hazardous fluids below the land surface (40 CFR 144.80).

EPA banned new large-capacity cesspools on April 5, 2000. Since that date, no new large-capacity cesspools may be constructed. A ban on existing large-capacity cesspools went into effect on April 5, 2005. Any large-capacity cesspools must be closed immediately. It is unclear as to the number of LCSS that are cesspools, however as a start all LCSS should submit the basic inventory information.

Table 6-2 lists 105 East Hampton properties with SPDES permits, due to their wastewater flows being in excess of 1,000 gpd, in East Hampton, that may have cesspools as there is not documentation that they have been converted to septic systems.

2.7.4.2 FEDERAL AND STATE LAW – SPDES PERMIT REQUIREMENTS

New York State 2012 draft Design Standards for Intermediate Wastewater Systems, in Section E3, require total nitrogen from a site to be < 10 mg/l - http://www.dec.ny.gov/chemical/79072.html

New York State Law in **6 NYCRR §703.6 Groundwater effluent limitations for discharges to Class GA waters** states:

(a) The groundwater effluent limitations in Table 3 of subdivision (e) of this section and effluent limitations as established by section 702.16(c)(1) of this Title apply to a discharge from a point source or outlet or any other discharge within the meaning of the Environmental Conservation Law, section 17-0501 that will or may enter the waters of the State. Unless a demonstration is made to the contrary, it shall be presumed that a discharge to the ground or unsaturated zone is a discharge to groundwater.

(d) The groundwater effluent limitations shall be incorporated in SPDES permits for discharges to groundwaters, where applicable.

In addition to the effluent limitations above, the following also apply in the counties of Nassau and Suffolk:

Substance	Maximum Allowable Concentration in mg/L
(1) Dissolved solids, total	1,000
(2) Nitrogen, total (as N)	10

Working Draft

The Peconic Baykeeper in its lawsuit has provided the following opinion regarding effluent requirements associated with SPDES permits on Long Island:

"First, as the US EPA has repeatedly explained in rulemaking documents published in the Federal Register, and federal court has confirmed, the federal Clean Water Act's jurisdiction extends to discharges of pollutants from point sources into groundwater where the groundwater has a direct hydrological connection to a surface water. Thus, if a SPDES permit applicant discharges or proposes to discharge into groundwater that has a direct hydrological connection to surface water, the SPDES permit must all requirements of the CWA. This means that they must be issued by NYS DEC not the County, they must be limited to five years duration not ten, and must include effluent limitations based on the stricter of the applicable Technology Based Effluent Limitations (TBELs) or Water Quality Based Effluent Limitations (WQBELs). With respect to TBELs, EPA has said, for example in the context of the Chesapeake Bay TMDL, that readily available denitrification technologies can achieve levels lower than 5 mg/L and as low as 2.2 mg/L. Thus, the TBELs need to be in that range. And if, based on a reasonable potential analysis (RPA), New York State's narrative water quality standard for nitrogen would require a lower limit than 2.2 or 5 mg/L in any SPDES permit, then such lower value needs to be the limit included in the permit. That is for those septics discharging to groundwater that is directly chronologically connected to surface waters.

The next set of legal principles is for those septics in more upland areas.

Second, in many respects, the water quality protections established in New York's Environmental Conservation Law (ECL) mirror those of the federal Clean Water Act. For example, like the Clean Water Act, the ECL requires that all SPDES permits must include effluent limitations as needed to assure compliance with New York State's narrative water quality criterion for nitrogen and with the numeric water quality criteria for nitrate, nitrite, ammonia and ammonium. DEC can only issue a SPDES permit following, among other things, "a determination .

. . on the basis of a submitted application, plans, or other available information, that compliance with the specified permit provisions will . . . assure compliance with applicable water quality standards." 6 NYCRR § 750-2.1(b). And DEC has clarified that all of New York's water quality standards, including "the narrative standards for fresh and saline surface waters and groundwaters," are to be used as the basis for setting water-quality based effluent limitations and groundwater effluent limitations in SPDES permits. 6 NYCRR § 702.16.

Finally, DEC's regulations require that "each issued SPDES permit shall ensure compliance with . . . any more stringent limitations, including those [] necessary to meet water quality standards . . ." 6 NYCRR § 750-1.11(a)(5).

The ECL also contains certain water quality protections for the state's groundwater that are not found in the Clean Water Act. For example, many of the numeric water quality standards found in 6 NYCRR § 703.5 apply not only to surface waters, but also to class GA groundwaters like those under Suffolk County. These numeric water quality standards include: a 2 mg/L standard for ammonia and ammonium; 1mg/L for nitrite; 10 mg/L for nitrate; and 10 mg/L for nitrate and nitrite.

Working Draft

In addition, New York has also established a 10 mg/L effluent limit for the discharge of nitrogen to groundwater in Suffolk County. 6 NYCRR § 703.6. This effluent limit is not a water quality standard, but a direct limit on discharge that must be included in SPDES permits. DEC created an exception to this groundwater effluent limit (See 6 NYCRR § 702.21(a)), but the exception is strictly limited and cannot "be construed to allow any discharge that would preclude the best usage of Class GA waters," which is potable water supply. 6 NYCRR § 702.21(b); see also 6 NYCRR § 701.15 (listing potable water supply as the best usage of class GA groundwaters). The New York State Department of Health has established a standard for nitrogen in potable water supplies – the Maximum Contaminant Level – of 10 mg/L.

See 10 NYCRR § 5-1.52

Thus, water quality-based effluent limits are required in some SPDES permits that authorize a discharge to groundwater even where there is no direct connection to surface water.

Much of the groundwater is impaired as described in the November 2009 Report Suffolk County Comprehensive Water Resources Management Plan, Task 4.1- Groundwater Quality. For example, Figure 6 on page 14 in the Report has numerous private wells where the nitrogen level is already over 10 ppm. And the yellow dots are where it is 6-10 ppm, that is, potentially right on the cusp of being undrinkable, depending upon where in the 6-10 range it falls. Although East Hampton isn't as bad as other areas, there are many impaired wells in the Town."

The exceptions in New York State Law are:

§702.21 Exceptions to groundwater effluent limitations

(a) Activities and conditions. The effluent limitations set forth in section 703.6 of this Title or established pursuant to section 702.16(c)(1) of this Part for discharges to Class GA waters are not applicable to the following activities:

(1) the discharge of sewage without the admixture of industrial waste or other wastes where:

(i) a disposal system, point source or outlet consists of a subsurface sewage disposal system designed, constructed and maintained in accordance with guidelines and standards satisfactory to the department;

(ii) monitoring facilities are utilized in accordance with requirements as may be specified by the department; and

(iii) the disposal system is designed to discharge, and discharges, less than 30,000 gallons per day;

(2) normally accepted agricultural practice of utilizing chemicals and fertilizers for growing of crops for human and animal consumption; and

(3) waste management systems that employ land application techniques and have renovative capabilities provided it has been demonstrated to the satisfaction of the commissioner that:

(i) there will be no actual or potential public health hazard;

(ii) applicable water quality standards will be met in saturated zones; and

(iii) applicable water quality standards will not be contravened in any adjacent waters of the State.

Working Draft

(b) Nothing contained in this section shall be construed to allow any discharge that would preclude the best usage of Class GA waters specified in section 701.15 of this Title.

This matter is a legal question that is beyond the scope of this project. It appears this issue will ultimately need to be decided by the courts.

2.7.5 TOWN WASTEWATER DISTRICTS

The Town has established the following wastewater districts in addition to the Scavenger Waste District as described above:

- **Camp Hero Sewer District** established by the Town Board on July 23, 1983 which authorized the expenditure of $182,500. for improvements to the community septic system;

- **Town Wide Wastewater Disposal District** established on September 16, 1983 under Town Law, Section 209-f with the boundaries being the entire Town excluding certain listed properties in the Village of Sag Harbor. Resolution authorized $2,890,000 for construction of the Scavenger Waste Treatment Facility.

2.8 LOT SIZES

Tables 2-16 and 2-17 present East Hampton lot sizes and percent of totals for existing developed properties and buildout developed properties, respectively.

Approximately 50% of all Town developed and buildout lots are < 0.5 acres with 34% of Montauk lots < 0.25 acres.

Working Draft

Table 2-16 East Hampton Lot Sizes – Existing Developed Properties

School District	<1/4 Acre	1/4 - 1/2 Acre	1/2 - 1.0	>1.0 Acre	Total
Amagansett	495	535	528	705	**2,263**
East Hampton	853	1,655	2,619	2,450	**7,577**
Montauk	1,318	1,215	888	546	**3,967**
Springs	372	2,141	1,236	592	**4,341**
Wainscott	72	155	363	465	**1,055**
Total	**3,110**	**5,701**	**5,634**	**4,758**	**19,203**

% of Lots in each Size Category & Cumulative Totals					
Amagansett	22%	24%	23%	31%	100%
East Hampton	11%	22%	35%	32%	100%
Montauk	33%	31%	22%	14%	100%
Springs	9%	49%	28%	14%	100%
Wainscott	7%	15%	34%	44%	100%
% of Total	16%	30%	29%	25%	100%
Cum. % of Total	16%	46%	75%	100%	

Table 2-17 East Hampton Lot Sizes – Buildout Developed Properties*

School District	<1/4 Acre	1/4 - 1/2 Acre	1/2 - 1.0 Acre	>1.0 Acre	Total
Amagansett	540	560	576	820	**2,496**
East Hampton	1,007	1,783	2,824	2,769	**8,383**
Montauk	1,424	1,348	1,000	630	**4,402**
Springs	511	2,380	1,349	679	**4,919**
Wainscott	83	172	390	526	**1,171**
Total	**3,565**	**6,243**	**6,139**	**5,424**	**21,371**

% of Lots in each Size Category & Cumulative Totals					
Amagansett	22%	22%	23%	33%	100%
East Hampton	12%	21%	34%	33%	100%
Montauk	32%	31%	23%	14%	100%
Springs	10%	48%	27%	14%	100%
Wainscott	7%	15%	33%	45%	100%
% of Total	17%	29%	29%	25%	100%
Cum. % of Total	17%	46%	75%	100%	

Buildout totals do not included lots that are not developable

Working Draft

3 NATURAL RESOURCE CHARACTERISTICS

3.1 GENERAL ENVIRONMENTAL DESCRIPTION OF EAST HAMPTON WATERSHEDS

Accabonac Harbor is located in the Town of East Hampton and is one of the major undeveloped coastal wetland ecosystems on Long Island. The watershed supports extensive salt marshes and is surrounded by largely developed woodlands. The Town and several other stakeholders including the Nature Conservancy own a number of parcels in the area. This diverse area is important to a variety of fish and wildlife, including several endangered, threatened, and special concern species. Most of the Accabonac Harbor area receives relatively little human disturbance, but there is extensive recreational use of the beaches and launching ramps for both private and commercial boaters.

The Accabonac Watershed has been designated by the New York State Department of State as a Scenic Area of Statewide Significance (SASS). The Accabonac Harbor SASS is unique because of the pristine environmental character as well as public accessibility. It is one of the most scenic areas of the region's coastline, with dramatic views of coastal bluffs, sandy beaches, and extensive tidal estuaries. The US Fish & Wildlife Service has listed Accabonac Harbor as a habitat area of special concern by virtue of the diversity of its habitats and that serves as breeding areas for several rare and endangered species.

3.2 SOILS

Information on the soils types was obtained from the USDA SSURGO database http://soils.usda.gov/survey/geography/ssurgo/ for the Town of East Hampton. The following data was obtained:

- Soil texture and permeability, by soil stratum
- Physical and Engineering properties
  - % Sand
  - % Silt
  - % Clay
  - Moist bulk density
  - K_{SAT} range
  - Available Water Capacity range
  - Linear extensibility range
  - Organic matter range
  - K_W factor, K_F factor, T factor
  - Wind erodibility group and index
  - Soil texture
- Hydric classification

LAI reviewed the above data for each soil type to determine which data would be used to classify a soil's capacity for wastewater effluent disposal. Soil characteristics have a critical effect on the type of onsite wastewater solutions that are feasible. Hydric soils are not suitable for onsite disposal due to the lack of sufficient unsaturated soils between the bottom of the leaching pools and the seasonal high groundwater table. Soils with a low hydraulic loading rate (HLR) require larger areas to dispose of the same quantity of wastewater as compared to soils with a higher HLR. For the same soils, disposal of

Working Draft

treated wastewater effluent (BOD < 30-mg/L) will have a higher HLR than for disposal of untreated septic tank effluent (STE). For each soil type, LAI identified the soil horizon with the most limiting texture and assigned a HLR in accordance with Table 4-3 from the 2002 US EPA Manual Onsite Wastewater Treatment Systems Manual (EPA/625/R-00/008) for both treated effluent (BOD < 30-mg/L) and septic tank effluent (STE).

Soil structure for loamy and clayey soils mapped in the area was evaluated from official soil series descriptions (USDA-NRCS, 2013). Most of the loamy horizons were described as having weak structure, corresponding to values shown in the 2002 EPA Manual. Exceptions include the Bridgehampton soil series for which the typical structure for silt loam horizons was described as massive. The 2002 EPA Manual does not give a HLR for septic tank effluent (STE) for horizons with silt loam texture and massive structure because wastewater movement is assumed to be too slow for the onsite system to function. The HLR for wastewater with BOD<30 mg/l for silt loam texture and massive structure is given as 0.2 gpd/ft^2 as compared to the HLR of 0.6 gpd/ft^2 reported in Table 2-3. Therefore, this soil type is not suitable for use with conventional systems and a treatment system producing an effluent with BOD < 30-mg/L is required. Even with the treatment system, the HLR is very low and a large disposal system is required.

Montauk soils are reported in the Suffolk County Soil Survey (USDA-NRCS, 2013) to have a dense till layer that begins at 18 to 38 inches. This dense layer would restrict wastewater movement and reduction of the HLR from 0.4 to 0.2 gpd/ft^2 for STE and from 0.6 to 0.4 gpd/ft^2 for effluent with BOD <30 mg/L, with lower values possible. Similarly, Wallington soils are described as having a fragipan that begins at 18 to 24 inches. In most cases, fragipans severely restrict water movement. The HLR for this soil is reduced to 0.2 for STE and 0.4 gpd/ft^2 for effluent with BOD <30 mg/l with the possibility of lower HLRs in local areas.

Soils with a shallow seasonal high groundwater table, indicated by a low (<2.5-ft) depth to groundwater (DGW), will require mounded disposal areas to provide the minimum separation distance (three (3) feet in Suffolk County for leaching pools or two (2) feet for shallow alternative systems to achieve minimum bacterial purification) between the bottom of the drainfield/leaching pool and seasonal groundwater. Soils that have both a low DGW and low HLR will require large mounded systems. Mounded systems by design require a larger footprint due to the required minimum side slopes or setbacks from retaining walls. The higher the mound, the larger the area that will be required and the higher the associated system cost. Large, mounded disposal areas are not feasible for smaller lots, and they are very expensive for lots where there is sufficient area to site them. For flat sites, mounded systems are generally aesthetically unappealing. In some cases an off-site solution is more cost-effective than an on-site mounded system.

For each soil type, LAI determined the category of wastewater management needs (i.e. solution type) required for that soil type. Table 3-1 presents soil characteristics, needs/solution categories, and corresponding map colors of Figure 3-1 which illustrates the wastewater management needs for areas based upon soils only.

Working Draft

Table 3-1 Soils Categories and Proposed Wastewater Management Solution

Category #	Map Color	Description	WW Management Needs / Solution
1	White	No Data	None
2	Red	Hydric - Not Suitable	Offsite Required
3	Orange	Depth to GW < 2.5-ft.	Mounded System
4	Orange / Hatched	Depth to GW < 2.5-ft., Low HLR	Large Mounded System
5	Yellow	Low HLR - Treatment System Required	Treatment System and Large System Required
6	Green	Suitable Soils and DGW	Conventional Septic

Table 3-2 presents the condensed soils data most relevant to wastewater disposal, the LAI-assigned soils category from Table 3-1 and the percentage of the Town of East Hampton and each of the School Districts that contains each soil type. The soil types by School District are presented on Table 3-3. Figure 3-1 illustrates the East Hampton categorized soils.

Working Draft

Table 3-2 Soils Types and Needs/Solutions Categories

Map Unit Symbol	Soils Category - Old	Soils Category - Final	Map Unit Name	Typical Depth to Seasonal Water Table (in)	Drainage Class	Special Features	HLR STE (gpd/ft^2)	HLR BOD<30 (gpd/ft^2)	Typical Structure	% of Town
Bc	1	0	Beaches	>80	excessively drained		----	----		1.38%
CuB	1	0	Cut and fill land, gently sloping	----	----		----	----		0.68%
CuC	1	0	Cut and fill land, sloping	----	----		----	----		0.05%
CuE	1	0	Cut and fill land, steep	----	----		----	----		0.01%
Du	1	0	Dune land	----	----		----	----		7.56%
Es	1	0	Escarpments	----	----		----	----		0.19%
Fd	1	0	Fill land, dredged material	----	----		----	----		0.65%
Gp	1	0	Gravel pits	----	----		----	----		0.38%
Ma	1	0	Made Land							0.12%
Rc	1	0	Recharge basin	----	----		----	----		0.01%
Ur	1	0	Urban land							0.21%
At	2	1	Atsion sand	6	poorly drained		0.8	1.6		0.28%
Bd	2	1	Berryland mucky sand	3	very poorly drained		0.8	1.6		0.49%
BhB	2	1	Bridgehampton silt loam till substratum, 2 to 6 percent slopes	>80	well drained		0	0.2	silt loam - massive structure	2.23%
De	2	1	Deerfield sand	27	moderately well drained		0.8	1.6		0.76%
Fs	2	1	Fill land, sandy	----	----		----	----		0.16%
Mu	2	1	Muck	----	----		----	----		1.08%
Ra	2	1	Raynham loam	6	somewhat poorly and pooly drained		0.4	0.6	weak structure	0.20%
ScB	2	1	Scio silt loam, till substratum, 2 to 6 percent slopes	21	moderately well drained		0.4	0.6	silt loam - weak structure	0.58%
Tm	2	1	Tidal marsh							2.71%
W	2	1	Water							2.40%
Wa	2	1	Wallington silt loam, till substratum	12	somewhat poorly drained	fragipan beginning at 18 to 24"	0.2	0.4		0.89%
Wd	2	1	Walpole sandy loam	6	poorly drained		0.4	0.7	sandy loam - weak structure	0.02%
We	2	1	Wareham loamy sand	6	poorly drained		0.8	1.6		0.74%
Wh	2	1	Whitman sandy loam	0	very poorly drained		0.2	0.6	sandy loam - massive	1.04%
SdA	3	1	Scio silt loam, sandy substratum, 0 to 2 percent slopes	21	moderately well drained		0.4	0.6	silt loam - weak structure	0.11%
Su	3	1	Sudbury sandy loam	27	moderately well drained		0.4	0.7	sandy loam - weak structure	0.01%

Working Draft

Table 3-2 Cont. Soils Types and Needs/Solutions Categories

Map Unit Symbol	Soils Category - Old	Soils Category - Final	Map Unit Name	Typical Depth to Seasonal Water Table (in)	Drainage Class	Special Features	HLR STE (gpd/ft^2)	HLR BOD<30 (gpd/ft^2)	Typical Structure	% of Town
MfA	4	2	Montauk fine sand loam, 0 to 3 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		0.19%
MfB	4	2	Montauk fine sand loam, 3 to 8 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		1.82%
MfC	4	2	Montauk fine sand loam, 8 to 15 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		2.18%
MkA	4	2	Montauk silt loam, 0 to 3 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		0.01%
MkB	4	2	Montauk silt loam, 3 to 8 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		1.02%
MkC	4	2	Montauk silt loam, 8 to 15 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		1.05%
MlB	4	2	Montauk soils, graded, 0 to 8 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		0.45%
MlC	4	2	Montauk soils, graded, 8 to 15 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		0.08%
MnA	4	2	Montauk loamy sand, sandy variant, 0 to 3 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		3.48%
MnB	4	2	Montauk loamy sand, sandy variant, 3 to 8 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		4.62%
MnC	4	2	Montauk loamy sand, sandy variant, 8 to 15 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		2.42%
MnE	4	2	Montauk loamy sand, sandy variant, 15 to 35 percent slopes	26	well drained	dense horizon beginning at 18 to 38"	0.2	0.4		4.60%
BgA	5	3	Bridgehampton silt loam, 0 to 2 percent slopes	>80	well drained		0.0	0.2	silt loam - massive structure	6.21%
BgB	5	3	Bridgehampton silt loam, 2 to 6 percent slopes	>80	well drained		0.0	0.2	silt loam - massive structure	2.04%
BhC	5	3	Bridgehampton silt loam till substratum, 6 to 12 percent slopes	>80	well drained		0.0	0.2	silt loam - massive structure	1.36%
Bm	5	3	Bridgehampton silt loam, graded	>80	well drained		0.0	0.2	silt loam - massive structure	0.17%

Working Draft

Table 3-2 Cont. Soils Types and Needs/Solutions Categories

Map Unit Symbol	Soils Category - Old	Soils Category - Final	Map Unit Name	Typical Depth to Seasonal Water Table (in)	Drainage Class	Special Features	HLR STE (gpd/ft^2)	HLR BOD<30 (gpd/ft^2)	Typical Structure	% of Town
CpA	6	3	Carver and Plymouth sands, 0 to 3 percent slopes	>80	excessively drained		0.8	1.6		5.19%
CpC	6	3	Carver and Plymouth sands, 3 to 15 percent slopes	>80	excessively drained		0.8	1.6		15.13%
CpE	6	3	Carver and Plymouth sands, 15 to 35 percent slopes	>80	excessively drained		0.8	1.6		5.30%
HaA	6	3	Haven loam, 0 to 2 percent slopes	>80	well drained		0.4	0.6	loam - weak structure	0.47%
HaB	6	3	Haven loam, 2 to 6 percent slopes	>80	well drained		0.4	0.6	loam - weak structure	0.36%
HaC	6	3	Haven loam, 6 to 12 percent slopes	>80	well drained		0.4	0.6	loam - weak structure	0.19%
He	6	3	Haven loam, thick surface layer	>80	well drained		0.4	0.6	loam - weak structure	0.12%
PlA	6	3	Plymouth loamy sand, 0 to 3 percent slopes	>80	excessively drained		0.8	1.6		4.07%
PlB	6	3	Plymouth loamy sand, 3 to 8 percent slopes	>80	excessively drained		0.8	1.6		5.19%
PlC	6	3	Plymouth loamy sand, 8 to 15 percent slopes	>80	excessively drained		0.8	1.6		1.64%
PmB3	6	3	Plymouth gravelly loamy sand, 3 to 8 percent slopes, eroded	>80	excessively drained		0.8	1.6		0.01%
PmC3	6	3	Plymouth gravelly loamy sand, 8 to 15 percent slopes, eroded	>80	excessively drained		0.8	1.6		0.03%
PsA	6	3	Plymouth loamy sand, silty substratum, 0 to 3 percent slopes	>80	excessively drained		0.8	1.6		3.14%
PsB	6	3	Plymouth loamy sand, silty substratum, 3 to 8 percent slopes	>80	excessively drained		0.8	1.6		1.49%
RdA	6	3	Riverhead sandy loam, 0 to 3 percent slopes	>80	well drained		0.4	0.7	sandy loam - weak structure	0.72%
RdB	6	3	Riverhead sandy loam, 3 to 8 percent slopes	>80	well drained		0.4	0.7	sandy loam - weak structure	0.25%
RdC	6	3	Riverhead sandy loam, 8 to 15 percent slopes	>80	well drained		0.4	0.7	sandy loam - weak structure	0.03%
RhB	6	3	Riderhead and Haven soils, graded, 0 to 8 percent slopes	>80	well drained					0.03%

Working Draft

Table 3-3 Soils Categories by School District

Soil Category	Description	% of Montauk Soils	% of Amagansett Soils	% of Springs Soils	% of East Hampton Soils	% of Village of East Hampton Soils	% of Wainscott Soils
1	No Data	12.4%	36.0%	4.0%	3.2%	9.8%	4.7%
2	Hydric - Not Suitable	27.4%	9.5%	9.9%	7.9%	17.8%	1.4%
3	Depth to GW < 2.5-ft.	0.3%	0.0%	0.0%	0.0%	0.1%	0.2%
4	Depth to GW < 2.5-ft., Low HLR	35.8%	19.9%	56.4%	9.4%	0.0%	0.0%
5	Low HLR - Treatment System Required	6.4%	10.6%	0.0%	6.7%	48.9%	7.6%
6	Suitable Soils and DGW	17.7%	24.0%	29.7%	72.8%	23.4%	86.0%
		100.0%	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

3.3 SURFICIAL GEOLOGIC FEATURES

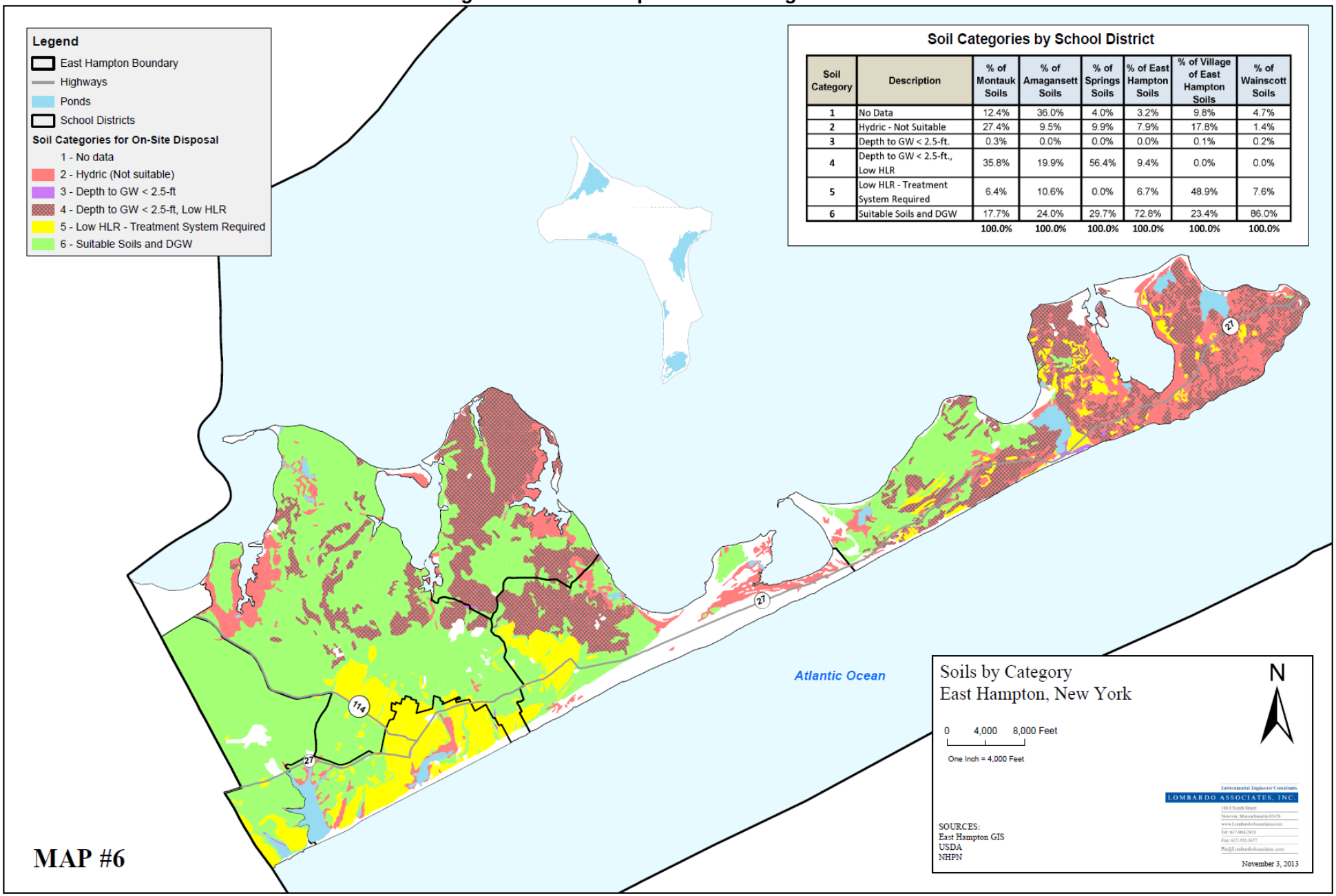
Figure 3-2 illustrates the surficial geology in East Hampton. Table 3-4 presents the surficial geology types in East Hampton, their characteristics.

Table 3-4 East Hampton Surficial Geology

Surficial Geology Type	CHARACTERISTICS			
	Topography	Drainage	Texture	Sub-Base
Beach Deposits	Rolling and Hilly	Deep, excessively drained	Coarse-textured soils	Moraines
Marsh Deposits	Sand dunes, tidal marshes, and beaches			
Ronkonkoma Drift	Deep, nearly level to gently sloping	Well drained to moderately well drained	medium-textured soils	outwashed plains
Outwashed Deposits	Deep, rolling and hilly	excessively drained	Coarse-textured soils	Moraines
Artificial Fill	Deep, rolling and hilly	excessively drained and moderately well drained to well drained	medium-textured soils to coarse-textured soils	Moraines

Working Draft

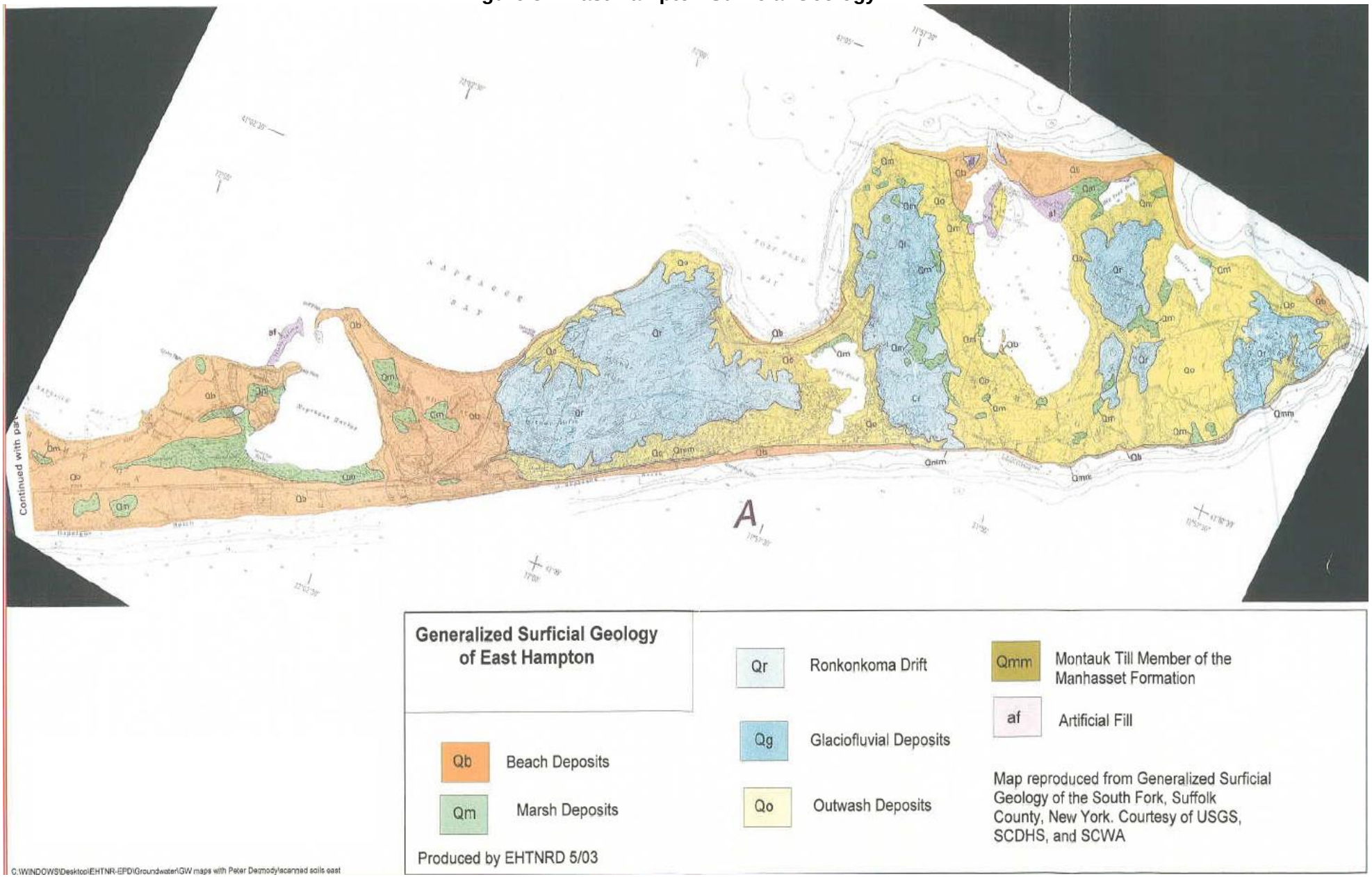
Figure 3-1 East Hampton Soils Categorization



Soil Categories by School District

Soil Category	Description	% of Montauk Soils	% of Amagansett Soils	% of Springs Soils	% of East Hampton Soils	% of Village of East Hampton Soils	% of Wainscott Soils
1	No Data	12.4%	36.0%	4.0%	3.2%	9.8%	4.7%
2	Hydric - Not Suitable	27.4%	9.5%	9.9%	7.9%	17.8%	1.4%
3	Depth to GW < 2.5-ft.	0.3%	0.0%	0.0%	0.0%	0.1%	0.2%
4	Depth to GW < 2.5-ft., Low HLR	35.8%	19.9%	56.4%	9.4%	0.0%	0.0%
5	Low HLR - Treatment System Required	6.4%	10.6%	0.0%	6.7%	48.9%	7.6%
6	Suitable Soils and DGW	17.7%	24.0%	29.7%	72.8%	23.4%	86.0%
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 3-2 East Hampton Surficial Geology



3.4 TOPOGRAPHY

The Suffolk County Digital Elevation Model (DEM), used to generate the 20-ft contours, as presented on Figure 3-3. LAI has generated 1 foot contours for use in engineering analysis. Surface elevations in East Hampton range from 180 feet to sea level. It is noted that areas with excessive slope (>15%) complicate on-site disposal of treated wastewater.

3.5 FLOOD PLAINS & S.L.O.S.H.

Figure 3-4 presents the FEMA floodplains for East Hampton.

The Sea, Lake and Overland Surges from Hurricanes (SLOSH) impacted areas in East Hampton are presented on Figure 3-5 and have the following categories:

SLOSH Category	Surge Range (feet)
1	7 - 12
2	12 - 15
3	15 - 20
4	20 - 25

3.6 WETLANDS

Figure 3-6 illustrates the types and locations of wetlands in East Hampton wetlands. The wetland areas are defined by the National Wetland Inventory and potential wetland areas per USDA, NRCS mapped hydric soils and NYSDEC maps.

(a) Class I wetlands have one or more of the following characteristics:

- Kettlehole Bog
- Habitat of an endangered or threatened animal species
- Contains an endangered or threatened plant species
- Supports an animal species in abundance or diversity unusual for the state or for the major region of the state in which it is found
- Tributary to a body of water which could subject a substantially developed area to significant damage from flooding or from additional flooding should the wetland be modified, filled, or drained
- Adjacent or contiguous to a body of water used for, or connected to, a public water supply
- Contains four or more of the enumerated Class II characteristics

(b) Class II wetlands has any of the following seventeen enumerated characteristics:

- Emergent marsh in which purple loosestrife and/or reed (phragmites) constitutes less than two-thirds of the covertype
- Two or more wetland structural groups

Working Draft

- Tidal Wetland
- Associated with permanent open water outside the wetland
- Adjacent or contiguous to streams
- Traditional migration habitat of an endangered or threatened animal species
- Habitat of an animal species vulnerable in the state
- Contains a plant species vulnerable in the state
- Supports an animal species in abundance or diversity unusual for the county
- Archaeological or paleontological significance
- Associated with an unusual geological feature
- Tributary to a body of water which could subject a lightly developed area, an area used for growing crops for harvest, or an area planned for development by a local planning authority, to significant damage from flooding or from additional flooding should the wetland be modified, filled, or drained
- Connected to an aquifer identified by a government agency as a potentially useful water supply
- Tertiary treatment capacity for a sewage disposal system
- Within an urbanized area
- One of the three largest wetlands within a city, town, or NYC borough
- Within a publicly owned recreation area

(c) Class III wetlands have any of the following characteristics:

- Marsh in which purple loosestrife and/or reed (phragmites) constitutes two-thirds or more of the covertype
- Deciduous swamp
- Shrub swamp
- Consists of floating and/or submergent vegetation
- Consists of wetland open water
- Contains an island with an area or height above the wetland
- Total alkalinity of at least 50 parts per million
- Adjacent to fertile upland
- Habitat of an animal species vulnerable in the major region of the state in which it is found, or it is traditional migration habitat of an animal species vulnerable in the state or in the major region
- Contains a plant species vulnerable in the major region
- Part of a surface water system with permanent open water and it receives significant pollution of a type amenable to amelioration by wetlands
- Visible from an interstate highway, a parkway, a designated scenic highway, or a passenger railroad and serves a valuable aesthetic or open space function
- One of the three largest wetlands of the same covertype within a town
- Is in a town in which wetland acreage is less than one percent of the total acreage
- On publicly owned land that is open to the public

(d) Class IV wetlands do not have any of the characteristics listed as criteria for Class I, II or III wetlands. Class IV wetlands will include wet meadows and coniferous swamps which lack other characteristics.

Working Draft

Figure 3-3 East Hampton Topography

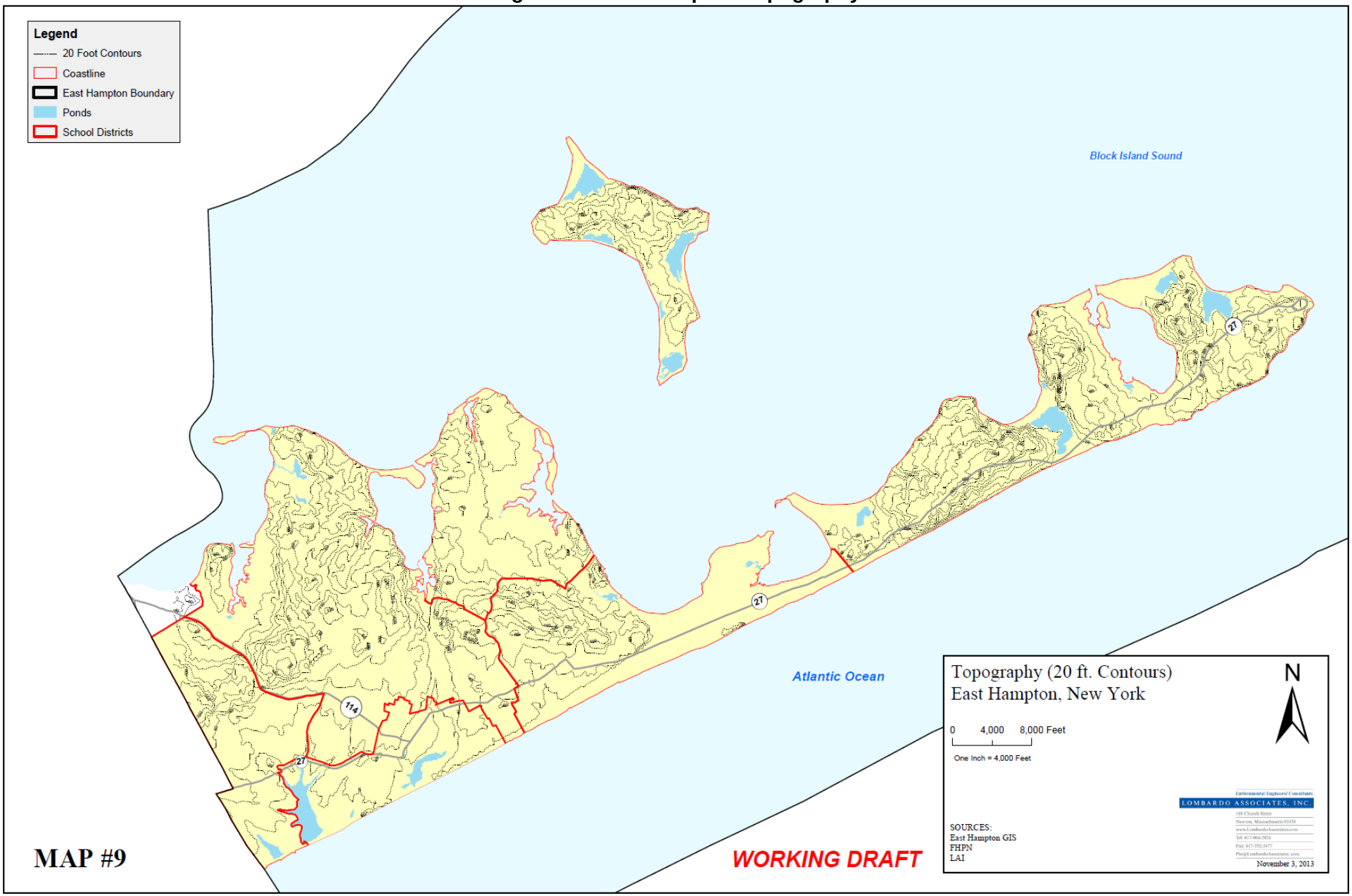


Figure 3-4 FEMA Floodplains in East Hampton

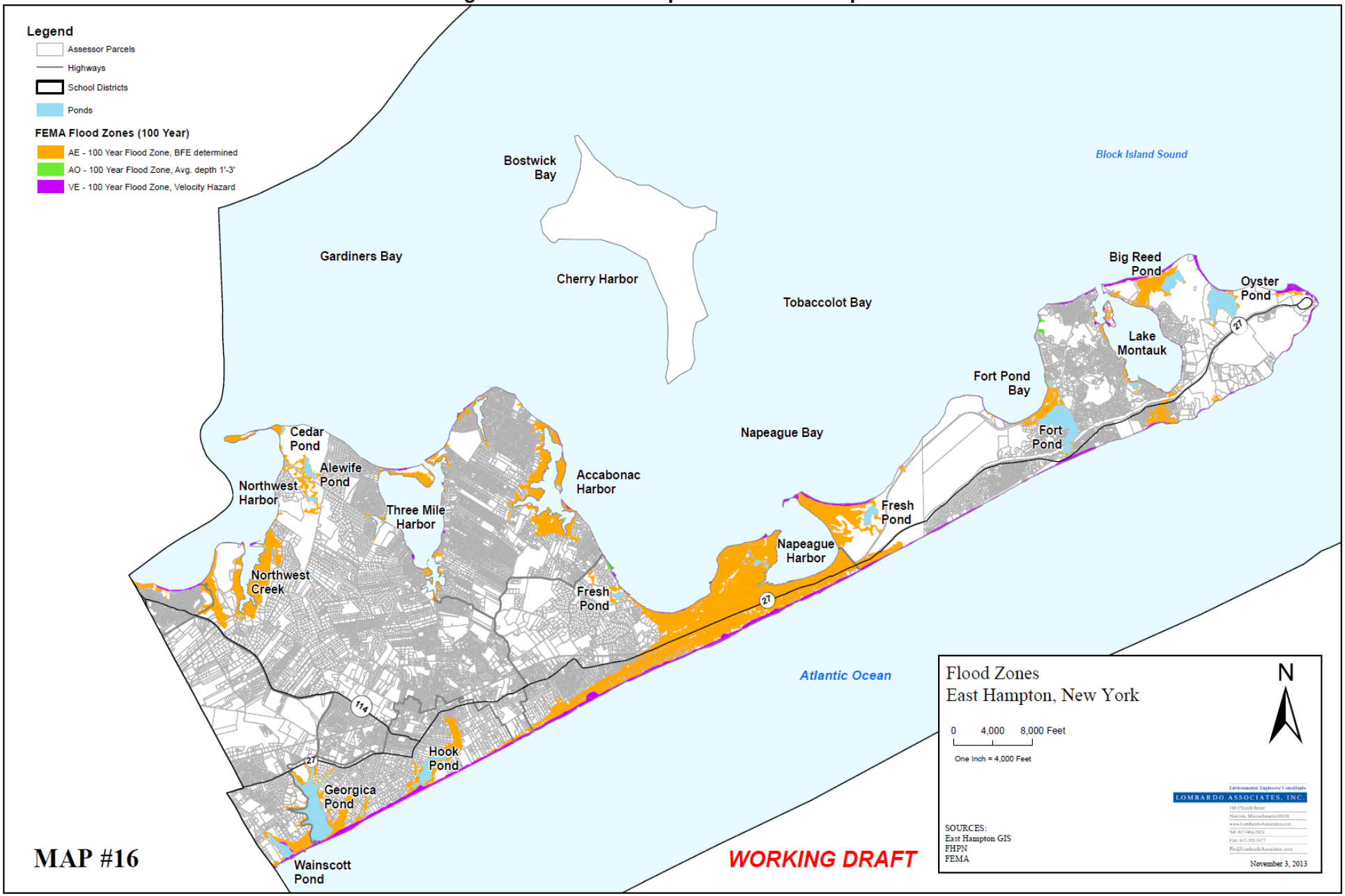


Figure 3-5 SLOSH Areas in East Hampton

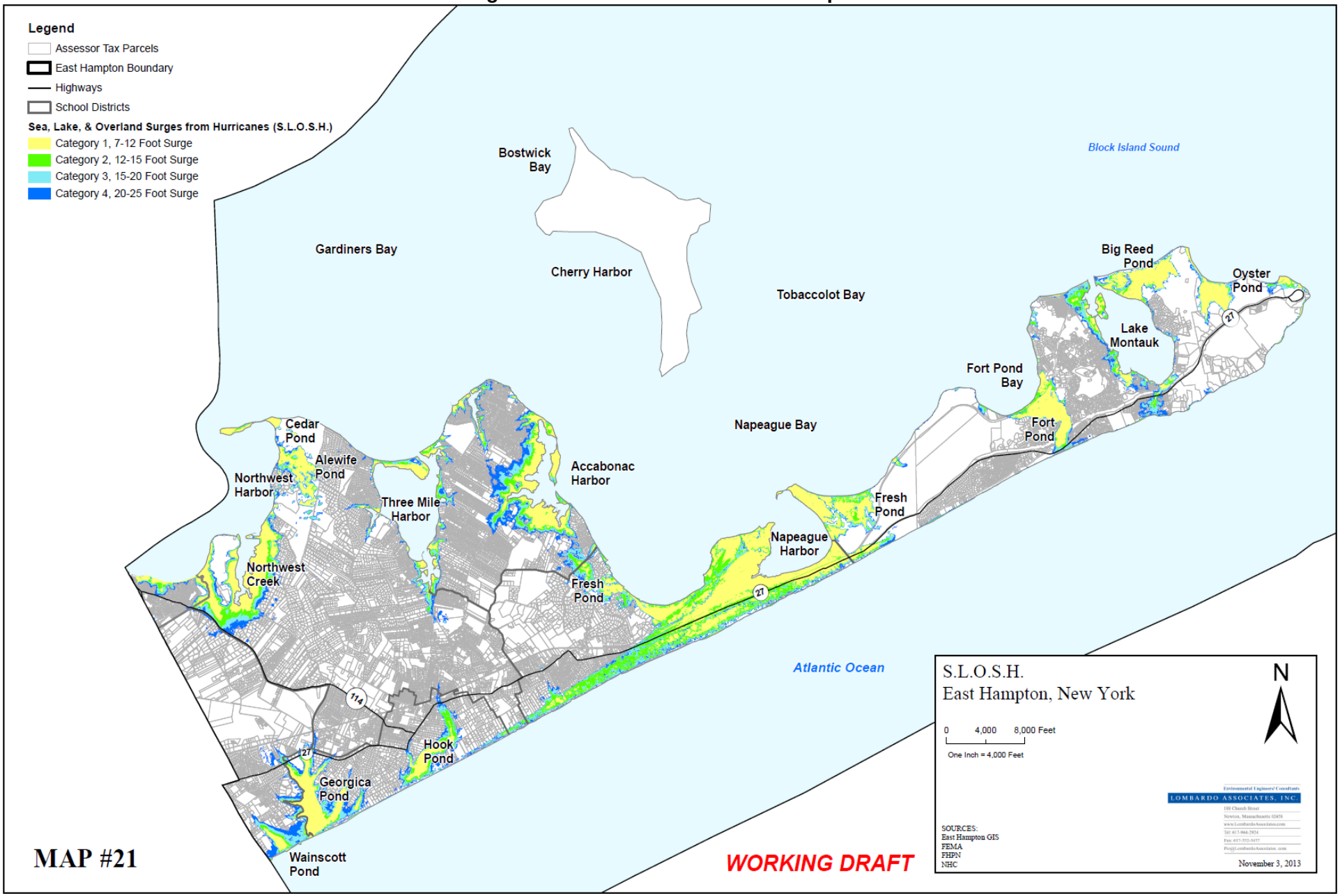
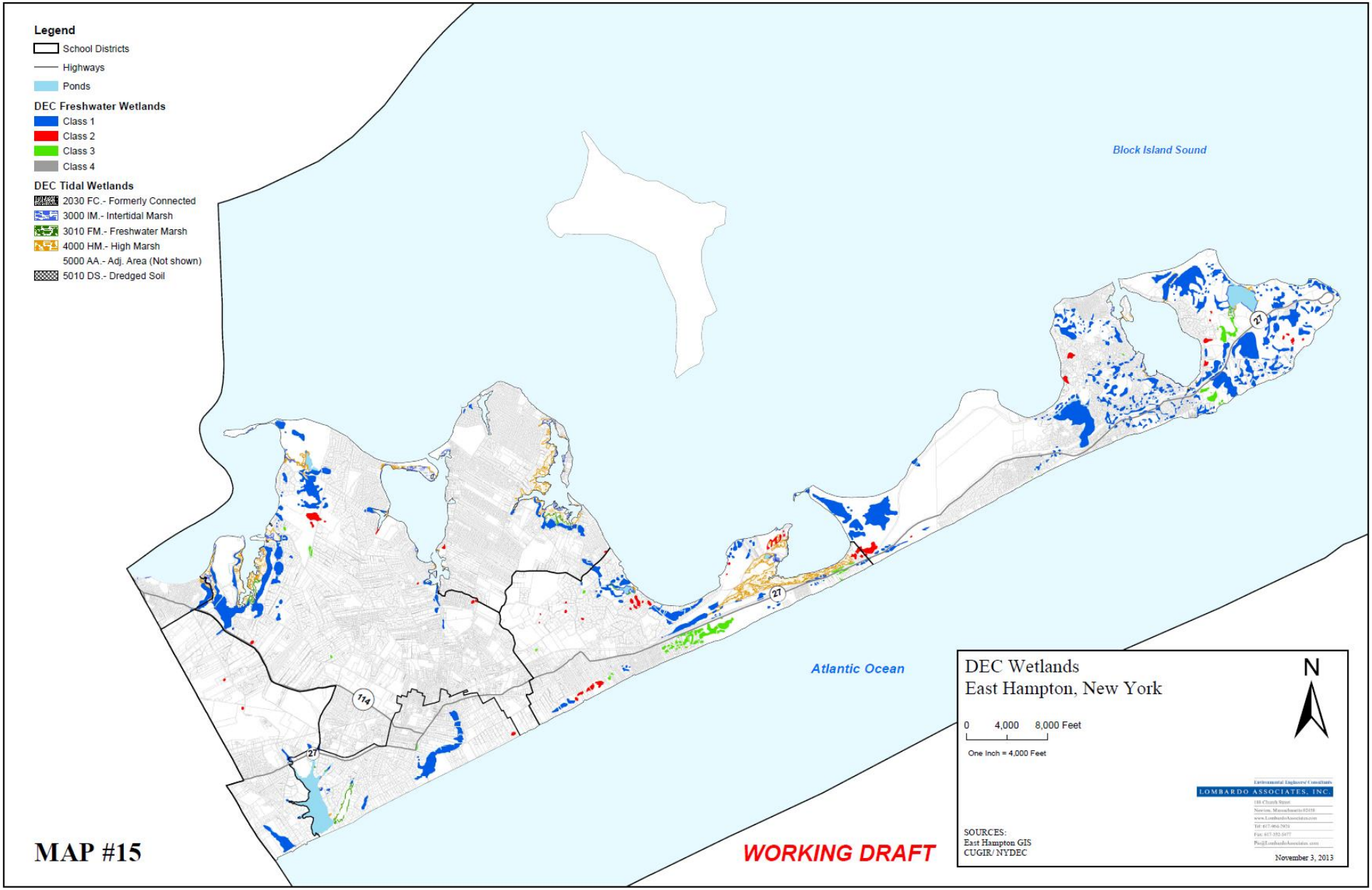


Figure 3-6 DEC Wetlands in East Hampton



3.7 WATER RESOURCES

3.7.1 GROUNDWATER & SURFACE WATER QUANTITY & WATERSHEDS

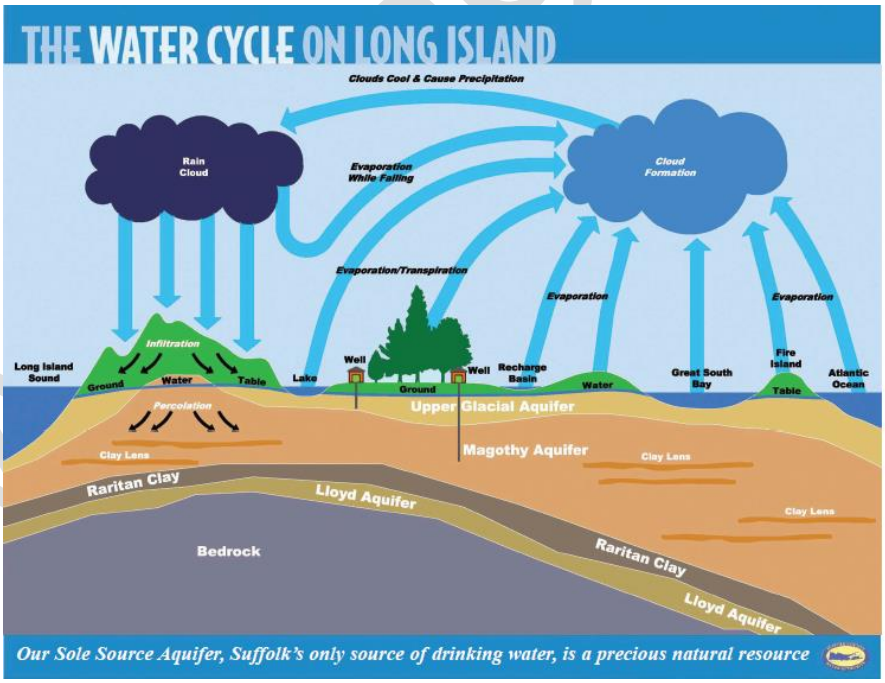
Water resources in East Hampton are composed of:

- Groundwater which is fed by rainfall infiltration and then discharges to surface waters;
- Surface water which receives some surface runoff, but is predominately fed by groundwater or is exposed groundwater.

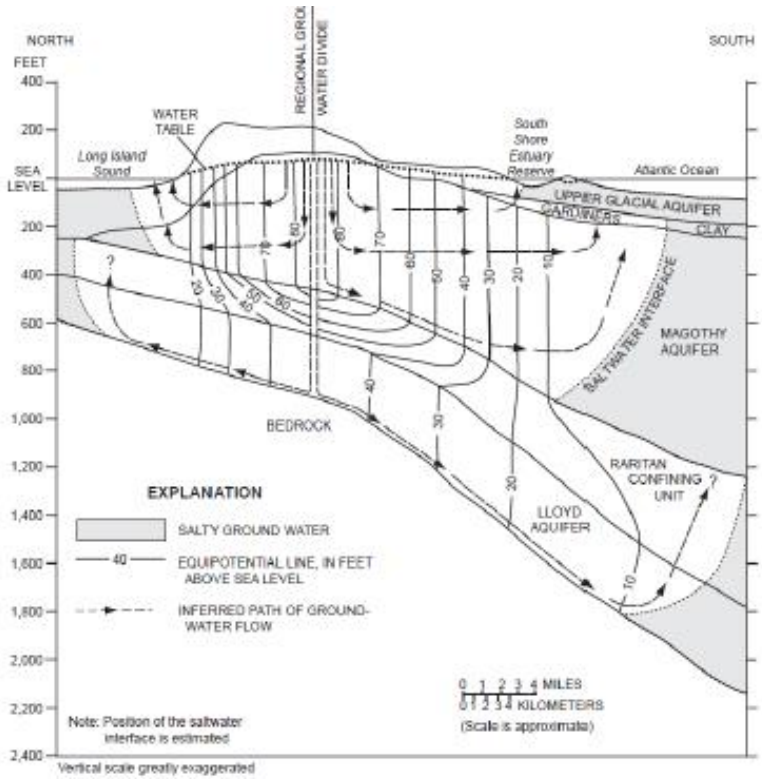
The Town's groundwater is its sole source water supply aquifer, as well as recipient of its wastewater discharges. Annual rainfall in East Hampton averages 45 inches per year, with approximately 50% infiltrating to groundwater, a modest amount to surface runoff and the balance is evaporated or transpired by vegetation(USGS, 1998). As described by the USGS, an alternative method of calculating recharge specifies an annual recharge rate equal to 75 to 90 percent of precipitation from October 15 through May 15.

Figure 3-7 illustrates the general water cycle on Long Island and illustrates the generalized directions of groundwater flow in the Town

Figure 3-7 Long Island Water Cycle & Generalized Groundwater Flow Directions



(SCWA website, 2012)



Generalized section showing hydrogeologic units and generalized directions of groundwater flow on the north and south shores of Long Island, N.Y. (Monti and Scorca, 2003; Nemickas and others, 1989)

East Hampton's groundwater is classified into the following two categories with the Zone V boundary illustrated on Figure 2-4 and the remaining areas being in Zone IV.

- Zone V area where the shallow aquifer flow is primarily downward and recharges the deeper aquifer;
- Zone IV in which groundwater flow is primarily lateral, with eventual discharge into the surrounding surface waters.

East Hampton's groundwater elevations and watershed boundaries as determined by the USGS, are illustrated on Figure 3-8 and 3-9 respectively. Water balances for the various East Hampton groundwater sheds were developed by USGS and are presented on Table 3-5. **Gin reviewing Figures 3-8 and 3-9, one needs to note that groundwater shed boundaries and elevations are not static and change based upon a variety of factors.**

3.7.2 DEPTH TO GROUNDWATER & GROUNDWATER TRAVEL TIMES & SEA LEVEL RISE CONSIDERATION

Figure 3-10 illustrates the travel times for groundwater that discharges to surface waters and illustrates the direct link between groundwater quality and potential impacts to surface waters. Depth to groundwater throughout East Hampton is illustrated on Figure 3-11.

Table 3-5 East Hampton Groundwater Watershed Water Balances

Groundwater Flows from East Hampton Watersheds							
Data from "Areas Contributing to the Peconic Estuary, and Ground Water Budgets for the North and South Folks and Shelter Island, Suffolk County, NY USGS, Water Resources Investigations Report 97-4136, 1998"							
Contributing Area			Inflow (ft^3/day)		Outflow (ft^3/day)		
Map identifier	Watershed Name	Acreage	Recharge from Precipitatoin	Public-supply return flow	Agricultural withdrawal	Public-supply withdrawal	Total Discharges[(a)]
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY							
SF9	Sag Harbor	3,300	732,000	28,200	4,000	106,000	649,000
SF10	Northwest Harbor	6,990	1,570,000	18,800	200	0	1,590,000
SF11	3-Mile Harbor	6,680	1,500,000	2,300	400	0	1,500,000
SF12	Accabonac Harbor	5,070	1,140,000	1,300	200	0	1,140,000
SF13	Napeague Harbor West	930	209,000	3,100	0	0	212,000
SF14	Napeague Harbor East	440	100,000	600	0	0	101,000
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	3,070	674,000	18,400	0	42,400	650,000
SF16	Lake Montauk	2,360	524,000	34,100	200	33,300	524,000
SF17	Oyster Pond	1,710	356,000	0	0	0	356,000
South Fork Areas Contributing to Atlantic Ocean							
SF18	Southern East Hampton from Nepeague Harbor to Montauk	4,100	915,000	35,000	600	26,000	923,000

a Estimate of total discharge determined from computed sum of recharge from precipitation, public-supply withdrawal and return flow, and agricultural withdrawal. The quantity may not equal the sum of these components because of rounding to significant digits.

Units change from ft^3/day to Gallons/day							
Contributing Area			Inflow (gal/day)		Outflow (gal/day)		
Map identifier	Watershed Name	Acreage	Recharge from Precipitatoin	Public-supply return flow	Agricultural withdrawal	Public-supply withdrawal	Total Discharges[(a)]
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY							
SF9	Sag Harbor	3,300	5,475,360	210,936	29,920	792,880	4,854,520
SF10	Northwest Harbor	6,990	11,743,600	140,624	1,496	0	11,893,200
SF11	3-Mile Harbor	6,680	11,220,000	17,204	2,992	0	11,220,000
SF12	Accabonac Harbor	5,070	8,527,200	9,724	1,496	0	8,527,200
SF13	Napeague Harbor West	930	1,563,320	23,188	0	0	1,585,760
SF14	Napeague Harbor East	440	748,000	4,488	0	0	755,480
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	3,070	5,041,520	137,632	0	317,152	4,862,000
SF16	Lake Montauk	2,360	3,919,520	255,068	1,496	249,084	3,919,520
SF17	Oyster Pond	1,710	2,662,880	0	0	0	2,662,880
South Fork Areas Contributing to Atlantic Ocean							
SF18	Southern East Hampton from Nepeague Harbor to Montauk	4,100	6,844,200	261,800	4,488	194,480	6,904,040

Working Draft

Figure 3-8 East Hampton Groundwater Elevations & Peconic – Atlantic Ocean Boundary

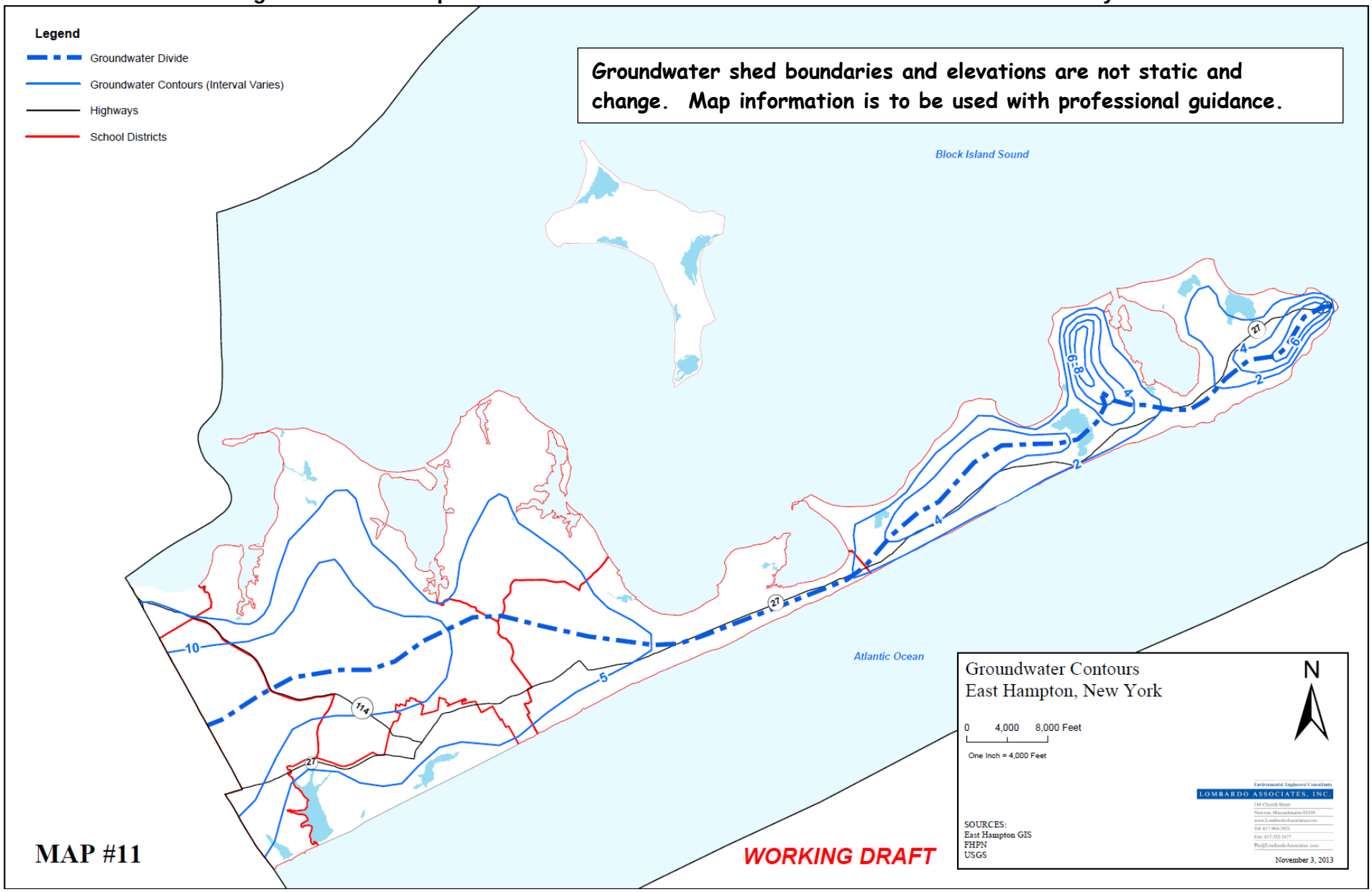


Figure 3-9 East Hampton Major Groundwater Watershed Boundaries

Groundwater Flows to Peconic Estuary and Atlantic Ocean from East Hampton Watersheds

Data from "Areas Contributing to the Peconic Estuary, and Ground Water Budgets for the North and South Folks and Shelter Island, Suffolk County, NY USGS, Water Resources Investigations Report 97-4136, 1998"

Contributing Area			Inflow (CFD)		Outflow (CFD)		
Map ID	Watershed Name	Acreage	Recharge from Precipitatoin	Public-supply return flow	Agricultural withdrawal	Public-supply withdrawal	Total Discharges[36]
SOUTH FORK AREAS IN EAST HAMPTON CONTRIBUTING TO PECONIC ESTUARY							
SF9	Sag Harbor	3,300	732,000	28,200	4,000	106,000	649,000
SF10	Northwest Harbor	6,990	1,570,000	18,800	200	0	1,590,000
SF11	3-Mile Harbor	6,680	1,500,000	2,300	400	0	1,500,000
SF12	Accabonac Harbor	5,070	1,140,000	1,300	200	0	1,140,000
SF13	Napeague Harbor West	930	209,000	3,100	0	0	212,000
SF14	Napeague Harbor East	440	100,000	600	0	0	101,000
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	3,070	674,000	18,400	0	42,400	650,000
SF16	Lake Montauk	2,360	524,000	34,100	200	33,300	524,000
SF17	Oyster Pond	1,710	356,000	0	0	0	356,000
	Total	30,550	6,805,000	106,800	5,000	181,700	6,722,000
SOUTH FORK AREAS IN EAST HAMPTON CONTRIBUTING TO ATLANTIC OCEAN							
SF18	Southern East Hampton from Nepeague Harbor to Montauk	4,100	915,000	35,000	600	26,000	923,000
SF19	Shinnecock to Nepeague Harbor	37,400	8,270,000	584,000	200,000	490,000	8,160,000
	Total	41,500	9,185,000	619,000	200,600	516,000	9,083,000

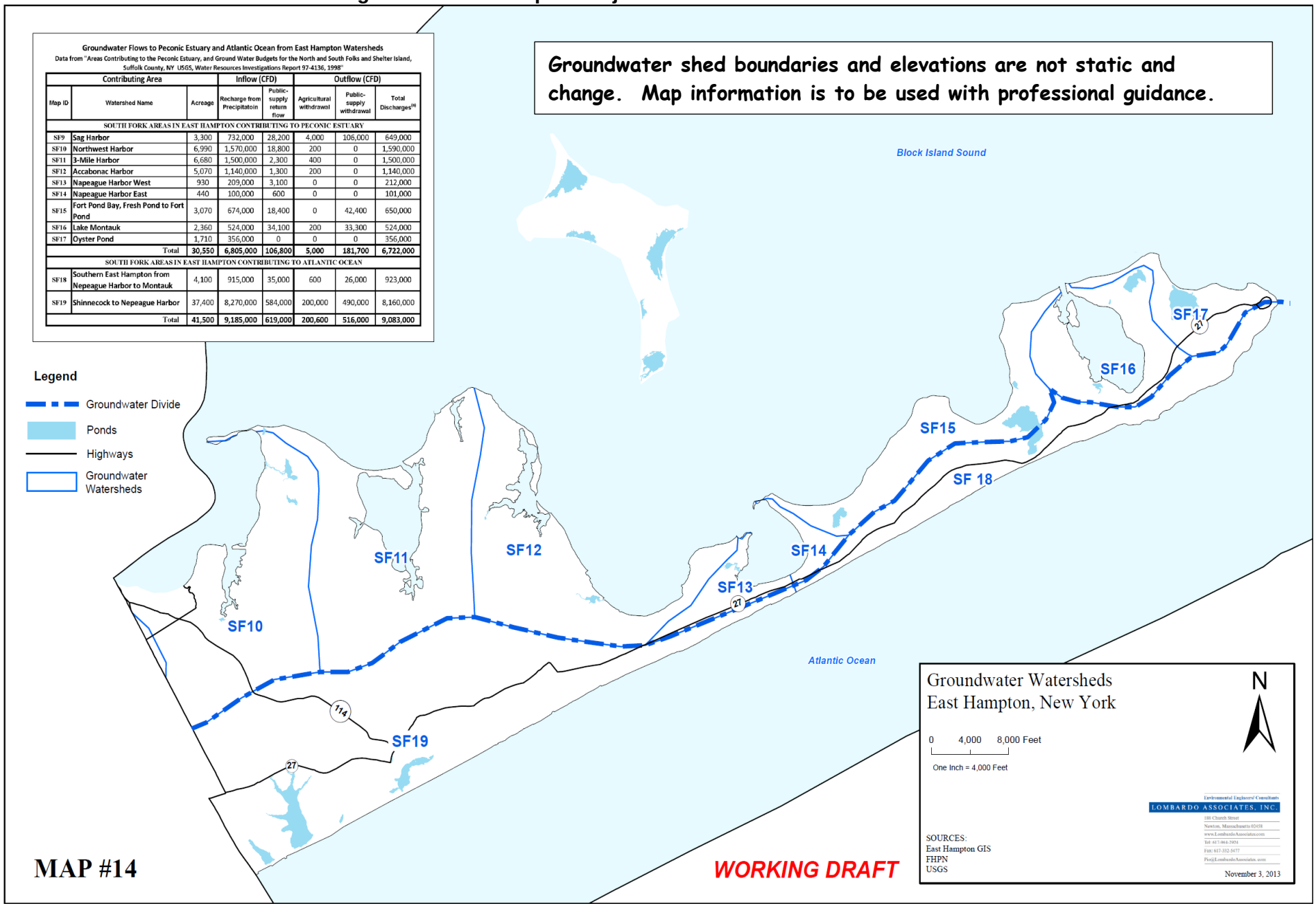
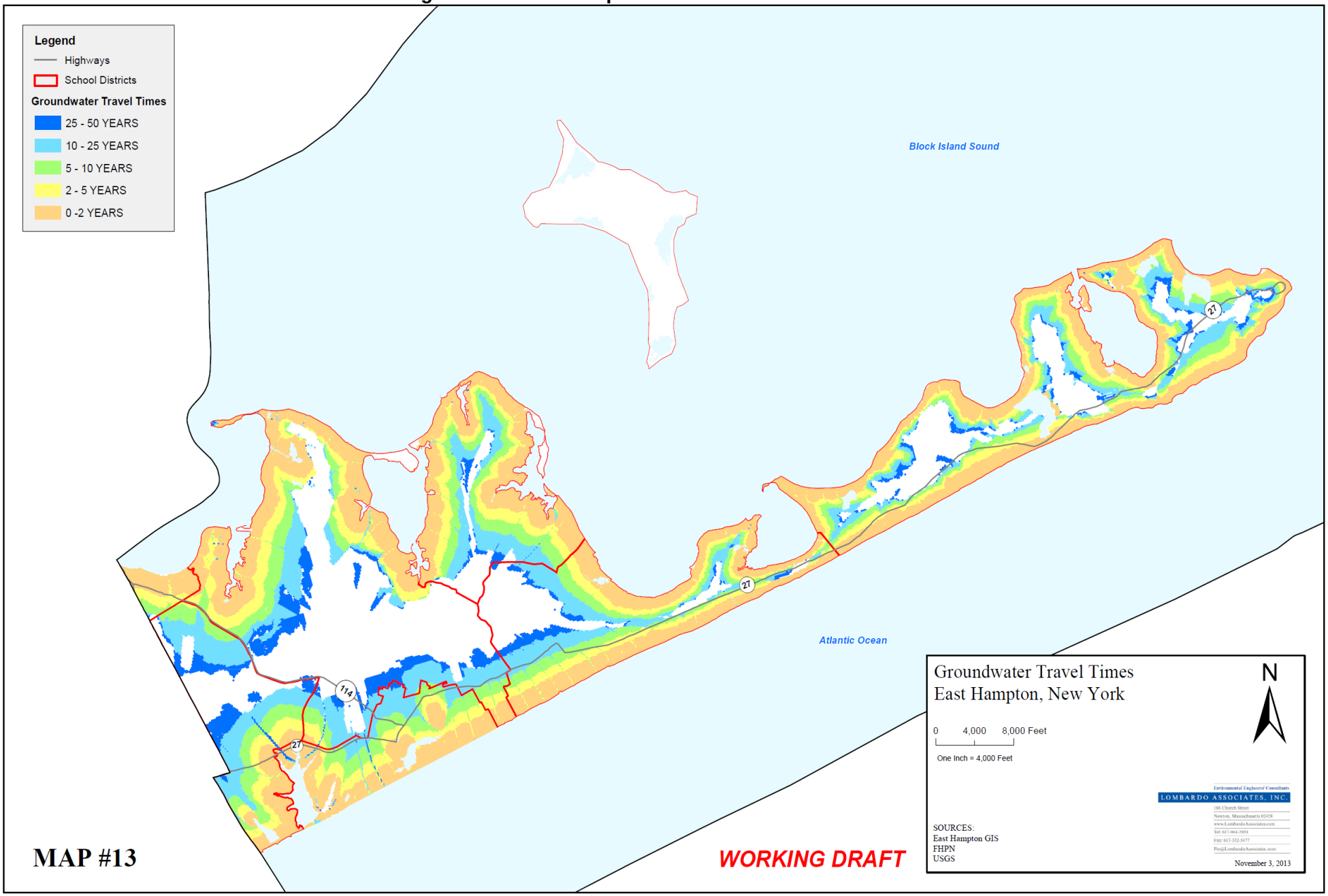


Figure 3-10 East Hampton Groundwater Travel Times



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Figure 3-11 Depth to Groundwater

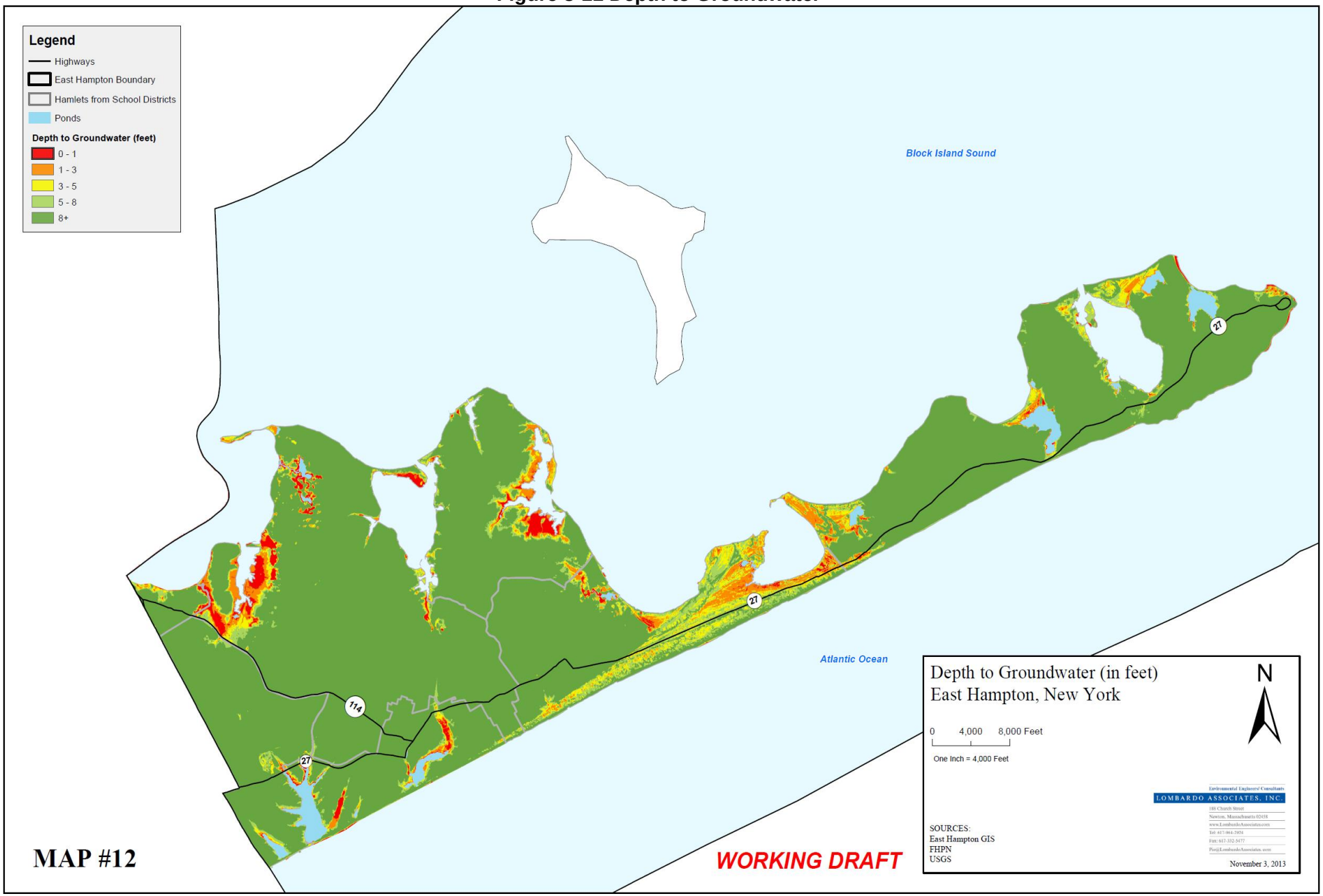


Table 3-6 presents the projected sea level rise as reported in the December 2010 New York State Sea Level Rise Task Force Report to the Legislature. For East Hampton, this table is valid for this project's planning purposes. The associated rise in groundwater for all areas in the Town of East Hampton will be generally equal to the projected sea level rise.

Table 3-6 Projected Sea Level Rise on Long Island

Sea Level Rise Scenario	2020's		2050's		2080's	
	Low	High	Low	High	Low	High
Projected Rise	0.17	0.42	0.58	1.00	1.00	1.92
Rapid Melt	0.42	0.83	1.58	2.42	3.42	4.58

3.7.3 GROUNDWATER & SURFACE WATER QUALITY

THIS IS A PLACEHOLDER SECTION PENDING THE FPM REPORT WHICH IS AWAITING SCDHS DATA

East Hampton has numerous community water supply wells with varying, including some with high, degrees of susceptibility rating for nitrates and VOCs contamination as presented on Figure 3-12 and 3-13, respectively (from the SCWRS draft 2010 Report). As illustrated on Figure 3-12 (from SCWRS 2010, Figure 3-5), water supply wells with elevated nitrate levels exist in East Hampton with some violations of the 10 ppm nitrate-N drinking water standard. Although the drinking water standard for nitrate-N is 10 ppm, groundwater discharging to surface waters with nitrate-N levels above 0.45 mg/l stimulate excess algae growth and cause aquatic ecology decline.

Based upon a limited review of groundwater and surface water quality data, the following observations have been made:

Surface Water

Big Reed Pond — Although very limited data exists, high levels of chlorophyll-α suggest potential pollution - based upon the NPV draft report

Lake Montauk — Bacterial contamination exists. Nutrient enrichment / accelerated eutrophication does not appear to be an issue as for 374 samples only 3+/-% of samples for chlorophyll a and nitrogen were above action levels.

Groundwater

Montauk Landfill — Extremely high levels of ammonia, with many > 30 - 40 mg/l, have

Working Draft

	been measured at wells IW-4 and IW-5, in violation of water quality standards. Other constituents above water quality standards include phenols, iron, manganese, sodium and total dissolved solids (TDS)
Springs-Fireplace Rd Landfill	Significant **nitrate** contamination has been measured at wells S-1 (values > 30 mg/l), S-2, and S-9. Other constituents above water quality standards include phenols, iron, manganese, sodium and total dissolved solids (TDS). High manganese levels may be due to nearby composting operations as recorded at other Suffolk County composting facilities. High TDS and sodium levels may be due to historical salt storage practices.

Table 3-7a presents some of the groundwater quality data with Figure 3-12a illustrating the well locations at the Fireplace-Springs Road Landfill and SWF.

Figure 3-12b presents the modeled tracklines of groundwater that is migrating from the Landfill vicinity towards Three Mile Harbor. These tracklines do not represent a plume as they are not correlated directly with any water quality data. They are also approximate as they are based on the results of a model which may not fully represent the subsurface reality. Figure 3-12b illustrates the general pathway of groundwater migrating from the landfill/SWTP area.

Working Draft

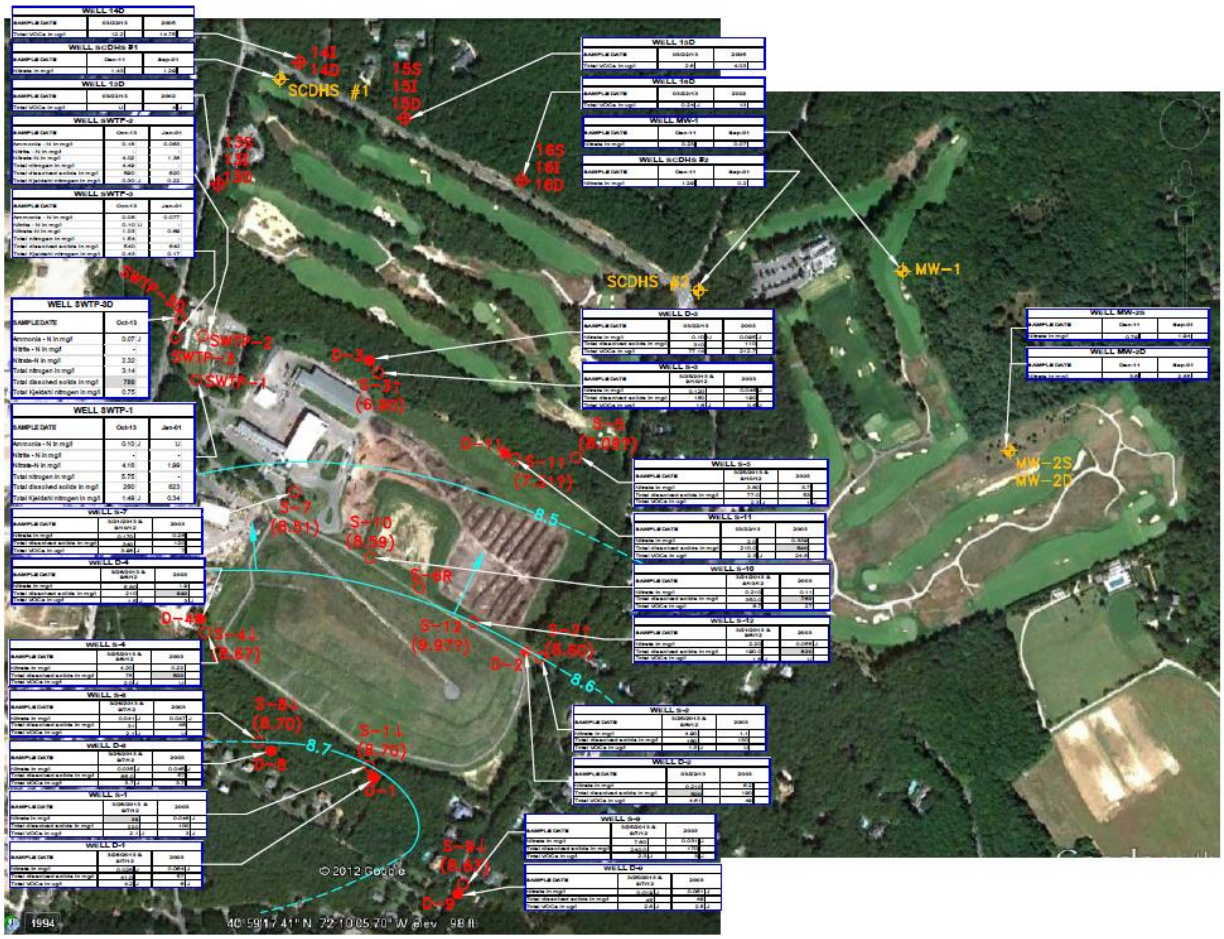
Table 3-7a Groundwater Quality – SWF & Landfill Areas

	SWF Groundwater Monitoring																		
		Period			Welll # A - Upgradient					Welll # B - Downgradient					Welll # C - Downgradient				
	Year	Start	Finish	Date	Ammonia-N	Nitrate-N	TKN	TN	TDS	Ammonia-N	Nitrate-N	TKN	TN	TDS	Ammonia-N	Nitrate-N	TKN	TN	TDS
	2011	1/1/2011	3/31/2011							<.2					<.2				
		04/01/11	06/30/11	05/15/11	0.40	10.00	1.40	11.40	570	<.2	1.30	0.80	2.10	660	<.2	0.80	0.60	1.40	660
		07/01/11	09/30/11	08/15/11	0.60	<.5	0.80	0.80	610	<.2	5.70	0.60	6.30	640	<.2	1.00	0.60	1.60	700
		10/01/11	12/31/11	11/15/11	0.20	4.80	0.60	5.40	650	0.20	1.30	0.40	1.70	660	0.20	1.50	0.40	1.90	580
	2009	01/01/09	03/31/09	02/15/09	<.2	2.00	0.8	2.80	750	<.2	3.40	1.00	4.40	650	<.2	3.50	1.20	4.70	790
		04/01/09	06/30/09	05/15/09	0.20	2.40	1.00	3.40	650	<.2	2.40	1.00	3.40	650	0.30	<.5	0.70	0.70	750
		07/01/09	09/30/09	08/15/09	<.2	1.70	0.40	2.10	660	0.20	2.60	0.60	3.20	630	<.2	1.60	0.80	2.40	740
		10/01/09	12/31/09	11/15/09	<.2	1.90	0.60	2.50	690	<.2	2.90	0.40	3.30	570	<.2	1.10	0.40	1.50	690
	2008	05/01/08	07/31/08	06/15/08	<.05	1.80	0.60	2.40	1,000	<.2	1.60	0.40	2.00	670	0.20	3.00	1.20	4.20	740
		10/01/08	12/31/08	11/15/08	<.2	3.10	1.20	4.30	660	<.2	2.80	1.00	3.80	700	0.20	3.40	1.00	4.40	740
	2007	04/01/07	06/30/07	05/15/07	1.00	3.30	1.00	4.30	630	2.60	2.80	1.00	3.80	550	1.00	0.90	1.00	1.90	550
	Springs Fireplace Road Landfill																		
Nitrate-	Well	12/20/11	3/21/12	6/14/12	9/7/12	11/15/12	3/26/13		Standard										
(mg/l)	S-1	NS	31.0	NS	34.0	NS	38.0		10.0										
	S-2	NS	12.0	NS	10.0	NS	4.9												
	S-4	NS	7.4	NS	1.7	NS	4.2												
	S-9	NS	1.8	NS	13.0	NS	7.6												
TDS	S-1	NS	230	NS	220	NS	220		500.0										
(mg/l)	S-2	NS	270	NS	260	NS	180												
	S-4	NS	150	NS	77	NS	78												
	S-9	NS	300	NS	230	NS	240												
Phenols	S-1	NS	<.03	NS	0.060	NS	0.020		0.001										
(mg/l)	S-2	NS	<.03	NS	0.070	NS	0.030												
	S-4	NS	<.03	NS	0.070	NS	0.030												
	S-9	NS	<.15	NS	0.070	NS	0.030												
Mangan	S-1	NS	11.50	NS	10.70	NS	9.04		0.3										
(mg/l)	S-2	NS	8.82	NS	8.97	NS	3.47												
	S-4	NS	1.01	NS	0.82	NS	0.89												
	S-9	NS	0.34	NS	0.35	NS	0.278												
Sodium	S-1	NS	13.0	NS	14.0	NS	11.0		20.0										
(mg/l)	S-2	NS	40.0	NS	39.0	NS	25.0												
	S-4	NS	11.0	NS	10.0	NS	9.6												
	S-9	NS	69.0	NS	50.0	NS	51.0												
	Montauk Landfill																		
TKN		3/28/12	6/6/12	9/26/12	12/17/12	3/27/13	6/12/13												
(mg/l)	IW-4	NS	42	42	43	43	47												
	IW-5	25	29	34	34	32	29												
TDS	IW-4	NS	440	450	430	420	420		500										
(mg/l)	IW-5	630	560	630	610	600	600												
Phenols	IW-4	NS	0.05	0.0	0.02	0.030	0.03		0.001										
(mg/l)	IW-5	0.01	0.04	0.0	0.03	0.020	0.02												
Mangan	IW-4	3.8	3.14	3.1	3.06	3.1			0.30										
(mg/l)	IW-5	9.4	8.22	8.2	8.54	8.2	8.02												
Sodium	IW-4	NS	66.0	65	68.0	67.00	70.0		20.00										
(mg/l)	IW-5	78.0	70	67.6	89.00	90.0	84.00												

	Well Screened Depth	Longitude	Latitude
A			
B			
C			
S-1			
S-2			
S-4			
S-9			
IW-4			
IW-5			

Working Draft

Figure 3-12a Fireplace-Springs Road Landfill & SWF GW Monitoring Well – Locations & Data



LEGEND:

- MW-1 – GOLF COURSE MONITORING WELL
- S-1 (8.70) – SHALLOW MONITORING WELL (GROUND WATER ELEVATION IN FT.)
- D-1 – DEEP MONITORING WELL
- 13S 13I 13D – MONITORING WELL CLUSTER
- GROUNDWATER DIVIDE
- WATER TABLE ELEVATION CONTOUR
- VERTICAL HEAD DIFFERENTIAL

ANALYTE in mg/l	NYSDEC Class GA Ambient Water Quality Standard	
Ammonia - N	2	
Nitrite - N	1	
Nitrate-N	10	***
Total nitrogen	-	
Total dissolved solids	500	
Total Kjeldahl nitrogen	-	

Notes:
mg/l = milligrams per liter
*** = Value applies to the sum of nitrate and nitrite
Bold shaded values exceed NYSDEC Class GA Ambient Water Quality Standard

APPROXIMATE SCALE IN FEET:

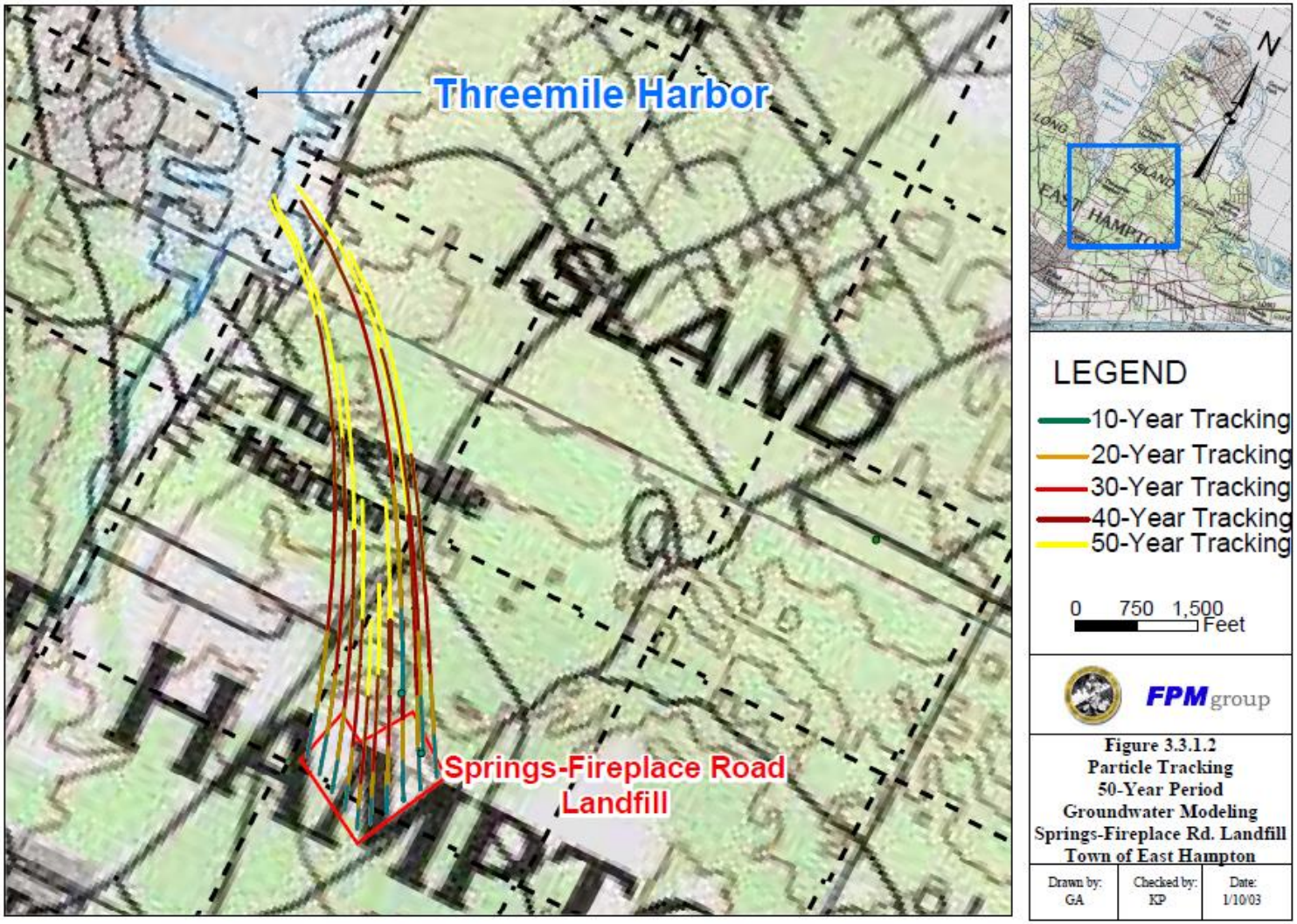
0 250 500 1,000

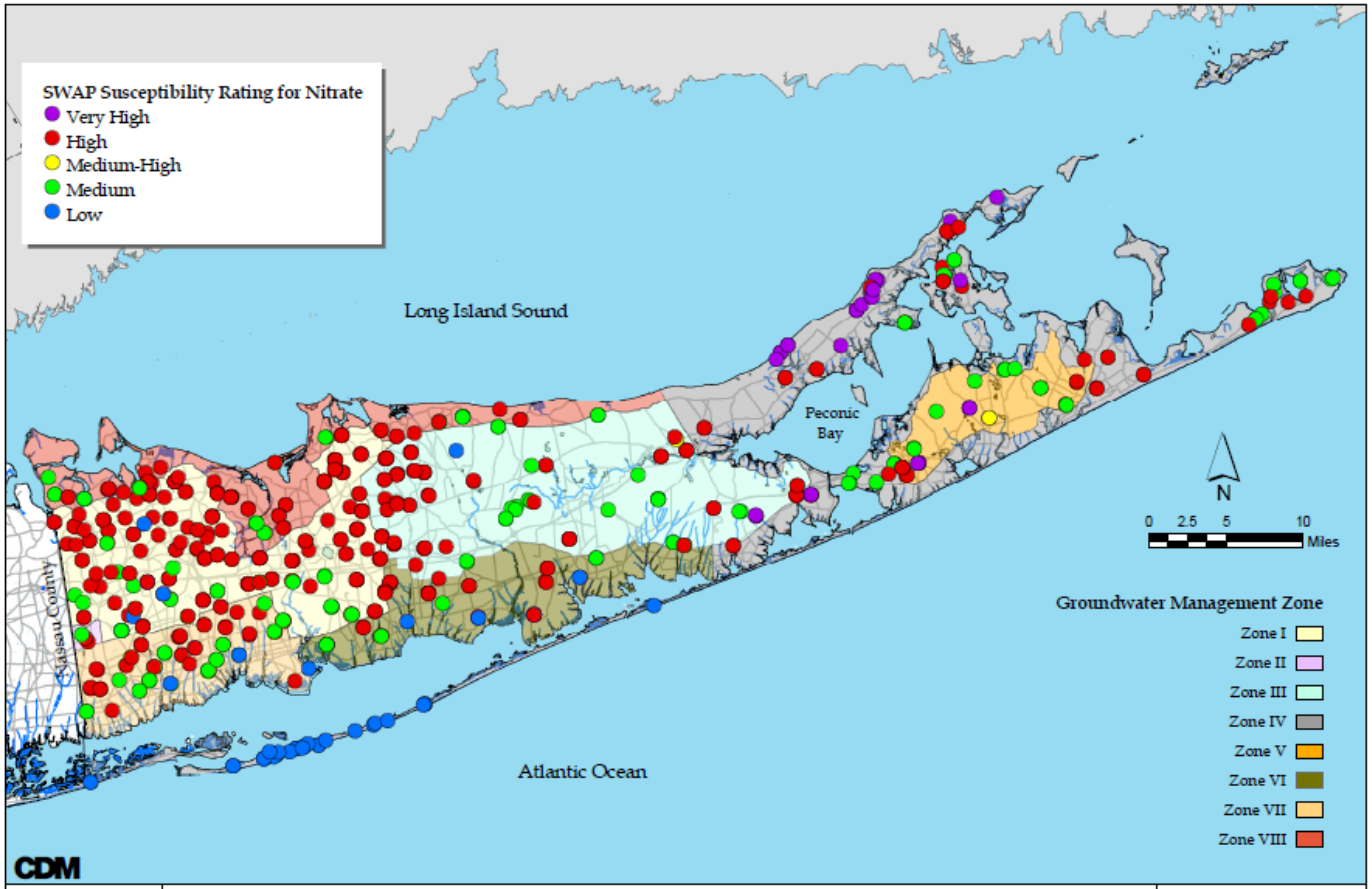
GROUNDWATER CONDITIONS
SWTP/LANDFILL AREA
EAST HAMPTON, NY

SOURCE: AERIAL PHOTOGRAPH – GOOGLE EARTH, 2010

H:\EASTHAMPTON\SPRING-FIREPLACE\FIGURE 4.dwg

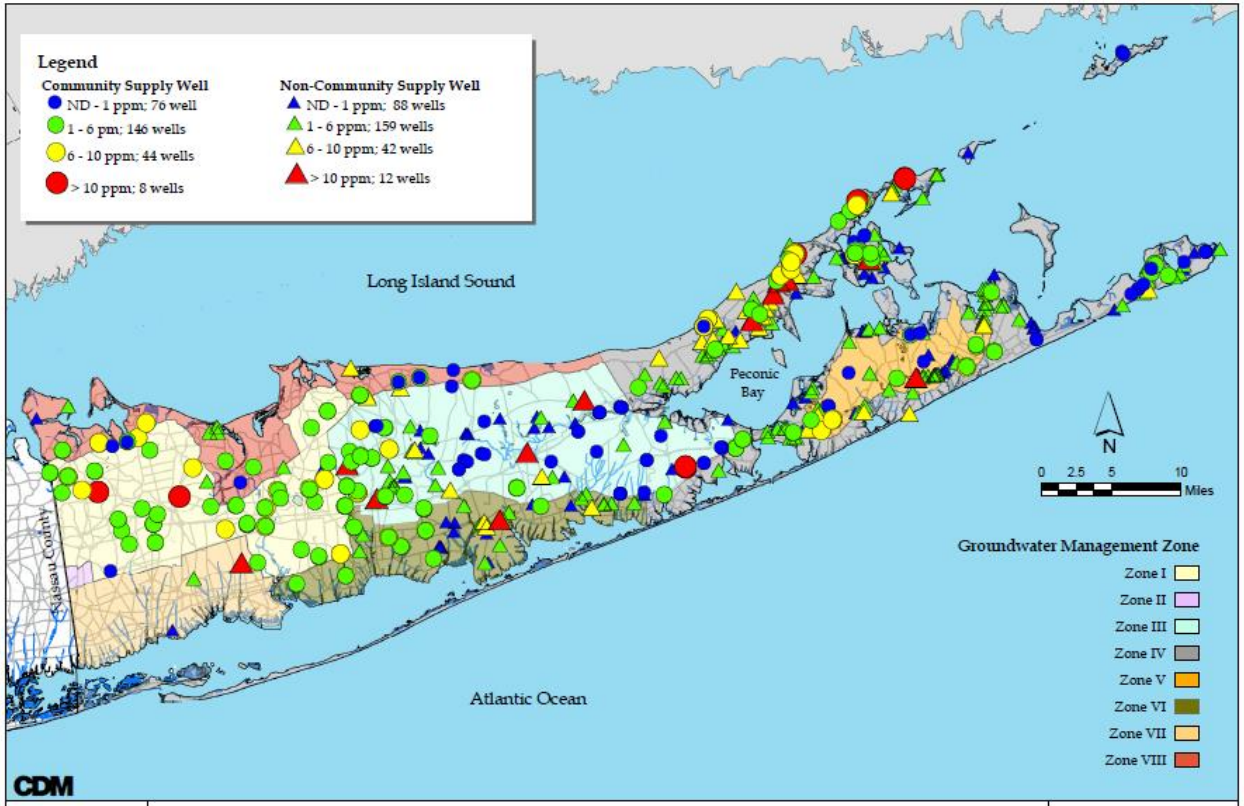
Figure 3-12b SWF - Landfill Modelled Groundwater Pathways





Suffolk County Comprehensive Water Resources Management Plan
Community Supply Well Susceptibility for Nitrates
New York State Source Water Assessment Program (SWAP)

Figure 1



Suffolk County Comprehensive Water Resources Management Plan
Average Nitrate Concentration in the Upper Glacial Aquifer
Community and Non-Community Supply Wells - 2005
(data from SCWA, SCDHS, 2006)

Figure 3

Figure 3-12c East Hampton Wells & Nitrate Concentrations

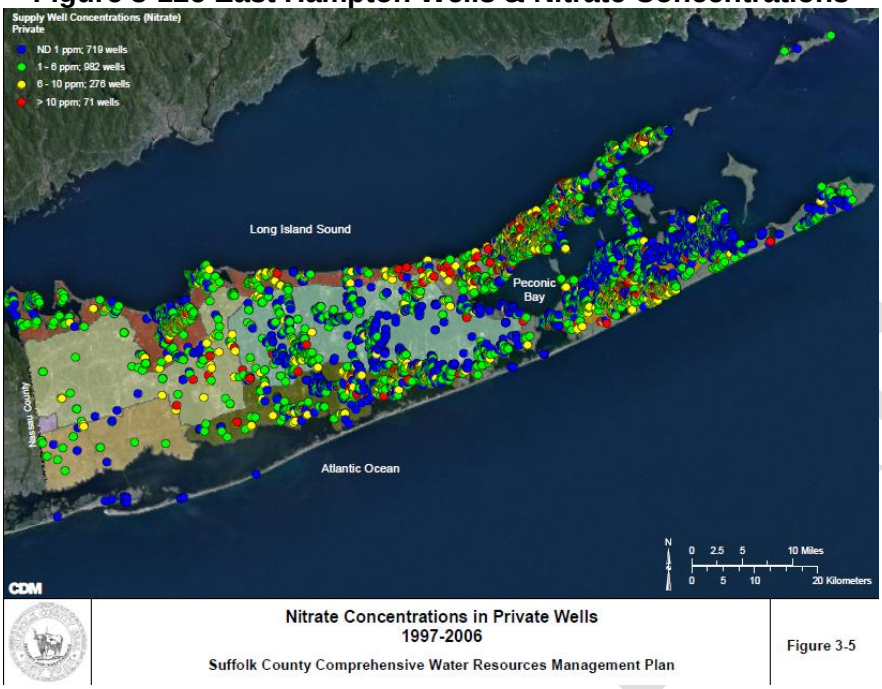
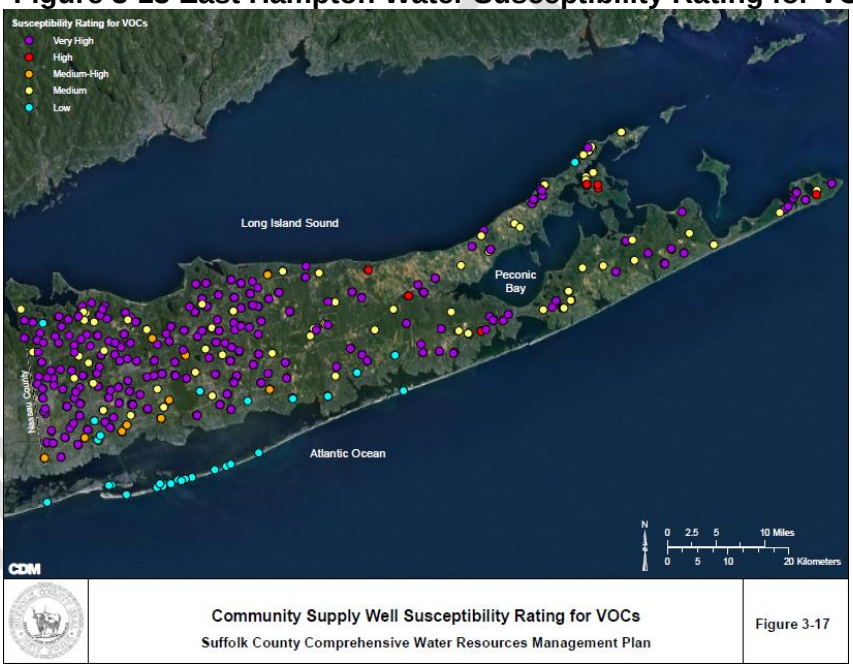
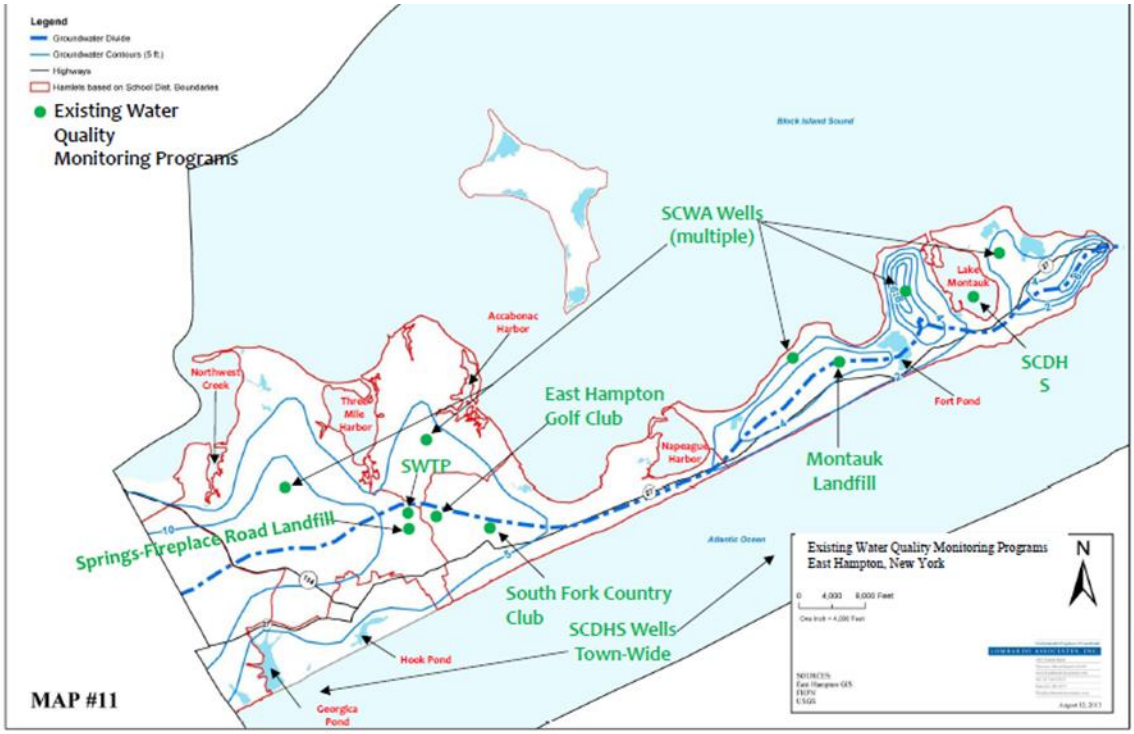


Figure 3-13 East Hampton Water Susceptibility Rating for VOCs



The Town's Stony Hill aquifer (generally groundwater watershed SF-12 on Figure 3-9), which is an important water supply source, has water quality concerns as landfill leachate and Scavenger Waste Treatment Facility (SWTF) effluent have historically discharged to the groundwater aquifer. Figure 3-14 illustrates the location of landfills in East Hampton and the SWTF.

Figure 3-14 East Hampton Landfills & Scavenger Waste Facility Locations



3.8 SURFACE WATERS

The Town's surface waters consist of:

Embayments

- ✓ Lake Montauk
- ✓ Napeague Harbor & Bay
- ✓ Accabonac Harbor
- ✓ Three Mile Harbor
- ✓ Northwest Harbor

Freshwater Ponds

- ✓ Oyster Pond
- ✓ Big Reed Pond
- ✓ Fort Pond
- ✓ Fresh Pond

The Village of East Hampton has the surface waters of:

- ✓ Georgica Pond
- ✓ Lily Pond
- ✓ Hook Pond

According to the 2010 draft SCWRS, the Suffolk County Department of Health Services (SCDHS) monitors the quality of coastal waters at the locations illustrated on Figure 3-

Working

15a. According to the November 2012 Report "Peconic Estuary Water Quality Status and Trends Prepared for the Suffolk County Department Of Health Services, Division Of Environmental Quality", Figure 3-15b illustrates the surface water quality monitoring stations in the Town waters.

Figure 3-15a Coastal Waters Sampling Locations-2010 SCDHS Report

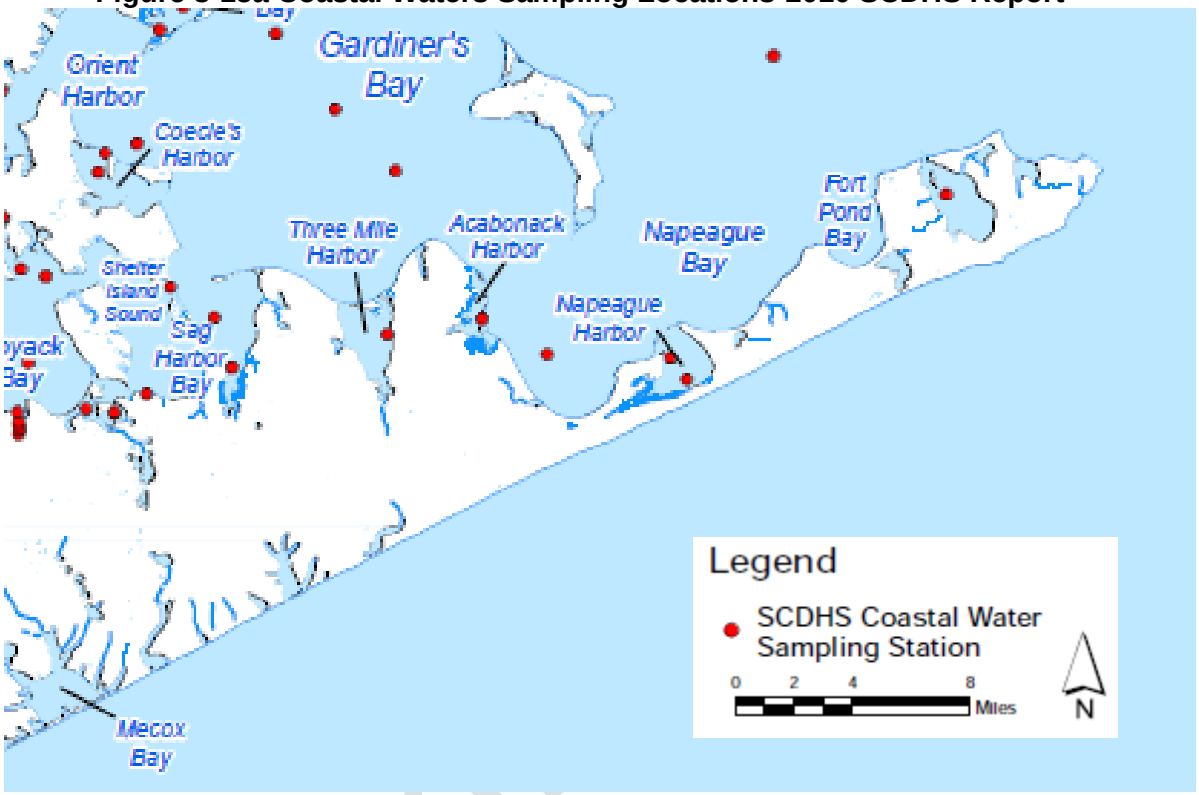


Figure 3-15b Coastal Waters Sampling Locations-Nov. 2012 SCDHS Report

3.9 WATER QUALITY DATA – HISTORICAL & CURRENT DATA

3.9.1 HISTORICAL

The major recent studies on ground and surface water quality are:

- ✓ Draft Suffolk County Comprehensive Water Resources Management Plan 2010
- ✓ Peconic Estuary Water Quality Status and Trends Prepared for the Suffolk County Department Of Health Services, Division Of Environmental Quality, November 2012

3.9.2 DATA COLLECTED BY THIS PROJECT

To assess potential impacts to groundwater quality from the SWF, both groundwater and leaching pool sediment testing has been performed.

Groundwater testing has been performed using the existing SWF monitoring wells (shallow), as well as a new deeper well adjacent to the SWF, to more fully assess groundwater quality beneath and in downgradient proximity to the SWF with the results presented on Table 3-7. The log of the new deep well (SWTP-3D), with a location map, is presented on Table 3-8. The SWTP-3D well is 150 feet deep, with a screen set between 140 and 150 feet below grade. The static water table has been measured at approximately 89 feet below the top of the casing.

In addition, the sediment from a representative number of primary discharge pools in the SWF leaching field has been tested with the results presented on Table 3-9.

3.9.3 DATA BEING COLLECTED BY EAST HAMPTON TRUSTEES

The Town of East Hampton Trustees have retained Professor Christopher Gobler of Stony Brook University to perform the following water quality studies and data collection. It is expected that the data collection will be completed by the end of 2013 and that a project report may not be available until sometime in early 2014.

1. Assess the temporal and spatial dynamics of toxic cyanobacteria and cyanotoxins in East Hampton's major freshwater lakes;
2. Assess the temporal and spatial dynamics of the PSP-causing dinoflagellate Alexandrium and its toxins in East Hampton's marine waters;
3. Assess the temporal and spatial dynamics of the ichthyotoxin dinoflagellate, Cochlodinium, in East Hampton's marine waters;
4. Assess factors promoting marine and freshwater HABs in East Hampton Town waters

It is noted that in his March 2010 Progress Report to the Suffolk County Department of Health Services, entitled "The cause, effects, dynamics, and distribution of Cochlodinium

Working Draft

polykrikoides blooms and cells in the Peconic Estuary, Suffolk County, NY “, Professor Gobler stated in the Report’s Executive Summary:

Table 3-7b SWF Groundwater Sampling Results – Oct. 16, 2013

GROUNDWATER CHEMICAL ANALYTICAL DATA
SCAVENGER WASTE FACILITY
TOWN OF EAST HAMPTON, NEW YORK

WELL NO.	**SWTP-1**	**SWTP-2**	**SWTP-3**	**SWTP-3D**	**NYSDEC Class GA Ambient Water Quality Standards**
Sample Date	**10/16/13**				
General Chemistry in mg/l					
Total Kjeldahl Nitrogen	1.49 J	0.298 J	0.428	0.751	-
Ammonia as Nitrogen	0.098 J	0.175	0.084	0.068 J	2
Nitrate as Nitrogen	4.16	4.02	1.03	2.32	10
COD	14 J	ND	11 J	30	-
BOD	ND	ND	ND	ND	-
Total Dissolved Solids	260	**590**	**540**	**780**	500
Total Suspended Solids	180	16	94	52	
Phosphate	1.5	0.15	0.37	0.68	-
Chloride	35	82	190	130	250
Metals in ug/l					
Aluminum	354	68.9	503	544	-
Antimony	0.12 J	0.66 J	0.22 J	0.34 J	3
Arsenic	1.22	1.18	0.69	1.54	25
Barium	29.71	66.02	99.99	48.88	1,000
Cadmium	ND	0.16 J	0.09 J	0.10 J	5
Calcium	5,600	9,480	14,200	16,500	-
Chromium	2.72	3.24	2.34	2.58	50
Cobalt	1.98	2.70	1.59	2.28	-
Copper	2.16	6.24	3.76	6.22	200
Iron	**1,620**	**630**	**906**	**434**	300
Lead	2.66	0.68 J	1.54	1.10	25
Magnesium	2,530	4,780	7,150	6,400	-
Manganese	281.5	226.9	94.90	24.33	300
Nickel	2.45	3.90	2.19	4.73	100
Potassium	7,500	14,900	7,940	14,800	-
Selenium	ND	0.42 J	0.46 J	0.81 J	10
Silver	ND	0.13 J	ND	ND	50
Sodium	**72,900**	**202,000**	**176,000**	**250,000**	20,000
Thallium	0.16 J	0.10 J	0.08 J	ND	-
Vanadium	1.79 J	0.54 J	1.50 J	1.03 J	-
Zinc	3.69 J	12.02	9.48 J	8.71 J	-
Volatile Organic Compounds in ug/l					
Naphthalene	ND	2.7	ND	ND	10

Notes:

mg/l = milligrams per liter

ug/l = micrograms per liter

ND = Analyte was not detected at or above the reporting limit (RL).

J = Sample result is greater than the method detection limit (MDL) but below the contract-required detection limit (CRDL), or RL.

BOD = Biochemical Oxygen Demand

COD = Chemical Oxygen Demand

- = NYSDEC Class GA Ambient Water Quality Standard not established.

*** = Value applies to the sum of nitrate and nitrite

Shaded values exceed the March 8, 1998 NYSDEC Class GA Ambient Water Quality Standard (March, 1998).

Working Draft

Table 3-8 SWF Deep Groundwater Well Log

FPM GROUP

Ronkonkoma,NY

FPM PROJECT #	LAI/EH WQMP	FPM JOB #	1099g-13-02 (02)		
SITE ADDRESS	EH SWTP-Springs-Fireplace Road, Springs, NY				
BORING/WELL	SWTP-3D	TOTAL DEPTH	155	DIAMETER	6.63 " / 6" ID
TOC ELEV.	97.17'	WATER LEVEL INITIAL		STATIC	89.22'
SCREEN DIA.	4"	LENGTH	10'	SLOT SIZE	10 Slot
CASING DIA.	4"	LENGTH	140'	TYPE	PVC
DRILLING COMP	LAWES	DRILLING MET	HSA (5-100') Mud Rotary (100'-155')		
DRILLER	CP	LOG BY	BC	DATE DRILLED	9/25-9/26/13

SITE MAP

DEPTH (FEET)	SAMPLE	OVA/PID (PPM)	WELL CONSTRUCTION	GRAPHIC LOG	DESCRIPTION/SOIL CLASSIFICATION (INTERVAL, RECOVERY, COLOR, MATRIX TYPE, MOISTURE CONTENT, COMMENTS)
-10-		0			0 TO 30' (Drill Cuttings)
-20-		0		SP	Tan to light brown, medium to coare SAND with little gravel.
-30-		0			30 to 155' (Drill Cuttings)
-40-		0			Dark brown to brown silty SAND (medium to fine) with some gravel.
-50-		0			
-60-		0			Well Completion Details #2 WG ~155 to ~135 fbg Bentonite Seal ~135 to ~131 fbg
-70-		0			Grout ~131 to 1' fbg Watertight bolt down manhole set at grade
-80-		0			
-90-		0		SM	
-100-		0			
-110-		0			
-120-		0			
-130-		0			
-140-		0			
-150		0			End of Drilling
-160-					

Table 3-9 SWF Leaching Pool Chemical Analysis – Oct. 16, 2013

LEACHING POOL CHEMICAL ANALYTICAL DATA
SCAVENGER WASTE FACILITY
TOWN OF EAST HAMPTON, NEW YORK

LEACHING POOL NO.	LP-1	LP-2	LP-3	LP-4	SCDHS
SAMPLE DATE	10/16/13				Action Level
General Chemistry in mg/kg					
Total Kjeldahl Nitrogen	7,000	3,600	2,700	3,200	-
Ammonia as Nitrogen	110	100	430	12	-
Nitrate as Nitrogen	ND	ND	6.0	70	-
Phosphate	10,000	6,600	10,000	4,400	-
Chloride	26	18	45	42	-
Total Organic Carbon (%)	7.19	6.10	4.14	2.82	-
Metals in mg/kg					
Aluminum	15,000	4,800	3,100	10,000	-
Antimony	3.8 J	2.2 J	5.4 J	1.6 J	-
Arsenic	3.1	1.8	4.4	1.7	25
Barium	48	26	55	52	-
Beryllium	ND	ND	ND	ND	8
Cadmium	0.94 J	0.64 J	0.74 J	0.64 J	10
Calcium	900	390	2,400	950	-
Chromium	8.4	5.4	14	5.5	100
Cobalt	2.0 J	1.2 J	1.4 J	1.3 J	-
Copper	260	180	120	170	500
Iron	17,000	17,000	22,000	4,700	-
Lead	17	6.8	25	10	400
Magnesium	410	250	500	240	-
Manganese	65	19	38	18	-
Mercury	0.14 J	0.10 J	0.34	ND	2
Nickel	7.0	2.9	6.6	5.9	1,000
Potassium	200 J	140 J	370	130 J	-
Selenium	0.96 J	0.61 J	1.8 J	1.1 J	-
Silver	0.72 J	0.54 J	3.1	1.0 J	1,000
Sodium	80 J	ND	340	250	-
Thallium	ND	ND	ND	ND	-
Vanadium	11	6.3	21	5.6	-
Zinc	440	160	300	440	-
Volatile Organic Compounds in ug/kg					
Acetone	100	64	21 J	17	-
2-Butanone	12 J	6.2 J	ND	ND	600

Notes:
mg/kg = milligrams per kilogram
ug/kg = micrograms per kilogram
ND = Analyte was not detected at or above the reporting limit (RL).
J = Sample result is greater than the method detection limit (MDL) but below the contract-required detection limit (CRDL), or RL.
BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
SCDHS Action Level - Suffolk County Department of Health Services Action Level SOP 9-95 rev.8/13/10

Working Draft

- ✓ Regarding nutrients, during blooms, the addition of different N compounds significantly increased the growth of *C. polykrikoides* more frequently than other phytoplankton groups suggesting blooms were promoted by N-loading

- ✓ Studies also confirmed the highly toxic nature of *C. polykrikoides* blooms and isolates to multiple species and life stages of fish and shellfish.

- ✓ potential mechanisms for successfully mitigating blooms are not known,

3.10 IMPAIRED WATER BODIES & TMDL STUDIES

3.10.1 IMPAIRED WATER BODIES

New York State Department of Environmental Conservation (NYSDEC) has identified the East Hampton water bodies listed on Table 3-10 in its 2012 Section 303(d) List of Impaired Waters requiring a TMDL/Other Strategy, http://www.dec.ny.gov/chemical/31290.html.

Table 3-10 East Hampton Impaired Waterbodies

PART - CATEGRY	WIN	WBNAME	ID	TYPE	CLASS	POLL CODE	POLLUTANT	SOURCE	YEAR
B	(MW6.3h) BIS..P755	Fort Pond	1701-0122	Lake	B	DO	D.O. / Oxygen Demand		2008
B	(MW7.1a) AO-P782/P784	Wainscott Pond / Fairfield Pond	1701-0144	Lake	C	DO	D.O. / Oxygen Demand		2008
4a	(MW6.3f) GB-AH	Accabonac Harbor	1701-0047	Estuary	SA	PTH	Pathogens	Urban / Storm Runoff	2006
4a	(MW6.3f) GB-SIS-NH-136	Northwest Creek and tidal tribs	1701-0046	Estuary	SA	PTH	Pathogens	Urban / Storm Runoff	2006
4a	(MW6.3h) BIS..P753	Fresh Pond	1701-0280	Lake	C	MET	Mercury	Atmospheric Dep.	2010
4a	(MW6.3h) BIS..P761	Lake Montauk	1701-0031	Estuary	SA	PTH	Pathogens	Urban / Storm Runoff	2006
4a	(MW7.1a) AO-P780	Georgica Pond	1701-0145	Estuary	SA	PTH	Pathogens	Agriculture	2007

Definitions of the Part / Category codes are:

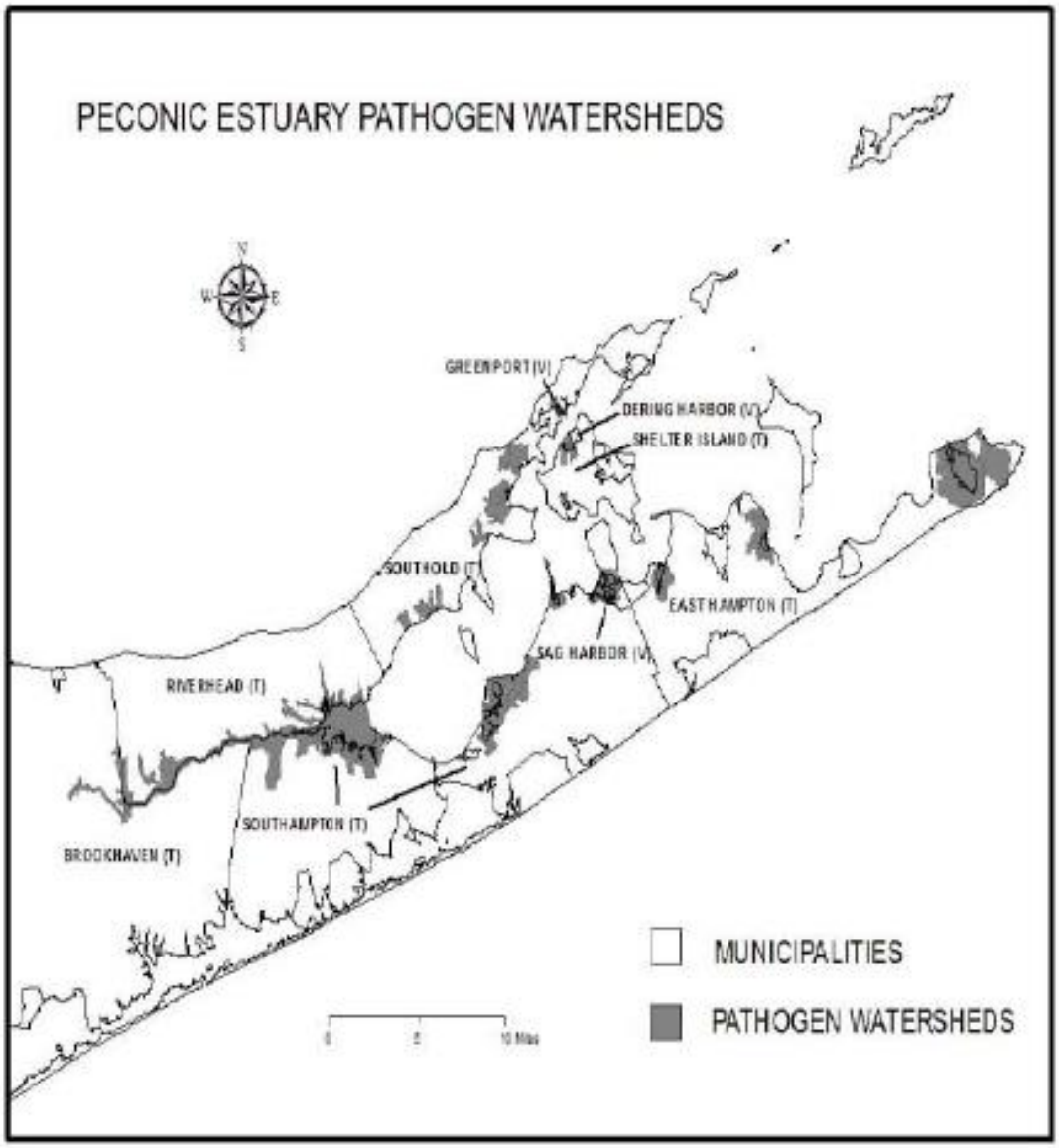
- Category 4a Waters - TMDL development is not necessary because a TMDL has already been established for the segment/pollutant.
- B Listed Waterbodies Not Meeting Dissolved Oxygen Standards, Pending Verification of Use Impairments/Pollutants/Sources

Working Draft

Figure 3-16 illustrates the Peconic estuary areas with pathogen impairment.

Figure 3-16 Peconic Estuary Watersheds with Pathogen Impairment

Peconic Estuary Pathogen Watersheds



On November 1, 2013, citing recent bacteriological surveys, the New York State Department of Environmental Conservation (NYSDEC) announced emergency regulations to change the designation of underwater shellfish lands for the following areas in East Hampton:

- Accabonac Harbor, approximately 14 acres shall be designated as seasonally uncertified to the harvest of shellfish during the period May 1 through November 30.
- Three Mile Harbor (Hands Creek), approximately 15 acres shall be designated as uncertified to the harvest of shellfish year-round.

3.10.2 TMDL STUDIES

3.10.2.1 PECONIC ESTUARY – NITROGEN

A Total Maximum Daily Load (TMDL) for nitrogen was prepared for the Peconic Estuary and is described in:

- Total Maximum Daily Load for Nitrogen in the Peconic Estuary Program Study Area, Including Waterbodies Currently Impaired Due to Low Dissolved Oxygen: the Lower Peconic River and Tidal Tributaries; Western Flanders Bay and Lower Sawmill Creek; and Meetinghouse Creek, Terrys Creek and Tributaries September 2007 http://www.dec.ny.gov/docs/water_pdf/tmdlnitrpecn.pdf

The following subwatersheds were identified as not meeting dissolved oxygen standards:

- Lower Peconic River and Tidal Estuaries
- Western Flanders Bay and Lower Sawmill Creek
- Meetinghouse Creek, Terrys Creek and Tributaries

In order to model the nitrogen concentrations as they relate to dissolved oxygen levels in the impaired waterbodies, nitrogen loads from the entire Peconic Bay estuary were examined. Only two of the watersheds that were modeled were in East Hampton. These were the Gardiners Bay South and the Montauk watershed. Groundwater nitrogen concentrations were estimated using very general assumptions based on broad land use categories. Estimates of the various sources and ultimate nitrogen loads for these areas were not made in this report, and no TMDL values were established for the East Hampton watersheds.

3.10.2.2 GEORGICA POND - PATHOGENS

A Total Maximum Daily Load (TMDL) for pathogenic bacteria (fecal coliforms) was prepared for Georgica Pond and is described in:

- Final Report for Shellfish Pathogen TMDLs for 27 303(d)-listed Waters Prepared for U.S. Environmental Protection Agency, Oceans and Coastal Protection Division and New York State Department of Environmental Conservation Division of Water, prepared by Battelle, Duxbury, MA, September 2007 http://www.dec.ny.gov/docs/water_pdf/tmdlpathshel07.pdf

Working Draft

Georgica Pond is connected to the Atlantic Ocean through a narrow inlet that periodically gets clogged by sediment and requires clearing to restore flushing via and tidal exchange. The TMDL report divided Georgica Pond into three subembayments, each with documented fecal coliform (FC) exceedances based on pre-1997 data. TMDLs based on these data were calculated for the following three subembayments of Georgica Pond:

- Upper Georgica Pond
- Lower Georgica Pond
- Georgica Cove

The assumption is that reduced fecal coliform loads to these subembayments will likely result in overall compliance as these are the inner "hot spots" within the estuary. Table 3-11 presents the sources of existing fecal coliform loads, the TMDL values and required load reductions for Upper Georgica Pond, Lower Georgica Pond and Georgica Cove.

It is noted that there is concern that Harmful Algae exist in Georgica Pond based upon a Dog's death that was associated with drinking Pond water. We understand that an autopsy of the dog revealed harmful algae were ingested and the algae may have been the cause of canine death.

Table 3-11 Georgica Pond Subwatersheds Fecal Coliform Sources and TMDL Required Removal Summary

Subwatershed	Residential / Urban (billion FC/yr)		Other (billion FC/yr)	Total (billion FC/yr)	TMDL (billion FC/yr)	% Removal Required
	MS4	Non-MS4				
Upper Georgica Pond	758,232	0	2,316	760,548	53,238	**93%**
Lower Georgica Pond	176,835	0	480	177,315	12,412	**93%**
Georgica Creek	1,308,926	0	4,128	1,313,054	105,044	**92%**

As can be seen in Table 3-11, nearly all pathogen loads to the Georgica Pond subembayments comes from MS4 contributions. The required TMDL pathogen load reduction to the embayments ranges from 92% - 93%.

3.10.2.3 OTHER EAST HAMPTON PECONIC ESTUARY WATERSHEDS

Total Maximum Daily Loads (TMDL) for pathogenic bacteria (fecal coliforms) was prepared for the following Peconic Bay water bodies:

- ✓ Sag Harbor and Sag Harbor Cove
- ✓ Northwest Creek and tidal tributaries
- ✓ Accabonac Harbor
- ✓ Montauk Lake
- ✓ Oyster Pond

Working Draft

and are described in:

- Final Report for Peconic Bay Pathogens TMDL Prepared for U.S. Environmental Protection Agency Oceans and Coastal Protection Division Prepared by Battelle, Duxbury, MA September 2006

Table 3-12 presents a summary of the existing fecal coliform loads, TMDL values and TMDL required fecal coliform removals for each of the subwatersheds where coliform concentration exceedances have been recorded.

Table 3-12 East Hampton Subwatersheds Fecal Coliform Sources and TMDL Required Removal Summary

Subwatershed	Residential / Urban (billion FC/yr)		Other (billion FC/yr)	Total (billion FC/yr)	TMDL (billion FC/yr)	% Removal Required
	MS4	Non-MS4				
Sag Harbor-2	10,547	3,516	346	14,409	8,146	**43%**
Northwest Creek	0	36,688	6,895	43,583	4,178	**90%**
Accabonac Harbor-2	0	43,625	2,815	46,440	25,600	**45%**
Accabonac Harbor-3	0	16,191	994	17,185	1,647	**90%**
Accabonac Harbor-4	0	16,162	2,357	18,519	1,253	**93%**
Accabonac Harbor-5	0	13,027	483	13,510	1,295	**90%**
Lake Montauk-1	0	98,939	2,234	101,173	47,977	**53%**
Lake Montauk-2	0	31,912	1,988	33,900	15,148	**55%**
Lake Montauk-3	0	361,078	16,077	377,155	187,710	**50%**
Oyster Pond*	0	47,407	17,597	65,004	n/a	**n/a**

No TMDL was calculated due to a lack of data for Oyster Pond

Figure 3-16 is an illustration of the pathogenic impaired watersheds as presented in:

- Pathogen Watershed Improvement Strategies Guidance Document Draft New York State Department of Environmental Conservation April 30, 2010

3.11 WATER QUALITY STANDARDS

As developed in the draft Lake Montauk Watershed Management Plan, Table 3-13 presents the New York State fresh and marine water classifications, with the Surface Water Quality Evaluation criteria presented on Table 3-14.

3.12 SHELLFISH CLOSURES

On November 1, 2013, NYSDEC issued additional shellfish closures for areas in east Hampton as follows:

- Accabonac Harbor, approximately 14 acres were designated as seasonally uncertified to the harvest of shellfish during the period May 1 through November 30.

Working Draft

- Three Mile Harbor (Hands Creek), approximately 15 acres were designated as uncertified to the harvest of shellfish year-round.

Table 3-13 NYS Fresh and Marine Water Classifications

Freshwater Classification	Best Usage
AA	Source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. Suitable for fish, shellfish and wildlife propagation and survival.
A	Source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. Suitable for fish, shellfish and wildlife propagation and survival.
B	Primary and secondary contact recreation and fishing. Suitable for fish, shellfish and wildlife propagation and survival.
C	Suitable for fish, shellfish and wildlife propagation and survival. Also, for primary and secondary contact recreation, although other factors may limit the use for these purposes.
D	Due to such natural conditions as intermittency of flow, water conditions not being conducive to propagation of game fishery, or unsuitable stream bed conditions, the waters will not support fish propagation. Suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Marine Water Classification	Best Usage
SA	Shellfishing for market purposes, primary and secondary contact recreation and fishing. Suitable for fish, shellfish and wildlife propagation and survival.
SB	Primary or secondary contact recreation and any fishing. Suitable for fish, shellfish and wildlife propagation and survival.
SC	Suitable for fish, shellfish and wildlife propagation and survival. Also, suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.
I	Secondary contact recreation and fishing. Suitable for fish, shellfish and wildlife propagation and survival.
SD	Suitable for fish, shellfish and wildlife survival. This classification may be given to those waters that cannot meet the requirements for primary and secondary contact recreation and fish propagation for reasons of natural or man-made conditions.

Source: 6NYCRR Parts 700-705, Water Quality Regulations for Surface Waters and Groundwaters, effective September 1, 1991.
Note: Examples of Primary contact recreation include swimming, diving, and surfing. Examples of Secondary contact recreation include fishing and boating.

Table 3-14 Surface Water Quality Evaluation Criteria

Analyte	Established Threshold	Regulating Authority
Clarity – Secchi Disc	Visibility is less than 6.6 feet	NYS Section 305(b) CALM Methodology – Public Bathing Use Assessment Criteria
Total Coliform	70 colonies/100ml	6 NYCRR §703.4
Fecal Coliform	14 colonies/100ml	NSSP
Chlorophyl-α	>8 µg/L	NYS Section 305(b) CALM Methodology – Recreation Use Assessment Criteria
Dissolved Oxygen	<4.8 mg/L	6 NYCRR §703.3
Total Nitrogen	>0.45 mg/L	Peconic Estuary Program
Ammonia	>0.035 mg/L	6 NYCRR §703.5
Phosphorus (Freshwater only)	20 µg/L	NYSDEC Water Quality Guidance Value

3.13 LAKE MONTAUK WATER QUALITY MANAGEMENT PLAN

A Lake Montauk Watershed Management Plan - Draft Characterization Study dated July 25, 2013 has been prepared along with draft recommendations.

3.14 STORMWATER MANAGEMENT ISSUES

A sub watershed Management Plan for Accabonac Harbor dated December 2011 was prepared to reduce overall pollutant loadings and runoff within the watershed by storm water retrofits.

Draft field assessments, dated November 8, 2013, for the Tanbark Creek subwatershed have been developed.

Working Draft

4 WATER SUPPLY & USE

4.1 PUBLIC AND PRIVATE ON-SITE WELL WATER SUPPLY SOURCES-SUPPLIERS

The Town's groundwater is its sole source water supply aquifer, as well as recipient of wastewater discharges.

The Suffolk County Water Authority (SCWA) provides public water through its distribution section 23 and 26 (Montauk). The SCWA Quarterly Rate Schedule effective April 1, 2013 is:

- $ 1.234 per 100 Cubic Feet which is equivalent to $ 1.65 per 1,000 Gallons
- $20.49 Service Charge Per Quarter

Figure 4-1 presents the layout of the Suffolk County Water Authority drinking water distribution in East Hampton. East Hampton properties served and not served by SCWA, who rely upon individual water supply wells, are illustrated on Figures 4-2 and 4-3, respectively. Table 4-1 presents statistics on developed properties on public water and individual wells. Table 4-2 presents the approximate number of parcels with public water service in each School District and the total average daily water use for parcels with public water. Water use includes water use for activities that generate wastewater and consumptive uses such as irrigation.

Table 4-1 Parcels on Public Water & Individual Wells

# of Dev. Parcels w/Water Service	# of Developed Properties	% of Dev. Prop. w/Water Service
9,179	20,059	45.8%
# of Dev. Parcels w/o Water Service		% of Dev. Prop. w/o Water Service
10,880		54.2%

Table 4-2 Parcels with Water Service and Average Daily Water Use by District

School District	# of Dev. Parcels On Public Water	# of Dev. Parcels Not On Public Water	Total	Avg. Daily Water Use by School District
Amagansett	1,631	632	2,263	1,571,712
East Hampton	3,675	3,902	7,577	4,338,588
Montauk	2,383	1,584	3,967	1,636,876
Sag Harbor	764	92	856	490,153
Springs	636	3,705	4,341	296,646
Wainscott	90	965	1,055	125,764
Totals	**9,179**	**10,880**	**20,059**	**8,459,739**

Working Draft

Table 4-3a presents the summer average daily water use by land use in East Hampton.

Table 4-3a Water Use by Land Use

Land Use	Summer Water Use (gpd)
Med Density Residential	4,017,658
Low Density Residential	2,470,448
Commercial	806,066
Institutional	140,954
Vacant	135,458
Recreation Open Space	158,674
High Density Residential	637,138
Agriculture	25,188
Industrial	13,943
Transportation	36,239
Cemetary	5,039
Utilities	631
Waste Handling Mngmt	3,020
Not Classified	9,283
Total	**8,459,739**

Table 4-3b presents the number of water users in the various use categories

Table 4-3b Number of Parcels in Water Use Ranges

	Summer Water Use (gpd)							
	0 - 299	300 - 599	600 - 999	1,000 - 4,999	5,000 - 9,999	10,000- 29,999	30,000+	Totals
# of Parcels	3,978	1,585	1,150	2,267	123	34	10	**9,147**
Total Summer Water Use	537,109	677,135	900,185	4,545,803	804,087	575,290	420,197	**8,459,806**
% of Total Water Use	6.3%	8.0%	10.6%	53.7%	9.5%	6.8%	5.0%	**100.0%**

Working Draft

Figure 4-1 East Hampton SCWA Public Water Supply Distribution Water Mains

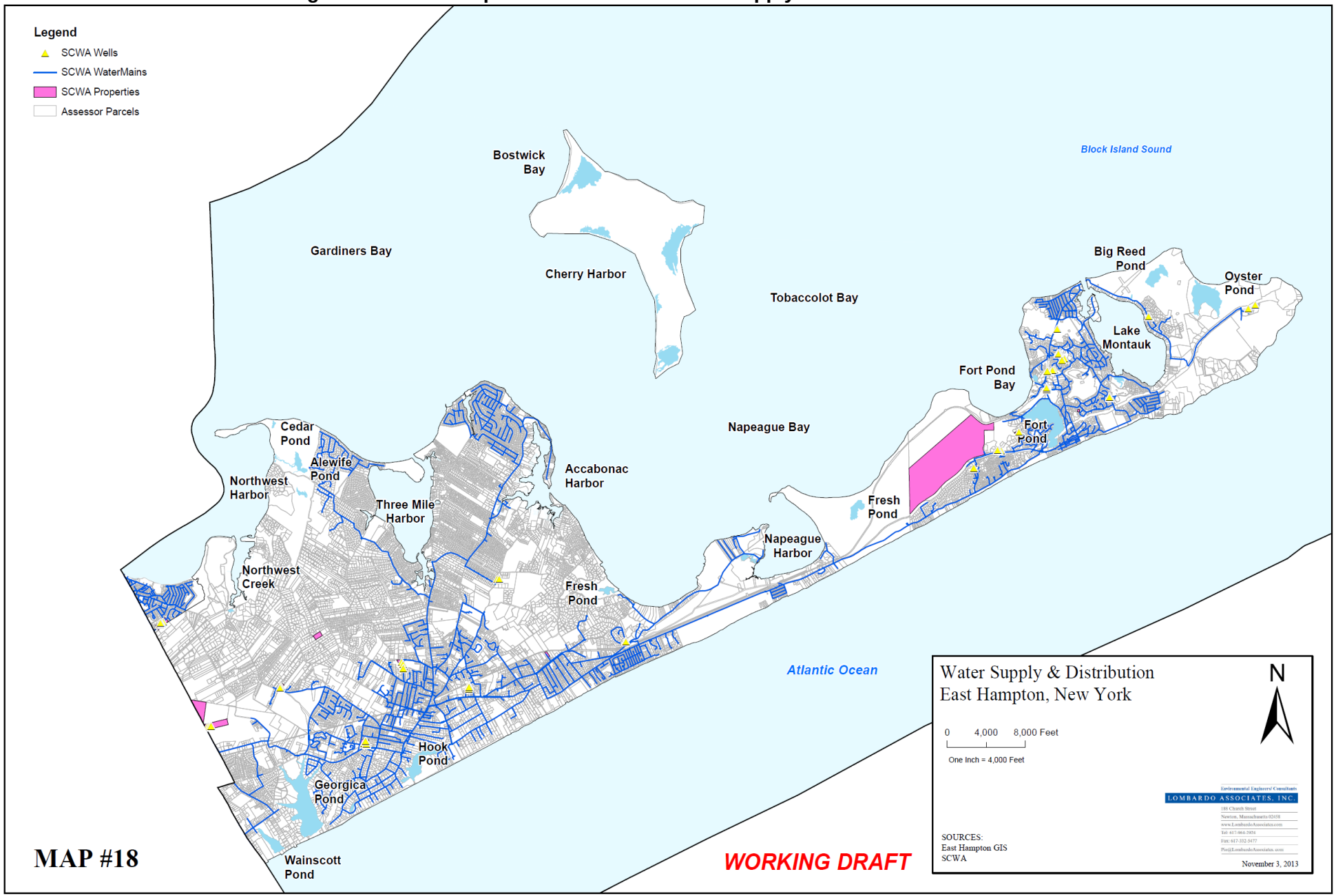


Figure 4-2 East Hampton properties Served by SCWA Public Water

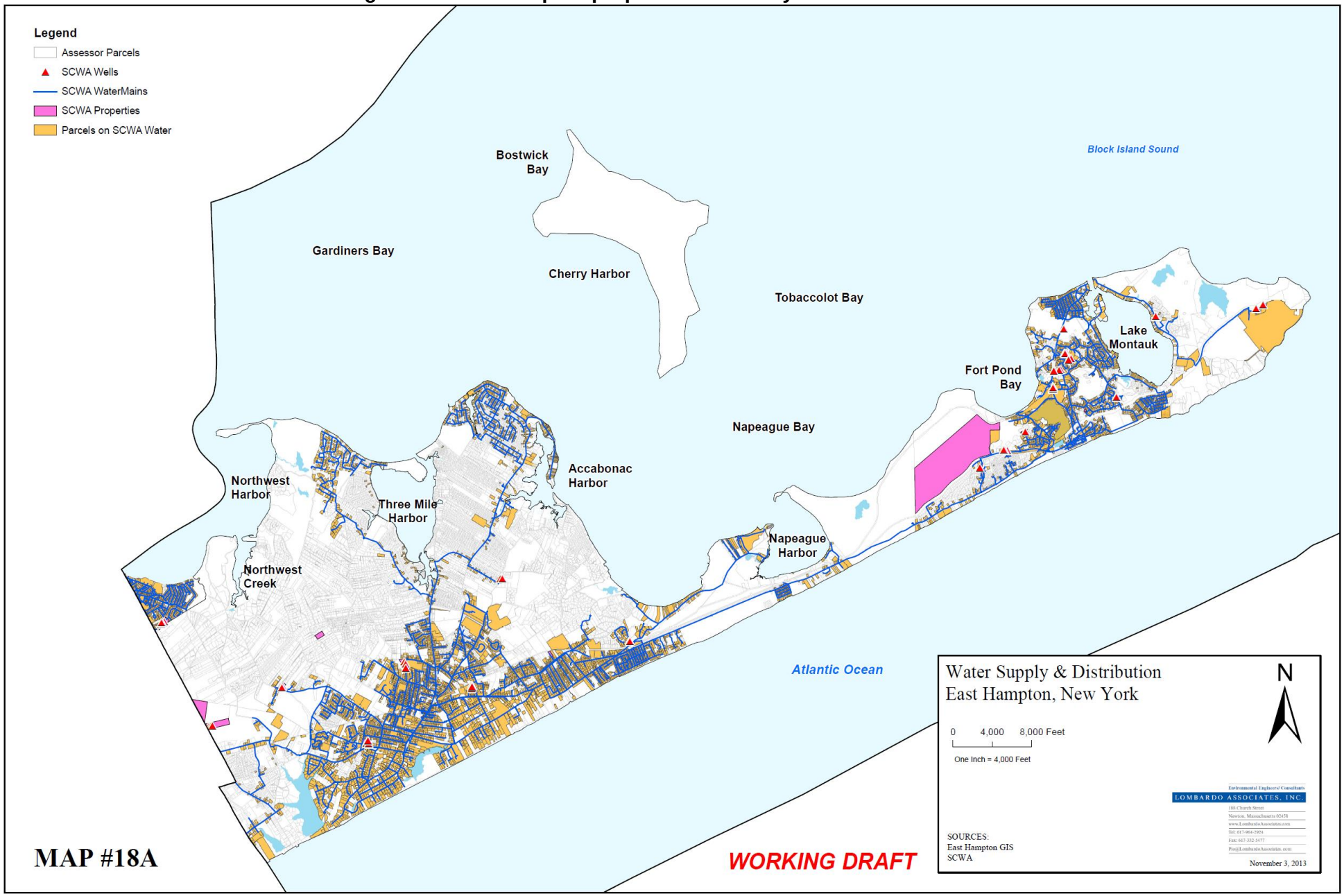
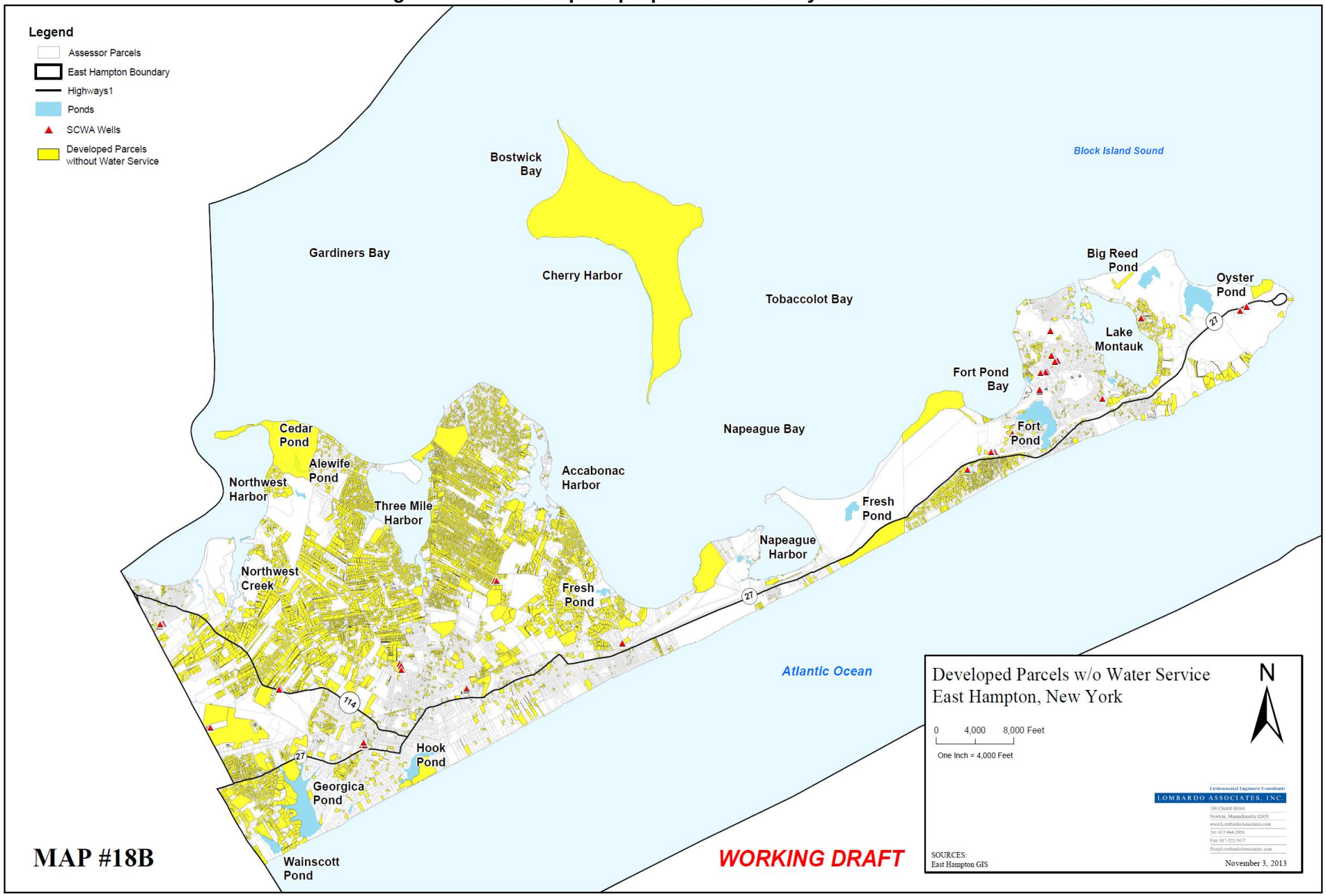


Figure 4-3 East Hampton properties Served by Private Wells



4.2 WATER USE DETERMINATION METHODOLOGY

Water use can only be determined from the records of users of the SCWA public water supply system as individual wells do not typically measure water use – as well as there are no known records of any use.

The Suffolk County Water Authority (SCWA) provided the Town which provided LAI with water use data for the year 2012. The objective of analyzing water use data is to estimate wastewater generation rates, as best as possible, on a parcel by parcel basis. Wastewater generation rates are a critical component of the wastewater management needs analysis.

Table 4-4 presents a description of the SCWA data provided with sample data for each field.

Table 4-4 SCWA Raw Water Use Data

Field	Description	Sample Data			
conobj	Water meter number	6000311359	6000311383	6000311391	6000311400
tag1	SCWA Identifier	040500754885	040500665992	040500754889	040457124427
date	Reading date	20120524	20120228	20120524	20120827
consump1	Reading (ft^3)	9107	5491	12258	22561
100cuft	Consumption - previous reading to current reading (100 ft^3)	0.91	0.74	2.35	39
gals	Consumption - previous reading to current reading (gal)	680.68	553.52	1757.8	29172

LAI calculated the average daily water use for each reading. The Town also provided the SCWA GIS shapefile that had the location coordinates for each water meter. LAI used this location and the parcel database to assign water meters to the parcels on which they are located. The common identifier for parcels is the District, Section, Block and Lot (DSBL) number.

The following challenges were identified with the parcel and water meter data:

- There are 775 parcels that are overlapping other, larger parcels (Sub-Units – such as condominiums);
- A total of 117 water meters are located on the sub-units. Water meters that were located on overlapping parcels were assigned to both parcels by the GIS software, resulting in double counting of water use that needed to be resolved;
- There are 554 parcels that have more than one water meter on them, as illustrated on Figure 4-4. The total number of water meters that are located on these 554 parcels is 1,430.

To properly assign water use data to parcels, each water meter needs to be associated with one unique parcel. To accomplish this goal, LAI created a GIS shapefile that stripped out overlapping parcels. Once the overlapping parcels were removed, each water meter was assigned to one unique parcel. This resulted in 9,423 parcels with

Working Draft

water service with a total of 10,355 water meters. Some of these remaining parcels contain water use that was associated with one or more overlapping parcels prior to being removed from this analysis.

LAI used the water meter number (conobj field) to link the water use data to the appropriate parcel. LAI used the reading dates to calculate an average daily water use (gpd) for each water meter that has two or more water readings. This average was calculated by dividing the consumption (gallons) by the number of days between readings. Table 4-5 presents representative data from this analysis. The following issues were noted:

- The majority of readings were done on our around the same dates and were taken on a quarterly basis.
- Some meters have monthly water meter readings, the majority of these were high flow parcels
- Some parcels have multiple meters on them, as many as 20 on one parcel
- The number of days per period varied from 1 day to 145 days, with the majority being ~96 days
- Some water meters only had one reading, so no water use could be calculated.

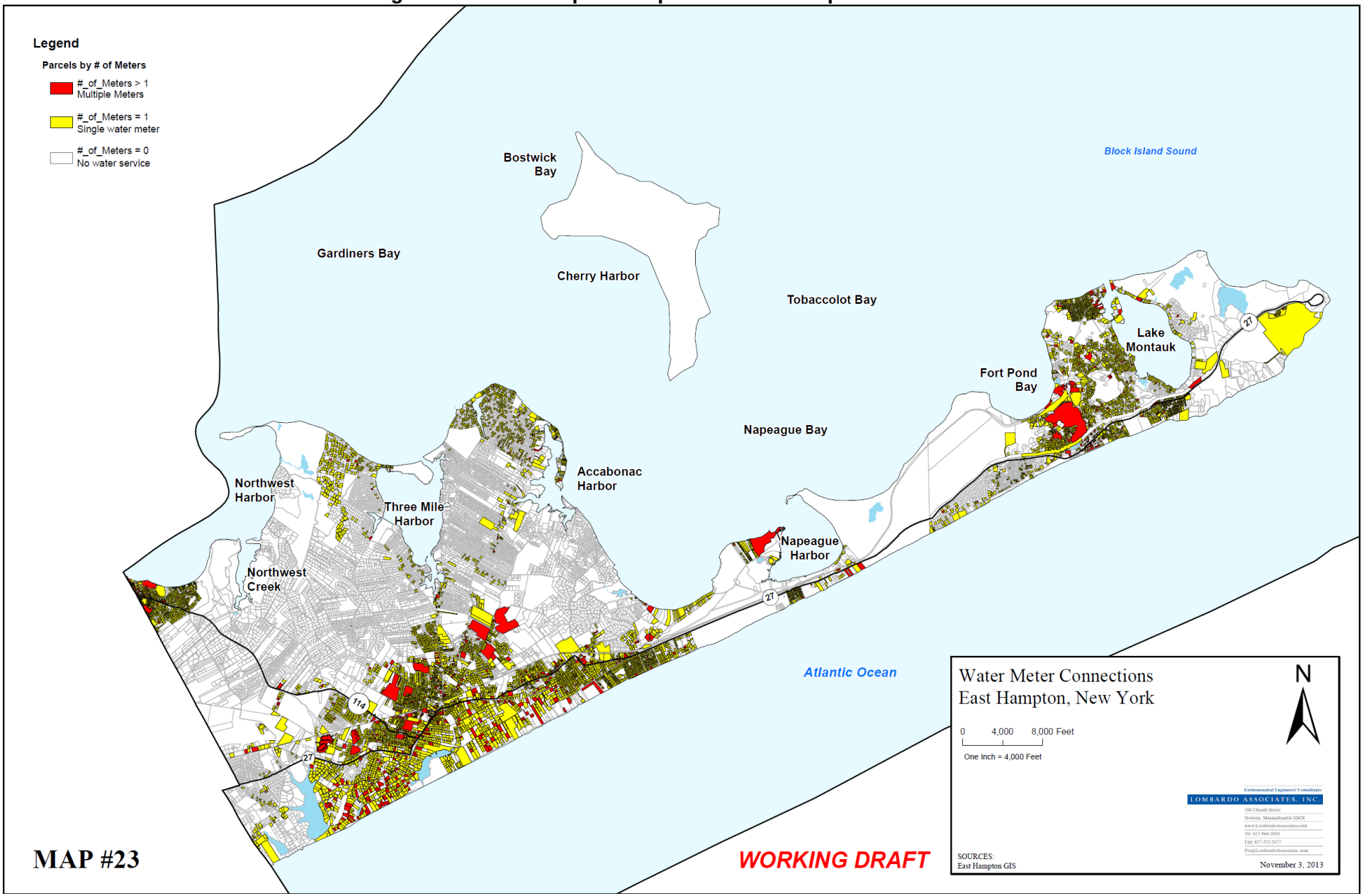
The data was filtered to focus on summer water use so that summer peak flows could be established. Only water meter reading periods that fall entirely within the dates May 1, 2012 – September 30, 2012 (summer use) were included in the analysis, and water meter readings that spanned less than 10 days were removed from the analysis. Non-uniform readings and multiple meters on parcels were handled as follows:

1. For water meters with one water use value (gpd) within this period, that value was assigned to the water meter.
2. For water meters with two or more water use values within this period, the weighted average of the values was taken and assigned to that water meter. Weighted averages were calculated using the number of days in the period for each water use value.
3. For parcels that have more than one meter, the sum of either 1 or 2 above for all meters on that parcel was taken and assigned to that parcel.

The result is a single summer water use number for each parcel for which data was available.

Working Draft

Figure 4-4 East Hampton Properties with Multiple Water Meters



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Table 4-5 Average Daily Water Use by Period

date	conobj	consump1 (ft^3)	100cuft	DSBL	Water Use (gpd)	Period
2/23/2012	6000220366	8,587	5.94	0300197000500003001		
5/21/2012	6000220366	9,187	6.00	0300197000500003001	51	02/23/2012 - 05/21/2012
8/22/2012	6000220366	9,797	6.10	0300197000500003001	49	05/21/2012 - 08/22/2012
11/20/2012	6000220366	10,458	6.61	0300197000500003001	55	08/22/2012 - 11/20/2012
2/23/2012	6000220377	55,438	1.36	0300197000500033000		
5/21/2012	6000220377	57,662	22.24	0300197000500033000	189	02/23/2012 - 05/21/2012
8/22/2012	6000220377	67,625	99.63	0300197000500033000	801	05/21/2012 - 08/22/2012
11/20/2012	6000220377	83,074	154.49	0300197000500033000	1,284	08/22/2012 - 11/20/2012
2/23/2012	6000220393	21,421	6.43	0300197000300051000		
5/21/2012	6000220393	21,992	5.71	0300197000300051000	49	02/23/2012 - 05/21/2012
8/22/2012	6000220393	25,658	36.66	0300197000300051000	295	05/21/2012 - 08/22/2012
11/20/2012	6000220393	31,971	63.13	0300197000300051000	525	08/22/2012 - 11/20/2012
2/23/2012	6000220404	13,301	1.53	0300200000100020000		
5/21/2012	6000220404	13,422	1.21	0300200000100020000	10	02/23/2012 - 05/21/2012
8/22/2012	6000220404	15,060	16.38	0300200000100020000	132	05/21/2012 - 08/22/2012
11/20/2012	6000220404	15,780	7.20	0300200000100020000	60	08/22/2012 - 11/20/2012
2/23/2012	6000220412	10,840	24.10	0300200000100010001		
5/21/2012	6000220412	11,095	25.50	0300200000100010001	217	02/23/2012 - 05/21/2012
8/22/2012	6000220412	12,371	127.60	0300200000100010001	1,026	05/21/2012 - 08/22/2012
11/20/2012	6000220412	13,139	76.80	0300200000100010001	638	08/22/2012 - 11/20/2012
2/23/2012	6000220420	5,579	10.80	0300200000100004005		
5/21/2012	6000220420	5,736	15.70	0300200000100004005	133	02/23/2012 - 05/21/2012
8/22/2012	6000220420	6,154	41.80	0300200000100004005	336	05/21/2012 - 08/22/2012
11/20/2012	6000220420	6,339	18.50	0300200000100004005	154	08/22/2012 - 11/20/2012
2/22/2012	6000224799	52,261	3.48	0302004000200010000		
5/18/2012	6000224799	54,552	22.91	0302004000200010000	199	02/22/2012 - 05/18/2012
8/17/2012	6000224799	62,398	78.46	0302004000200010000	645	05/18/2012 - 08/17/2012
11/19/2012	6000224799	68,862	64.64	0302004000200010000	514	08/17/2012 - 11/19/2012

Working Draft

4.3 Summer Water Use

A ranking of the highest water users (>5,000 gpd) by customer and average summer water use is presented on Table 4-6. When the number of water meters that are associated with one parcel is greater than one, that parcel may contain water use associated with parcels that were overlapping prior to being removed from this analysis.

Table 4-6 Average Summer Water Use (gpd)

Property Address	Hamlet / School District	# of Water Meters	2012 Summer Water Use (gpd)
281 ABRAHAMS PATH	Amagansett	2	65,850
26 WEST END AVE	East Hampton	3	64,325
110 APAQUOGUE RD	East Hampton	2	46,395
FENWICK PL	Montauk	5	41,251
105 OAK VIEW HWY	East Hampton	3	40,085
484 W LAKE DR	Montauk	2	33,160
HUCKLEBERRY LA	East Hampton	20	33,002
290 OLD MONTAUK HWY	Montauk	1	32,773
2118 MONTAUK HWY	Amagansett	4	32,666
331 FURTHER LA	East Hampton	2	30,690
11 BEACH PLUM CT	Amagansett	1	28,004
80 FURTHER LA	East Hampton	1	27,617
126 S EMERSON AVE	Montauk	14	27,217
58 CROSS HIGHWAY EAST	Amagansett	1	26,914
61 N BRIAR PATCH RD	East Hampton	1	26,876
32 STAR ISLAND RD	Montauk	2	26,008
18 GOODFRIEND DR	Wainscott	3	24,669
DEFOREST RD	Montauk	1	22,425
372 FURTHER LA	Amagansett	1	22,085
61 HWY BEHIND THE POND	East Hampton	1	21,509
18 STAR ISLAND RD	Montauk	1	20,782
0	East Hampton	3	19,305
HUCKLEBERRY LA	East Hampton	12	18,058
52 GEORGICA RD	East Hampton	2	17,122
316 ACCABONAC RD	East Hampton	11	16,926
420 FURTHER LA	Amagansett	2	16,067
1898 MONTAUK HWY	Montauk	1	15,154
21 OCEANVIEW TER	Montauk	1	14,322
HUCKLEBERRY LA	East Hampton	15	14,254
18 CHAUNCEY CLOSE RD	East Hampton	1	12,896
20 DUNE ALPIN DR SO	East Hampton	27	12,674
LAZY POINT RD	Amagansett	38	12,269
108 S EMERSON AVE	Montauk	2	12,132
1 BAY ST	Sag Harbor	8	11,620
10 WEST END AVE	East Hampton	2	11,536
2178 MONTAUK HWY	Amagansett	2	11,512
2166 MONTAUK HWY	Amagansett	1	11,312
514 MONTAUK HWY	East Hampton	15	11,248
71 LEE AVE	East Hampton	1	10,854
341 FURTHER LA	Amagansett	1	10,709
14 GRACIE LA	East Hampton	1	10,487
39 STAR ISLAND RD	Montauk	1	10,340
STUARTS LN	East Hampton	12	10,274
226 PANTIGO RD	East Hampton	1	10,113
15 W DUNE LA	East Hampton	1	9,936
201 LILY POND LA	East Hampton	1	9,726
400 PANTIGO PL	East Hampton	2	9,651

Parcels with multiple meters may include water use from overlapping parcels removed from this analysis

Working Draft

Table 4-6 Summer Water Use (cont.)

Property Address	Hamlet / School District	# of Water Meters	2012 Summer Water Use (gpd)
37 SHIPWRECK DR	Amagansett	1	9,595
191 BUCKSKILL RD	East Hampton	1	9,444
727 OLD MONTAUK HWY	Montauk	1	9,387
2 BAY ST	Sag Harbor	2	9,257
254 ABRAHAMS PATH	East Hampton	3	9,006
11 HAMILTON DR	Montauk	1	8,761
3 GINGERBREAD LA	East Hampton	3	8,525
101 LILY POND LA	East Hampton	2	8,517
24 TALKHOUSE LN	Montauk	1	8,429
130 S EMERSON AVE	Montauk	2	8,405
SECOND HOUSE RD	Montauk	2	8,282
50 OLD BEACH LA	East Hampton	1	8,176
15 OLD FIREPLACE RD	Springs	1	8,140
EDGEMERE ST	Montauk	5	7,981
23 APAQUOGUE RD	East Hampton	1	7,598
25 WILLS POINT RD	Montauk	2	7,594
226 FURTHER LN	East Hampton	2	7,575
113 TOWN LINE RD	Wainscott	1	7,536
795 MONTAUK HWY	Montauk	2	7,501
43 SANDPIPER LA	Amagansett	1	7,464
434 OLD MONTAUK HWY	Montauk	1	7,421
149 MARINE BLVD	Amagansett	1	7,414
240 EDGEMERE ST	Montauk	3	7,407
72 LILY POND LN	East Hampton	1	7,399
57 CROSS HWY	East Hampton	1	7,389
433 W LAKE DR	Montauk	2	7,384
16 NAVY RD	Montauk	3	7,356
16 WINDMILL LN	East Hampton	1	7,301
10 CASTLE CT	Amagansett	1	7,249
442 FURTHER LA	Amagansett	1	7,232
73 HWY BEHIND THE POND	East Hampton	1	7,148
75 WEST END AVE	East Hampton	1	7,079
3 DUNE ALPIN DR NO	East Hampton	18	7,061
5 GREAT OAK WAY	East Hampton	1	7,051
53 CRASSEN BLVD	Amagansett	1	7,047
207 MAIN ST	East Hampton	2	7,022
181 GEORGICA RD	East Hampton	1	7,007
PANTIGO RD	East Hampton	5	6,973
10 SARAH'S WAY	East Hampton	1	6,941
59 STAR ISLAND RD	Montauk	1	6,923
81 LILY POND LA	East Hampton	1	6,874
352 W LAKE DR	Montauk	1	6,858
2004 MONTAUK HWY	Amagansett	1	6,812
86 LILY POND LA	East Hampton	3	6,654

Parcels with multiple meters may include water use from overlapping parcels removed from this analysis

Working Draft

Table 4-6 Summer Water Use (cont.)

Property Address	Hamlet / School District	# of Water Meters	2012 Summer Water Use (gpd)
102 APAQUOGUE RD	East Hampton	2	6,626
183 S EDGEMERE ST	Montauk	1	6,587
360 CRANBERRY HOLE RD	Amagansett	1	6,548
15 EDGEMERE ST	Montauk	2	6,533
PANTIGO RD	East Hampton	10	6,483
75 MIDDLE LA	East Hampton	1	6,479
13 GUERNSEY LA	Springs	1	6,465
66 JAMES LA	East Hampton	2	6,459
2 GINGERBREAD LA	East Hampton	1	6,458
500 W LAKE DR	Montauk	1	6,441
58 STAR ISLAND RD	Montauk	1	6,335
5 N FARRAGUT RD	Montauk	1	6,295
17 PANTIGO RD	East Hampton	1	6,284
82 BENDIGO RD	Amagansett	2	6,205
94 MAIN ST	East Hampton	1	6,195
9 SHIPWRECK DR	Amagansett	1	6,186
36 WEST END AVE	East Hampton	1	6,146
189 FURTHER LN	East Hampton	3	6,134
12 SECOND HOUSE RD	Montauk	1	6,098
57 WEST END AVE	East Hampton	1	6,085
434 W LAKE DR	Montauk	1	6,076
12 FLAMINGO AVE	Montauk	2	6,066
379 BLUFF RD	Amagansett	2	5,995
142 LILY POND LN	East Hampton	1	5,992
14 CLOVER LEAF LN	East Hampton	1	5,931
31 MARINE BLVD	Amagansett	1	5,882
256 MARINE BLVD	Amagansett	1	5,857
79 BUELLS LN	East Hampton	5	5,850
74 MONTAUK HWY	Amagansett	1	5,844
40 EGYPT CLOSE	East Hampton	1	5,805
15 AMY'S LN	East Hampton	1	5,791
45 BAY ST	Sag Harbor	1	5,777
3 STAR ISLAND RD	Montauk	1	5,770
76 S EDISON ST	Montauk	2	5,764
25 OCEAN AVE	East Hampton	1	5,761
18 DAYTON LN	East Hampton	1	5,761
4 WEST END AVE	East Hampton	2	5,758
141 SAYRES PATH	Wainscott	1	5,747
98 OCEAN AVE	East Hampton	2	5,717
7 JUDSON LN	East Hampton	1	5,714
141 BUCKSKILL RD	East Hampton	2	5,708
9 DEERFIELD WAY	Amagansett	1	5,685
5 TYSON LA	East Hampton	2	5,677
3 POTTERS LA	East Hampton	1	5,670
83 MARINE BLVD	Amagansett	1	5,650

Parcels with multiple meters may include water use from overlapping parcels removed from this analysis

Working Draft

Table 4-6 Summer Water Use (cont.)

Property Address	Hamlet / School District	# of Water Meters	2012 Summer Water Use (gpd)
354 MONTAUK HWY	Wainscott	1	5,646
43 DUNEMERE LN	East Hampton	2	5,578
77 TOILSOME LA	East Hampton	1	5,578
36 FITHIAN LN	East Hampton	1	5,577
FURTHER LA	Amagansett	2	5,572
426 W LAKE DR	Montauk	2	5,536
112 S BRIAR PATCH RD	East Hampton	1	5,516
140 SPRINGS FIREPLACE RD	East Hampton	2	5,509
75 ACCABONAC RD	East Hampton	1	5,490
184 THREE MILE HARBOR RD	East Hampton	1	5,420
4 ANVIL CT	East Hampton	1	5,401
31 E DUNE LA	East Hampton	1	5,391
56 MIDDLE LA	East Hampton	1	5,388
209 GEORGICA RD	East Hampton	1	5,378
371 ROUTE 114	East Hampton	2	5,303
85 WEST END AVE	East Hampton	1	5,270
22 ALEWIVE BRK HANDS CK RD	East Hampton	1	5,256
19 BEECH HOLLOW CT	Montauk	1	5,230
92 OCEAN AVE	East Hampton	1	5,228
408 W LAKE DR	Montauk	2	5,196
20 MARLEY LA	East Hampton	1	5,181
46 GEORGICA RD	East Hampton	3	5,164
216 OLD MONTAUK HWY	Montauk	1	5,112
27 DREW LN	East Hampton	1	5,095
143 MAIN ST	East Hampton	1	5,072
93 WEST END AVE	East Hampton	1	5,066
14 ST MARYS LN	Amagansett	1	5,065
88 LILY POND LN	East Hampton	1	5,059
101 ELY BRK TO HANDS CRK RD	East Hampton	1	5,014
12 MARINA LA	East Hampton	1	5,013
100 GEORGICA RD	East Hampton	2	5,005

Parcels with multiple meters may include water use from overlapping parcels removed from this analysis

Working Draft

4.4 EMERGING CONTAMINANTS – WATER SUPPLY

The disposal of pharmaceuticals, personal care products and other contaminants (all classified as emerging contaminants) are now being found in drinking water supplies impacted by wastewater disposal practices. In 2012, the Suffolk County Water Authority retired and removed from service the Montauk Edgemere Rd. #2 well because it had elevated levels of the contaminants:

- Carbamazepine; Gemfibrozil; Ibuprofen; Meprobamate; Naproxen

Long Island Pharmaceutical Society (LIPS) holds 2 collection days a year for unwanted drugs and medicines. Independent pharmacists participate in the program. The NYSDEC also has a household Drug Collection program that is sponsored by the Group for the East End with collection points are Sag Harbor, Shelter Island and Westhampton Beach. The following pharmacies in East Hampton accept unwanted medicines/drugs:

White's Pharmacy 81 Main St, East Hampton, NY 11937 (631) 324-0082
Park Place Chemists 200 Pantigo Place, East Hampton, NY 11937 (631) 324-6660

4.5 PROPERTIES WITHIN ZONES OF CONTRIBUTION OF COMMUNITY WATER SUPPLY WELLS

Table 4-7 presents the number of properties within various travel times to community water supply wells. Lots are listed if any portion of the lot is within the 2007 Source Water Contributing Areas as defined in the 2010 Draft Suffolk County Comprehensive Water Resources Management Plan (SCCWRMP), as provided by SC DHS. The information used to produce the Source Water Contributing Areas was based upon Community Public Supply Wells that existed in 2007, and may now be dated (e.g., new wells have been added to the network, older wells no longer used and removed from the network, etc., are not reflected). Also, the pumpage rates used for modelling of the SCWA wells were pumpage estimates for future pumping made in 2007, and do not necessarily reflect current or actual pumapge rates. For detailed understanding of the data, please review the appropriate Task Reports of the Draft SCCWRMP that describe the purpose and assumptions included in the modelling used in the development of the Source Water Contributing Areas.

Table 4-7 Properties within Various Travel Times to Community Water Supply Wells

School District	Travel Time to Water Supply Wells - # of Developed Parcels						Total
	2-year	5-year	25-year	50-year	75-year	100-year	
Amagansett	0	0	11	43	0	16	**70**
East Hampton	72	0	67	66	99	98	**402**
Montauk	11	11	57	51	47	50	**227**
Springs	0	0	91	0	0	0	**91**
Wainscott	9	0	16	0	0	26	**51**
Total	**92**	**11**	**242**	**160**	**146**	**190**	**841**

Working Draft

5 GIS & ASSESSOR'S DATA

5.1 GIS DATA

GIS data of Town features was acquired from the following sources:

- Town of East Hampton
- USDA
- FEMA
- USGS
- NYSDEC
- NWI
- NOAA

Although much of the data was usable as-is, some data layers, such as topography, slope and depth to groundwater, had to be derived by LAI from existing data. Table 5-1 presents the data layers used in LAI's project maps and the sources from which they were derived.

Table 5-1 Sources for Project GIS Data

GIS Data Layer Group		Description	Data Source
Planning Area	Base Data	2004 Aerial Photography	USGS
		Land Use	Town of East Hampton
		Zoning	Town of East Hampton
		Streets	Town of East Hampton
		Villages (Hamlets)	Town of East Hampton
		Fire Districts	Town of East Hampton
		School Districts	Town of East Hampton
	Physical Characteristics	Slope	Suffolk County / LAI
		Topography Contours	Suffolk County / LAI
		Water Bodies	Town of East Hampton
		Surface Watersheds	USGS / LAI
	Property Data	Parcels	Town of East Hampton
	Soils and Geology	Soils - All	USDA
		Soils - Grouped	USDA / LAI
		Surficial Geology	USGS
Environmentally Sensitive Areas		Wetlands	NWI
			DEC
		Flood Plain	FEMA
		Sea, Lake, and Overland Surges from Hurricanes (SLOSH)	NOAA / NYSOEM
		Groundwater Recharge Nodes	Town of East Hampton
		Critical Environmental Areas	Town of East Hampton
Groundwater Data		Depth to Groundwater	USGS
		Groundwater Contours	USGS
		Groundwater Travel Times	Suffolk County
		Groundwater Watersheds	USGS
Potable Water Supplies		Groundwater Management Zones	Town of East Hampton
		Public Water Supply Wells	Town of East Hampton
		USGS Wells	Town of East Hampton
		Fire and Cistern Wells	Town of East Hampton
		Water Supply System	Town of East Hampton

Working Draft

5.2 ASSESSOR'S DATA

Parcel and property data was acquired from:

- Town of East Hampton GIS department
- Town of East Hampton Assessor's Office

The Town's GIS department had completed the process of joining a significant amount of property data to the GIS parcels.

The following building data was provided by the Town Assessor's Office for a limited number of properties as described below:

- # of Buildings
- Year Built
- Commercial / Residential
- House Type
- NYS Use Code
- NYS Use Name
- # of Bedrooms
- # of Bathrooms
- Land Value
- Total Assessed Value

In responses to LAI's request for assessor's data, the Town's IT Department provided the following information which has been edited and expanded upon by LAI:

- The Assessment records show 24,851 parcels.
- Of the 24,851 Parcels, 4,115 are considered to be vacant land according to assessors records.
- Therefore there are:
    - ✓ 20,736 developed parcels
    - ✓ 18,054 Residential developed parcels
    - ✓ 1,580 Commercial developed parcels
    - ✓ 1,102 other developed parcels

- Building permits began in 1957 via manual record keeping (paper). The first building permit to be entered into a database was permit number 32591 in 1995.
- All building permits issued prior to 1995 were not entered into the database. The historical data was only entered if a new building permit for the parcel.

Of the databases provided LAI, limited records exist for approximately 15,664 parcels and the data needed for wastewater management purposes was not in the provided databases. It ***appears*** that the data needed for 12,471 **residential** properties exists in the database. However due to its incompleteness and **need for commercial property information**, the data is not being used for this study. Water use information and engineering judgments will be used to estimate wastewater flows.

Working Draft

Opinions on GIS-Assessors Database Management Integration

The Town's IT Department has provided the following comments on what is needed for an integrated GIS-Assessors database.

1. Data in the Building Department is not fully entered into MS Govern. The only way historical data is entered is when a building permit is triggered on a property that is not already in the system.
2. Assessment Data is dependent on the building permit being issued, at which time the assessors populate the building structural elements.
3. All parcels are entered into MS Govern so that the County and town parcel dataset is consistent.
4. The Building Department's historical data is entered into the system

5.3 PARCEL ATTRIBUTES

We integrated the data from the various sources and created parcel attributes with representative examples presented on Table 5-2.

Working Draft

Table 5-2 Parcel Attributes

Field	Description	Sample Data			
OBJECTID	Record Number	1	5	936	4796
DSBL	District, Section, Block, Lot	0300003000100001004	0301001000100005000	0300054000200014000	0300024001300022000
DISTRICT	District	300	301	300	300
SECTION	Section	3	1	54	24
BLOCK	Block	1	1	2	13
LOT	Lot	1.00400	5.00000	14.00000	22.00000
P_ID	unique identifer for Govern Data	0	57216	0	63140
GIS_ADDRES	Property Address - GIS	SOUNDVIEW DR	188 NEWTOWN LA	TERRY RD	143 NORFOLK DR
GIS_ZIP_CO	Property Zip Code - GIS	11954	11937	11937	11937
GIS_FIRST_	Owner First Name - GIS	HERBERT L	DAVID N		JESSICA
GIS_LAST_N	Owner Last Name - GIS	GOLDEN	SAAICHI	KEM ASSOCIATES	COFRESI
GOVERN_ADD	Owner Address - Govern		188 NEWTOWN LA		143 NORFOLK DR
GOVERN_FIR	Owner First Name - Govern		David		MICHAEL
GOVERN_MID	Owner Middle Name - Govern		N		DOMINIC
GOVERN_LAS	Owner Last Name - Govern		Saaichi		COFRESI
GOVERN_COM	Commercial Property Data - Govern				
GOVERN_FUL	Owner Full Name - Govern		DAVID N SAAICHI		MICHAEL DOMINIC
SCTM	Suffolk County Tax Map Number	300-3-1-1.004	301-1-1-5	300-54-2-14	300-24-13-22
CLASS	NY State Use Class		210		210
Acres	Parcel Area (Acres)	0.0547	0.4012	2.5169	0.5743
Area_Sq_Ft	Parcel Area (sq. ft.)	2,382	17,476	109,635	25,018
BTCAMP	Land Use Category - see layer file	9	2	7	2
Zoning	Zoning	A3	R-20	A2	B
School_Dis	School District	6	1	1	4
Fire_Distr	Fire District	16	0	18	13
Adjacent_P	Adjacent to Public Water Supply	1	0	0	1
Affordable	Affordable Housing Overlay District	0	0	0	0
Limited_Bu	Limited Business Overlay District	0	0	0	0
Agricultur	Agricultural Overlay District	0	0	0	0
Water_Rech	Water Recharge Overlay District	0	0	0	0
HPOD	Harbor Protection Overlay District	0	0	0	0
Recreation	Recreational Overlay District	0	0	0	0
Coastal_Zo	Coastal Erosion Zone (1,2,3,4)	0	0	0	0
H2OZoneV	Groundwater Recharge Zone V	0	1	0	0
SGPA	Special Groundwater Protection Area	0	0	0	0
Pine_Barre	Pine Barrens Region	0	0	1	0
LWRP_EH_Co	Local Waterfront Revitilization Program	1	0	1	1
Land_Acqui	Acquired Land Description				
Nature_Pre	Nature Preserve	0	0	0	0
Nature_Con	Nature Conservancy				
Historic_S	Historic Site	0	0	1	0
Historic_N	Historic Name			TERRY CEMETERY	
Architectu	Architectural History	0	0	0	0
NR_Lot_Ins	Natural Resources Special Permit Inspection	0	0	0	0
Clearing	Cleared Land - C = 100% Cleared; U = Uncleared; P = Partially Cleared, Vacant; I = Partially Cleared, Improved; E = Exempt			U	C
Perimeter	Parcel Perimeter (ft)	222	611	1,652	732
Zone_Map_S	Zoning Map Sheet #	9	5	1	2
Historic_D	Historic District Name				
Building_P	Recent Building Permit Issued				
Shape_Leng	Parcel Perimeter (ft)	222	611	1,652	732
Shape_Area	Parcel Area (sq. ft)	2,382	17,476	109,634	25,018

Working Draft

6 WASTEWATER MANAGEMENT PRACTICES

6.1 HISTORICAL PRACTICES IN EAST HAMPTON

Except for the small Camp Hero collection and septic system in Camp Hero State Park in Montauk and the Sag Harbor wastewater collection system, East Hampton relies exclusively on conventional septic systems for wastewater management except for the treatment systems located at Montauk Manor and Rough Riders Landing in Montauk.

The original septic systems in East Hampton (17th century through 19th century) were outhouses, consisting of shallow holes in the ground covered by sheds or canopies. In the 19th and 20th centuries, these systems were replaced by brick-lined, deeper holes (cesspools) that received both wastewater from toilets and grey water from kitchens and sinks. Wastewater solids collect inside cesspools and are mostly anaerobically digested by naturally occurring bacteria in the wastewater. The liquid portion seeps out of the cesspool and passes through the soil into the groundwater below. Cesspools were legal to install prior to 1978, after which current wastewater disposal guidelines, which require a septic tank and leaching pool or drainfield, were implemented. For the purpose of this study, any system built prior to or during 1978 is assumed to be a cesspool.

A review of the current (1978) SCDHS regulations for leaching pools reveals that the standard 1, 2 and 3 leaching pool systems for single family homes have the following depths, measured from grade to the bottom of the leaching pool:

- 1-leaching pool system: 14-ft
- 2-leaching pool system: 8-ft
- 3-leaching pool system: 6-ft

Alternate sewage disposal systems for high groundwater conditions for 1-3 bedroom residences are a minimum of 34" (2.83-ft) below grade. These systems require a cluster of 5 shallow leaching pools.

For this project's planning purposes, it is assumed that septic systems installed prior to 1978 are cesspools and have a minimum depth from surface to bottom of the cesspool or leaching pool of 6-ft. Table 6-1 presents the Assessor's data on building age (assumed to be the age of the disposal system). Per correspondences with the Assessor's office, developed parcels for which no building age data is available are assumed to have been built prior to 1978, and therefore are also assumed to have a cesspool.

Working Draft

Table 6-1 Assessor's Building Age Data and Assumed Disposal System Type

# of Parcels w/Buildings Built After 1978	6,919
# of Parcels w/Buildings Built Before 1978	4,695
# of Parcels w/Buildings Built in 1978	232
Total Assessor's Parcels w/Building Age Data	11,846
Total Developed Parcels	19,403
Dev. Parcels w/no Assessor's Building Age	7,557
Total Assumed to be (Cesspools)	12,484
Total Assumed to be Conventional Systems	6,919

Residential septic systems are considered Class V injection wells, but are exempt from regulation by the U.S. Environmental Protection Agency. Septic systems depend upon the availability of good soils in order to work efficiently. Areas with soils that contain poor soils (see Figure 3-1) will have challenges siting a septic system that adequately disposes of wastewater. Areas such as Montauk, whose soils have a restrictive layer, are required to set leaching pools on a column of clean sand that penetrates the restrictive layer creating a flow path down to the groundwater table. It has been reported that some of these columns are more than 75' deep. If these holes are dug adjacent to ponds or wetlands that are dependent upon perched water for their habitat needs, these ponds and wetlands can be dewatered, significantly damaging them. In extremely prolonged rainy periods such as East Hampton experienced in the spring of 2003, and if such a column of sand is sufficiently downgradient from the perched water table, the groundwater under artesian pressure can move up through the column of sand and spill out over the ground bringing wastewater products with it, creating a serious health problem. Leaching catchment basins set on columns of clean sand in similar situations can act the same way during such conditions; rather than leach water, they receive it from below and spill it out on to the road or shoulder, which was the case on Lincoln Road in Montauk in the spring of 2003 where the artesian phenomenon resulted in major flooding.

6.2 EXISTING WASTEWATER TREATMENT SYSTEMS & LARGE SEPTIC SYSTEMS

There are four STPs operating within the greater limits of East Hampton Town. The Sag Harbor STP situated on Bay Street is the only long-standing STP on the South Fork, the only one serving a sizeable population (most of Sag Harbor Village), and the only one with an outfall pipe discharging treated effluent into a water body (Sag Harbor Bay). The East Hampton Scavenger Waste Treatment Plant on Springs-Fireplace Road in East Hampton treats septage from on-site subsurface septic treatment systems hauled to the site by scavenger waste trucks. The other two STPs are "package" treatment plants serving privately owned condominiums, Rough Riders on Fort Pond Bay in Montauk and Montauk Manor STP on Edgemere Avenue, also in Montauk.

Table 6-3 lists the sewer systems and wastewater treatment plants with the SPDES Permit # and permitted flow.

Working Draft

Table 6-3 Sewer Systems & Wastewater Treatment Systems in East Hampton

STP Map ID#	STP Name	Permitted Flow[A] (mgd)	SPDES Permit #[B]	Level of Treatment	Outfall[C]
	TOWN STPs				
T-5	East Hampton Scavenger Waste Plant	0.045	NY0199079	Tertiary	GW
	Total =	**0.045**			
	VILLAGE STPs				
V-5	Village of Sag Harbor Sewer District	0.250	NY0028908	Secondary	SW-M
	Total =	**0.250**			
	PRIVATE STPs				
P-EH-01	Montauk Manor	0.030	NY0195952	Tertiary	GW
P-EH-02	Rough Riders Landing	0.032	NY0195995	Tertiary	GW
	Total =	**0.062**			
	Permitted Flow Grand Total =	**0.357**			

According 2005 Comprehensive Plan, non-profit and quasi-governmental Town public-assisted housing facilities, such as:

- ✓ Whalebone Apartments,
- ✓ Accabonac Apartments,
- ✓ Windmill 1 and 2 Apartments,
- ✓ Three Mile Harbor Trailer Park
- ✓ Avallone on Fort Pond Bay

have combined sewer--leaching field systems. When the New York Ocean Science Laboratory (NYOSL) was in operation prior to 1981, Avallone served as a dormitory for lab workers and visiting scientists. When the NYOSL site was redeveloped as the Rough Rider condominiums, the package treatment plant that was constructed to handle the condominium's wastewater had extra capacity; when the abandoned dormitory was converted to apartments in the late 1980s, their wastewater disposal needs were accommodated by the existing STP.

Table 6-2 lists the 112 properties with SPDES permits, due to their wastewater flows being in excess of 1,000 gpd, in East Hampton along with their SPDES permit number as provided by the Peconic Baykeeper, who is claiming that all SPDES permits in Suffolk County need to be required to achieve NYSDEC effluent standards of TN < 10 mg/l for discharges to groundwater drinking water aquifers. Table 6-2 includes the Town Hall, Town Offices Building, and Schools.

According to NYSDEC's website, Statutory Authority for SPDES permits are Article 17, Titles 7 & 8 of the Environmental Conservation Law Clean Water Act with Applicable Regulations in 6NYCRR Parts 750-757 and Federal Regulations 40 CFR (many parts) http://www.dec.ny.gov/docs/permits_ej_operations_pdf/spdesprofile.pdf,

EXEMPT ACTIVITIES: Discharge of sewage effluent to groundwater less than 1,000 gal/day. **MINOR PROJECTS:** Discharges to groundwaters of less than 10,000 gal/day of sewage effluent, without the admixture of industrial wastes.

Working Draft

Table 6-2 SPDES Permits in East Hampton

Properties in Town of East Hampton with SPDES Permits	
Area	No. Properties with SPDES Permits
AMAGANSETT	9
EAST HAMPTON	49
EASTHAMPTON VILLAGE	1
MONTAUK	49
WAINSCOTT	2
SAG HARBOR	2
Total	112

				Area
1	NY0180904	OCEAN COLONY MOTEL (AM-42B)	74 MONTAUK HWY	AMAGANSETT
2	NY0133647	AMAGANSETT EAST SIDE TENNIS CLUB	C03-92 W/S ABRAHAM PATH S/O MAPLE ST	AMAGANSETT
3	NY0174017	WINDWARD SHORES MOTEL	MONTAUK HIGHWAY	AMAGANSETT
4	NY0181935	HERMITAGE (AM-59)	2148 MONTAUK HWY -1000' W OF HITHER HILLS STATE PARK |SCTM# 300-110-2-23	AMAGANSETT
5	NY0279579	ST MICHAEL'S SR HOUSING PROJECT	486 MONTAUK HWY	AMAGANSETT
6	NY0069272	150 TOWN LANE	N/S TOWN LANE 1200' W/O ABRAHAMS PATH	AMAGANSETT
7	NY0177440	MEZZALUNA AMG RESTAURANT	231 MAIN ST	AMAGANSETT
8	NY0180041	SEA BREEZE INN (AM 55)	WS ATLANTIC AVE|TURN RIGHT AT FLAGPOLE OFF RTE 27	AMAGANSETT
9	NY0273619	WINDMILL INN	23 WINDMILL LN	AMAGANSETT
10	NY0064386	PARRISH MEWS (EHV 24)	6-10 MAIN ST	EAST HAMPTON
11	NY0088340	VILLA ITALIAN SPECIALTIES (EHV-26)	7 RAILROAD AVE	EAST HAMPTON
12	NY0135135	MAIDSTONE VILLAGE (TMH-10AR)	295 THREE MILE HARBOR RD	EAST HAMPTON
13	NY0173193	RONJO MOTEL INC (MT 173)	55 SOUTH ELMWOOD AVE| N/E/C SOUTH ELMWOOD D & S EDBEMEVUE ST	EAST HAMPTON
14	NY0173436	MONTAUK SOUNDVIEW (MT-138B)	WEST LAKE DR|N/W/C WEST LAKE AND SOUNDVIEW DR	EAST HAMPTON
15	NY0174041	SEAFOOD SHOP (WS-18)	NE/C MONTAUK HWY & WAINSCOTT RD|	EAST HAMPTON
16	NY0174734	G & T DAIRIES SUPERMARK & DELI (EHV 27)	36 RACE LN	EAST HAMPTON
17	NY0177148	KENNYS TIPPERARY INN	WEST LK DR (MT 188) WEST LAKE DR @ FLAMINGO AVE	EAST HAMPTON
18	NY0178837	LAUNDRY RESTAURANT (EHV-35)	31 RACE LN	EAST HAMPTON
19	NY0181862	GINGERBREAD SQUARE (EHV-42)	24 GINGERBEAD LN	EAST HAMPTON
20	NY0193569	PALM REST.AT HUNTINGTON (EHV-43)	MAIN ST S/E CORNER WITH HUNTING LN	EAST HAMPTON
21	NY0193721	DAMARK'S DELI (EH-64)	CORNER OF SOAK HIDES RD & THREE MILE HARBOR RD	EAST HAMPTON
22	NY0211052	EAST HAMPTON OFFICE PARK (C03-88-027)	300 PANTIGO PLACE	EAST HAMPTON
23	NY0132161	RETAIL STORE (TMH 11)	FORT POND BLVD OFF THREE MILE HARBOR RD	EAST HAMPTON
24	NY0133485	CEDAR POINT COUNTY PARK (TMH 12)	CEDAR POINT RD	EAST HAMPTON
25	NY0133931	INDIAN WELLS BEACH (AM 49)	INDIAN WELLS PLAIN HWY	EAST HAMPTON
26	NY0179965	HEDGES INN (EHV-37)	74 JAMES LN NORTH OF JEFFERY'S LN	EAST HAMPTON
27	NY0195251	GEORGICA ESTATES (SEC.3 LOT 7)(EH-73C)	HUCKLEBERRY LANE	EAST HAMPTON
28	NY0195502	EAST HAMPTON BEACH FACILITY (EH-75)	W/S OCEAN AVE & ATLANTIC OCEAN MAIN BEACH	EAST HAMPTON
29	NY0211567	FRESNO PLACE (C03-88-004 & EHV-47)	8 FRESNO PLACE	EAST HAMPTON
30	NY0211885	WHALEBONE VILLAGE APTS.(EH-84)	147 BOATHEADERS LANE	EAST HAMPTON
31	NY0221465	PHOENIX HOUSE EAST HAMPTON	INDUSTRIAL RD.	EAST HAMPTON
32	NY0221864	NICK & TONI'S (C03-89-013)	136 N MAIN ST	EAST HAMPTON
33	NY0237051	THE DINER INC.(C03-91-005)	74 MONTAUK HWY	EAST HAMPTON
34	NY0237159	CAMP BLUE BAY (C03-91-002)	THREE MILE HARBOR-HOG CREEK RD & FLAGGY HOLE RD -NW CORNER	EAST HAMPTON
35	NY0237850	AFFRODABLE HOUSING ACCABONAC C03-92-22	ACCABONIC HWY -E SIDE -800 FT NW OF SPRINGS CLOSE HWY	EAST HAMPTON
36	NY0238031	COMPOSTINGFACILITY	SPRINGSFIREPLACERD - ESIDE OF ABRAHAMSPATH	EASTHAMPTON

Table 6-2 SPDES Permits in East Hampton (cont.)

37	NY0238236	EASTHAMPTONHIGHSCHOOL	2LONGLN	EASTHAMPTON
38	NY0252662	THEMILLHOUSEINN	31NMAINST	EASTHAMPTON
39	NY0253332	SAGHARBORSTATEPARK	SAGHARBORGOLFCLUBDR|BARCELONANECK	EASTHAMPTON
40	NY0253979	HARBORMARINA	423THREEMILEHARBOR - NOFGANN| HOGCREEKRD -300'	EASTHAMPTON
41	NY0254378	TERRYKINGATHLETICFACILITY	385ABRAHAMSPATH|500'SOFTOWNLN	EASTHAMPTON
42	NY0254771	SPRINGSFIREPLACEROADAPARTMENTS	SPRINGSFIREPLACERD SESIDEOFCORD41 - 500'NEOFCROSSHWY	EASTHAMPTON
43	NY0254894	MAIDSTONECLUBTENNIS	50OLDBEACHLN - RTE27TOJAMESLN - MAIDSTONELN	EASTHAMPTON
44	NY0255173	TWOMILEHOLLOWBEACH	TWOMILEHOLLOWRD -S END	EASTHAMPTON
45	NY0255696	GUILDHALL	158MAINST	EASTHAMPTON
46	NY0273457	TOWNHALLCOMPLEX	159PANTIGORD	EASTHAMPTON
47	NY0277568	ROSSSCHOOLCENTERFORWELLBEING	18GOODFRIENDDR	EASTHAMPTON
48	NY0253685	SPRINGSSCHOOL	48SCHOOLST	EASTHAMPTON
49	NY0254088	BOYSHARBOR	180SPRINGYBANKSRD	EASTHAMPTON
50	NY0273023	ST.LUKE'SEPISCOPALCHURCH	18JAMESLN	EASTHAMPTON
51	NY0278327	HAMPTONCOUNTRYDAYCAMP	191BUCKSKILLRD|	EASTHAMPTON
52	NY0279285	DLTALMAGE4	SUFFOLKST	EASTHAMPTON
53	NY0199079	EASTHAMPTON(T)SCAVENGERWASTETP	262SPRINGS-FIREPLACERD|SCTM#300-145-2- 13.1	EASTHAMPTON
54	NY0079065	EASTHAMPTONPOINTRESTAURANT(TMH- 10R)	295THREEMILEHARBOR	EASTHAMPTON
55	NY0180483	66NEWTOWNLANECOMPLEX(C03-90-012)	66NEWTONLN	EASTHAMPTON
56	NY0210005	DELLAFEMINAREDHORSEFOODMARKET	74MONTAUKHWY	EASTHAMPTON
57	NY0173959	DUFFYPLAZASHOPS(MT175)	THEPLAZA|SEDGEMERE	EASTHAMPTON
58	NY0193763	WAINSCOTTVILLAGE(WS24)	ROUTE27-400'W/OGEORGICADR|ACROSSST FROMWAINSCOTTPOSTOFFICE	EASTHAMPTON
59	NY0180301	CIRCLE-MAINSTREETCONDO(EHV-38)	MAINSTREETANDTHECIRCLE	EHAMPTON VILLAGE
60	NY0091111	HARBORSIDEMOTEL(MT140)	371WLAKERD@EFLAMINGORD -NWCORNER	MONTAUK
61	NY0132659	MALIBUMOTEL(MT-155&MT-155A)	ELMWOODAVE|SW/CESSEXELMWOODAVE	MONTAUK
62	NY0133094	BEACHCOMBERMOTEL(MT158B)	OLDMONTAUKHWY|NORTHSIDE200'EASTOF SCHOOLLN	MONTAUK
63	NY0133442	OCEANBEACHEAST(MT157)	108SEMERSONAVE	MONTAUK
64	NY0135127	PORTROYALMOTEL(MT66C)	NAVYRD	MONTAUK
65	NY0135887	BLUEHAVENMOTEL(MT168)	WESTLAKEDR	MONTAUK
66	NY0175978	MONTAUKRACQUETCLUB(MT182)	WESTLAKEDR|ESIDEATSFULTONDR	MONTAUK
67	NY0180416	ATLANTICBLUFFSCLUB(MT-212)	707OLDMONTAUKHWY|NORTHSIDEBETWEEN SCHOOLST&WASHINGTONST	MONTAUK
68	NY0180564	STEPPINGSTONECONDO(MT-215)	WLAKEDR -NECORNERWITHSFULTON|	MONTAUK
69	NY0180955	DAUNT'SALBATROSSMOTEL(MT-219)	SOUTHELMWOODAVE - SWCORNERWITH SOUTHEDGEMEREST	MONTAUK
70	NY0193861	ROYALATLANTICNORTH(MT-223)	SEMERSONAVE@SEDGMEREAVE	MONTAUK
71	NY0193992	VILLAGEDUNESCOOP(MT-162R)	SOUTHEMERSONAVE|105'E/OSOUTHELDER AVE	MONTAUK
72	NY0210650	FOUROAKS(C03-88-006)	FLAMINGOAVE	MONTAUK
73	NY0067946	ROYALATLANTICBEACHRESORT(MT-135)	131SEDGEWATERAVE	MONTAUK
74	NY0088561	SNUGHARBORMOTEL-MARINA(MT115A)	3STARISLANDRD|SCTM#0300-12-1-8.8,8.9, 8.10&8.11	MONTAUK
75	NY0091774	SHEPHERD'SBEACHINN	107SELMWOODAVE	MONTAUK
76	NY0094692	THEMOVIE(MT-151)	3EDGEMERERD	MONTAUK
77	NY0094731	CROWSNESTINN(MT-152)	4OLDWESTLAKEDR|1½MIEOFMONTAUK	MONTAUK
78	NY0133001	STARISLANDYACHTCLUBLTD(MT124A)	59STARISLANDRD	MONTAUK
79	NY0134392	SUNNSOUNDRESORT(MT-160)	22SOUNDVIEWDR|SCTM#300-005-01-12	MONTAUK
80	NY0173070	EASTBYNORTHEASTLLC	51EDGEMERERD	MONTAUK
81	NY0174327	GURNEY'SINNRESORT&SPALTD.(MT-18AR)	290OLDMONTAUKHIGHWAY	MONTAUK
82	NY0175188	COASTGUARDSTATIONMONTAUK(MT180)	EAST&WESTLAKEDRIVE/STARISLANDRD	MONTAUK
83	NY0175871	MARINESALES&SERVICE(MT-181)	426WLAKEDR|SCTM#300-6-3-17,20&21	MONTAUK
84	NY0175951	GOSMANSCLAMBAR(MT63A)	484WLAKEDR|SCTM300-6-1-30.1	MONTAUK
85	NY0177580	MONTAUKYACHTCLUBANDRESORT	STARISLANDRD	MONTAUK

Table 6-2 SPDES Permits in East Hampton (cont.)

86	NY0177962	HITHERHILLSSTATEPARK(MT203)	OLDMONTAUKHWY	MONTAUK
87	NY0179736	MOTELMT-210RR	205URFSIDEAVE|SCTM300-49-6-21	MONTAUK
88	NY0194794	WAVECREST(MT-64A)	SECONDHOUSERDOPPOSITESOUTHELDERLN	MONTAUK
89	NY0196471	HARBORRIDGECONDOMINIUM(MT104R)	FAIRWAYPL	MONTAUK
90	NY0211338	MONTAUKSHORES(C03-93-003)	DEFORESTRD -SSIDE -1180'EOFDITCHPLAINS RD|SCTM0300-32.01-01-1	MONTAUK
91	NY0237418	GONEFISHINGMARINA(C03-90-019)	467ELAKEDR	MONTAUK
92	NY0238538	MONTAUKDOWNSSTATEPARK	SOUTHFAIRVIEWAVE	MONTAUK
93	NY0252638	EASTLAKECOMFORTSTATION	ELAKEDR -NEND|SCTM0300-6-1-2	MONTAUK
94	NY0253367	MONTAUKPOINTSTATEPARK	EASTENDOFSTRTE27	MONTAUK
95	NY0253405	CAMPHEROSTATEPARK	CAMPHERORD|SCTM#300-15.00100013.009	MONTAUK
96	NY0253553	INLETSEAFOOD	541ELAKEDR|SCTM#300-6-2-2&3	MONTAUK
97	NY0272965	THEHARVESTRESTAURANT	11SEMERYST	MONTAUK
98	NY0273520	PANORAMICVIEW	272OLDMONTAUKHWY	MONTAUK
99	NY0277711	MONTAUKLAKECLUB&MARINA	211ELAKEDR|SCTM300-13-3-6,26	MONTAUK
100	NY0278831	WESTLAKEMARINA	352WESTLAKEDRIVE|SCTM#0300-12-1-5& 11.1	MONTAUK
101	NY0195952	MONTAUKMANOR	236EDGEMEREST	MONTAUK
102	NY0195995	ROUGHRIDERSLANDINGSTP	EDGEMERERD|SCTM300-27-2-1	MONTAUK
103	NY0092142	ANNBREYER'SCOTTAGES(MT-149)	WESTLAKEDR|BELLPOLE114WESTLAKEAND FLAMINGO	MONTAUK
104	NY0179850	TOWERATMONTAUKCONDOMINIUM(MT 211)	SEUCLIDAVE&EDGEMERERD	MONTAUK
105	NY0132322	BORNFREEMOTELI(MT154)	SEMERSONAVE - NSIDE -70'WOFSEDGEMERE	MONTAUK
106	NY0181412	SANDSMOTELEAST	SEMERSONAVE&SEMERYST -NECORNER	MONTAUK
107	NY0193917	THELANDING	402WESTLAKEDR	MONTAUK
108	NY0194671	SUNSCAPECONDOMINIUM	NWCEMERSONAVE&SESSEXST	MONTAUK
109	NY0273210	EASTHAMPTONINDOORTENNISCLUBLLC	175DANIELSHOLERD	WAINSCOTT
110	NY0222224	WAINSCOTTMOTEL(C09-90-038)	3720MONTAUKHWY|370'WESTOFCORNEROF TOWNLINERD	WAINSCOTT
111	NY0133639	INNATMILLCREEK(THE)(NY7)	590NOYACRD	SAGHARBOR
112	NY0254274	SALTYDOGCONDOMINIUMS	3705NOYACKRD	SAGHARBOR

WO

6.3 CAMP HERO WASTEWATER SYSTEM

The Camp Hero wastewater collection system is understood to have been acquired by the Town to serve the Camp Hero Estates which were formerly housing for the Montauk Air Force Base. **The Camp Hero Sewer System is a Special Assessment District #41 and the 2012/2013 Assessment was $282.58/$1,000 assessment, which results in approximately a $550. fee to each of the properties connected to the Camp Hero wastewater System.**

According to the 1982 As Built Plans, the wastewater system serves 26 houses and a community center with a wastewater collection system that drains to two pump stations that discharge to septic tanks with effluent flowing to 10 – 10 feet in diameter 12 foot deep leaching pools. It is understood that the collection system consists of "orangeburg pipe", which is known to have deformation and collapsing problems and is considered a substandard material. It is no longer used in wastewater collection systems.

Severn Trent Services manages the Camp Hero Wastewater System as part of its contract with the Town for managing the Scavenger Waste Facility, and provided the following corrective action recommendations for the Camp Hero wastewater system.

Lower Pump Station

1. Needs dedicated Electrical feed
2. Needs an Autodialer - with battery back-up - with alarms for loss of power, pump failure, High wet well level
3. Needs the hole in the roof repaired - may need a complete new roof
4. Needs an emergency power generator
5. Collection system should be investigated - it is likely that the "Orangeburg" pipe is not sound.
6. Spare pumps are needed as there are none.
7. Improved landscaping around the pump station.
8. Emergency power generator connected with upper pump station.

Upper Pump Station

1. Needs a dedicated Autodialer with alarms for loss of power, pump failure, High wet well level
2. Pump Station needs a new pump to replace the failed one, as well as a spare
3. Pump Station should be fenced, including the area where the leach pools are located.
4. The system should have an emergency power generator connecting both Pump Staions.
5. Improved landscaping around the pump station.

LAI's recommendations are:

1. Collection system - evaluate with TV inspection as it may need to be replaced
2. Treatment/Disposal System of Leaching Pools - filed inspect/evaluate to determine their continued use
3. Consider the need to add treatment system for nitrogen removal as it may be required.

6.4 GREASE TRAPS

Scavenger waste transporters have stated that approximately 50% of commercial properties with food preparation facilities do not have grease traps, which results in grease being comingled with wastewater and causing treatment problems at receiving wastewater treatment plants.

Through the Town Code required inspection program, this deficiency should be identified and corrected.

Working Draft

7 SCAVENGER WASTE MANAGEMENT

A detailed description of the East Hampton Scavenger Waste Management situation and options for future management are presented in the Scavenger Waste Management Report. This section is a brief summary of scavenger waste management issues. **The Scavenger Waste Water System is Special Assessment District # 40 and the 2012/2013 tax assessment was $3.75/$1,000 assessed valuation.**

7.1 SCAVENGER WASTE BACKGROUND

The East Hampton Scavenger Waste Facility (SWF) is located at 262 Springs Fireplace Road in East Hampton (631-907-8903) and was built in the mid 1980's. The SWF was designed and permitted by the New York State Department of Environmental Conservation (NYSDEC) to treat scavenger waste with on-site disposal of treated effluent and off-site disposal of sludge. The Town operated the facility until 2001 when the Town contracted operations and maintenance (O&M) to Severn Trent Services (STS) for five years and then renewed their contract for another 5 years. In 2011, the Town did not renew the STS five year contract but has retained STS on a month to month basis. Ross Hilber (rhibler@stes.com; (516) 674-6032 ext. 228) is the STS area manager and Fred Nero (fnero1952@yahoo.com; 631-276-1029) is the on-site operator. Mr. Nero has worked at the SWF since it was operated by the Town.

In January 2012 the East Hampton Scavenger Waste facility (SWF) was converted to a transfer station with a NYSDEC permit that limits the quantity of scavenger waste that can be received to 10,000 gpd on a 12-day rolling average.

The 2013 disposal fees at the SWF are:

$130./1,000 gallons for wastewater
$260./1,000 gallons for grease

A detailed description of the Scavenger Waster Facility is presented in the Scavenger Waste Facility Report. Figure 7-1 illustrates the SWF layout and location of groundwater monitoring wells.

7.2 SCAVENEGER WASTE PUMPING FEES

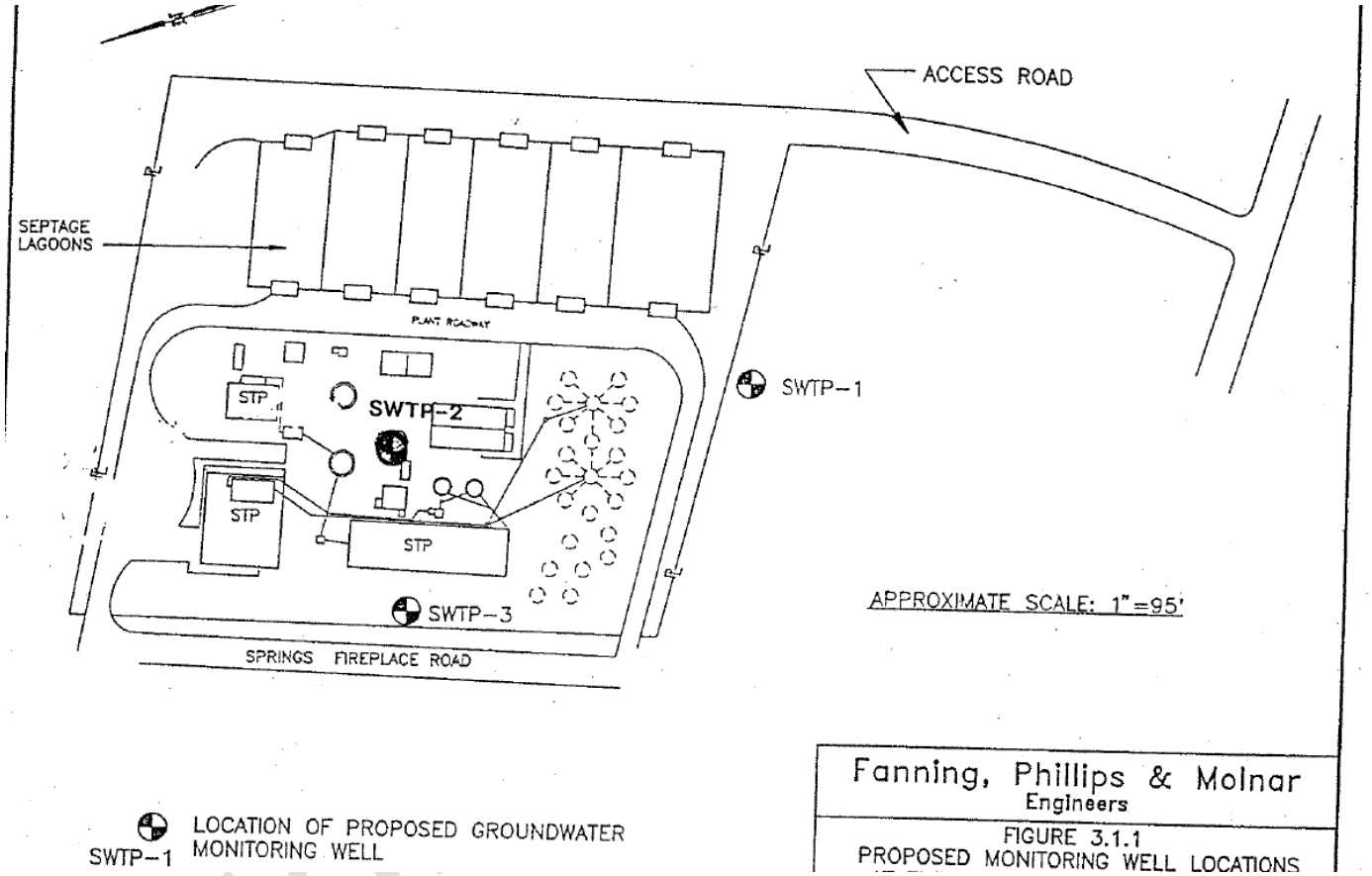
It is understood that a "typical" fee for septic system pumping is $300 for 1,000 gallon tanks/cesspools and $400 for 1,500 gallon Tanks with additional fees for larger septic tanks.

7.3 HISTORICAL & EXISTING FLOWS

Table 7-1 presents a summary of historical flows at the East Hampton Scavenger Waste Facility based upon STES data. Daily July – August flows for 2011 – 2013 and annual flow data as provided by STES and the Town are presented on Table 7-2.

Working Draft

Figure 7-1 SWF Layout & Groundwater Monitoring Wells



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Table 7-1 SWF Flows 2004 – 2013

Peak Factor		Period of Record Data				Monthly Flows at East Hampton Scavenger Waste Treatment Facility - ADF gpd									Transfer Station	
6 day/wk		2003 - 2013 Period														
1.167		Max (gal)	Min (gal)	Avg (gal)	Avg (gpd)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
31	Jan	22,449	4,140	13,802	445	22,449	13,213	16,317	20,849	18,911	17,150	10,181	10,069	10,707	7,839	4,140
28	Feb	23,000	4,796	13,367	477	14,375	21,008	17,346	23,000	14,917	16,850	9,229	9,229	9,842	6,442	4,796
31	Mar	22,667	6,884	15,991	516	22,667	20,686	19,735	21,513	20,607	18,554	9,597	13,548	14,000	8,106	6,884
30	Apr	31,185	7,408	20,335	678	28,634	31,185	28,626	23,226	29,264	18,938	15,672	17,267	15,750	7,716	7,408
31	May	35,526	8,633	24,542	792	34,298	35,526	33,103	34,966	35,115	15,928	19,871	18,403	25,290	8,825	8,633
30	Jun	45,308	8,338	28,778	959	45,308	39,435	44,549	45,198	34,891	13,560	21,272	22,221	32,667	8,338	9,119
31	Jul	61,416	9,085	36,546	1,179	60,236	61,416	57,007	54,236	42,640	25,125	27,040	22,054	34,059	9,085	9,108
31	Aug	66,472	9,315	40,193	1,297	64,001	64,102	56,925	66,472	53,855	35,107	23,634	23,333	34,962	10,421	9,315
30	Sep	47,623	7,525	26,943	898	41,613	47,623	36,638	41,925	31,948	19,709	19,756	18,531	23,042	8,062	7,525
31	Oct	37,141	6,074	20,945	676	30,466	37,141	36,234	30,241	27,645	16,267	17,349	13,511	15,468	6,074	-
30	Nov	28,544	8,116	16,918	564	22,111	21,333	28,219	28,544	24,539	11,999	12,503	13,164	15,567	8,116	-
31	Dec	30,860	6,202	16,223	523	24,444	23,935	22,545	30,860	19,589	13,247	11,478	13,849	12,306	6,202	-
	Max	66,472	4,140	22,882												
365	**Totals**	35,189	7,946	22,956	63	34,378	34,828	33,218	35,189	29,606	18,577	16,516	16,306	20,375	7,946	5,579

Working Draft

Table 7-2 SWF Annual Flows Town & STES Data and July – August 2011 – 2013 Daily Flows

Flows at East Hampton Scavenger Waste Treatment Facility											
Town data		**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**thru 9-30-2013**
		Operated as a Treatment and Disposal Facility								**Transfer station with 10,00 gpd limit**	
Annual Total (gal/yr)		2,055,840	10,133,660	10,859,620	8,970,000	5,510,900	4,888,900	4,905,000	5,241,000	2,314,200	1,456,500
Ave. Daily (6 days/week)		6,568	32,376	34,695	28,658	17,607	15,619	15,671	16,744	7,394	6,204
Disposal Fee Range /1,000 gal		$ 50	$ 70	$ 75	$ 75	$ 90	$ 90	$ 115	$ 115	$ 135	$ 135
					$ 90		$ 115				

East Hampton Scavenger Waste Flows July and August from 2011 to 2013							
	2011		**2012**		**2013**		
Date	**July**	**August**	**July**	**August**	**July**	**August**	
	846,000	794,000	252,100	262,600	246,000	245,000	Total for month (gallons)
	27,290	**25,613**	**8,132**	**8,471**	**7,935**	**7,903**	**Average daily flow (gpd)**
	54,000	**63,000**	**25,600**	**20,000**	**19,000**	**24,500**	**Maximum**
	1.98	2.46	3.15	2.36	2.39	3.10	Max/Average
	3 day running average						
	27,218	26,540	8,116	8,490	7,868	8,075	Average daily flow (gpd)
	42,667	49,667	14,400	14,600	18,000	14,833	Maximum
	14,667	14,000	2,400	2,300	-	3,167	Minimum
	1.57	1.87	1.77	1.72	2.29	1.84	Max/Average

Working Draft

7.4 SCAVENGER WASTE CARTERS

The carters that have used the EH SWF since 2005 are:

Aqua Nova Commercial Services
Eastern Environmental Services
Hampton Septic
J & J Cesspool
Norsic
Ray Serva Cesspool Service
Schenck Cesspool Service
Direct Drainge Cesspool Service
Griffiths Carpet Cleaning
Harold McMahon Cesspool
John K Ott
Quackenbush Cesspool Service
S & P Cesspool
Sessa

Currently, the active carters in East Hampton are:

Hampton Septic
J&J Carting
McMahon Plumbing
Schenck Cesspool Service
John K. Ott Cesspool
Norsic & Son
Quackenbush Cesspool Service

7.5 ALTERNATE SCAVENGER WASTE TREATMENT FACILITIES

The alternate, out of Town, Scavenger Waste Treatment Facilities are:

- Riverhead Wastewater Treatment Plant, Riverhead, NY
- Bergen Point Wastewater Treatment Plant, Babylon, NY
- Clear Flo Technologies, Inc., N. Lindenhurst, NY
- Yellow Trading Ltd., Yaphank, NY – for grease only

Working Draft

8 MARINA PUMPOUTS

8.1 MARINA PUMPOUT FACILITIES

Table 8-1 is a listing of Marina Pump Out Facilities in East Hampton

Table 8-1 EH Marina Pump Out Facilities

East Hampton Marina Pump Out Facilities						
Name	Street		Latitude	Longitude	Hours of Operation	
Town of East Hampton Gann Road Pumpout	42 Gann Road, Three Mile Harbor	East Hampton	41.027178	-72.190944	24 hours	
Village of Sag Harbor Marine Park Docks	7 Bay Street, Long Wharf	Sag Harbor	41.002295	-72.293359	24 hours	
East Hampton Point Marina (BJD Enterprises Ltd.)	295 Three Mile Harbor Road	East Hampton	41.020019	-72.180969	7:30 AM - 6 PM	Portable
Town of East Hampton Star Island #2 Pumpout	159 Pantigo Road	East Hampton			As Needed	
Town of East Hampton Star Island Pumpout Facility	Star Island Commercial Dock, Star Island Drive	Montauk	41.073397	-71.934542	24 Hours	
Town of East Hampton Trustees Boat #1	267 Three Mile Harbor Road	Amagansett	41.020025	-72.181172	8 AM - 5 PM	Boat
Town of East Hampton Trustees Boat #2	Gann Road	East Hampton	41.027093	-72.180974	As Needed	Boat

Town Trustees operate two pumpout boats that provide free service to boats in 3Three Mile Harbor and Lake Montauk.

8.2 MARINA PUMPOUT QUANTITIES

Table 8-2 provides Town Trustees boats pumpout quantities for 2010. Data for additional years is to be provided by Town Trustees.

Three Mile Harbor 2012 pumpouts are understood to be 18,250 gallons.

Working Dra

Table 8-2 Trustees Boats Pump Out Quantities 2010

East Hampton Pump-Outs by Trustee Boats						
	2010					
Month	Three Mile Harbor - Boat # 1		Lake Montauk - Boat # 2		Totals	
	Boats served	Gallons Pumped	Boats served	Gallons Pumped	Boats served	Gallons Pumped
May	36	1,220	72	2,830	108	4,050
June	72	2,770	123	5,230	195	8,000
July	272	10,849	544	18,290	816	29,139
August	212	8,872	536	17,160	748	26,032
September	99	4,560	158	5,640	257	10,200
October	48	1,490	69	2,480	117	3,970
Total	**739**	**29,761**	**1,502**	**51,630**	**2,241**	**81,391**
	Boats Served		Boats Served			
Maidstone	187		Yacht Club	800		
Moored	184		Star Island	150		
Halsey	105		Snug Harbor	200		
East Hampton Point	70		Lake Club	100		
Gardiners	59		Sportsman	35		
Three Mile Boat Yard	52		Lake Mon Anchore	35		
Town Dock	26		Gone fishin	30		
Harbor Marina	11		West Lake Loc	12		
Shagwong	10		Ricks	20		
Hog Creek	6		Diamond Cove	9		
Lion Head	3		Lands, End	9		
Total	713		South Lake	9		
			the Landing	9		
			the ramp	9		
			The Condos	1		
			East Dock	1		
			Total	1,429		

Working Draft

9 RELEVANT GOVERNMENTAL ENTITIES

In addition to the East Hampton Town Board, the following governmental entities have jurisdiction over water and wastewater related matters:

- Town Trustees
- Suffolk County Department of Health Services
- NYSDEC

9.1 TRUSTEES

The Trustees of the Freeholders and Commonalty of the town of East Hampton represent the original government of East Hampton. The Trustee positions were created and granted sole authority over the Town of East Hampton, by King James II through the Dongan Patent dated December 9, 1686. Although the Nichols Patent had defined the boundaries for the Town of East Hampton in 1666, the Dongan Patent is one of the earliest of the New World documents to provide for a representative government by elected officials in North America.

As the original governing body of East Hampton, the Trustees managed and made allotments of the Town's "common lands." Since their creation in 1686, the Town Trustees have continuously functioned as an autonomous governing body and represent an important historic link to the earliest roots of our democratic Nation. The East Hampton Town Trustees meet the second and the fourth Tuesday of each month at 6:00 PM in the Trustee office at 267 Bluff Road Amagansett, NY 11930.

2012-2013 Trustees

Timothy Bock
Brian Byrnes
Dennis Curles
Stephanie Talmage Forsberg
Deborah Klughers
Stephen Lester
Sean McCaffrey
Diane McNally
Nathaniel Miller

9.2 SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES

The Suffolk County Department of Health Services (SCDHS) Office of Wastewater Management is responsible for permitting wastewater systems in East Hampton. For wastewater design flows greater than 1,000 gpd, a SPDES permit is required. SCDHS has been delegated authority to issue SPDES permits by NYSDEC for systems with design flows < 30,000 gpd. For systems with flows >15,000 gpd that are privately owned, SC DPW approval is also needed.

9.3 NYSDEC

The NYSDEC SPDES and solid waste transfer permitting sections in NYSDEC are applicable for wastewater management and scavenger waste management, when the facility is used as a transfer station. The key contact NYSDEC personnel are:

Working Draft

SPDES Permit Issues

New York State Dept. of Environmental Conservation
Stony Brook University
50 Circle Road
Stony Brook, NY 11790-3409

William Spitz, Regional Manager, 631-444-0405,
Joe Sun, wxsun@gw.dec.state.ny.us,

Solid Waste – Transfer Station Issues

Syed Rahman, P.E., Regional Materials Management Engineer, 631-444-0375,
shrahman@gw.dec.state.ny.us
Lija Jacob, lxjacob@gw.dec.state.ny.us

Working Draft

10 TOWN OF EAST HAMPTON MANAGEMENT STRUCTURE

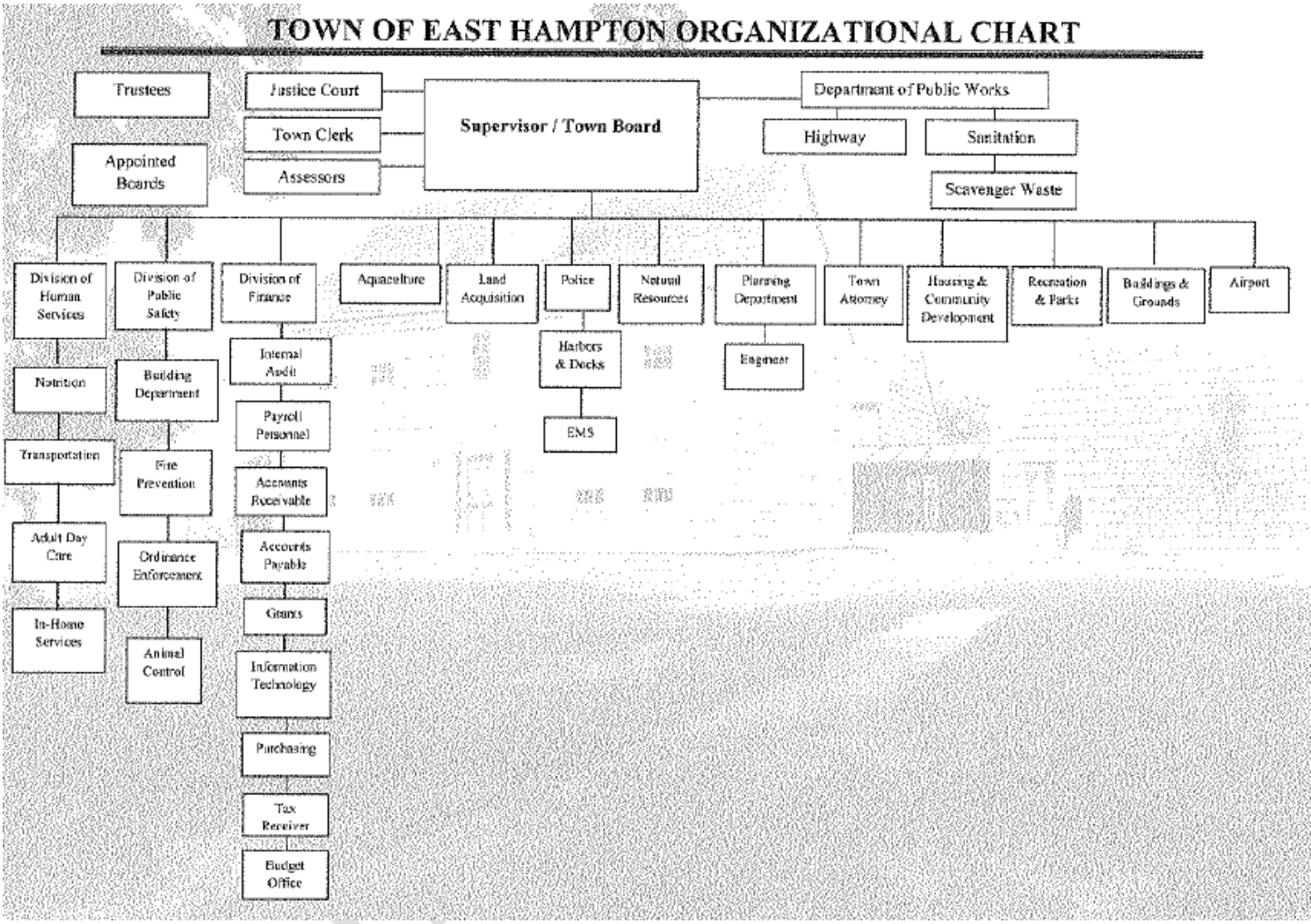
10.1 MANAGEMENT ORGANIZATION

Figure 10-1 presents the Town of East Hampton's Organization. The key functions are supposed to be performed by the Departments as they affect wastewater management, scavenger waste facility/ management and water quality monitoring are described on Table 10-1. It is noted that the Organization Chart does not include the Town's Director of Environmental Protection – who is also the Director of Natural Resources.

Table 10-1 Key Wastewater-Scavenger Waste Management Activities & Responsible EH Town Departments

Function	Responsible Department	Activity	Comments
Scavenger Waste Facility – Town Code Chapter 210	Sanitation Inspector and DPW Director. Building Inspector and the Director of Environmental Protection may also enforce provisions whether or not either is serving as Sanitation Inspector.	Manage Operations Contractor & provide reports to Town Board liaison	It is understood that no person has been the Sanitation Inspector or DPW Director for years.
Approval of septic system as required by Town Code § 210-3-1.	Building Inspector Sanitation Inspector and Director of Environmental Protection may also enforce provisions.	Issue permits for on-site wastewater systems	Town Code states "No person shall construct, alter, modify, repair or replace any on-site wastewater disposal system without having first obtained from the East Hampton Town Building Inspector a building permit for such work." It is understood that Town permits are only issued for repairs.
Town Code § 210-6-1. Required maintenance	Sanitation Inspector, Building Inspector or Director of Environmental Protection	Confirm that on-site systems are inspected and pumped every 3 years	It is understood that this has not ever been performed.

Figure 10-1 Town of East Hampton Organizational Chart



11 FINDINGS

The major findings associated with the Community Profile report are:

1. **Fundamental Issue – lack of enforcement of existing code/laws.**
   If existing codes and laws were enforced:

   a. Most wastewater caused water quality problems would likely have been required to be corrected

   b. Scavenger Waste Facility Issues would be significantly diminished as the volume of flow from malfunctioning systems would be reduced

2. **Town Codes adopted in mid 1980s are excellent and need little refinement**

   Recommended areas of improvement include:

   a. Especially for Montauk where soils characteristics can be challenging for siting septic systems due to impermeable soils and restrictive layers, soils based sizing of leaching systems should be required suing US EPA guidelines in the 2002 US EPA Manual of On-Site Wastewater Systems.

   b. Consider issuance off operating permits for all commercial systems, in particular to ensure grease traps are installed and properly serviced.

3. **Town staff positions vital to wastewater management & water quality protection have not been filled for years.**

   a. Existing town staff needs to be enhanced by
      i. filling critical staff positions,
      ii. organizational adjustments,
      iii. professional engineering services retained to lead the needed improvements
      iv. appointment of Town lead person in charge

4. **The legacy of unaddressed wastewater problems is what needs to be addressed – quantified in the Needs Report**

5. **Scavenger Waste Facility Management**

   a. Position that would manage SWF activities is unfilled

   b. While many Town staff are involved, we were not able to identify the staff person who is in charge of the SWF.

   c. Records on SWF are not centralized and easily accessible. Excessive time/effort has been necessary to access records through Town staff and Severn Trent.

   d. Collected data on SWF waste and groundwater is not organized and professionally reviewed

Working Draft

e. Immediate cost savings of at least $12,000+/month have been identified in the Scavenger Waste Report.

6. **Groundwater quality in the SWF, Springs-Fireplace Road and Montauk Landfill areas and throughout Town show elevated levels of constituents of concern, including nitrate, ammonia, sodium and manganese. Additional details to be in future FPM groundwater reports.**

7. **112 SPDES Permits exist in East Hampton – some associated with municipal buildings. Most have no effluent limits. Lawsuit alleges that these systems need to be compliant with NYSDEC requirement for effluent requirements, most notably Total Nitrogen < 10 mg/l, and possibly lower. 112 SPDES permits in Town may need treatment systems.**

8. **Grease traps need to be installed on all commercial properties producing wastewater from food service.**

9. **Educate and provide incentives for property owners to install septic tank effluent filters, which will safely allow septic system pumping frequency to be reduced to every 5+ years for properly functioning systems. Thus savings would accrue to property owners. 3 year frequency in Town Code should be changed.**

10. **Camp Hero wastewater system needs to be upgraded – likely replaced with potentially continuing to use leaching pools. Wastewater overflows are understood to have occurred**

Working Draft

12 RECOMMENDATIONS

As identified in this Community Profile Report, there are a number of areas in need of improvement that should be addressed as the Town proceeds with an improved Wastewater Management approach.

These needs and LAI recommendations are presented on Table 11-1.

Table 11-1 Community Profile Recommendations

Improvements needed	Activities Needed	Recommendations
Assessor's Database	1. Populate database with information on parcels developed prior to 1995 so that database is complete. 2. Add commercial property information that is essential for projecting wastewater design flows. This information may best be collected by Fire Department in its site surveys, which are understood to occur at each property once every 3 years	Perform as part any follow-on Wastewater Facilities Planning efforts that will require lot by lot data and analysis.
Town Management Structure	1. Decide whether wastewater improvement program is to be part of DPW or under Director of Environmental Protection (DEP). 2. Appoint Sanitation Inspector	Based upon existing lean management, place under Director of Environmental Protection and retain professional consultants to guide and manage activities with Sanitation Inspector providing permit and inspection reports review.
On-Site Systems Inspection	1. Develop inspection program procedures and forms 2. Train scavenger waste haulers to perform inspections 3. Implement inspection program and prioritize areas based upon risks to public health and water quality. 4. Establish program to address financing of malfunctioning systems that can and should be addressed on-site. Develop neighborhood solutions for areas where on-site solutions not feasible or cost-effective on-site.	Place under Director of Environmental Protection
Camp Hero wastewater system	1. Upgrade system	Pending a field survey of equipment, it is likely that the collection system and pump station needs to be replaced at a minimum.

Working Draft

WORKING DRAFT

Task Report

Wastewater Needs Analysis Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

January 8, 2014

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 WASTEWATER PRACTICES IMPROVEMENT NEEDS DEFINITION – INTRODUCTION 4
- 1.1 Wastewater Needs Types 4
- 1.2 Types and Quantities of Existing Wastewater Systems 5
- 1.3 Buildout Projections 5
- 1.4 Regulatory Standards & Existing System Design Assumptions 6
- 1.5 Sea Level Rise Impacts on Minimum Depth to Groundwater 7

2 PUBLIC HEALTH – INSUFFICIENT DEPTH TO GROUNDWATER 9
- 2.1 Criteria for Definition of Public Health Wastewater Needs 9
- 2.2 Depth to Groundwater Based Wastewater Needs 9

3 IMPERMEABLE SOILS 15
- 3.1 Needs Definitions 15
- 3.2 Soils Based Wastewater Needs 15

4 MALFUNCTIONING SYSTEMS 19

5 TMDL CONSIDERATIONS 20
- 5.1 Introduction 20
- 5.2 Nitrogen TMDL Analysis 20
  - *5.2.1 Nitrogen TMDL Calculations 20*
  - *5.2.2 Nitrogen TMDL Calculations & Removal Requirements 24*
- 5.3 Phosphorus TMDL Analysis 34
  - *5.3.1 Phosphorus TMDL Calculations 34*
  - *5.3.2 Phosphorus TMDL Removal Requirements 35*
- 5.4 Shellfish & Eelgrass Issues 37

6 HARBOR PROTECTION OVERLAY DISTRICT & WETLANDS - SETBACK REQUIREMENTS & DEPTH TO GROUNDWATER CONSIDERATION 38

7 PRIVATE WATER SUPPLY CONSIDERATIONS 39

8 PUBLIC WATER SUPPLY CONSIDERATIONS 43

9 TOWN & COUNTY CODE & STATE LAW CONSIDERATIONS 44

10 COST CONSIDERATIONS 48

11 ECONOMIC SUSTAINABILITY 49

12 WASTEWATER NEEDS SUMMARY 50

REFERENCES 52

APPENDIX A SHELLFISH CLOSINGS IN EAST HAMPTON - NOVEMBER 2013 53

APPENDIX B EEL GRASS HABITATS 61

APPENDIX C POND INFORMATION 64

List of Figures

Figure 2-1 Wastewater Needs Based on Existing Depth to Groundwater, No Sea Level Rise 12

Figure 2-2 Wastewater Needs Based on Existing Depth to Groundwater, 2-ft Sea Level Rise 13

Figure 2-3 Wastewater Needs Based on Existing Depth to Groundwater, 4-ft Sea Level Rise 14

WORKING DRAFT

Figure 3-1 Wastewater System Requirements Based on Soils Type 18
Figure 5-1 Conceptual Diagram of Tidal Prism Model 24
Figure 7-1 Schematic Diagram of ¼-Acre Lot with Private Well and Disposal System 41
Figure 7-2 Cones of Depressions of Individual Wells & Septic Systems.....42

List of Tables

Table 1-1 Preliminary Estimated Number of Wastewater System Types in East Hampton..... 5
Table 1-2 East Hampton Residential Buildout 2011 6
Table 1-3 Minimum Existing Depth to Groundwater for Leaching Pool Systems 7
Table 1-4 Projected Sea Level Rise in Long Island 7
Table 1-5 Required Existing Depth to Groundwater, 2-ft & 4-ft Sea Level Rise 8
Table 2-1 Wastewater Needs Based on Existing Depth to Groundwater (DGW)..... 9
Table 2-2 Existing DGW Based Wastewater Needs, 2-ft & 4-ft Sea Level Rise.....10
Table 2-3 Number of Wastewater Systems and Types by Groundwater Depth Zone & School District.....10
Table 2-4 Wastewater Systems Requiring Off-Site Solutions & Number of Cesspools Likely & Potentially Causing Water Quality Problems 11
Table 3-1 Soils Based Wastewater Needs Advisory Categories.....16
Table 3-2 No. of Parcels & Peak Summer WW Flows by Soils Categories & School District.....16
Table 3-3 Solution Types by Soils Category.....16
Table 3-4 Number of Properties by School District with Hydric Soils 17
Table 5-1 SC DHS Wastewater Design Flow Rates 22
Table 5-2 Agricultural Nitrogen Load to Groundwater.....23
Table 5-3 Embayments & Ponds Volumes and Residence Time.....26
Table 5-4 Existing Watershed Nitrogen Loads and Concentrations – 25% WW Attenuation 27
Table 5-4a Existing Watershed Nitrogen Loads and Concentrations –50% WW Attenuation 28
Table 5-4b Existing Watershed Nitrogen Loads and Concentrations – 75% WW Attenuation ...29
Table 5-5 Buildout Watershed Nitrogen Loads and Concentrations – 25% WW Attenuation.....30
Table 5-5a Buildout Watershed Nitrogen Loads and Concentrations – 50% WW Attenuation...31
Table 5-5b Buildout Watershed Nitrogen Loads and Concentrations – 75% WW Attenuation...32
Table 5-6 Existing Nitrogen Sources as a Percentage of Total Existing Watershed Nitrogen Load.....33
Table 5-7 Buildout Nitrogen Sources as a Percentage of Total Buildout Watershed Nitrogen Load.....33
Table 5-8 NYSDEC Lake Trophic Status Classification.....34
Table 5-9 Phosphorus TMDL Analysis Structure for Hook Pond, Georgica Pond and Fort Pond 36
Table 6-1 Estimate of Number of Properties with Septics within setback areas.....38
Table 7-1 Separation Distances and Well Depth 40
Table 7-2 Properties < ¼-acre w/ Onsite Systems & Private Water Supply.....40
Table 8-1 Number of Properties by SD Within Various Travel Times To Public Water Supply Wells.....43
Table 9-1 Properties With SPDES Permits That May Require Treatment Systems 44
Table 11-1 Summary of Wastewater Improvement Needs by Need Type 50
Table 11-2 Summary of Wastewater Improvement Needs by Need Type & Study Area.....51

WORKING DRAFT

1 WASTEWATER PRACTICES IMPROVEMENT NEEDS DEFINITION – INTRODUCTION

The purpose of the Wastewater Needs Report is to define the wastewater improvement needs as accurately as possible based upon the cause of the Need – which enables the most precise, objective and transparent determination of the appropriate solution(s) and optimization of solution options cost-effectiveness. The analysis needs to be viewed as a foundation starting point for public review and comment.

1.1 WASTEWATER NEEDS TYPES

Wastewater management needs are defined based upon:

1. **Bacterial public health considerations based upon insufficient depth to groundwater** – using the criteria of a minimum 2-foot separation between disposal system bottom and the seasonal high groundwater table.

2. **Impermeable/Hydric Soils -** Systems on sites with impermeable/hydric soils will be identified as candidates malfunctioning systems. Other data will be relieved upon for explicit needs definition. Soils data will be used as advisory- no needs will be based solely on soils criteria.

3. **Malfunctioning systems considerations** – for sites whose septic systems are malfunctioning which could be caused by a variety of site, system design/construction and/or use factors. Malfunctioning systems are considered a public health threat.

4. **Water quality considerations** – TMDL compliance for achieving/maintaining water quality standards.

    a. Bacterial is addressed in the above two wastewater categories. Also many non-wastewater factors cause bacterial contamination.
    b. Nitrogen discharges in coastal embayment watersheds to comply with expected TMDL requirements and eel grass restoration
    c. Phosphorus discharges in freshwater pond watersheds to comply with expected TMDL requirements

5. **Setback requirements compliance** for water quality protection may require off site solutions for properties adjacent to waterfront and wetland areas that are too small to comply with setback requirements.

6. **Private water supply considerations –** for areas where small lot size makes the required horizontal separation distances between disposal systems and individual water supply wells unlikely to be maintained. For areas where the only public health concern is separation between disposal systems and individual water supply wells, a public water supply solution may be technically and economically preferable versus a community wastewater solution.

7. **Public water supply considerations –** for areas with wastewater systems discharging within short (2 - 5 years) travel time to community water supply wells.

WORKING DRAFT

8. **Town & County Code & State Law considerations –** SPDES requirements is a major consideration.

9. **Cost Considerations** – when an off-site solution is more cost-effective than on-site system. Typically this situation is for sites where shallow depth to groundwater requires an expensive mounded system.

10. **Economic sustainability issues** – providing neighborhood solutions for commercial areas constrained by on-site solutions.

The objective data-driven wastewater needs definition procedures applied in the East Hampton Comprehensive Wastewater Management Project provides a firmly grounded engineering analysis that is transparent and reproducible. This needs definition then becomes the basis for easily understood comparable analysis of cost-effective, sustainable wastewater solutions to address the defined needs and desires of East Hampton.

1.2 TYPES AND QUANTITIES OF EXISTING WASTEWATER SYSTEMS

Based upon the Town's assessor's database and land use information, Table 1-1 presents LAI estimates of the assumed wastewater system types in East Hampton by residential and commercial categories and school districts. The data in Table 1-1 excludes the Village of Sag Harbor since that area is predominately sewered.

Table 1-1 Preliminary Estimated Number of Wastewater System Types in East Hampton

Year Built	System Type Assumed	Residential	Commercial	Other / Not Categorized	Total
Post 1978	Standard Leaching Pools	6,360	97	194	**6,651**
Pre 1978	Cesspool	11,327	884	359	**12,570**
	Total	**17,687**	**981**	**553**	**19,221**

Septic Type	Amagansett	East Hampton	Montauk	Springs	Wainscott	Total
Cesspools	1,614	4,646	2,952	2,745	613	**12,570**
Leaching Pool Systems	649	2,939	1,019	1,600	444	**6,651**
Total	**2,263**	**7,585**	**3,971**	**4,345**	**1,057**	**19,221**

1.3 BUILDOUT PROJECTIONS

WORKING DRAFT

The 2011 potential buildout of East Hampton is presented on Table 1-2 as developed by the Town's Planning Department. Buildout will be factored into the TMDL needs analysis of this Report whereby buildout nitrogen and phosphorus contributions will be examined to determine the impact of buildout on TMDL compliance.

Table 1-2 East Hampton Residential Buildout 2011

2011**				
School District	Non-Divisible Vacant Units	Potential Units from UR Maps	Potential Units from Vacant Divisible	Total Potential Res. Build-Out
East Hampton	596	235	77	908
Wainscott	144	10	24	178
Amagansett	283	26	94	403
Springs	487	117	27	631
Montauk	444	149	30	623
Total	**1,954**	**537**	**252**	**2,743**

According to the Town's Planning Department, the 2013 total number of potential additional housing units is 2,871 (including Village) and 2,260 (excluding Village). The Village buildout is expected to be revised down upon detailed analysis. The 2,260 buildout is approximately a 17% reduction from the 2011 estimates and is an approximate 10% increase over existing 2013 development.

1.4 REGULATORY STANDARDS & EXISTING SYSTEM DESIGN ASSUMPTIONS

Based upon a review of the current (1978) SCDHS regulations for leaching pools, the standard 1, 2 and 3 leaching pool systems for single family homes have the following depths, measured from grade to the bottom of the leaching pool:

A. 1-leaching pool system: 14-ft

B. 2-leaching pool system: 8-ft

C. 3-leaching pool system: 6-ft

Alternate sewage disposal systems for high groundwater conditions for 1-3 bedroom residences are a minimum of 34" (2.83-ft) below grade. These systems require a cluster of 5 shallow leaching pools. For planning purposes, it is assumed that systems installed prior to 1978 are cesspools with an unknown depth. For analytical purposes only, LAI has assumed a minimum depth from surface to bottom of the cesspool of 8-ft.

Table 1-3 presents the minimum required depth to groundwater (existing grade to existing seasonal high groundwater table) for SCDHS standard and alternate leaching pool systems.

WORKING DRAFT

Table 1-3 Minimum Existing Depth to Groundwater for Leaching Pool Systems

SCDHS Leaching Pool System	Post 1978		Pre 1978	
	Min. Depth, Surface to LP Bottom (ft)	Min. Depth + 2-ft Min. GW Separation* (ft)	Min. Depth, Surface to Cesspool Bottom (ft)	Min. Depth + 2-ft Min. GW Separation* (ft)
1	14.0	16.0	8.0	10.0
2	8.0	10.0		
3	6.0	8.0		
Alternate	3.0	5.0		

Note: Alternate LP systems require 2-ft separation. SCDHS Code requires a 3-ft separation for standard LP systems.

1.5 SEA LEVEL RISE IMPACTS ON MINIMUM DEPTH TO GROUNDWATER

Table 1-4 presents the projected sea level rise as reported in the December 2010 New York State Sea Level Rise Task Force Report to the Legislature.

Table 1-4 Projected Sea Level Rise in Long Island

Sea Level Rise Scenario	2020's		2050's		2080's	
	Low	High	Low	High	Low	High
Projected Rise	0.17	0.42	0.58	1.00	1.00	1.92
Rapid Melt	0.42	0.83	1.58	2.42	3.42	4.58

Rising sea levels will result in an associated rise in the groundwater table throughout East Hampton. It is assumed that the associated rise in groundwater will be approximately equal to the projected sea level rise. The following two sea level rise scenarios will be considered:

- 2-ft rise, covering the high end of the projected range for 2080 and up to the midpoint of the 2050 Rapid Melt range
- 4-ft rise, covering up to the midpoint of the 2080 Rapid Melt range

This report makes no prediction of if, when, and the degree to which sea level may rise. Immediate needs will be based upon existing sea elevations.

Table 1-5 presents the depths from existing ground surface to the bottom of the leaching pools for each type of leaching pool system described in the SCDHS Standards for Design and

WORKING DRAFT

Construction of Sewage Disposal Systems for Residential Properties. Both the 2-ft and 4-ft sea level rise scenarios are included. The minimum required depth to existing groundwater was calculated by adding the required minimum 2-ft separation between the bottom of the disposal system and the seasonal high groundwater table.

Table 1-5 Required Existing Depth to Groundwater, 2-ft & 4-ft Sea Level Rise

SCDHS Leaching Pool System	Post 1978 Min. DGW 2-ft Sea Level Rise	Pre 1978 Min. DGW 2-ft Sea Level Rise
1	18.0	12.0
2	12.0	
3	10.0	
Alternate	7.0	

SCDHS Leaching Pool System	Post 1978 Min. DGW 4-ft Sea Level Rise	Pre 1978 Min. DGW 4-ft Sea Level Rise
1	20.0	14.0
2	14.0	
3	12.0	
Alternate	9.0	

WORKING DRAFT

2 PUBLIC HEALTH – INSUFFICIENT DEPTH TO GROUNDWATER

2.1 CRITERIA FOR DEFINITION OF PUBLIC HEALTH WASTEWATER NEEDS

Wastewater needs based upon public health protection and Suffolk County Septic System code compliance are determined based upon the following criteria:

A. **Maintenance of a minimum of 2 feet between the bottom of the leaching pool and seasonal high groundwater to ensure adequate pathogenic bacterial purification.**

   Projected sea level rise and the associated impacts on groundwater elevations will be considered for projections of future issues, but will not be the basis of defining existing needs. It is noted that SCDHS code requires a 2-ft separation for alternate leaching pool systems, however a 3-ft separation is required for standard leaching pool systems. Scientific studies have determined that a minimum 2-ft of unsaturated soils is required for bacteria and virus removal from septic tank effluent. 4-ft separation is a typical design practice for new sites and to add a margin of safety.
   Areas with insufficient depth to groundwater will be identified as being capable of addressing their public health considerations with an on-site system or requiring an off-site solution as described in Section 2.2.

2.2 DEPTH TO GROUNDWATER BASED WASTEWATER NEEDS

The wastewater solution type required based on the existing depth to groundwater and minimum 2-ft separation to the existing seasonal high groundwater table are presented on Table 2-1. Table 2-2 presents the same information for the 2-ft and 4-ft sea level rise scenarios. Table 2-3 presents the number of properties and estimated wastewater system type that are in each depth to groundwater zone. Figures 2-1, 2-2 and 2-3 present the extents of the needs areas for the three sea elevation scenarios. As existing system data is not readily available, it is assumed that any system installed after 1978 has the appropriate system based on the depth to groundwater in the area it is installed. For systems installed prior to 1978, it is assumed that a minimum 8 feet to groundwater is required to have the required 2 foot separated. In other words, sites with wastewater systems built prior to 1978, require a depth to GW of at least 10 feet to not be a malfunctioning system.

Table 2-1 Wastewater Needs Based on Existing Depth to Groundwater (DGW)

Map Color	Existing DGW Range (ft)	Solution Type Based on Existing DGW	
Red	0 - 1	Off Site	Off site solution required
Orange	1 - 3	Alternate System + 2-4 ft. Mound	
Yellow	3 - 5	Alternate System + 0-2 ft. Mound	On Site Solution achievable
Light Green	5 - 8	Alternate System - No Mound	
Darker Green	8 +	Standard Leaching Pools	

WORKING DRAFT

Table 2-2 Existing DGW Based Wastewater Needs, 2-ft & 4-ft Sea Level Rise

Sea Level Rise of 2 feet assumed			
Map Color	Existing DGW Range (ft)	Solution Type Based on Existing DGW	
Red	0 - 3	Off Site	Off site solution required
Orange	3 - 5	Alternate System + 2-4 ft. Mound	
Yellow	5 - 7	Alternate System + 0-2 ft. Mound	On Site Solution achievable
Light Green	7 - 10	Alternate System - No Mound	
Darker Green	10 +	Standard Leaching Pools	

Sea Level Rise of 4 feet assumed			
Map Color	Existing DGW Range (ft)	Solution Type Based on Existing DGW	
Red	0 - 5	Off Site	Off site solution required
Orange	5 - 7	Alternate System + 2-4 ft. Mound	
Yellow	7 - 9	Alternate System + 0-2 ft. Mound	On Site Solution achievable
Light Green	9 - 12	Alternate System - No Mound	
Darker Green	12 +	Standard Leaching Pools	

Table 2-3 Number of Wastewater Systems and Types by Groundwater Depth Zone & School District

		Depth to Groundwater Category								
School District	Disposal System Type	1	2	3	4	5		Totals	Total Cesspools w/ Insufficient DGW	Total Leaching Pools w/ Insufficient DGW
		0 -1 ft	1 -3 ft	3 - 5 ft	5 - 8 ft	8 - 10 ft	10+ ft			
Required Solution Type		Off-site		On-site						
Amagansett	Cesspools	2	11	150	314	131	1,006	1,614	608	
	LP Systems	0	1	27	97	58	466	649		1
	Total	***2***	***12***	***177***	***411***	***189***	***1,472***	***2,263***	***608***	***1***
East Hampton	Cesspools	7	22	41	117	65	4,394	4,646	252	
	LP Systems	3	8	19	57	30	2,822	2,939		11
	Total	***10***	***30***	***60***	***174***	***95***	***7,216***	**7,585**	**252**	**11**
Montauk	Cesspools	4	27	152	204	111	2,454	2,952	498	
	LP Systems	4	6	16	26	45	922	1,019		10
	Total	***8***	***33***	***168***	***230***	***156***	***3,376***	**3,971**	**498**	**10**
Springs	Cesspools	12	38	79	197	144	2,275	2,745	470	
	LP Systems	1	7	24	44	50	1,474	1,600		8
	Total	***13***	***45***	***103***	***241***	***194***	***3,749***	**4,345**	**470**	**8**
Wainscott	Cesspools	1	2	4	13	19	574	613	39	
	LP Systems	0	0	1	4	12	427	444		0
	Total	***1***	***2***	***5***	***17***	***31***	***1,001***	**1,057**	**39**	**0**
Townwide Totals	Cesspool Total	26	100	426	845	470	10,703	12,570	1,867	
	LP System Total	8	22	87	228	195	6,111	6,651		30
	Total	**34**	**122**	**513**	**1,073**	**665**	**16,814**	**19,221**	**1,867**	**30**

Table 2-4 presents the number of properties with wastewater systems that require off-site solutions and are likely or potentially causing water quality problems by school districts.

WORK DRAFT

Table 2-4 Wastewater Systems Requiring Off-Site Solutions & Number of Cesspools Likely & Potentially Causing Water Quality Problems

	School District	Off-Site Req'd	% of Total	Cesspool Upgrade Req'd	% of Total	Total Systems at WQ Risk	% of Total	% of Town Totals
Wastewater Improvement Needs Due to Insufficient Depth to GW	Amagansett	14	9%	608	33%	622	31%	3.2%
	East Hampton	40	26%	252	13%	292	14%	1.5%
	Montauk	41	26%	498	27%	539	27%	2.8%
	Springs	58	37%	470	25%	528	26%	2.7%
	Wainscott	3	2%	39	2%	42	2%	0.2%
	Total	**156**	**100%**	**1,867**	**100%**	**2,023**	**100%**	**11%**
% of Town Systems		**1%**		**10%**		**11%**		

For planning purposes, a maximum technically feasible and cost-effective mound height of 4-ft was assumed. It is noted that while a 2-4 foot mound may be technically feasible (provided there is sufficient space on the lot), it is not likely to be an economical or aesthetically acceptable disposal alternative due to the large required area and/or the need for retaining walls. Evaluating the space requirements for this type of system relative to the available area on each parcel requires a lot-by-lot analysis and therefore is beyond the scope of this project.

WORKING DRAFT

Figure 2-1 Wastewater Needs Based on Existing Depth to Groundwater, No Sea Level Rise

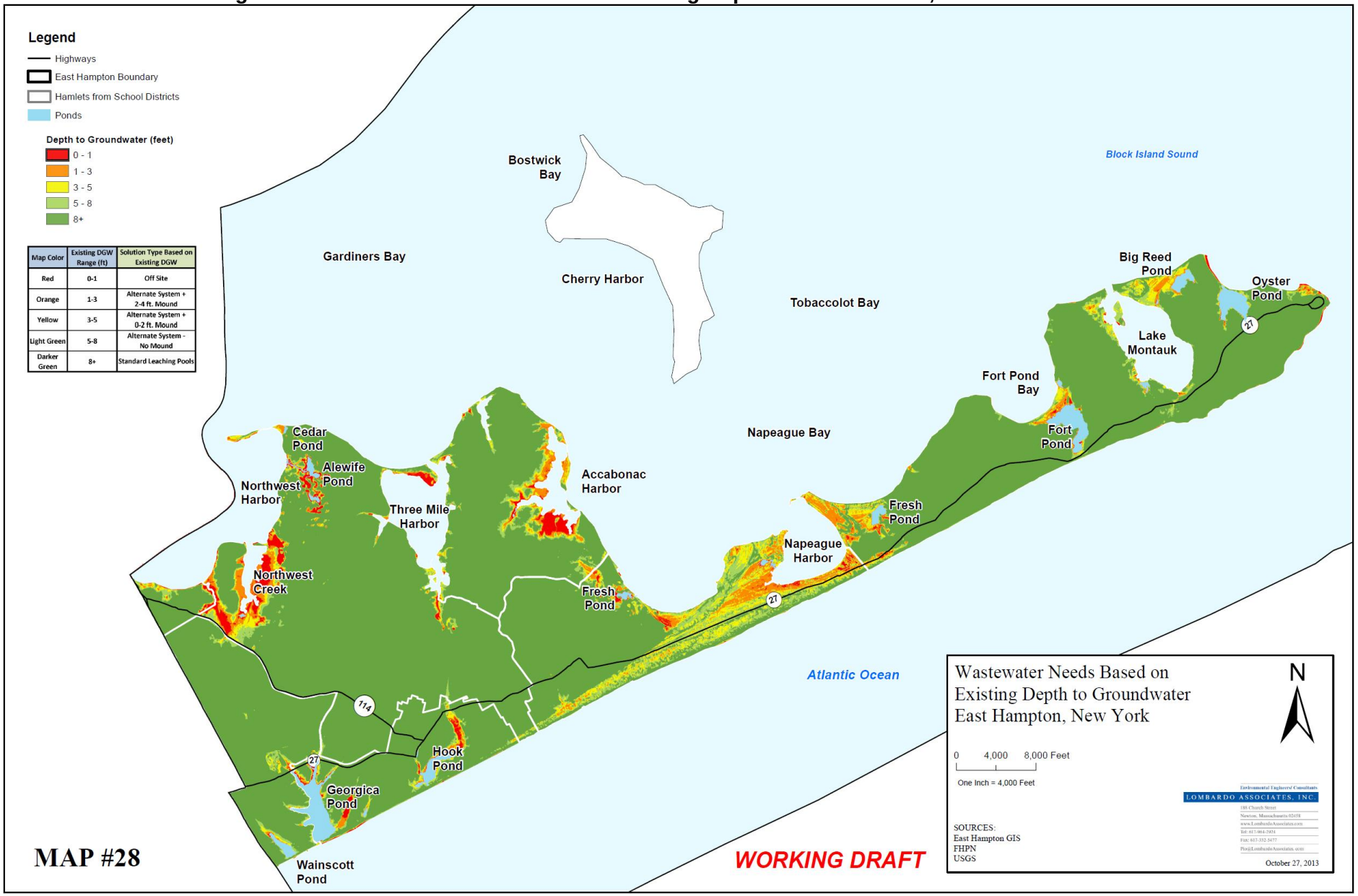
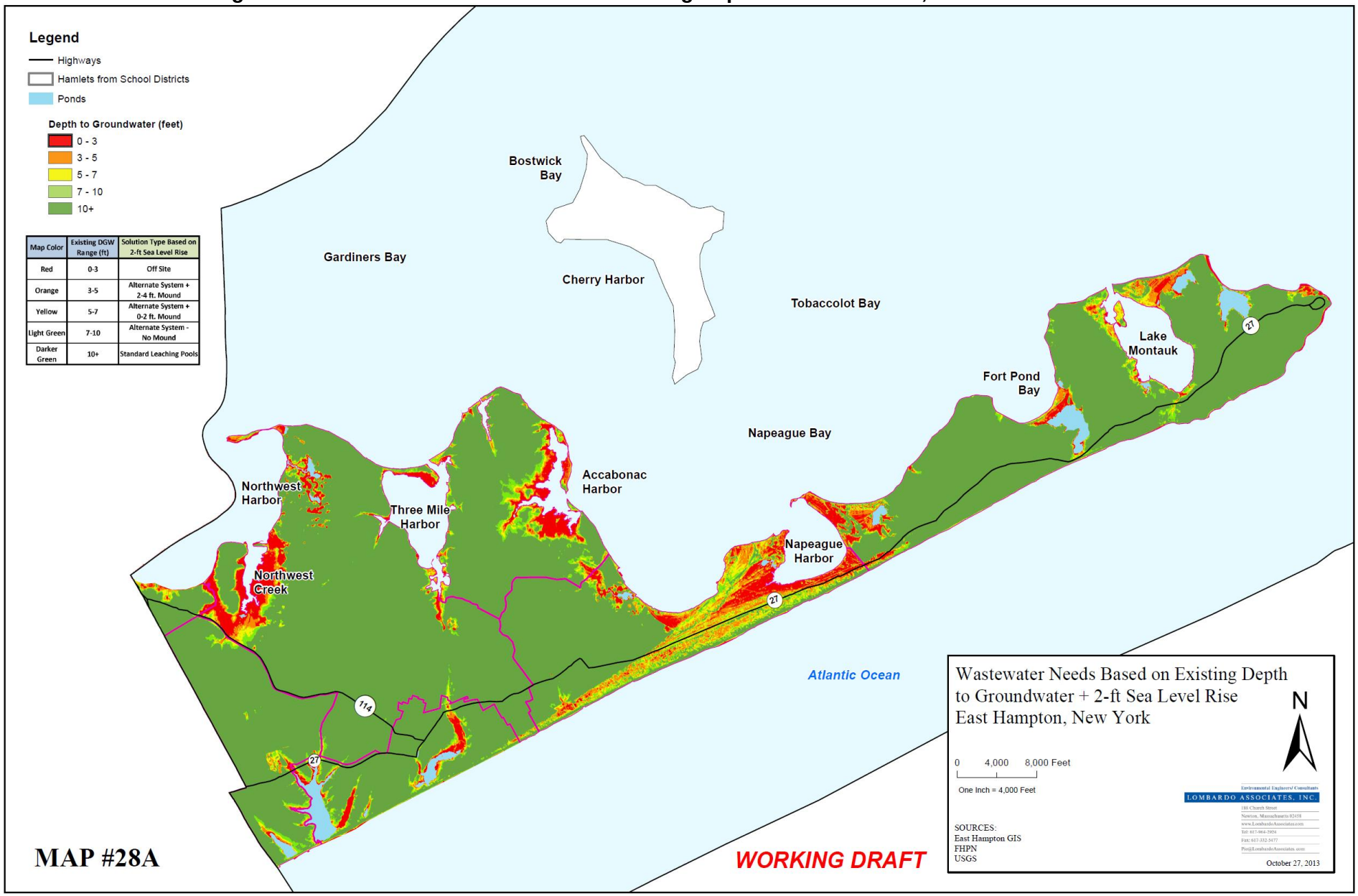
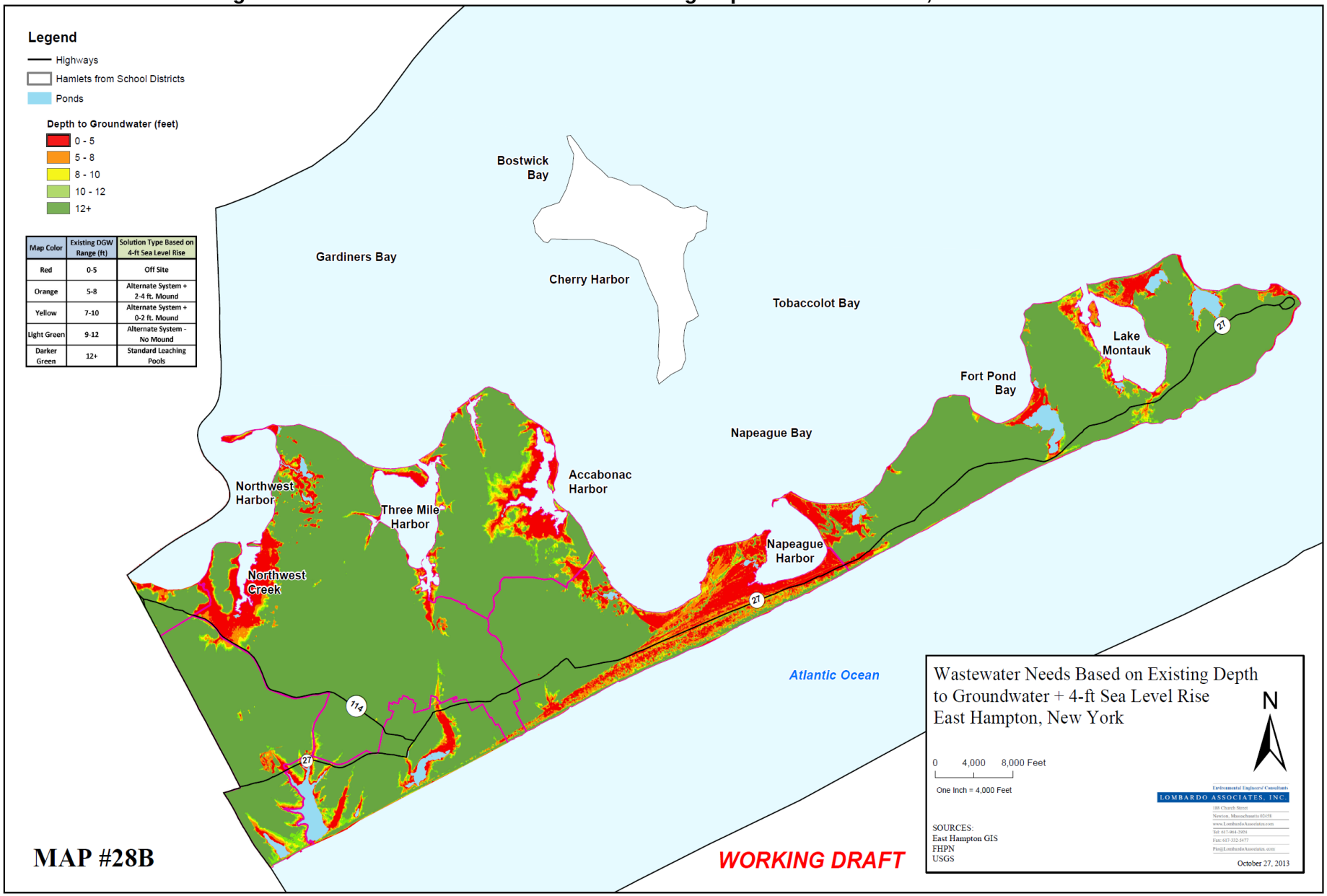


Figure 2-2 Wastewater Needs Based on Existing Depth to Groundwater, 2-ft Sea Level Rise



Map Color	Existing DGW Range (ft)	Solution Type Based on 2-ft Sea Level Rise
Red	0-3	Off Site
Orange	3-5	Alternate System + 2-4 ft. Mound
Yellow	5-7	Alternate System + 0-2 ft. Mound
Light Green	7-10	Alternate System - No Mound
Darker Green	10+	Standard Leaching Pools

Figure 2-3 Wastewater Needs Based on Existing Depth to Groundwater, 4-ft Sea Level Rise



Map Color	Existing DGW Range (ft)	Solution Type Based on 4-ft Sea Level Rise
Red	0-5	Off Site
Orange	5-8	Alternate System + 2-4 ft. Mound
Yellow	7-10	Alternate System + 0-2 ft. Mound
Light Green	9-12	Alternate System - No Mound
Darker Green	12+	Standard Leaching Pools

3 IMPERMEABLE SOILS

3.1 NEEDS DEFINITIONS

A. Sites with impermeable soils will typically experience failing leaching pools/drainfields due to the lack of soils ability to drain water.

These areas have been mapped and properties in these areas are potential candidates for an off-site solution. Field and homeowner surveys will need to be performed to "ground truth" the projections of problem areas.

It is noted that SCDHS regulations do not prohibit septic systems on sites based on soils testing.

B. Sites with soils with very low permeability require large disposal areas. For small lots with insufficient space to accommodate the larger systems, an offsite solution may be required.

It is again noted that SCDHS regulations do not require larger systems based on soils.

3.2 SOILS BASED WASTEWATER NEEDS

Soils data, as presented in the Community Profile Report, was used to determine an advisory on the potential wastewater needs of areas based on the prevailing soil type. Table 3-1 presents the septic system requirements based upon soils categories (see Community Profile report) and the percent of each school district containing soils in each needs category. Table 3-2 presents the total number of parcels and the wastewater peak summer flows for each soils category in each school district. Figure 3-1 presents a map of the soils-based needs advisory for East Hampton.

This soils based needs analysis has only used published literature information and consequently this soils based needs advisory should be considered preliminary. The following activities need to be performed to enable confidence in the soils based needs analysis:

- Review of soils borings on septic system design applications that are on file with the SCDHS and comparison with soils types, especially for Montauk with its challenging soils. Soils characteristics and categories would then be adjusted based upon the soils borings. This data mining activity may be able to obtain soils borings for the 6,000+ properties developed since 1978 when SCDHS current regulations were adopted.

- Homeowner surveys and field inspections of likely problem sites.

Table 3-3 lists the solution types associated with each of the soils categories. Table 3-4 lists the number of properties with hydric soils by school district. A comparison with Table 2-4 groundwater needs due to high groundwater indicates a close correlation, as would be expected.

Until further analysis is performed as described above, it is assumed that the depth to groundwater needs covers the soils based needs.

WORKING DRAFT

Table 3-1 Soils Based Wastewater Needs Advisory Categories

Soil Category	Description	WW Management Needs / Solution	% of Montauk Soils	% of Amagansett Soils	% of Springs Soils	% of East Hampton Soils	% of Village of East Hampton Soils	% of Wainscott Soils
0	No Data	n/a	12.4%	36.0%	4.0%	3.2%	9.8%	4.7%
1	Hydric - Not Suitable	Offsite Required	27.4%	9.5%	9.9%	7.9%	17.8%	1.4%
2	Restrictive layer limiting capacity	Large System / Potential Offsite Required	36.1%	19.9%	56.5%	9.4%	0.1%	0.2%
3	Suitable Soils	Conventional Septic	24.1%	34.6%	29.7%	79.5%	72.4%	93.7%
		Totals	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 3-2 No. of Parcels & Peak Summer WW Flows by Soils Categories & School District

	# of Parcels in Soils Categories					Prelim. Est. Total WW Flow in Soils Categories (gpd)				
	0	**1**	**2**	**3**		**0**	**1**	**2**	**3**	
School District	**No Data**	**Hydric**	**Restrictive Layer**	**Suitable Soils**	**Total**	**No Data**	**Hydric**	**Restrictive Layer**	**Suitable Soils**	**Total**
Amagansett	1,184	81	404	1,252	2,921	638,331	2,848	31,331	742,031	1,414,541
East Hampton	241	224	798	8,254	9,517	160,941	52,324	31,049	3,661,740	3,906,054
Montauk	508	1,487	2,706	780	5,481	247,966	340,448	662,305	222,469	1,473,188
Springs	135	190	3,390	1,808	5,523	12,911	5,561	205,834	42,675	266,981
Wainscott	59	4	0	1,366	1,429	630	0	0	112,559	113,189
Totals	**2,127**	**1,986**	**7,298**	**13,460**	**24,871**	**1,060,778**	**401,181**	**930,519**	**4,781,474**	**7,173,953**

Table 3-3 Solution Types by Soils Category

Soil Categories		
Description	**#**	**Solution Type**
Hydric	**1**	**Off-site**
Restrictive Layer	2	To Be Determined - assumed on-site
Suitable Soils	3	On-Site
No Data	0	To Be Determined - assumed on-site

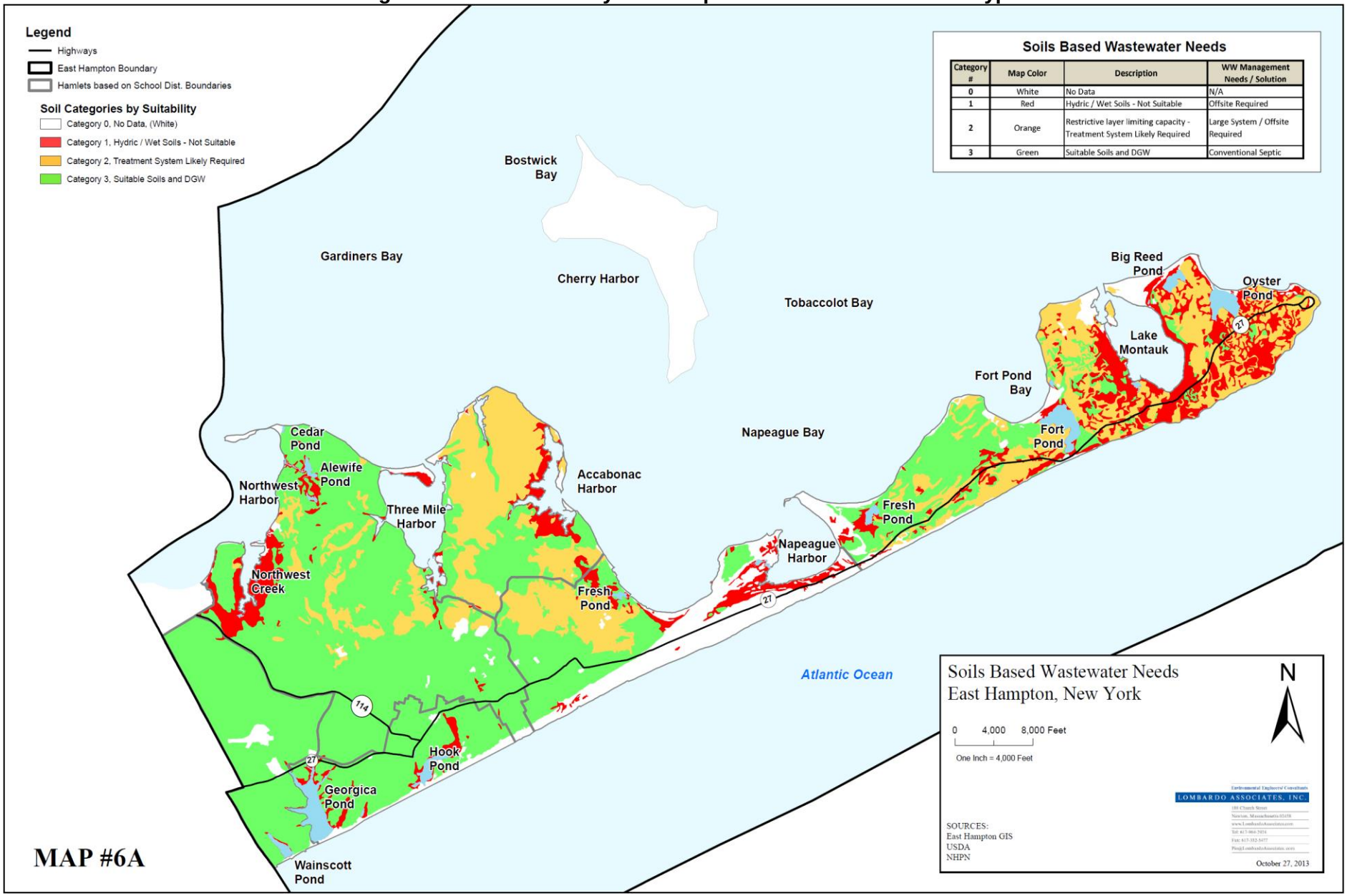
WORKING DRAFT

Table 3-4 Number of Properties by School District with Hydric Soils

Properties with Hydric Soils	#	% of Total
Amagansett	81	4%
East Hampton	224	11%
Montauk	1,487	75%
Springs	190	10%
Wainscott	4	0.2%
Totals	**1,986**	**100%**

WORKING DRAFT

Figure 3-1 Wastewater System Requirements Based on Soils Type



4 MALFUNCTIONING SYSTEMS

This section supplements the Public Health – Insufficient depth to groundwater which addresses the bacterial issues and is supplemented by the TMDL section which addresses performance malfunctioning systems regarding nitrogen and phosphorus.

Functional Malfunctioning Systems

Functionally malfunctioning systems are defined as those systems that have:

- Plumbing system back-ups;
- Surface breakout of wastewater;
- Excessive pumping

which would be indicative of a system that is undersized, overloaded and/or clogged such that the system is essentially a holding tank. Surface breakout is considered a health hazard.

Town code chapter 210 defines an on-site wastewater disposal system of any configuration which is pumped out more than one time in any thirty-day period as a **High-Frequency System**. Massachusetts code defines any system being pumped more than four (4) times per year as a Systems Failing to Protect Public Health and Safety and the Environment.

Performance Malfunctioning System

Performance malfunctioning systems are those that do not achieve the necessary bacterial, nitrogen and/or phosphorus removal required by their environmental setting – i.e. TMDL requirements, bathing beaches, shellfish areas, etc.

Ideally scavenger waste pumping records would identify properties with excessive pumpings that would be malfunctioning systems. Unfortunately the scavenger waste pumping records are incomplete, only in paper form and not considered reliable. While one scavenger waste pumping has provided an opinion on locations of malfunctioning systems, it is recommended that these systems be defined as part of an improved scavenger waste monitoring system and property owner surveys that would be performed in a subsequent phase.

Systems known to be malfunctioning are:

- **The Camp Hero wastewater system has been defined as malfunctioning as described in the Community Profile report, due to sewerage overflows and inadequate equipment.**

Systems suspected to be malfunctioning due to their age and large service area are:

- Three Mile Harbor Trailer Park
- Whalebone Apartments,
- Accabonac Apartments,
- Windmill 1 and 2 Apartments,
  Avallone on Fort Pond Bay

WORKING DRAFT

5 TMDL CONSIDERATIONS

5.1 INTRODUCTION

As nutrient Total Maximum Daily Load (TMDL) studies have not been performed for the East Hampton embayments and Ponds, the LAI project team has performed a simplified-mass balance TMDL analysis to determine the degree to which water quality standards may be violated from enrichment from nitrogen discharges for embayments and phosphorus for freshwater Ponds using the water quality standards of receiving water limit of 0.45 mg/l Total Nitrogen (TN) for embayments (as developed by the Peconic Estuary TMDL) and 0.020 mg/l for freshwater Ponds, per NYSDEC guidance http://www.dec.ny.gov/docs/water_pdf/305blakes10.pdf.

For analytical purposes, nitrogen loading is the nutrient to be managed for East Hampton's coastal embayments with phosphorus being the nutrient to be managed in freshwater Ponds.

5.2 NITROGEN TMDL ANALYSIS

5.2.1 NITROGEN TMDL CALCULATIONS

5.2.1.1 METHODOLOGY AND REFERENCES

A mass balance approach for East Hampton's coastal embayments to determine compliance with anticipated TMDL requirements consists of performing the following for the embayment and its watershed:

a. Quantifying nitrogen discharges from the watershed that reach the surface water body – referred to as attenuated load
b. Diluting that mass by the recharge volume
c. Computing an average embayment concentration by considering tidal exchange volume and nitrogen concentration.
d. Comparing the average embayment concentration to the TMDL target of 0.45 mg/l.
e. For computed embayment concentrations that are above the TMDL target, determine the mass that needs to be removed to achieve TMDL compliance
f. Determining the most cost-effective methods to remove the excess nitrogen – this activity is performed in the Scenarios Development Report.

In addition to wastewater, other sources of nitrogen contributions to groundwater and surface waters consist of:

1. Wastewater
2. Stormwater Runoff
3. Fertilizer
4. Agricultural
5. Atmospheric Deposition
6. Benthic Flux

WORKING DRAFT

Nitrogen loadings to Great South Bay were estimated by Kinney and Valiela (2011) using loading and attenuation values consistent with the Nutrient Loading Model. The following assumptions were used in their work:

- Atmospheric deposition is 10 kg/hectare/year, of which on average 84% is attenuated within the watershed
- 72% of wastewater nitrogen is attenuated within the watershed
- 84% of fertilizer inputs are attenuated within the watershed

The Cape Cod Commission has done extensive modeling of watershed nitrogen sources in the Cape Cod area, which is similar in climate and population density to East Hampton. Nitrogen loading assumptions used for Popponesset and Waquoit Bays are:

- Wastewater attenuation is 35% in septic drainfield (assuming 40 mg/l TN in septic effluent) with additional attenuation in rivers and ponds. As East Hampton has no rivers or Ponds that intercept wastewater discharges prior to the embayments, only the drainfield attenuation would be applicable.
- Roadway runoff nitrogen concentration = 1.5-mg/L
- Roof runoff nitrogen concentration = 0.75-mg/L
- Fertilizer rate for residences = 1.08-lbs / 1,000 ft^2 / year
- Fertilizer is attenuated at a rate of 80%
- 50% of residences use fertilizer

5.2.1.2 METHODOLOGY USED IN THIS PROJECT

Wastewater

LAI estimated the wastewater flow and associated wastewater nitrogen loads for each parcel based on the following assumptions:

- For residential properties with living area assessor's data available, the SCDHS design flows based on the square footage of the house were used.

- For commercial properties that had water use data but had no building data, 90% of the average summer water use was used

- For commercial properties, the building area and 0.03 gpd/ft^2 was used. This is for retail establishments.

  Assessor's data identifying restaurants was not available, therefore flows based on area and/or # of seats were not calculated. All commercial properties have the retail rate applied where water use data does not exist. This assumption may underestimate commercial property contributions.

Table 5-1 presents the various SC DHS wastewater system design flow rates for different establishments and will be used to the maximum extent practicable to estimate wastewater flows when reliable water use data is not available. For reference purposes, wastewater generation generally averages 50% of code design flows, however East Hampton commercial establishments may have higher flows due to their increased seasonal intensity of use.

WORKING DRAFT

Table 5-1 SC DHS Wastewater Design Flow Rates

Suffolk County Department of Health Services (2009) design flows rates			
Structure / Use	**Design Flow Rate (gpd/unit)**	**Design Basis**	**Units / EDU**
Single family residence	300	unit	1
Apartment/condo < 600 sf	150	unit	2
Apartment/condo 601 - 1,200 sf	225	unit	1.33
Apartment/condo > 1,200 sf	300	unit	1
Motel unit < 400 sf w/o kitchenette*	100	unit	3
Motel unit > 400 sf w/o kitchenette*	150	unit	2
Restaurant	30	seats	10
Wet Store	0.15	sf gross floor area	2,000
Dry Store	0.03	sf gross floor area	10,000
Wet Store (no Food)	0.10	sf gross floor area	3,000
Theater	3.00	seats	100
General Industrial	0.04	sf gross floor area	7,500
Non Medical Offcie Space	0.06	sf gross floor area	5,000
Medical Arts Space	0.10	sf gross floor area	3,000
* with kitchenette see apartment			

- Wastewater nitrogen loads were calculated using:
  - ✓ Septic Tank Effluent Nitrogen Concentration = 65-mg/L
  - ✓ 50% attenuation between the bottom of the disposal system and the receiving groundwater table
  - ✓ No attenuation between the groundwater to the receiving water body

Stormwater Runoff nitrogen contributions were calculated using:

- 45-inches of rainfall per year
- 15% of the watershed areas are hardscape / runoff areas (18% under buildout conditions)
- Blended roof runoff / highway runoff nitrogen concentration = 1.2-mg/L

Fertilizer nitrogen contributions were calculated using:

- 33% of lot area is landscaped on average
- 50% of properties use fertilizer on landscape areas
- Residential fertilizer application rate is 1.1 lb/1,000-ft^2
- 80% of fertilizer applied is either taken up by vegetation or otherwise attenuated prior to reaching groundwater – so 20% of applied fertilizer reaches groundwater

Agricultural nitrogen contributions were calculated using

- Land use data was used to identify potential agriculture areas
- 50% of agricultural land is assumed to be fertilized at a rate of 3 lbs. / 1,000-ft^3
- 80% of fertilizer applied is either taken up by crops or otherwise attenuated prior to reaching groundwater - – so 20% of applied fertilizer reaches groundwater

WORKING DRAFT

Five watersheds contain agricultural land use parcels, with the majority of this land being in the two watersheds that drain to the Atlantic Ocean. Table 5-2 presents the parcel agriculture nitrogen load calculations by watershed.

Table 5-2 Agricultural Nitrogen Load to Groundwater

Watershed Name	Agriculture Area		N Load to GW (lb/day)
	# of Parcels	Acres	
3-Mile Harbor	**7**	29.5	**385.3**
Accabonac Harbor	**8**	29	**373.0**
Lake Montauk	**4**	13	**163.5**
Southern East Hampton from Nepeague Harbor to Montauk*	**3**	40	**522.9**
Southern East Hampton from Nepeague Harbor to Montauk*	**155**	1,316	**17,198**

Drains to Atlantic Ocean

Atmospheric Deposition

Atmospheric deposition onto natural surfaces (excluding impervious and fertilized areas) is a continuous process that is evenly spread over the surface of the watershed. According to the Peconic TMDL report for nitrogen, atmospheric deposition is estimated at 18.37 lb./acre, with a 31.3% reduction expected as a result of the Clean Air Act, which reduces the deposition rate to 12.62 lb./acre. Similar to fertilizer contributions, it is assumed that 20% of nitrogen deposited onto natural surfaces (dry atmospheric deposition) reaches groundwater. 100% of nitrogen deposited directly onto the surface of the embayment reaches the embayment (wet atmospheric deposition). ***For the purpose of this analysis, wet atmospheric deposition is included in the calculation of groundwater nitrogen concentration to determine if the water quality standard is being met.***

Table 5-3 presents the area of each embayment and Pond, its estimated/assumed mean depth, estimated embayment/Pond volume, flushing rate and residence time and atmospheric deposition on the water body.

Benthic Flux

No data is available on benthic flux for East Hampton embayments. Benthic flux is a site specific variable, as described in the 1998 Report "Oxygen Uptake and Nutrient Regeneration in The Peconic Estuary" by the Center for Marine Science and Technology, University of Massachusetts, Dartmouth and Aubrey Consulting, Inc. The report stated that regeneration of inorganic nitrogen and phosphorus was related to the distribution of phytoplankton and organic matter deposition to the sediments.

Waterfowl

Geese and other waterfowl reside on/visit East Hampton Lakes and Ponds and contribute nutrients to the Lake directly through discharge of their wastes into the Lake

WORKING DRAFT

or on-land with surface/subsurface flow into the Lake. The nutrient content of Canadian geese droppings has been reported (Fleming, R. and H. Fraser, 2001) as:

TN (mg)/goose/day	3,168
TP (mg)/goose/day	936

and for a variety of gulls, the daily total production per bird was

TKN	608 mg to 1,819 mg.
Total phosphorus	38 mg to >115 mg

Fecal coliform loading rates have been measured for the black-backed gull and black-headed gull of $16x10^6$ and $1.1x10^6$ organisms per hour per bird, respectively. As embayments and Ponds/Lakes can have a significant waterfowl population, this issue can be quantified by bird population estimates. Bacterial contamination form waterfowl also can be quantified from bird population estimates and literature values for bacterial parameters as has been done for the western area of the Peconic Estuary in Pathogen Load Assessment for the Peconic Estuary Program March 2012 (http://www.peconicestuary.org/reports/2b56f963d6f13cbabac732e7d3ab5e3eb1a0fc9f.pdf)

Tidal Exchange

Tidal exchange of waters in the embayments with the Peconic Estuary will affect nitrogen concentrations in the embayments. As an initial estimate of tidal exchange, the Tidal Prism model, as shown on Figure 5-1, will be used to calculate additional flushing, with the total nitrogen concentration of the Peconic Estuary assumed to be 0.30 mg/l.

Figure 5-1 Conceptual Diagram of Tidal Prism Model

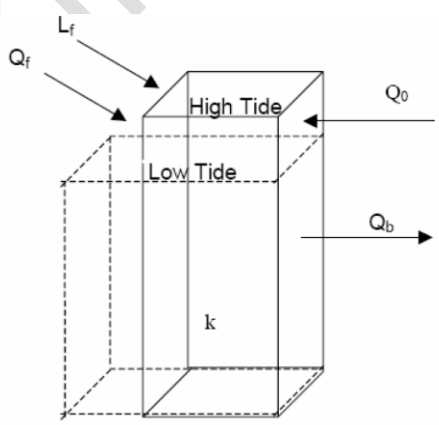


Table 5-3 presents the tidal volumes exchanged and estimated residence time in each embayment and freshwater pond.

5.2.2 NITROGEN TMDL CALCULATIONS & REMOVAL REQUIREMENTS

Table 5-4 presents the East Hampton major watersheds, the total recharge volume, the calculated wastewater nitrogen load and the resulting nitrogen concentrations in each

WORKING DRAFT

watershed. These values are based on existing nitrogen loads from existing sources. The TMDL removal requirement is based on maintaining a maximum groundwater nitrate concentration of 0.45-mg/L.

Buildout data was provided by the Town for vacant parcels that were buildable. Each buildable lot was assigned a wastewater design flow of 225-gpd for the purpose of calculating the additional wastewater nitrogen load for each subwatershed. The impervious surface area was assumed to increase from 15% to 18% at full buildout. The fertilizer load was increased in proportion to the number of additional parcels that would be added in each subwatershed. Table 5-5 presents the nitrogen loading, TMDL and required removal data for buildout conditions. Tables 5-6 and 5-7 present the % of the total nitrogen load attributed to each source.

Not all sources of nutrients are controllable. In areas where agriculture is a concern, controlling their contributions to nutrient loadings is typically accomplished through the use of Best Management Practices, with varying levels of actual removal achieved. For the purposes of this analysis, the only controllable sources of nutrient loading that will be considered are wastewater, stormwater, agriculture and fertilizer. The TMDL nitrogen reduction requirements that will be the basis for solution scenario development will consider the total amount of nutrients that need to be removed as a percentage of the controllable nutrient loads.

In LAI's opinion, any TMDL water quality needs must first be validated by additional data collection to confirm estimates of water quality impacts. In particular, the agricultural impacts for the three subwatersheds where agricultural properties are located are a major contributor to nitrogen.

Under existing and buildout conditions and based upon this simplified analytical method for the scenarios of 50% and 75% wastewater nitrogen attenuation, the only watersheds that require any nitrogen removal are ones with agricultural contributions.

Consequently it is recommended that the water quality monitoring program be initiated and more sophisticated TMDL analysis performed to determine any additional nitrogen removal needs. These efforts should occur concurrently with wastewater improvements that will reduce wastewater nitrogen discharges.

Even if TMDL analysis does not suggest wastewater nitrogen removal is required, nitrogen removal may be desired to improve existing water quality.

The above analysis does not consider the impact of reduced nitrogen removal of wastewater systems with leaching pools in groundwater. It is expected that significant reduction of the assumed 50% nitrogen removal in leaching pools will occur, however due to the lack of data and detailed information on the number and location of such systems, we simply note this matter at this point. While consideration of this matter would increase nitrogen loading to water bodies, there is not significant evidence of excessive nitrogen enrichment of East Hampton's embayments. Correction of wastewater systems with insufficient depth to groundwater will reduce nitrogen discharges to groundwater and receiving waters.

WORKING DRAFT

Table 5-3 Embayments & Ponds Volumes and Residence Time

Deposition Rate (kg/acre-yr)		4.0	0.2												
			Deposition onto water body (lb/day)	Water Body Flushing & Residence Time											
Water Body	Water Body Area (acres)	Nitrogen	Phos phorus	Mean Low Water Depth (ft)	Mean Tide Depth (ft)	Estuary Mid Tide Volume (ft^3)	Tide Range (ft)	Prism Volume (ft^3)	Prism Volume (gallons)	Water Residence Time (tidal cycles)	Tidal Cycles/Year	Est. Volume (Million Gallons)	Groundwater flow (MG/Yr)	Tidal Exchange (MG/Yr)	Residence time (days)
Embayment															
Northwest Harbor	1,306			7.2	8.2	468,483,880	2.07	117,760,975	880,913,330	2.1	702	3,064	11.89	618,333	1.81
Northwest Creek	162			3.4	4.4	31,296,553	2.07	14,607,410	109,271,026	1.1	702	179	11.89	76,700	0.85
Northwest Creek / Harbor	1,468	31.9		6.7	7.7	494,622,929	2.07	132,368,386	990,184,356	1.9	702	3,205	11.89	695,033	1.68
Accabonac Harbor	1,033	25.2		3	4.0	181,508,587	2.07	93,115,929	696,555,573	1.0	702	1,009	8.53	488,928	0.75
Three Mile Harbor	158	3.9		6.5	7.5	51,974,365	2.07	14,278,293	106,809,055	1.9	702	335	11.22	74,972	1.63
Lake Montauk	900	22.0		5.5	6.5	256,198,140	2.07	81,152,280	607,061,254	1.6	702	1,613	3.92	426,110	1.38
Napeague Harbor	846	20.6		4.6	5.6	207,659,668	2.07	76,283,143	570,637,578	1.4	702	1,268	10.11	400,544	1.16
Freshwater Pond				Watershed Area w/o Pond (acres)	Mean Depth (ft)										
Fort Pond	172	4.2		291	9							16,308			
Georgica Pond	290	7.1		2,756	6							260,415			
Hook Pond	64	1.6		1,608	6							33,532			
Fresh Pond	36	0.9			6							0			
Big Reed Pond	51	1.2			4							0			
Oyster Pond													2.66		
Estimated															

WORKING DRAFT

Table 5-4 Existing Watershed Nitrogen Loads and Concentrations – 25% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: AgricultureN Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition - Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	3.6	0.4	0.0	0.25	TBD	0.2	0.0	4.5	4.5	0.01	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	164.8	33.3	0.0	25.7	TBD	29.1	0.0	252.9	252.9	0.34	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	396.3	35.5	385.3	23.2	TBD	27.4	0.0	867.6	482.4	1.24	315.2	**552.5**	**167.2**	**64%**	**35%**
SF12	Accabonac Harbor	181.0	25.8	373.0	18.9	TBD	42.4	0.0	641.0	268.1	1.20	239.5	**401.5**	**28.5**	**63%**	**11%**
SF13	Napeague Harbor West	7.6	3.6	0.0	3.0	TBD	2.4	0.0	16.6	16.6	0.17	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	2.0	5.2	0.0	3.9	TBD	3.5	0.0	14.6	14.6	0.31	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	81.8	12.6	0.0	9.7	TBD	8.4	0.0	112.5	112.5	0.37	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	112.5	18.1	163.5	10.5	TBD	34.0	0.0	338.6	175.1	1.38	110.1	**228.5**	**65.0**	**67%**	**37%**
SF17	Oyster Pond	1.5	6.3	0.0	5.4	TBD	4.2	0.0	17.4	17.4	0.10	74.8	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.0	0.0	0.0	0.003	TBD	0.003	0	0.06
SF10	Northwest Harbor	23.5	4.8	0.0	3.657	TBD	4.155	0	36.05
SF11	3-Mile Harbor	102.4	9.2	99.5	5.999	TBD	7.088	0	224.16
SF12	Accabonac Harbor	7.2	1.0	14.8	0.749	TBD	1.678	0	25.40
SF13	Napeague Harbor West	0.5	0.2	0.0	0.204	TBD	0.161	0	1.12
SF14	Napeague Harbor East	0.3	0.7	0.0	0.559	TBD	0.495	0	2.08
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.8	0.1	0.0	0.093	TBD	0.080	0	1.08
SF16	Lake Montauk	5.1	0.8	7.4	0.475	TBD	1.546	0	15.39
SF17	Oyster Pond	0.6	2.5	0.0	2.158	TBD	1.664	0	6.92

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Table 5-4a Existing Watershed Nitrogen Loads and Concentrations –50% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	2.4	0.4	0.0	0.25	TBD	0.2	0.0	3.3	3.3	0.01	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	109.8	33.3	0.0	25.7	TBD	29.1	0.0	198.0	198.0	0.27	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	264.2	35.5	385.3	23.2	TBD	27.4	0.0	735.6	350.3	1.05	315.2	**420.4**	**35.1**	**57%**	**10%**
SF12	Accabonac Harbor	120.7	25.8	373.0	18.9	TBD	42.4	0.0	580.7	207.8	1.09	239.5	**341.2**	n/a	**59%**	n/a
SF13	Napeague Harbor West	5.1	3.6	0.0	3.0	TBD	2.4	0.0	14.1	14.1	0.14	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	1.3	5.2	0.0	3.9	TBD	3.5	0.0	14.0	14.0	0.30	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	54.5	12.6	0.0	9.7	TBD	8.4	0.0	85.2	85.2	0.28	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	75.0	18.1	163.5	10.5	TBD	34.0	0.0	301.1	137.6	1.23	110.1	**191.0**	**27.5**	**63%**	**20%**
SF17	Oyster Pond	1.0	6.3	0.0	5.4	TBD	4.2	0.0	16.9	16.9	0.10	74.8	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.0	0.0	0.0	0.003	TBD	0.003	0	0.04
SF10	Northwest Harbor	15.7	4.8	0.0	3.66	TBD	4.155	0	28.22
SF11	3-Mile Harbor	68.2	9.2	99.5	6.00	TBD	7.088	0	190.03
SF12	Accabonac Harbor	4.8	1.0	14.8	0.749	TBD	1.678	0	23.01
SF13	Napeague Harbor West	0.3	0.2	0.0	0.204	TBD	0.161	0	0.95
SF14	Napeague Harbor East	0.2	0.7	0.0	0.559	TBD	0.495	0	1.99
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.5	0.1	0.0	0.093	TBD	0.080	0	0.82
SF16	Lake Montauk	3.4	0.8	7.4	0.475	TBD	1.546	0	13.69
SF17	Oyster Pond	0.4	2.5	0.0	2.158	TBD	1.664	0	6.72

WORKING DRAFT

Table 5-4b Existing Watershed Nitrogen Loads and Concentrations – 75% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition - Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	1.2	0.4	0.0	0.25	TBD	0.2	0.0	2.1	2.1	0.01	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	54.9	33.3	0.0	25.7	TBD	29.1	0.0	143.1	143.1	0.19	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	132.1	35.5	385.3	23.2	TBD	27.4	0.0	603.5	218.2	0.86	315.2	**288.3**	n/a	**48%**	n/a
SF12	Accabonac Harbor	60.3	25.8	373.0	18.9	TBD	42.4	0.0	520.4	147.4	0.98	239.5	**280.8**	n/a	**54%**	n/a
SF13	Napeague Harbor West	2.5	3.6	0.0	3.0	TBD	2.4	0.0	11.6	11.6	0.12	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	0.7	5.2	0.0	3.9	TBD	3.5	0.0	13.3	13.3	0.28	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	27.3	12.6	0.0	9.7	TBD	8.4	0.0	58.0	58.0	0.19	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	37.5	18.1	163.5	10.5	TBD	34.0	0.0	263.6	100.1	1.08	110.1	**153.5**	n/a	**58%**	n/a
SF17	Oyster Pond	0.5	6.3	0.0	5.4	TBD	4.2	0.0	16.4	0.10	0.10	**74.8**	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.0	0.0	0.0	0.003	TBD	0.003	0	0.03
SF10	Northwest Harbor	7.8	4.8	0.0	3.657	TBD	4.155	0	20.39
SF11	3-Mile Harbor	34.1	9.2	99.5	5.999	TBD	7.088	0	155.91
SF12	Accabonac Harbor	2.4	1.0	14.8	0.749	TBD	1.678	0	20.62
SF13	Napeague Harbor West	0.2	0.2	0.0	0.204	TBD	0.161	0	0.78
SF14	Napeague Harbor East	0.1	0.7	0.0	0.559	TBD	0.495	0	1.89
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.3	0.1	0.0	0.093	TBD	0.080	0	0.56
SF16	Lake Montauk	1.7	0.8	7.4	0.475	TBD	1.546	0	11.98
SF17	Oyster Pond	0.2	2.5	0.0	2.158	TBD	1.664	0	6.52

WORKING DRAFT

Table 5-5 Buildout Watershed Nitrogen Loads and Concentrations – 25% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	4.6	0.4	0.0	0.28	TBD	0.2	0.0	5.48	5.48	0.02	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	195.1	40.0	0.0	28.5	TBD	21.2	0.0	284.8	284.78	0.38	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	464.0	42.6	385.3	25.8	TBD	22.5	0.0	940	554.92	1.34	315.2	**625.01**	**239.74**	**66%**	**43%**
SF12	Accabonac Harbor	215.8	31.0	373.0	21.0	TBD	16.4	0.0	657.2	284.22	1.23	239.5	**417.64**	**44.68**	**64%**	**16%**
SF13	Napeague Harbor West	8.5	4.3	0.0	3.4	TBD	2.3	0.0	18.51	18.51	0.19	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	2.9	6.3	0.0	4.4	TBD	3.3	0.0	16.89	16.89	0.36	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	90.5	15.1	0.0	10.8	TBD	8.0	0.0	124.5	124.51	0.41	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	127.2	21.8	163.5	11.6	TBD	11.5	0.0	335.6	172.14	1.37	110.1	**225.53**	**62.04**	**67%**	**36%**
SF17	Oyster Pond	1.5	7.6	0.0	6.0	TBD	4.0	0.0	19.10	19.10	0.11	74.8	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.1	0.0	0.0	0.003	TBD	0.003	0	0.07
SF10	Northwest Harbor	27.8	5.7	0.0	4.068	TBD	3.019	0	40.60
SF11	3-Mile Harbor	119.9	11.0	99.5	6.673	TBD	5.823	0	242.90
SF12	Accabonac Harbor	8.5	1.2	14.8	0.834	TBD	0.650	0	26.03
SF13	Napeague Harbor West	0.6	0.3	0.0	0.227	TBD	0.154	0	1.25
SF14	Napeague Harbor East	0.4	0.9	0.0	0.621	TBD	0.474	0	2.40
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.9	0.1	0.0	0.104	TBD	0.077	0	1.19
SF16	Lake Montauk	5.8	1.0	7.4	0.529	TBD	0.524	0	15.26
SF17	Oyster Pond	0.6	3.0	0.0	2.400	TBD	1.592	0	7.59

WORKING DRAFT

Table 5-5a Buildout Watershed Nitrogen Loads and Concentrations – 50% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	3.0	0.4	0.0	0.28	TBD	0.2	0.0	3.96	3.96	0.01	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	130.0	40.0	0.0	28.5	TBD	21.2	0.0	219.75	219.75	0.30	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	309.3	42.6	385.3	25.8	TBD	22.5	0.0	785.52	400.26	1.12	315.2	**470.35**	**85.08**	**60%**	**21%**
SF12	Accabonac Harbor	143.9	31.0	373.0	21.0	TBD	16.4	0.0	585.25	212.29	1.10	239.5	**345.72**	n/a	**59%**	n/a
SF13	Napeague Harbor West	5.7	4.3	0.0	3.4	TBD	2.3	0.0	15.66	15.66	0.16	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	1.9	6.3	0.0	4.4	TBD	3.3	0.0	15.92	15.92	0.34	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	60.4	15.1	0.0	10.8	TBD	8.0	0.0	94.33	94.33	0.31	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	84.8	21.8	163.5	11.6	TBD	11.5	0.0	293.22	129.73	1.20	110.1	**183.12**	**19.63**	**62%**	**15%**
SF17	Oyster Pond	1.0	7.6	0.0	6.0	TBD	4.0	0.0	18.60	18.60	0.11	74.8	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.0	0.0	0.0	0.003	TBD	0.003	0	0.05
SF10	Northwest Harbor	18.5	5.7	0.0	4.068	TBD	3.019	0	31.33
SF11	3-Mile Harbor	79.9	11.0	99.5	6.673	TBD	5.823	0	202.94
SF12	Accabonac Harbor	5.7	1.2	14.8	0.834	TBD	0.650	0	23.19
SF13	Napeague Harbor West	0.4	0.3	0.0	0.227	TBD	0.154	0	1.05
SF14	Napeague Harbor East	0.3	0.9	0.0	0.621	TBD	0.474	0	2.27
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.6	0.1	0.0	0.104	TBD	0.077	0	0.90
SF16	Lake Montauk	3.9	1.0	7.4	0.529	TBD	0.524	0	13.33
SF17	Oyster Pond	0.4	3.0	0.0	2.400	TBD	1.592	0	7.39

WORKING DRAFT

Table 5-5b Buildout Watershed Nitrogen Loads and Concentrations – 75% WW Attenuation

Watershed ID	Watershed Name	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition Wet + Dry (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day): Total	Total N Load to GW (lb/day): No Ag	GW N Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day): Total	TMDL Removal Req'd (lb/day): No Ag	TMDL Removal Req'd (%): Total	TMDL Removal Req'd (%): No Ag
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY																
SF9	Sag Harbor	1.5	0.4	0.0	0.28	TBD	0.2	0.0	2.44	2.44	0.01	136.4	n/a	n/a	n/a	n/a
SF10	Northwest Harbor	65.0	40.0	0.0	28.5	TBD	21.2	0.0	154.73	154.73	0.21	334.1	n/a	n/a	n/a	n/a
SF11	3-Mile Harbor	154.7	42.6	385.3	25.8	TBD	22.5	0.0	630.86	245.59	0.90	315.2	**315.7**	n/a	**50%**	n/a
SF12	Accabonac Harbor	71.9	31.0	373.0	21.0	TBD	16.4	0.0	513.33	140.37	0.96	239.5	**273.8**	n/a	**53%**	n/a
SF13	Napeague Harbor West	2.8	4.3	0.0	3.4	TBD	2.3	0.0	12.82	12.82	0.13	44.5	n/a	n/a	n/a	n/a
SF14	Napeague Harbor East	1.0	6.3	0.0	4.4	TBD	3.3	0.0	14.95	14.95	0.32	21.2	n/a	n/a	n/a	n/a
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	30.2	15.1	0.0	10.8	TBD	8.0	0.0	64.15	64.15	0.21	136.6	n/a	n/a	n/a	n/a
SF16	Lake Montauk	42.4	21.8	163.5	11.6	TBD	11.5	0.0	250.81	87.32	1.03	110.1	**140.7**	n/a	**56%**	n/a
SF17	Oyster Pond	0.5	7.6	0.0	6.0	TBD	4.0	0.0	18.11	18.11	0.11	74.8	n/a	n/a	n/a	n/a

Watershed ID	Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	0.0	0.0	0.0	0.003	TBD	0.003	0	0.03
SF10	Northwest Harbor	9.3	5.7	0.0	4.068	TBD	3.019	0	22.06
SF11	3-Mile Harbor	40.0	11.0	99.5	6.673	TBD	5.823	0	162.98
SF12	Accabonac Harbor	2.8	1.2	14.8	0.834	TBD	0.650	0	20.34
SF13	Napeague Harbor West	0.2	0.3	0.0	0.227	TBD	0.154	0	0.86
SF14	Napeague Harbor East	0.1	0.9	0.0	0.621	TBD	0.474	0	2.13
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	0.3	0.1	0.0	0.104	TBD	0.077	0	0.61
SF16	Lake Montauk	1.9	1.0	7.4	0.529	TBD	0.524	0	11.40
SF17	Oyster Pond	0.2	3.0	0.0	2.400	TBD	1.592	0	7.19

WORKING DRAFT

Table 5-6 Existing Nitrogen Sources as a Percentage of Total Existing Watershed Nitrogen Load

Watershed ID	Watershed Name	WW N Load % of Total			Storm water N Load % of Total	Agriculture N Load % of Total	Fertilizer % of Total	Water Fowl N Load % of Total	Atm. Deposition % of Total
		25% Atten.	50% Atten.	75% Atten.					
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	81.3%	74.4%	59.2%	7.9%	0.0%	5.6%	TBD	5.2%
SF10	Northwest Harbor	65.2%	55.5%	38.4%	13.2%	0.0%	10.1%	TBD	11.5%
SF11	3-Mile Harbor	45.7%	35.9%	21.9%	4.1%	44.4%	2.7%	TBD	3.2%
SF12	Accabonac Harbor	28.2%	20.8%	11.6%	4.0%	58.2%	3.0%	TBD	6.6%
SF13	Napeague Harbor West	45.8%	36.0%	22.0%	21.6%	0.0%	18.2%	TBD	14.4%
SF14	Napeague Harbor East	13.6%	9.5%	5.0%	35.8%	0.0%	26.8%	TBD	23.8%
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	72.7%	63.9%	47.0%	11.2%	0.0%	8.6%	TBD	7.5%
SF16	Lake Montauk	33.2%	24.9%	14.2%	5.4%	48.3%	3.1%	TBD	10.0%
SF17	Oyster Pond	8.5%	5.8%	3.0%	36.2%	0.0%	31.2%	TBD	24.1%

Table 5-7 Buildout Nitrogen Sources as a Percentage of Total Buildout Watershed Nitrogen Load

Watershed ID	Watershed Name	WW N Load % of Total			Storm water N Load % of Total	Agriculture N Load % of Total	Fertilizer % of Total	Water Fowl % of Total	Atm. Deposition % of Total
		25% Atten.	50% Atten.	75% Atten.					
SOUTH FORK AREAS CONTRIBUTING TO PECONIC ESTUARY									
SF9	Sag Harbor	83.1%	76.7%	62.1%	10.7%	0.0%	5.6%	TBD	7.0%
SF10	Northwest Harbor	68.5%	59.2%	42.0%	18.2%	0.0%	9.6%	TBD	13.0%
SF11	3-Mile Harbor	49.4%	39.4%	24.5%	5.4%	49.0%	2.9%	TBD	3.3%
SF12	Accabonac Harbor	32.8%	24.6%	14.0%	5.3%	63.7%	2.8%	TBD	3.6%
SF13	Napeague Harbor West	46.1%	36.3%	22.2%	27.5%	0.0%	14.6%	TBD	21.6%
SF14	Napeague Harbor East	17.2%	12.2%	6.5%	39.5%	0.0%	20.9%	TBD	27.4%
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	72.7%	64.0%	47.0%	16.1%	0.0%	8.5%	TBD	11.5%
SF16	Lake Montauk	37.9%	28.9%	16.9%	7.4%	55.8%	3.9%	TBD	4.0%
SF17	Oyster Pond	7.8%	5.3%	2.7%	40.7%	0.0%	21.5%	TBD	32.5%

WORKING DRAFT

5.3 PHOSPHORUS TMDL ANALYSIS

New York State Department of Environmental Conservation (NYSDEC) defines the Trophic Status of Lakes based upon transparency (Secchi Disc readings), total phosphorus and chlorophyll a as presented on Table 5-8, http://www.dec.ny.gov/docs/water_pdf/305blakes10.pdf.

In a recent study of Lakes, NYSDEC found that 78% of the variability of chlorophyll a levels were accounted for by changes in TP, (Callinan, C.W. et al, "Proposed nutrient criteria for water supply lakes and reservoirs", JAWWA, 105:4, April 2013.)

Table 5-8 NYSDEC Lake Trophic Status Classification

Parameter	Oligotrophic	Mesotrophic	Eutrophic	Hypereutrophic
Transparency (Secci Disk) (m)	> 5	2 - 5	< 2	
Total Phosphorus (μg/L)	< 10	10 - 20	> 20	
Chlorophyll-α (μg/L)	< 2	2 - 8	> 8	
Predominant Algae Type	Diatoms	Green Algae	Blue-green algae	Blue-green algae - especially cynobacteria toxins producing blue-green algae

5.3.1 PHOSPHORUS TMDL CALCULATIONS

The water bodies for which preliminary phosphorus TMDL will be performed are:

- Fort Pond
- Hook Pond
- Georgica Pond – for which a pathogen TMDL has been prepared

Wastewater

- Wastewater phosphorus loads were calculated using:
  - ✓ Septic Tank Effluent Phosphorus Concentration = 6-mg/L
  - ✓ 50% attenuation between the bottom of the disposal system and the receiving groundwater table
  - ✓ 50% attenuation between the groundwater to the receiving water body

It is noted that phosphorus removal by soils is highly complex as numerous physical and biogeochemical processes control phosphorus removal (see (Lombardo, 2006, available from www.LombardoAssociates.com). Some researchers recommend prohibiting septic systems within 300 feet of ponds as a protective measure from phosphorus induced eutrophication. Consequently needs based upon wastewater phosphorus require field sampling for the basis of any analytical assumptions.

Although no data is available, it is understood from area residents that Fort Pond is experiencing excessive algal growth. Given the small watershed and high development

WORKING DRAFT

density, Fort Pond appears to be a strong candidate as a freshwater pond requiring phosphorus removal.

5.3.2 PHOSPHORUS TMDL REMOVAL REQUIREMENTS

Fort Pond has a TMDL requirement for dissolved oxygen, which is presumed to be caused by excessive phosphorus stimulating excessive algae growth. While Table 5-9 presents a TMDL analysis structure, significant data collection and watershed studies are needed to understand the geochemistry of phosphorus removal by watershed soils

WORKING DRAFT

Table 5-9 Phosphorus TMDL Analysis Structure for Hook Pond, Georgica Pond and Fort Pond

	Controllable					*Not Controllable*									
Watershed Name	WW P Load (lb/day)	Storm water P Load (lb/day)	Agriculture N Load (lb/day)	Fertilizer (lb/day)	Water fowl N Load (lb/day)	Atm. Dep. P Load Wet + Dry (lb/day)	Benthic (lb/day)	Total P Load to GW (lb/day)		GW P Conc (mg/L)	TMDL Load (lb/day)	TMDL Removal Req'd (lb/day)		TMDL Removal Req'd (%)	
								Total	No Ag			Total	No Ag	Total	No Ag
Fort Pond	Analysis to be completed														
Hook Pond	Analysis to be completed														
Georgica Pond	Analysis to be completed														

Watershed Name	Atten. WW N Load ($g/m^2/yr$)	Storm water N Load ($g/m^2/yr$)	Agriculture N Load ($g/m^2/yr$)	Fertilizer ($g/m^2/yr$)	Water fowl ($g/m^2/yr$)	Atm. Deposition Wet + Dry ($g/m^2/yr$)	Benthic ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
Fort Pond	Analysis to be completed							
Hook Pond	Analysis to be completed							
Georgica Pond	Analysis to be completed							

WORKING DRAFT

5.4 SHELLFISH & EELGRASS ISSUES

Appendix A presents information on shellfish harvest closings. Appendix B presents information on historical eelgrass habitat based upon a 1999 study for SC DHS.

The estuaries that have loads that exceed those thought to be associated with declines in seagrass habitat (>3 or 5 $g/m^2/yr$) include the following:

- Three-Mile Harbor
- Accabonac Harbor
- Lake Montauk

WORKING DRAFT

6 HARBOR PROTECTION OVERLAY DISTRICT & WETLANDS - SETBACK REQUIREMENTS & DEPTH TO GROUNDWATER CONSIDERATION

Town code chapter 255 Harbor Protection Overlay District, § 255-3-75B(1) require that no septic system shall be installed or constructed unless it is set back a minimum of 200 feet from the surface waters of:

- Accabonac Creek,
- Fort Pond (including the arm of Fort Pond north of Industrial Road),
- Georgica Pond,
- Great Pond (Lake Montauk),
- Hog Creek,
- Napeague Harbor,
- Northwest Creek,
- Northwest Harbor,
- Steppingstones Pond,
- Three Mile Harbor,
- Tuthill Pond and/or
- Wainscott Pond and
- Upland boundary of any wetlands contiguous to the foregoing bodies of water.

§ 255-3-75B(2) requires that the bottom of the leaching pool is situated a minimum of four feet above the groundwater table.

§ 255-3-75.C(2)(b) requires that the septic system shall be set back a minimum of 150 feet from the upland boundary of all tidal wetlands (including tidal surface waters) or to the maximum extent feasible. Table 6-1 presents the initial estimate of the number of properties with septic systems within Harbor Protection Overlay District Setbacks.

Table 6-1 Estimate of Number of Properties with Septics within setback areas

Need Type	Setback req'd
Area	
Amagansett	125
East Hampton	190
Montauk	311
Springs	313
Wainscott	26
Total	965

WORKING DRAFT

7 PRIVATE WATER SUPPLY CONSIDERATIONS

For properties that are not served by public water supply, the SCDHS required horizontal separation distance between the disposal systems and the water supply wells on each property must be maintained to ensure public health. The applicable separation distances are:

- Leaching Pools to Well – 150-ft, with conditions allowing as little as 65-ft
- Leaching Pools to Property Line – 10-ft
- Well to property line – 1-ft

The separation between the well and the leaching pool can be reduced to 100-ft for properties meeting the following conditions:

"Single-family residential lots which are exempt from the minimum lot size requirements contained in Article 6, §760-609 of the Suffolk County Sanitary Code, and single-family lots indicated on realty subdivision or development maps approved by the department prior to March 1, 1988 require that a minimum horizontal separation of 100 feet be provided between the well and the closest edge of all leaching pools. Where such separations are physically impossible to attain connection to public water will be required if available within 250 feet of any property line (see §406.4 - 11ACCESS TO PUBLIC WATER). If public water is not available, a well may be installed with less than 100 feet separation between well and leaching pool without a variance from the department provided that:

1. The maximum attainable horizontal separation is maintained, with a minimum separation of at least 65 feet, and
2. The depth of the well screen below the water table is increased according to the schedule contained in Table 7-1**.** For example: if the well can be located only 70 feet horizontally from the nearest leaching pool, and the depth to groundwater is less than 100 feet, then the top of the well screen must be installed a minimum of 130 feet below the water table."

Based on the above setbacks, to be compliant the minimum length of a property is 120-feet. Using a 90 foot wide lot, the minimum lot size would need to be 10,800-ft^2. This is approximately ¼-acre. In addition to the conditions noted above, it is possible to have rectangular lots (same length, but less than 90-ft wide) with strategically placed leaching pools and wells that meet separation requirements and are smaller than ¼-acre. Figure 6-1 presents a schematic diagram of the separation distances.

While smaller lots can be compliant with the applicable separation distances, for the purposes of this study, it is assumed that lots that are smaller than ¼-acre do not have the minimum separation distances between the private water supply wells and nearby disposal systems.

Table 7-2 presents the number of properties that meet the following conditions in each school district:

- Are not served by public water

WORKING DRAFT

- Are developed
- Have a total lot area less than ¼-acre

Table 7-1 Separation Distances and Well Depth

Depth of water table below grade	Maximum attainable horizontal separation	Required well screen depth below water table
< 100 feet	100' 90' 80' 70' 65'	40' 70' 100' 130' 145'
100 to 200 feet	100' 90' 80' 70' 65'	40' 60' 80' 100' 110'
> 200 feet	100' 90' 80' 70' 65'	40' 50' 60' 70' 75'

Table 7-2 Properties < ¼-acre w/ Onsite Systems & Private Water Supply

School District	Dev. Prop. < 1/4 Acre in Size, no Public Water									Total
	Commercial			Residential			No Designation			
	Cesspool	Leaching Pools	Total	Cesspool	Leaching Pools	Total	Cesspool	Leaching Pools	Total	
Amagansett	5	0	5	37	2	39	0	0	0	**44**
East Hampton	56	0	56	198	41	239	4	0	4	**299**
Montauk	41	1	42	520	68	588	2	0	2	**632**
Springs	8	0	8	273	58	331	1	0	1	**340**
Wainscott	41	0	41	4	21	25	2	0	2	**68**
Total	**151**	**1**	**152**	**1,032**	**190**	**1,222**	**9**	**0**	**9**	**1,383**

As can be seen in Table 7-2, there are 1,383 properties that likely do not have sufficient separation between private disposal systems and private drinking water wells, with approximately 50% located in Montauk and approximately 25% in Springs and East Hampton. Wells on properties in the Three Mile Harbor watershed may be impacted by contamination emanating from the Springs-Fireplace Road landfill – SWF-Solid Waste Management area.

Figure 7-1 Schematic Diagram of ¼-Acre Lot with Private Well and Disposal System

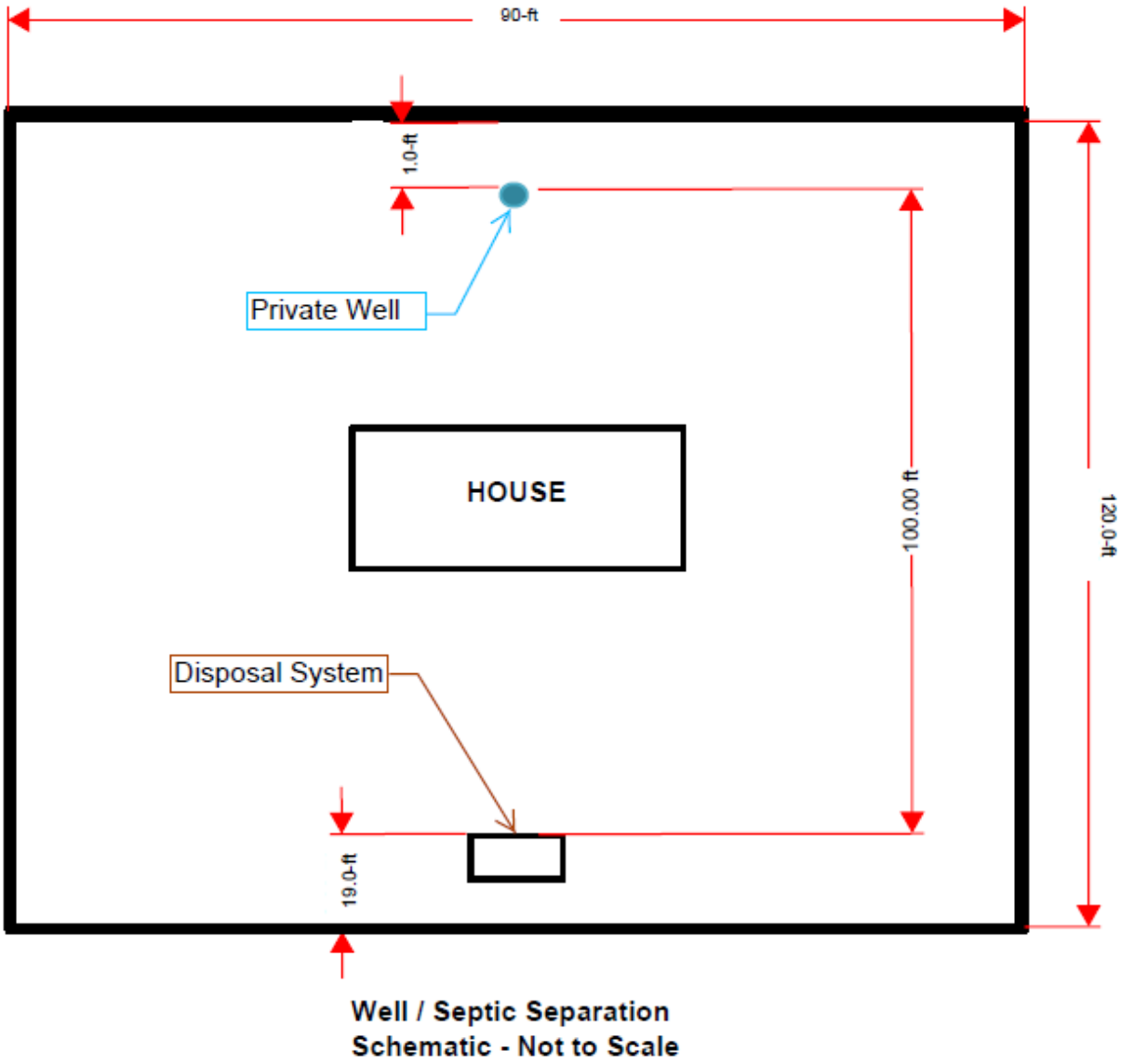
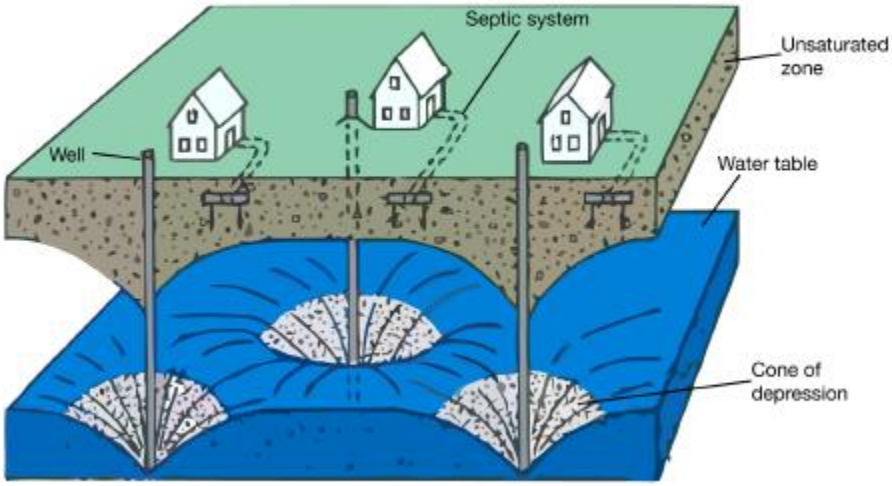


Figure 7-2 illustrates the cones of depressions of individual wells and how septic system effluent can enter a water supply well when the leaching pools are too close to the water well.

Figure 7-2 Cones of Depressions of Individual Wells & Septic Systems

Adapted from Waller, U.S. Geological Survey, Ground Water and the Rural Homeowner.



WORKING DRAFT

8 PUBLIC WATER SUPPLY CONSIDERATIONS

SC DHS Standards require 200 feet from leaching pools to public supply wells. However for wastewater treatment plants or any flow in excess of 5,000 gpd, a separate "siting review" is conducted by SC DHS to minimize impacts to public supply wells. The guidance document on this process is being updated and is expected to be issued shortly.

Table 8-1 presents the number of properties at the various travel times to public water supply wells, as provided by the SC DHS. Properties within the 2 year travel time should have pretreatment systems to protect the public water supply.

Table 8-1 Number of Properties by SD Within Various Travel Times To Public Water Supply Wells

School District	Travel Time to Water Supply Wells - # of Developed Parcels						Total
	2-year	5-year	25-year	50-year	75-year	100-year	
Amagansett	0	0	11	43	0	16	**70**
East Hampton	72	0	67	66	99	98	**402**
Montauk	11	11	57	51	47	50	**227**
Springs	0	0	91	0	0	0	**91**
Wainscott	9	0	16	0	0	26	**51**
Total	**92**	**11**	**242**	**160**	**146**	**190**	**841**

WORKING DRAFT

9 TOWN & COUNTY CODE & STATE LAW CONSIDERATIONS

The major potential needs of this category is whether the 112 properties with SPDES permits need to have upgraded wastewater systems – which is the subject of a lawsuit.

Should these properties require upgrades, LAI recommends that they be prioritized as follows:

1. Properties in areas in which there is expected to be insufficient depth to groundwater

2. Properties in the watersheds draining to the Peconic Estuary, prioritized by those with the shortest travel time to a surface water

A septic system is considered a Large Capacity Septic System (LCSS) if it receives *solely sanitary waste* either from multiple dwellings or from a *non-residential establishment* and the system has the capacity to *serve 20 or more persons per day*.

Large Capacity Septic Systems (LCSS) are required to be permitted. Properties with large capacity cesspools need to have their systems upgraded in accordance with Federal law as they were banned for existing properties as of April 5, 2005.

Table 9-1 presents a list of the properties with SPDES Permits that may require treatment systems.

Table 9-1 Properties With SPDES Permits That May Require Treatment Systems

Properties in Town of East Hampton with SPDES Permits	
Area	**No. Properties with SPDES Permits**
AMAGANSETT	9
EAST HAMPTON	49
EASTHAMPTON VILLAGE	1
MONTAUK	49
WAINSCOTT	2
SAG HARBOR	2
Total	**112**

WORKING DRAFT

Table 9-1 Properties With SPDES Permits That May Require Treatment Systems (cont.)

			AMAGANSETT
1	NY0180904	OCEAN COLONY MOTEL (AM-42B)	74 MONTAUK HWY
2	NY0133647	AMAGANSETT EAST SIDE TENNIS CLUB	C03-92 W/S ABRAHAM PATH S/O MAPLE ST
3	NY0174017	WINDWARD SHORES MOTEL	MONTAUK HIGHWAY
4	NY0181935	HERMITAGE (AM-59)	2148 MONTAUK HWY -1000' W OF HITHER HILLS STATE PARK |SCTM# 300-110-2-23
5	NY0279579	ST MICHAEL'S SR HOUSING PROJECT	486 MONTAUK HWY
6	NY0069272	150 TOWN LANE	N/S TOWN LANE 1200' W/O ABRAHAMS PATH
7	NY0177440	MEZZALUNA AMG RESTAURANT	231 MAIN ST
8	NY0180041	SEA BREEZE INN (AM 55)	WS ATLANTIC AVE|TURN RIGHT AT FLAGPOLE OFF RTE 27
9	NY0273619	WINDMILL INN	23 WINDMILL LN
			EAST HAMPTON
10	NY0064386	PARRISH MEWS (EHV 24)	6-10 MAIN ST
11	NY0088340	VILLA ITALIAN SPECIALTIES (EHV-26)	7 RAILROAD AVE
12	NY0135135	MAIDSTONE VILLAGE (TMH-10AR)	295 THREE MILE HARBOR RD
13	NY0173193	RONJO MOTEL INC (MT 173)	55 SOUTH ELMWOOD AVE|N/E/C SOUTH ELMWOOD D & S EDBEMEVUE ST
14	NY0173436	MONTAUK SOUNDVIEW (MT-138B)	WEST LAKE DR|N/W/C WEST LAKE AND SOUNDVIEW DR
15	NY0174041	SEAFOOD SHOP (WS-18)	NE/C MONTAUK HWY & WAINSCOTT RD|
16	NY0174734	G & T DAIRIES SUPERMARK & DELI (EHV 27)	36 RACE LN
17	NY0177148	KENNYS TIPPERARY INN	WEST LK DR (MT 188) WEST LAKE DR @ FLAMINGO AVE
18	NY0178837	LAUNDRY RESTAURANT (EHV-35)	31 RACE LN
19	NY0181862	GINGERBREAD SQUARE (EHV-42)	24 GINGERBEAD LN
20	NY0193569	PALM REST.AT HUNTINGTON (EHV-43)	MAIN ST S/E CORNER WITH HUNTING LN
21	NY0193721	DAMARK'S DELI (EH-64)	CORNER OF SOAK HIDES RD & THREE MILE HARBOR RD
22	NY0211052	EAST HAMPTON OFFICE PARK (C03-88-027)	300 PANTIGO PLACE
23	NY0132161	RETAIL STORE (TMH 11)	FORT POND BLVD OFF THREE MILE HARBOR RD
24	NY0133485	CEDAR POINT COUNTY PARK (TMH 12)	CEDAR POINT RD
25	NY0133931	INDIAN WELLS BEACH (AM 49)	INDIAN WELLS PLAIN HWY
26	NY0179965	HEDGES INN (EHV-37)	74 JAMES LN NORTH OF JEFFERY'S LN
27	NY0195251	GEORGICA ESTATES (SEC.3 LOT 7)(EH-73C)	HUCKLEBERRY LANE
28	NY0195502	EAST HAMPTON BEACH FACILITY (EH-75)	W/S OCEAN AVE & ATLANTIC OCEAN MAIN BEACH
29	NY0211567	FRESNO PLACE (C03-88-004 & EHV-47)	8 FRESNO PLACE
30	NY0211885	WHALEBONE VILLAGE APTS.(EH-84)	147 BOATHEADERS LANE
31	NY0221465	PHOENIX HOUSE EAST HAMPTON	INDUSTRIAL RD.
32	NY0221864	NICK & TONI'S (C03-89-013)	136 N MAIN ST
33	NY0237051	THE DINER INC.(C03-91-005)	74 MONTAUK HWY
34	NY0237159	CAMP BLUE BAY (C03-91-002)	THREE MILE HARBOR-HOG CREEK RD & FLAGGY HOLE RD -NW CORNER
35	NY0237850	AFFRODABLE HOUSING ACCABONAC C03-92-22	ACCABONIC HWY -E SIDE -800 FT NW OF SPRINGS CLOSE HWY
36	NY0238031	COMPOSTINGFACILITY	SPRINGSFIREPLACERD - ESIDE OF ABRAHAMSPATH
37	NY0238236	EASTHAMPTONHIGHSCHOOL	2LONGLN
38	NY0252662	THEMILLHOUSEINN	31NMAINST
39	NY0253332	SAGHARBORSTATEPARK	SAGHARBORGOLFCLUBDR|BARCELONANECK
40	NY0253979	HARBORMARINA	423THREEMILEHARBOR - NOFGANN| HOGCREEKRD -300'
41	NY0254378	TERRYKINGATHLETICFACILITY	385ABRAHAMSPATH|500'SOFTOWNLN
42	NY0254771	SPRINGSFIREPLACEROADAPARTMENTS	SPRINGSFIREPLACERD SESIDEOFCORD41 - 500'NEOFCROSSHWY
43	NY0254894	MAIDSTONECLUBTENNIS	50OLDBEACHLN - RTE27TOJAMESLN - MAIDSTONELN
44	NY0255173	TWOMILEHOLLOWBEACH	TWOMILEHOLLOWRD -S END
45	NY0255696	GUILDHALL	158MAINST
46	NY0273457	TOWNHALLCOMPLEX	159PANTIGORD
47	NY0277568	ROSSSCHOOLCENTERFORWELLBEING	18GOODFRIENDDR
48	NY0253685	SPRINGSSCHOOL	48SCHOOLST
49	NY0254088	BOYSHARBOR	180SPRINGYBANKSRD
50	NY0273023	ST.LUKE'SEPISCOPALCHURCH	18JAMESLN
51	NY0278327	HAMPTONCOUNTRYDAYCAMP	191BUCKSKILLRD|
52	NY0279285	DLTALMAGE4	SUFFOLKST
53	NY0199079	EASTHAMPTON(T)SCAVENGERWASTETP	262SPRINGS-FIREPLACERD|SCTM#300-145-2- 13.1
54	NY0079065	EASTHAMPTONPOINTRESTAURANT(TMH- 10R)	295THREEMILEHARBOR
55	NY0180483	66NEWTOWNLANECOMPLEX(C03-90-012)	66NEWTONLN
56	NY0210005	DELLAFEMINAREDHORSEFOODMARKET	74MONTAUKHWY
57	NY0173959	DUFFYPLAZASHOPS(MT175)	THEPLAZA|SEDGEMERE
58	NY0193763	WAINSCOTTVILLAGE(WS24)	ROUTE27-400'W/OGEORGICADR|ACROSSST FROMWAINSCOTTPOSTOFFICE

WORKING DRAFT

Table 9-1 Properties With SPDES Permits That May Require Treatment Systems (cont.)

			EAST HAMPTON VILLAGE
59	NY0180301	CIRCLE-MAINSTREETCONDO(EHV-38)	MAINSTREETANDTHECIRCLE
			MONTAUK
60	NY0091111	HARBORSIDEMOTEL(MT140)	371WLAKERD@EFLAMINGORD -NWCORNER
61	NY0132659	MALIBUMOTEL(MT-155&MT-155A)	ELMWOODAVE|SW/CESSEXELMWOODAVE
62	NY0133094	BEACHCOMBERMOTEL(MT158B)	OLDMONTAUKHWY|NORTHSIDE200'EASTOF SCHOOLLN
63	NY0133442	OCEANBEACHEAST(MT157)	108SEMERSONAVE
64	NY0135127	PORTROYALMOTEL(MT66C)	NAVYRD
65	NY0135887	BLUEHAVENMOTEL(MT168)	WESTLAKEDR
66	NY0175978	MONTAUKRACQUETCLUB(MT182)	WESTLAKEDR|ESIDEATSFULTONDR
67	NY0180416	ATLANTICBLUFFSCLUB(MT-212)	707OLDMONTAUKHWY|NORTHSIDEBETWEEN SCHOOLST&WASHINGTONST
68	NY0180564	STEPPINGSTONECONDO(MT-215)	WLAKEDR -NECORNERWITHSFULTON|
69	NY0180955	DAUNT'SALBATROSSMOTEL(MT-219)	SOUTHELMWOODAVE - SWCORNERWITH SOUTHEDGEMEREST
70	NY0193861	ROYALATLANTICNORTH(MT-223)	SEMERSONAVE@SEDGMEREAVE
71	NY0193992	VILLAGEDUNESCOOP(MT-162R)	SOUTHEMERSONAVE|105'E/OSOUTHELDER AVE
72	NY0210650	FOUROAKS(C03-88-006)	FLAMINGOAVE
73	NY0067946	ROYALATLANTICBEACHRESORT(MT-135)	131SEDGEWATERAVE
74	NY0088561	SNUGHARBORMOTEL-MARINA(MT115A)	3STARISLANDRD|SCTM#0300-12-1-8.8,8.9, 8.10&8.11
75	NY0091774	SHEPHERD'SBEACHINN	107SELMWOODAVE
76	NY0094692	THEMOVIE(MT-151)	3EDGEMERERD
77	NY0094731	CROWSNESTINN(MT-152)	4OLDWESTLAKEDR|1½MIEOFMONTAUK
78	NY0133001	STARISLANDYACHTCLUBLTD(MT124A)	59STARISLANDRD
79	NY0134392	SUNNSOUNDRESORT(MT-160)	22SOUNDVIEWDR|SCTM#300-005-01-12
80	NY0173070	EASTBYNORTHEASTLLC	51EDGEMERERD
81	NY0174327	GURNEY'SINNRESORT&SPALTD.(MT-18AR)	290OLDMONTAUKHIGHWAY
82	NY0175188	COASTGUARDSTATIONMONTAUK(MT180)	EAST&WESTLAKEDRIVE/STARISLANDRD
83	NY0175871	MARINESALES&SERVICE(MT-181)	426WLAKEDR|SCTM#300-6-3-17,20&21
84	NY0175951	GOSMANSCLAMBAR(MT63A)	484WLAKEDR|SCTM300-6-1-30.1
85	NY0177580	MONTAUKYACHTCLUBANDRESORT	STARISLANDRD
86	NY0177962	HITHERHILLSSTATEPARK(MT203)	OLDMONTAUKHWY
87	NY0179736	MOTELMT-210RR	20SURFSIDEAVE|SCTM300-49-6-21
88	NY0194794	WAVECREST(MT-64A)	SECONDHOUSERDOPPOSITESOUTHELDERLN
89	NY0198471	HARBORRIDGECONDOMINIUM(MT104R)	FAIRWAYPL
90	NY0211338	MONTAUKSHORES(C03-93-003)	DEFORESTRD -SSIDE -1180'EOFDITCHPLAINS RD|SCTM0300-32.01-01-1
91	NY0237418	GONEFISHINGMARINA(C03-90-019)	467ELAKEDR
92	NY0238538	MONTAUKDOWNSSTATEPARK	SOUTHFAIRVIEWAVE
93	NY0252638	EASTLAKECOMFORTSTATION	ELAKEDR -NEND|SCTM0300-6-1-2
94	NY0253367	MONTAUKPOINTSTATEPARK	EASTENDOFSTRTE27
95	NY0253405	CAMPHEROSTATEPARK	CAMPHERORD|SCTM#300-15.00100013.009
96	NY0253553	INLETSEAFOOD	541ELAKEDR|SCTM#300-6-2-2&3
97	NY0272965	THEHARVESTRESTAURANT	11SEMERYST
98	NY0273520	PANORAMICVIEW	272OLDMONTAUKHWY
99	NY0277711	MONTAUKLAKECLUB&MARINA	211ELAKEDR|SCTM300-13-3-6,26
100	NY0278831	WESTLAKEMARINA	352WESTLAKEDRIVE|SCTM#0300-12-1-5& 11.1
101	NY0195952	MONTAUKMANOR	236EDGEMEREST
102	NY0195995	ROUGHRIDERSLANDINGSTP	EDGEMERERD|SCTM300-27-2-1
103	NY0092142	ANNBREYER'SCOTTAGES(MT-149)	WESTLAKEDR|BELLPOLE114WESTLAKEAND FLAMINGO
104	NY0179850	TOWERATMONTAUKCONDOMINIUM(MT 211)	SEUCLIDAVE&EDGEMERERD
105	NY0132322	BORNFREEMOTELI(MT154)	SEMERSONAVE - NSIDE -70'WOFSEDGEMERE
106	NY0181412	SANDSMOTELEAST	SEMERSONAVE&SEMERYST -NECORNER
107	NY0193917	THELANDING	402WESTLAKEDR
108	NY0194671	SUNSCAPECONDOMINIUM	NWCEMERSONAVE&SESSEXST
			WAINSCOTT
109	NY0273210	EASTHAMPTONINDOORTENNISCLUBLLC	175DANIELSHOLERD
110	NY0222224	WAINSCOTTMOTEL(C09-90-038)	3720MONTAUKHWY|370'WESTOFCORNEROF TOWNLINERD
			SAGHARBOR
111	NY0133639	INNATMILLCREEK(THE)(NY7)	590NOYACRD
112	NY0254274	SALTYDOGCONDOMINIUMS	3705NOYACKRD

WORKING DRAFT

Table 9-2 SPDES Permits and Wastewater Flows by Watershed

Watershed ID	Watershed Name	# of SPDES Permits	WW Flow (gpd)
SF10	Northwest Harbor	1	300
SF11	3-Mile Harbor	4	1,024
SF12	Accabonac Harbor	1	2,175
SF13	Napeague Harbor West		
SF14	Napeague Harbor East		
SF15	Fort Pond Bay, Fresh Pond to Fort Pond	6	7,537
SF16	Lake Montauk	9	38,830
SF17	Oyster Pond	1	0
SF18	Southern East Hampton from Nepeague Harbor to Montauk	9	10,944
SF19	Southern East Hampton from Nepeague Harbor to Montauk	22	41,560
	Total	**53**	**102,371**

Of the 112 listed SPDES permits, 3 were outside the Study Area and 12 were not positively located based on the limited information. LAI 97 total properties were located.

WORKING DRAFT

10 COST CONSIDERATIONS

This category covers sites where an off-site solution is more cost-effective than on-site system (i.e. likely small lots, difficult soils and/or shallow depth to groundwater) and where an off-site solution is preferred to enable use of the property dedicated for the wastewater system, especially for commercial applications. This situation is usually where shallow depth to groundwater requires a mounded system.

As cost considerations associated with depth to groundwater are already incorporated in the depth to groundwater needs analysis, sites with needs based upon other factors that affect cost considerations are proposed to be identified through the public participation process as this issue is very site specific.

At this time there are no properties in this category.

WORKING DRAFT

11 ECONOMIC SUSTAINABILITY

Commercial / industrial areas typically have a higher density of development and intensity of use than comparable residential areas. The space requirement for an onsite system increase with wastewater design flow especially when SPDES permits are required for sites with wastewater design flows > 1,000 gpd (i.e. retail space > 3,400 , restaurants with > 34 Seats, etc.) for sites that are not grandfathered and not subject to being required to use advanced wastewater treatment systems.

Existing lot area outside of the SCDHS required setbacks for siting a wastewater system is often limited in commercial / industrial areas, and in some cases is non-existent. For this reason, the wastewater system requirements become a hindrance to economic sustainability in areas where maintaining economic vitality and potentially growth is desired.

At this time the areas in the category of economic sustainability are:

- ✓ Montauk Center

WORKING DRAFT

12 WASTEWATER NEEDS SUMMARY

Table 11-1 presents a summary of wastewater improvement needs by need type, with Table 11-2 presenting the information disaggregated by Study Area.

Table 11-1 Summary of Wastewater Improvement Needs by Need Type

	Wastewater Need Type			
1	Bacterial public health considerations based upon insufficient depth to groundwater	# Properties Off-Site Solution Required	# Properties Likely Off-Site Solution Required	Add'l # Properties – WQ Risk
		146	**499**	**1,706**
2	Impermeable/Hydric Soils	At this time considered part of category 1 above.		
3	Malfunctioning systems considerations	Camp Hero System Others suspected		
4	Water quality – TMDL considerations	At this time, no additional nitrogen removal needs provided other needs addressed. Agriculture impact needs to be examined and addressed. Phosphorus removal potentially needed at Fort Pond		
5	Setback requirements	579		
6	Private water supply considerations	**1,383 properties vulnerable**		
7	Public water supply considerations	Minimum 92 properties requiring treatment		
8	Town & County Code & State Law considerations	**- 112 Properties with SPDES**; - **Large Cesspools** need to be abandoned-number unknown - **Large Septic Systems** need permits – number unknown		
9	Cost Considerations	Assumed addressed in other categories. Add'l sites to be identified through public participation		
10	Economic sustainability issues	✓ Montauk Center ✓ Others To be specified by Town Board		

WORKING DRAFT

Table 11-2 Summary of Wastewater Improvement Needs by Need Type & Study Area

	1				2	3	4	5	6	7	8	9	10
Need Type	**Bacterial public health considerations - insufficient depth to groundwater**		**Cesspool Upgrades Likely Required**		**Impermeable / Hydric Soils Advisory ONLY**	**Malfunctioning systems**	**Water quality – TMDL**	**Setback req'd**	**Private water supply -LP Separation Issues**	**Public water supply factor**	**Town, County Code & State Law considerations**	**Cost Factor**	**Economic sustainability issues**
Area	Off Site Required	Upgrade Req'd -Off Site May Appropriate	GW at 5 - 8 fbg	GW at 8 - 10 fbg									
Amagansett	14	148	306	129			None at this time - To Be Determined (TBD)	125	44	0			
East Hampton	38	40	115	64		27		190	299	72			
Montauk	36	146	197	108				311	632	11			1
Springs	56	74	191	141				313	340	0			
Wainscott	2	4	13	19				26	68	9			
Total	146	412	822	461		27		965	1,383	92	112	0	1
Properties addressed in other categories		Setback - # 5	173	87									
		Bacterial DGW # 1	151										
Net Total			498	374									

WORKING DRAFT

REFERENCES

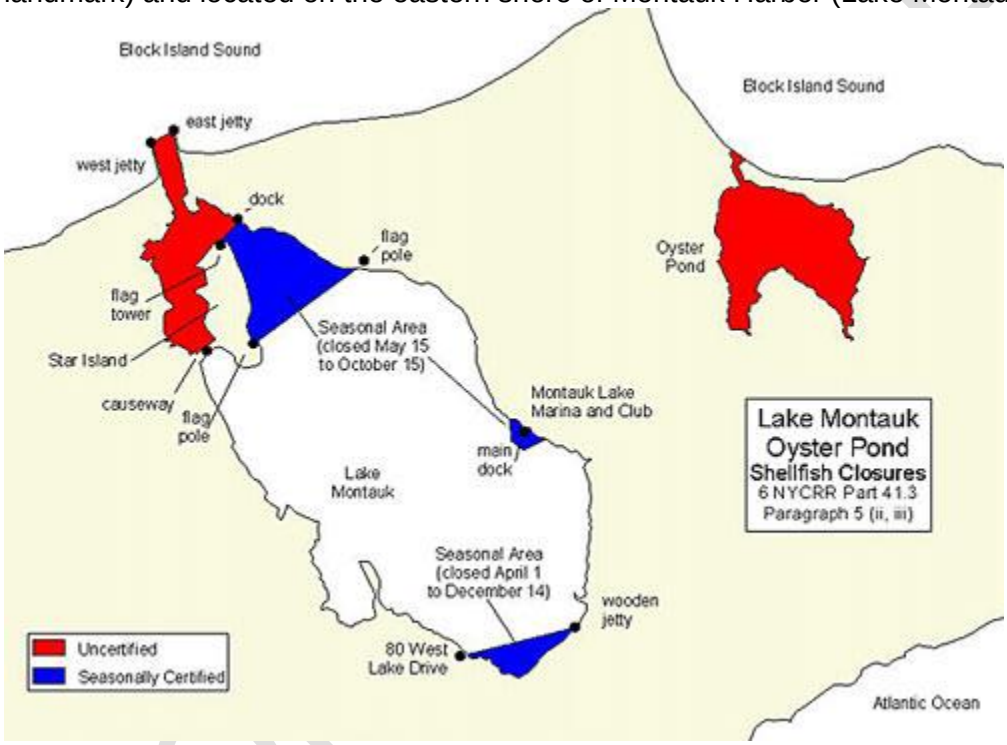
1. Brawley, J.W. 2002. Dynamic modeling of nutrient inputs and ecosystem responses in the Waquoit Bay estuarine system. Ph.D. Thesis. University of Maryland, College Park, MD.
2. Hauxwell, J., J. Cebrian, C. Furlong, and I. Valiela. 2001. Macroalgal canopies contribute to eelgrass (Zostera marina) decline in temperate estuarine ecosystems. Ecology. 82(4:1007-1022.
3. Latimer, J.S. and S.A. Rego. 2010. Empirical relationship between eelgrass extent and predicted watershed-derived nitrogen loading for shallow New England estuaries, Estuarine, Coastal and Shelf Science 90.

WORKING DRAFT

APPENDIX A SHELLFISH CLOSINGS IN EAST HAMPTON - NOVEMBER 2013

Part 41: Sanitary Condition of Shellfish Lands [*Last amended November 1, 2013*]
(ii) Montauk Lake (Montauk Harbor). http://www.dec.ny.gov/regs/4014.html

(a) All that area lying south of a line extending easterly from the flashing red light on the jetty on the western side of the entrance to Montauk Harbor (Lake Montauk) to the flashing green light on the jetty on the eastern side of the entrance to said harbor; and all that area, including tributaries, northerly of the causeway to Star Island and a line extending easterly from the flag tower at the U.S. Coast Guard Station on Star Island to the southernmost extremity of the dock serving Deep Water Seafood, Inc. (local landmark) and located on the eastern shore of Montauk Harbor (Lake Montauk).



an image of Montauk Lake Shellfish Closures

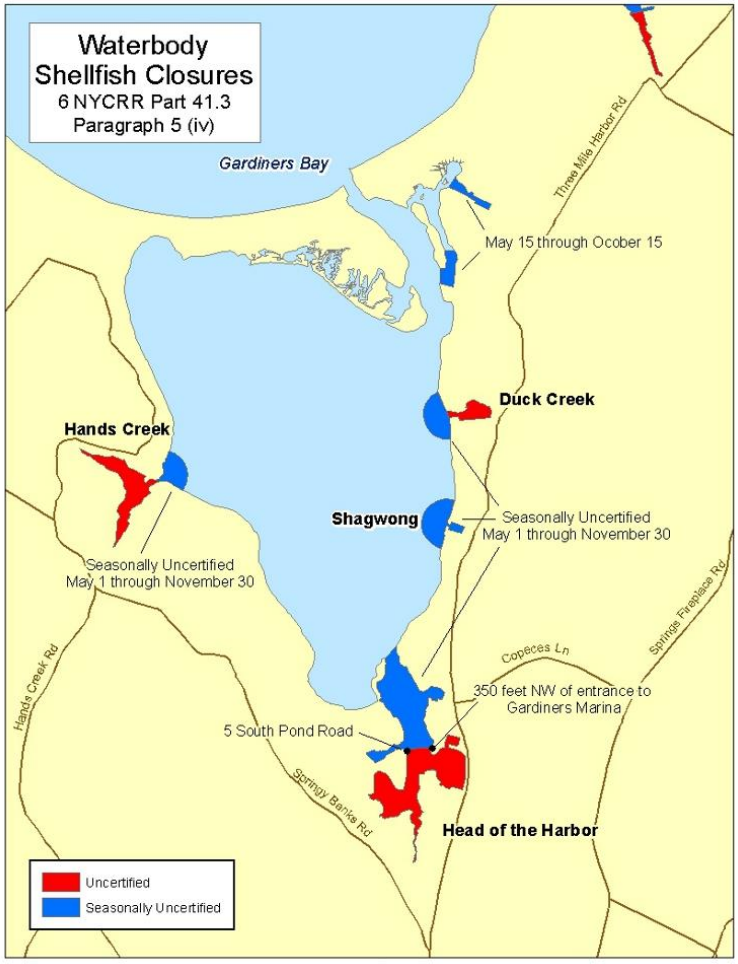
(b) During the period April 1st through December 14th (both dates inclusive), all that area of Montauk Lake and tributaries lying southerly of a line extending easterly from the highest point of the stone chimney (serving the Rispoli residence, 80 Old West Lake Drive) to the northwestern end of northernmost wooden jetty extending from the shoreline at Bridgeford Colony (local landmarks, local name).

(c) During the period May 15th through October 15th (both dates inclusive), all that area of Montauk Harbor (Montauk Lake) lying south of a line extending easterly from the flag tower at the U.S Coast Guard Station on Star Island to the southernmost extremity of the dock serving Deep Water Seafood, Inc. (local name, local landmark), on the western shore and northwest of a line extending northeasterly from the white flagpole located on the shoreline of the P. Kalikow residence (local name), off Star Island Drive, to a white flagpole at 395 East Lake Drive on the opposite shoreline (local landmark).

(d) During the period May 15th through October 15th (both dates inclusive), all that area of Montauk Harbor (Montauk Lake) at the Montauk Lake Marina and Club (local name, local landmark) lying east of a line extending southeasterly from a point 100 yards northwesterly of the main fixed dock to the southwesternmost end of that same fixed dock, continuing southeasterly along the fixed T- dock to its southeasternmost end and continuing in an easterly direction, 100 yards southeast of the innermost end of the floating T-dock.

(iii) Oyster Pond. All that area of Oyster Pond and tributaries.
Note: All reference points, except local landmarks and local names in Montauk Lake (Montauk Harbor) in the Town of East Hampton are taken from National Oceanic Atmospheric Administration Nautical Chart No. 13205, 25th Ed., dated January 12, 1980.

(iv) Three Mile Harbor.



an image of Three Mile Harbor Shellfish Closures

(a) During the period May 1st through November 30th (both dates inclusive), all that area of Three Mile Harbor within a 500 foot radius in all directions of the entrance to the East Hampton Point Marina(located on the eastern shoreline at 295 Three Mile Harbor Road)

and extending across the entrance into the Maidstone Harbor/Maidstone Marina Boat Basin, locally known as Duck Creek, located approximately 50 feet north of the East Hampton Point Marina.

(b) All that area of the Maidstone Harbor/Maidstone Marina Boat Basin, locally known as Duck Creek, lying east of a line extending northerly from the landward end of the northern wave break wall of the East Hampton Point Marina, including the entrance leading into the harbor.

(c) During the period from May 1st through November 30th (both dates inclusive), all that area of Three Mile Harbor within a 500 foot radius in all directions of the entrance to Shagwong Marina (local name), located on the eastern shoreline of Three Mile Harbor Road.

(d) During the period from May 1st through November 30th (both dates inclusive), all that area of Three Mile Harbor and tributaries lying southeast of a line extending northeasterly from the northeasternmost point of land on the peninsula located at the western side of the entrance into "Head of the Harbor" (local name), at the southern end of Three Mile Harbor and continuing to the western terminus of Breeze Hill Road, and lying north of a line extending northeasterly from the northernmost corner of the residence located at 5 South Pond Road on the western shoreline, to the northern side of the entrance of an unnamed creek on the opposite eastern shoreline (the entrance to this creek is located approximately 350 feet northwest of the entrance to Gardiner's Marina).

(e) All that area of "Head of the Harbor" (local name) at the southern end of Three Mile Harbor, lying south of a line extending northeasterly from the northernmost corner of the residence located at 5 South Pond road on the western shoreline, to the northern side of entrance of an unnamed creek on the opposite eastern shoreline (the entrance to this creek is located approximately 350 feet northwest of the entrance to Gardiner's Marina).

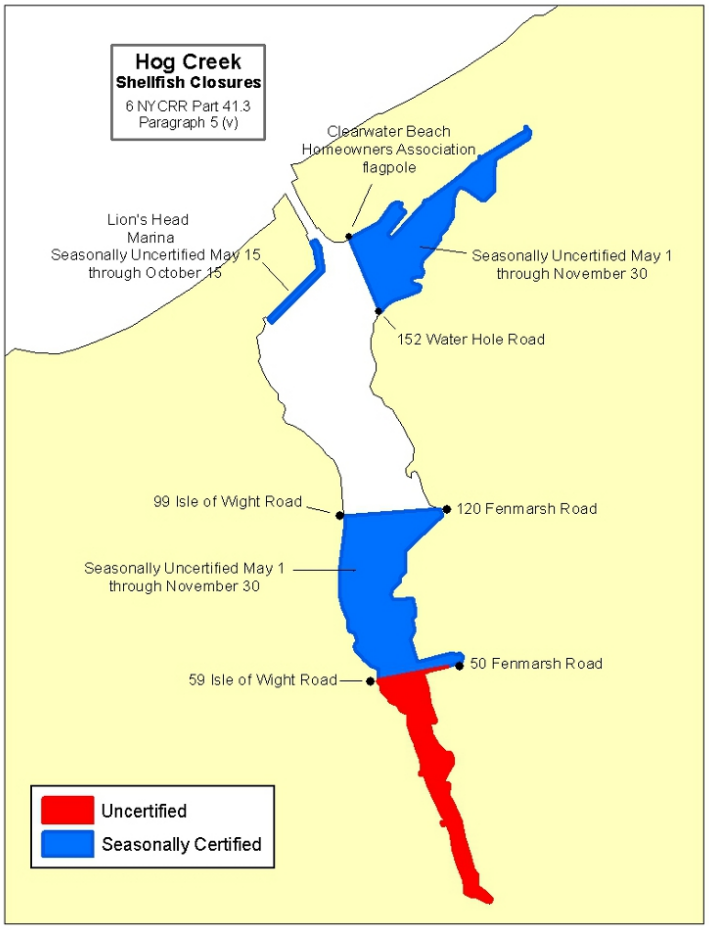
(f) All that area of Hands Creek, including tributaries, lying west of a line extending northerly from an orange marker located on the southern side of the Hands Creek entrance channel to the opposite shoreline; and, during the period May 1st through November 30th, both dates inclusive, all that area within a 500 foot radius in all directions of the entrance to Hands Creek.

(g) During the period May 15th through October 15th (both dates inclusive), all that area of Three Mile Harbor lying southeast of a line extending southwesterly from the northeasternmost point of land at the entrance of the cove harboring the Sunset Cove Marina (local name) to the opposite shoreline serving the inlet.

(h) During the period May 15th through October 15th (both dates inclusive), all that area of Three Mile Harbor lying southerly of a line extending westerly from Harborview Lane (local name) and continuing to the opposite shoreline on Sedge Island (local name, local landmark) and easterly of a line extending northerly from the northwesternmost point of the bulkhead serving the Town of East Hampton, Town Dock (local name) and parking area, to the southernmost end of Sedge Island on the opposite shoreline.

WORKING DRAFT

(v) Hog Creek.



Hog Creek map

(a) During the period May 1st through November 30th (both dates inclusive), all that area of Hog Creek, including tributaries, lying easterly of a line extending southeasterly from the flagpole (located near the east side of the entrance to Hog Creek) on the property of the Clearwater Beach Property Owners Association, Inc. (local landmarks, local name) to the western end of the dock serving the residence at No. 152 Water Hole Road (local landmark, local name).

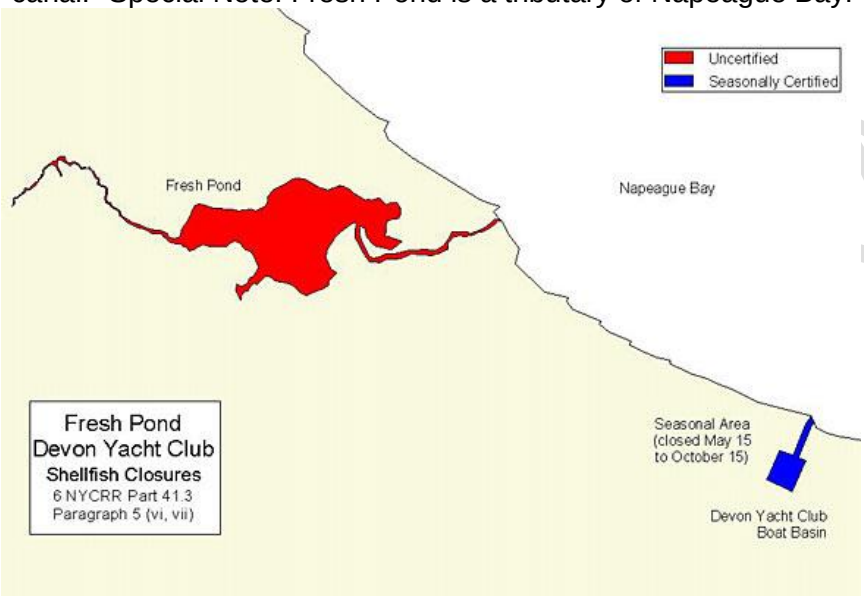
(b) During the period May 15th through October 15th (both dates inclusive), all that area of Hog Creek lying within the perimeter of the Lionhead Beach Association marina and within 35 feet of the bulkhead along the shoreline of the Lionhead Beach Association property. Said property is located at the easterly end of Bay Inlet Road (local names, local landmarks).

(c) All that area of Hog Creek lying south of a line extending easterly from the highest point of the white center peak of the residence located at 59 Isle of Wight Road to the red brick chimney on the north facing side of the residence located at 50 Fenmarsh Road on the opposite shoreline.

WORK DRAFT

(d) During the period May 1st through November 30th (both dates inclusive), all that area of Hog Creek lying north of a line extending easterly from the highest point of the white center peak of the residence located at 59 Isle of Wight Road to the red brick chimney on the north facing side of the residence located at 50 Fenmarsh Road on the opposite shoreline, and lying south of a line extending easterly from the highest point of the center peak of the grey residence located at 99 Isle of Wight Road to the northerly corner of the whitish-grey, hexagon shaped residence located at 120 Fenmarsh Road on the opposite shoreline.

(vi) Fresh Pond. All that area of Fresh Pond, including tributaries and the entrance "canal." Special Note: Fresh Pond is a tributary of Napeague Bay.



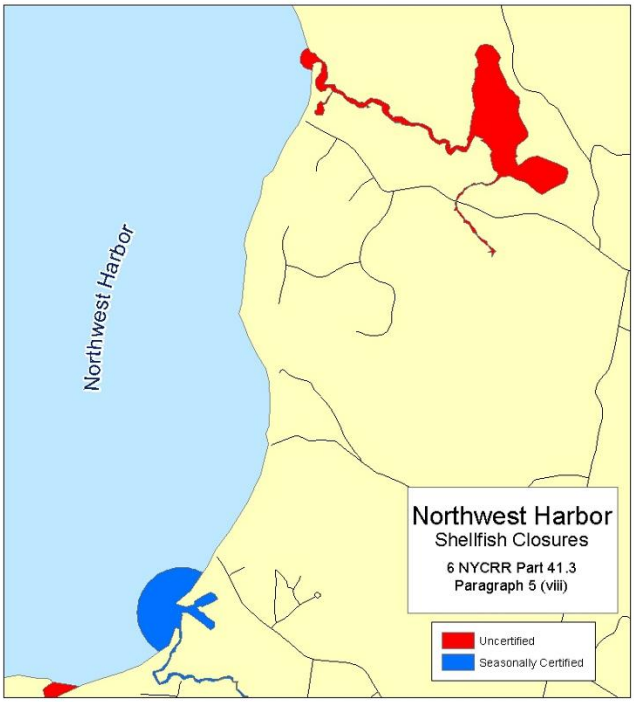
an image of Fresh Pond Devon Yacht Club Shellfish Closures

(vii) ***Napeague Bay. During the period May 15th through October 15th (both dates inclusive), all that area of the Devon Yacht Club Boat Basin (local name), located on the southern side of Napeague Bay.
(viii) Northwest Harbor.

(a) All that area of Alewife Pond, including entrance channel and all that area of Northwest Harbor, within 50 yards in all directions from the inlet of Alewife Pond.

(b) During the period May 1 through December 14, both dates inclusive, all that area of Northwest Harbor within a 200 yard radius from the western point of the spit of land on the southerly side of the entrance to the old Mile Hill Marina (local name), including the old Mile Hill Marina and the unnamed creek located immediately south of the old marina, which are all located southerly of Mile Hill Road.

WORKING DRAFT



an image of Northwest Harbor Shellfish Closures

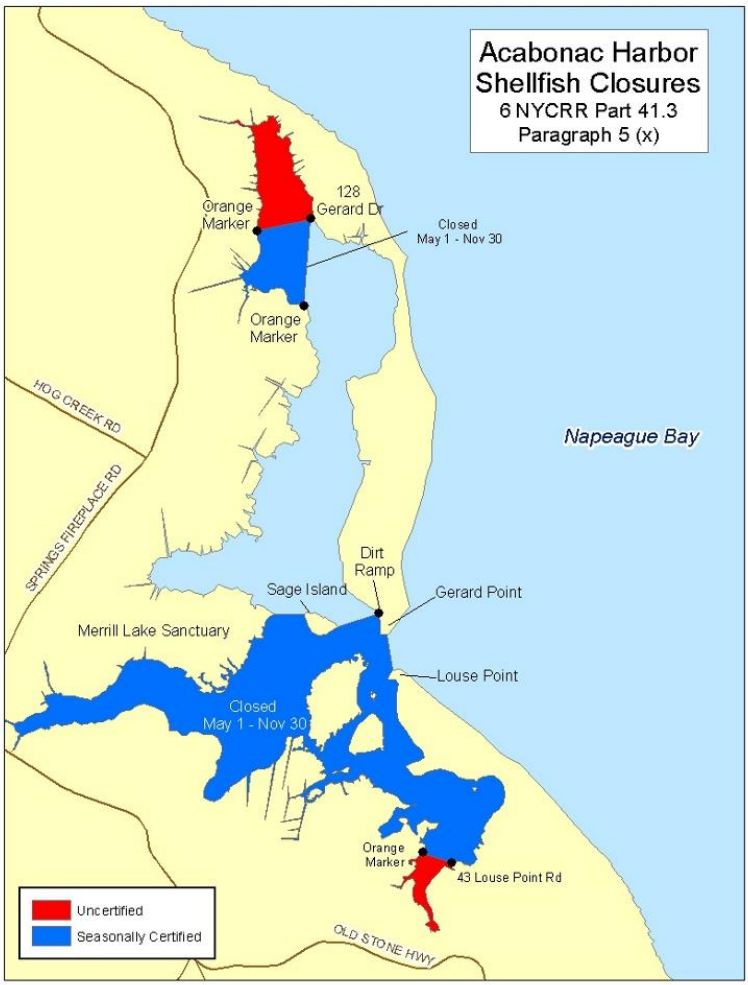
(ix) Northwest Creek.

(a) All that area of Northwest Creek and its tributaries.
***(also see: Northwest Creek Conditional Program) That portion of Northwest Creek designated as a conditional area remains uncertified when there is no conditional program in effect, and during any period when the conditional program is in the "closed" status.

(x) Accabonac Harbor.

(a) All that area of East Harbor (located in the southeasternmost portion of Accabonac Harbor) lying south and west of a line extending northwesterly from the northwesternmost point of land of the property at 43 Louse Point Road (the house on said property is two stories, painted grey with a dark roof and is the fifth house north of the intersection of Louse Point Road and Old Stone Highway) to an orange painted pole on the opposite western shoreline of East Harbor.

WORKING DRAFT



(b) During the period May 1st through November 30th (both dates inclusive) all that area of Accabonac Harbor and East Harbor lying south of a line extending easterly from the northeasternmost point of land at the Merrill Lake Sanctuary to the westernmost point of land at Sage Island (local name) and continuing southeasterly along the northern shoreline of Sage Island (an orange marker is located at the northernmost point of said island) to its easternmost point, heading easterly to the foot of the dirt launch area at Gerard Point (local landmark) and all that area west of a line extending southerly from the southernmost point of land at Gerard Point (located at the northern side of the entrance to Accabonac Harbor) to the northernmost point of land at Louse Point (located at the southern side of the entrance to Accabonac Harbor).

(c) During the period January 1st through December 31st, all that area of the northernmost portion of Acabonac Harbor, including tributaries, lying north of a line extending westerly from the westernmost point of land of the property at 128 Gerard Drive to an orange marker on the opposite western shoreline.

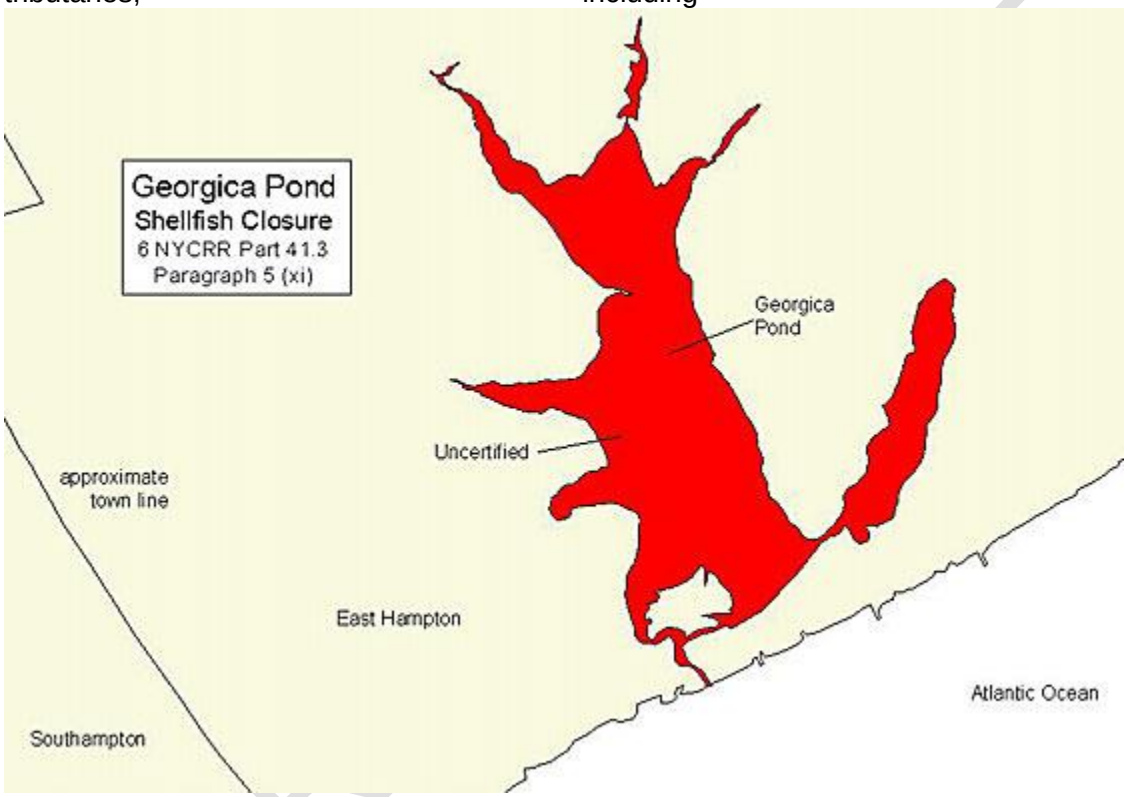
(d) During the period May 1st through November 30th, both dates inclusive, all that area of Acabonac Harbor lying west of a line extending southwesterly from the westernmost

WORK DRAFT

point of land of the property at 128 Gerard Drive to an orange marker located on the opposite western shoreline, and south of the line described in clause (c) above.

***(also see: Accabonac Harbor and East Harbor Conditional Program) Those portions of Accabonac Harbor and East Harbor designated as conditional areas remain uncertified when there is no conditional program in effect, and during any period when the conditional program is in the "closed" status.

(xi) ***Georgica Pond. All that area of Georgica Pond, a brackish embayment and its tributaries, including a



Appendix B Eel Grass Habitats

Following are excerpts from the 1999 Peconic Estuary Program Eelgrass Habitat Criteria Study, Prepared for SC DHS by EEA, Inc. Garden City, NY.

3.10 Three-Mile Harbor (Station 132)

Three-Mile Harbor is located in the Town of East Hampton. The inlet opens to Gardiners Bay to the north bounded by Sammy's Beach to the west and Maidstone Town Park to the east. This area is presently devoid of eelgrass. EHTNRD conducted an eelgrass transplant at Sammy's Beach in 1996. It was successful initially, but as of the summer of 1997 only a few plugs could be found during the annual monitoring event by EHTNRD. The shoreline surrounding the harbor is moderately developed by residential housing. Anchorage and mooring exist within the harbor. There are 10 marinas, a town commercial fishing dock, three town boat ramp sites, and slips at the Town/County facility.

Aerial photographs indicate that immediately adjacent to the cut channel at the mouth exists a large sand plume. According to Suffolk County Department of Public Works (SCDPW) records, dredging began at the mouth in 1958 for boat access to marinas. This area is scheduled to be dredged in April 1999. The dredge spoil material is all sand and is readily used for beach nourishment on both sides of the inlet and at an upland area on Marina Lane.

3.11 Napeague Harbor (Station 134)

Napeague Harbor is located in the Town of East Hampton between Napeague State Park (west) and Heather Hills State Park (east). The railroad tracks run east/west immediately to the south of the harbor. Napeague Harbor is approximately 1,086 acres in size. Although mostly surrounded by parkland, a small section along the northwest portion of the harbor supports low density residential housing.

Napeague Harbor supports thick beds of eelgrass on the southerly side of the shoal along the eastern shoreline. Although patchy from clam rakers, the eelgrass beds appear very healthy. Cashin reported high salinity of 33 ppt, shallow depth of approximately 1.1-meters and good visibility. There are two inlets to Napeague Harbor. A review of aerial photographs indicate a sand plume immediately inside the western-most entrance and immediately along the inner western edge of the eastern inlet. Dredging of a modified inlet began in 1967. Dredge spoil is entirely of sand and historically was deposited on the Hicks property. The area was last dredged January 1989. Napeague Harbor provides anchorage and has a boat launching ramp at Lazy Point (northwest of western inlet).

3.12 Lake Montauk (Station 135)

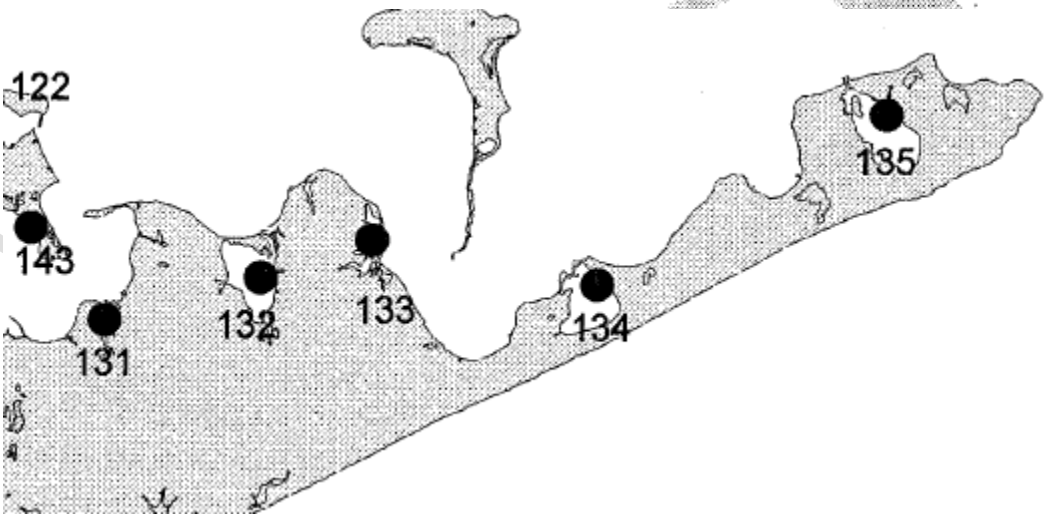
Lake Montauk is located in the Town of East Hampton and is approximately 1,102 acres in size. It is situated at the eastern end of the south fork of Long Island. It is surrounded by moderately dense residential housing to the west and south and low density residential housing and the Montauk Airport to the east. The inlet has been periodically dredged since 1949 and was last dredged in 1974. The dredge spoil material is all sand and is used for beach nourishment. Immediately to the south of the inlet is the U.S. Coast Guard Station and Montauk Yacht Club located on Star Island.

The sampling station is located at the northeastern portion of the Lake near the Airport. This area supports a mixed bed of eelgrass with 5 % *C. fragile* at a depth of 2.6-meters. This area is known for high boat traffic which may be related to the moderate density of the eelgrass, and mixed bed conditions within the harbor.

3.13 Accabonac Harbor (Station 133)

Accabonac Harbor is located in the Town of East Hampton and is approximately 304 acres in size. It is situated to the west of Gardiners Island. There is relatively low density residential housing around the harbor. There are three sanctuary's; Kaplan Meadows, Merrill Lake and Edwards Island within and/or surrounding the harbor. C. Gerard Town Park is located along the eastern shoreline on Gerard Drive. Additionally, a New York State Conservation area is situated at the lower portion of the harbor (East Harbor).

Historically, eelgrass was abundant in Accabonac Harbor and even harvested as insulation for houses before the turn of the century. Presently there are no eelgrass beds within the harbor. The inlet has been periodically dredged since 1959 and was last dredged February 1996. All dredge spoil consists of sand and some mud and is used for beach nourishment on both sides of the inlet. This is evident on the aerial photographs (1996) where thick sand plumes exist on both sides of the inlet. There are two boat launching ramps; one on Shipyard Lane and one on Landing Lane. Anchorage is present within the harbor.



3.14 Northwest Creek (Station 131)

Northwest Creek is located within the Town of East Hampton. Northwest Creek is immediately adjacent to Northwest Harbor which drains into Gardiners Bay. It is a relatively long (approximately 2.3 kilometers) and narrow (an average 410-meters) estuary occupying approximately 140 acres. The inlet connecting Northwest Creek to Northwest Harbor is extremely narrow (less than 33-meters across). Although Northwest Creek historically supported eelgrass beds, none are present today.

The vast majority of the shoreline is boarded by an expansive intertidal marsh dominated by saltmarsh cordgrass. Beyond the marsh is an oak/pine forest. The eastern portion of the creek is bordered by New York State Environmental Conservation Area and the Northwest Harbor County Park. The western shoreline is bordered by the Sag Harbor Golf Club at Barcelona Neck. A boat launching ramp is located at the County Dock and anchorage exists within the creek. Salinity within the creek system averages 26.5 ppt, ranging from 24.1 to 28.8 ppt with little variation between the mouth and head.

In general, the entire system is extremely shallow, with an average depth of 1.0-meter. The deepest areas are at the mouth and northeast corner where a mooring field is located. The substrate consists of silty fine grain material with the exception of the mouth and mooring area which is mostly medium sands. Northwest Harbor has been dredged since 1961 to modify the inlet and was last dredged January 1999. Dredge spoil material is all sand and can readily be used for beach nourishment. Presently, the spoil is placed on the barrier spit at the entrance to Northwest Creek.

WORKING

Appendix C Pond Information

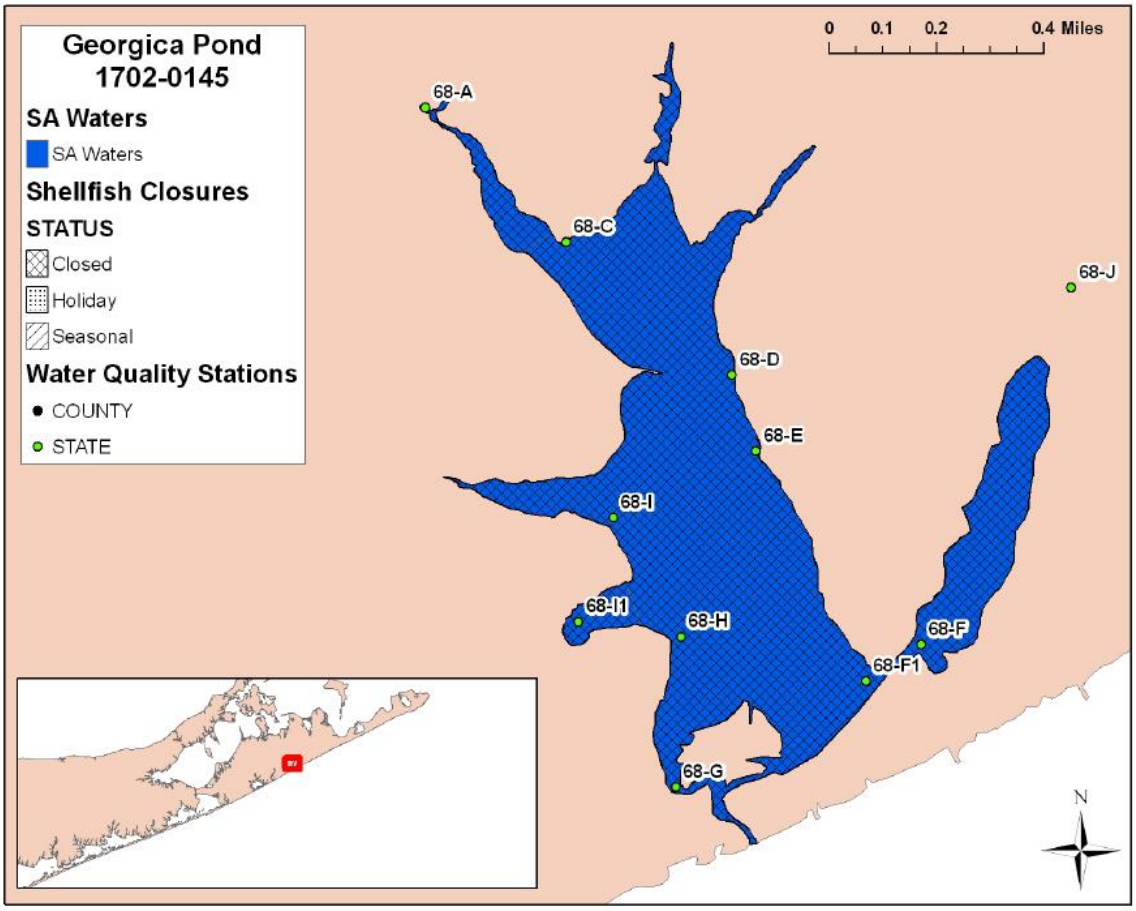
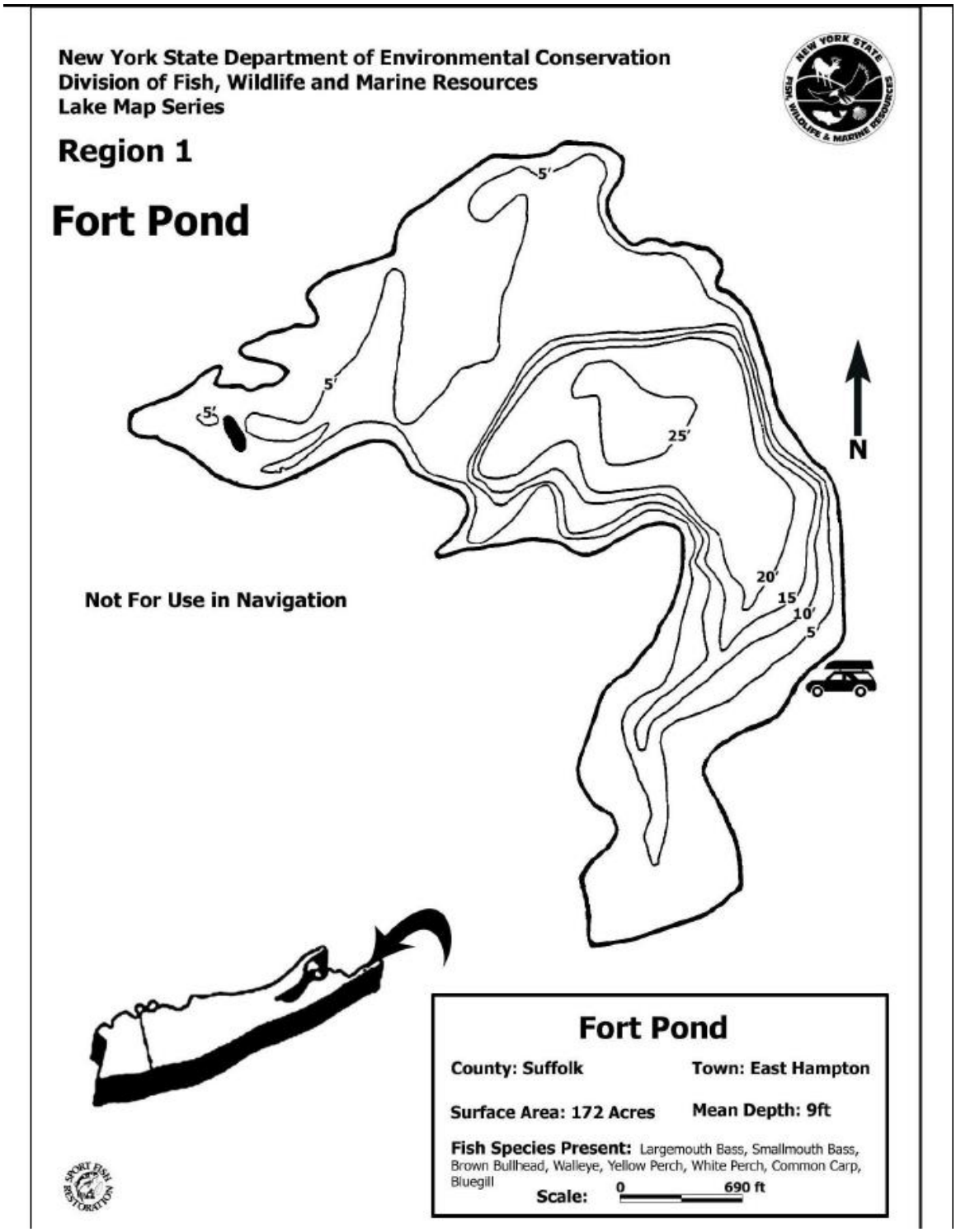
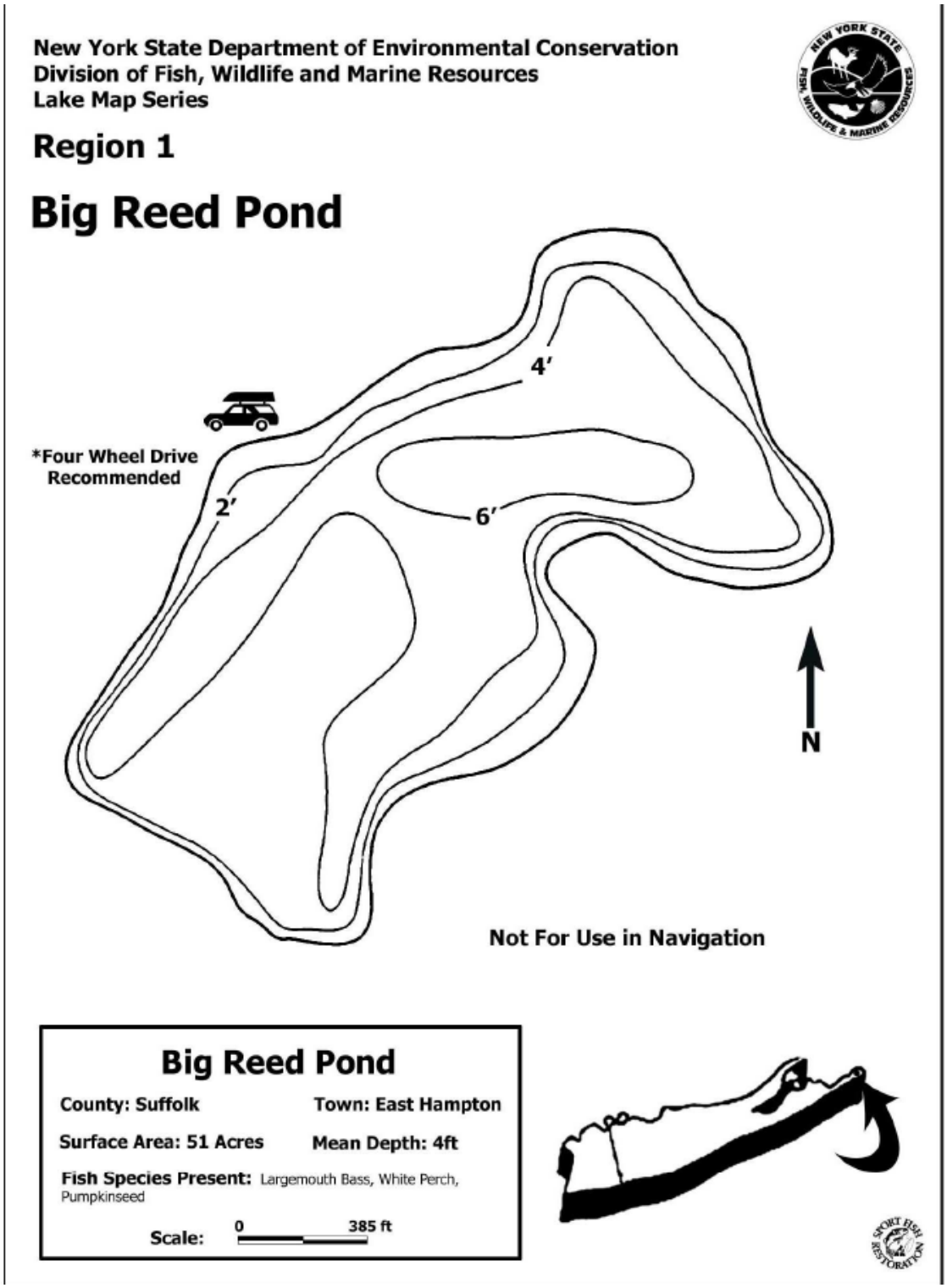
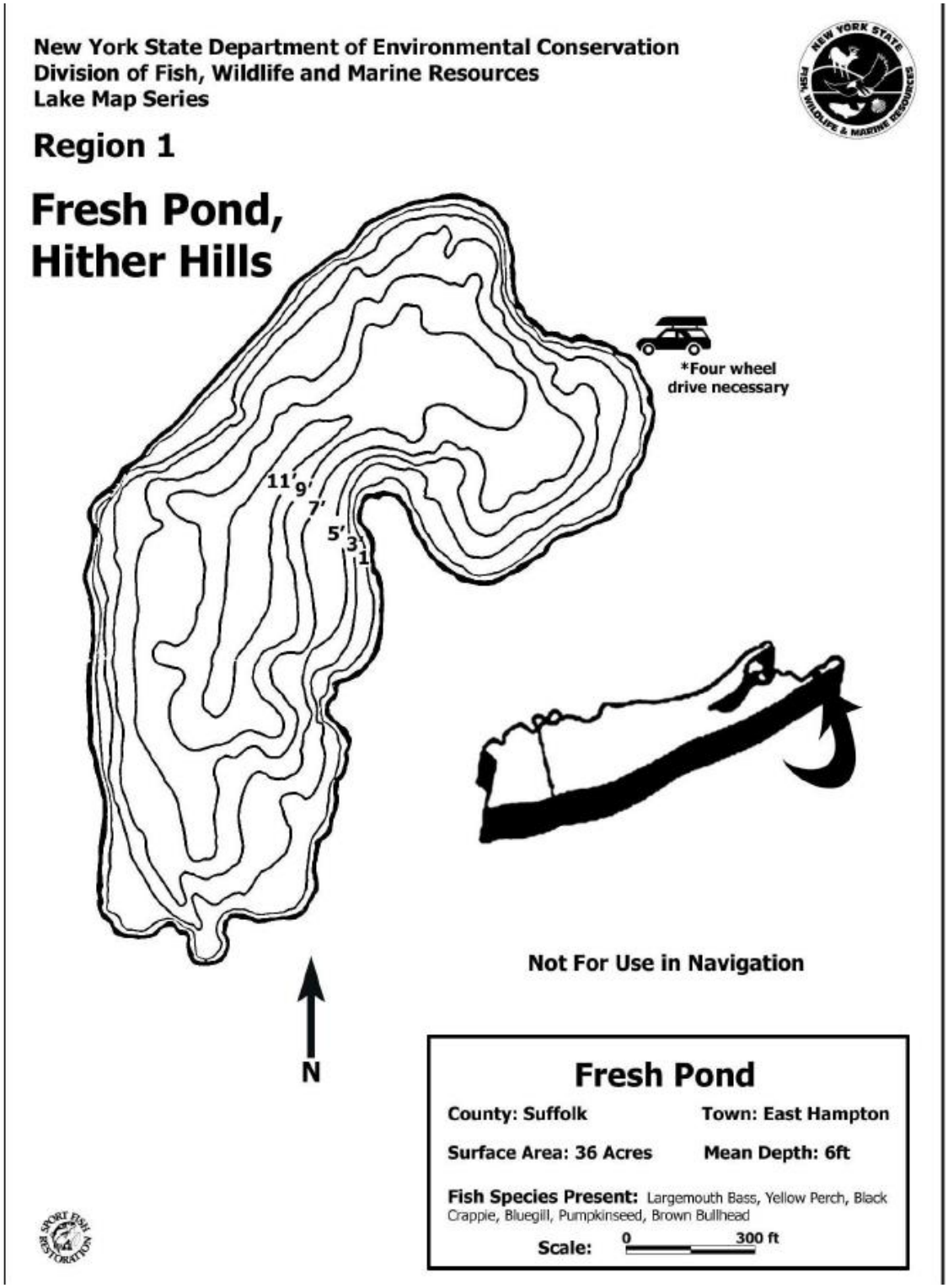


Figure A-14. Georgica Pond SA waters, Shellfish Closure Areas, and Water Quality Stations.


New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources
Lake Map Series
Region 1
Fort Pond
5'
5'
5'
25'
20'
15'
10'
5'
N
Not For Use in Navigation
Fort Pond
County: Suffolk
Town: East Hampton
Surface Area: 172 Acres
Mean Depth: 9ft
Fish Species Present: Largemouth Bass, Smallmouth Bass, Brown Bullhead, Walleye, Yellow Perch, White Perch, Common Carp, Bluegill
Scale: 0 690 ft


New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources
Lake Map Series
Region 1
Big Reed Pond
4′
2′
6′
*Four Wheel Drive Recommended
N
Not For Use in Navigation
Big Reed Pond
County: Suffolk
Town: East Hampton
Surface Area: 51 Acres
Mean Depth: 4ft
Fish Species Present: Largemouth Bass, White Perch, Pumpkinseed
Scale: 0 385 ft


New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources
Lake Map Series
Region 1
Fresh Pond,
Hither Hills
*Four wheel
drive necessary
11'
9'
7'
5'
3'
1'
Not For Use in Navigation
N
Fresh Pond
County: Suffolk
Town: East Hampton
Surface Area: 36 Acres
Mean Depth: 6ft
Fish Species Present: Largemouth Bass, Yellow Perch, Black Crappie, Bluegill, Pumpkinseed, Brown Bullhead
Scale: 0 300 ft

WORKING DRAFT

Task Report

Scenarios Development Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

December 30, 2013

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 3
2 SCENARIO DEVELOPEMENT 6
2.1 Site Selection and Evaluation Criteria 7
3 STUDY AREAS 8
3.1 Montauk 8
3.1.1 Camp Hero 8
3.1.2 Ditch Plains 8
3.1.3 Other Montauk Service Areas 9
3.2 Amagansett 12
3.3 East Hampton 12
3.4 Springs 12
3.5 Wainscott & Village East Hampton 17
4 ZONING ISSUES 18
APPENDIX A: GEESE MANAGEMENT TECHNIQUES 19

List of Figures

Figure 3-1 Montauk Service Areas and Potential Treatment / Disposal/Reuse Sites 10
Figure 3-2 Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites 12
Figure 3-3 East Hampton NorthService Areas and Potential Treatment / Disposal/Reuse Sites 14
Figure 3-4 East Hampton South Service Areas and Potential Treatment / Discharge Sites 15
Figure 3-5 SpringsService Areas and Potential Treatment / Discharge Sites 16
Figure 3-6 Wainscott & Village of East Hampton Service Areas and Potential Treatment / Discharge Sites 17

List of Tables

Table ES-1 Summary of Wastewater Improvement Needs by Need Type. 3
Table ES-2 Summary of Wastewater Improvement Needs by Need Type & Study Area & Initial Cost Estimates 4
Table ES-3 Numbers of Needs Types in Service Areas 5
Table 3-1 Montauk Area Potential Treatment and Disposal Sites Analysis 11
Table 3-2 Non-Montauk Study Areas Treatment and Disposal Sites Analysis 13

1 EXECUTIVE SUMMARY

The wastewater needs for the Town of East Hampton were defined in the Wastewater Needs Analysis Report and are summarized on Tables ES-1 and ES-2.

Table ES-1 Summary of Wastewater Improvement Needs by Need Type.

	Wastewater Need Type			
1	Bacterial public health considerations based upon insufficient depth to groundwater	# Properties Off-Site Solution Required	# Properties Likely Off-Site Solution Required	Add'l # Properties – WQ Risk
		146	**499**	**1,706**
2	Impermeable/Hydric Soils	At this time considered part of category 1 above.		
3	Malfunctioning systems considerations	Camp Hero System Others suspected		
4	Water quality – TMDL considerations	- At this time, no additional nitrogen removal needs provided other needs addressed. - Agriculture impact needs to be examined and addressed. - N Loading impact on eelgrass concerns Lake Montauk, 3 Mile Harbor & Accabonac - Phosphorus removal appears to be needed for Fort Pond - Georgica Pond needs Watershed Management Plan		
5	Setback requirements	579		
6	Private water supply considerations	**1,383 properties vulnerable**		
7	Public water supply considerations	Minimum 92 properties requiring treatment		
8	Town & County Code & State Law considerations	**- 112 Properties with SPDES**; - **Large Cesspools** need to be abandoned-number unknown - **Large Septic Systems** need permits – number unknown Could be large.		
9	Cost Considerations	Assumed addressed in other categories. Add'l sites to be identified through public participation		
10	Economic sustainability issues	✓ Montauk Center ✓ Others To be specified		

Table ES-2 Summary of Wastewater Improvement Needs by Need Type & Study Area & Initial Cost Estimates

	1				2	3	4	5	6	7	8	9	10
Need Type	**Bacterial public health considerations - insufficient depth to groundwater**		**Cesspool Upgrades Likely Required**		**Impermeable / Hydric Soils Advisory ONLY**	**Malfunctioning systems**	**Water quality – TMDL**	**Setback req'd**	**Private water supply -LP Separation Issues**	**Public water supply factor**	**Town, County Code & State Law considerations**	**Cost Factor**	**Economic sustainability issues**
Area	Off Site Required	Upgrade Req'd -Off Site May Appropriate	GW at 5 - 8 fbg	GW at 8 - 10 fbg									
Amagansett	14	148	306	129			None at this time - To Be Determined (TBD)	125	44	0			
East Hampton	38	40	115	64		27		190	299	72			
Montauk	36	146	337	247				311	632	11			1
Springs	56	74	191	141				313	340	0			
Wainscott	2	4	13	19				26	68	9			
Total	146	412	962	600		27		965	1,383	92	112	0	1
Properties addressed in other categories		Setback - # 5	173	87									
		Bacterial DGW # 1	151								**GRAND TOTAL**		**4,289**
Net Total			638	513									
Percent of Total	3%	10%	15%	12%	0%	1%	0%	22%	32%	2%	3%	0%	0%

Any planning level costs are "Order of Magnitude" estimates and in accordance with industry standards, cost estimates at this stage of planning should be considered as +50% to - 30% of indicated costs. Conventional engineering solutions could result in significantly higher costs than the above estimates. Additionally the number and types of needs require field verification. A lot by lot Wastewater Plan is the methodology used to refine the estimates.

LAI has created service areas that would collect, treat and dispose / reuse wastewater from areas that have concentrations of needs. Due to scattered needs that would be best addressed with a local/individual solution, the areas may not contain all the parcels with needs and will contain nearby and “along the way” parcels that do not have needs as typical engineering practice is that any property with frontage on a street with a proposed sewer will be connected.

Table ES-3 presents the numbers of need types by Service Areas.

Table ES-3 Numbers of Needs Types in Service Areas

Service Area	Developed Parcels with Wastewater Needs in Service Areas							
	# Parcels	Cesspool <10' DGW	<1/4-Acre, No WS	GW Need[1]	DW Need	Setback	Failing System[2]	WW Need Total[3]
Montauk Shoreline #1	73	32	0	1	0	36	0	47
Montauk Shoreline #2	58	17	0	0	0	24	0	28
Montauk Shoreline #3	74	7	4	4	0	44	0	51
Montauk Center	114	7	25	0	0	3	0	31
Montauk Well #1	201	0	0	0	22	0	0	22
Camp Hero	28	0	0	0	0	0	28	28
Ditch Plains Development	276	60	8	0	0	0	0	66
Ditch Plains Trailer Park	300	0	300	0	0	4	0	300
Fort Pond Shoreline #1	94	5	9	2	0	32	0	39
Fort Pond Shoreline #2	40	2	1	0	0	13	0	14
The Docks	64	47	1	4	0	25	0	53
Nepeague #1	29	28	5	1	0	27	0	29
Nepeague #2	33	26	0	2	0	15	0	27
Springs #1	159	57	5	2	0	33	0	85
Springs #2	303	161	14	1	0	67	0	181
3-Mile Harbor #2	416	56	114	0	0	62	0	184
3-Mile Harbor #1	348	15	1	4	0	84	0	88
3-Mile Harbor #3	237	64	8	0	0	67	0	98
Northwest Harbor #1	26	21	3	0	0	2	0	23
East Hampton #1	264	0	2	0	51	0	0	52
East Hampton #2	339	6	44	0	24	0	0	74
Fort Pond Shoreline #1	98	0	0	1	0	0	0	0
Outside Service Areas	16,587	1,204	1,201	8	14	386	0	2,535
DGW 5' - 8'				522				522
SPDES Permits						112		112
	20,161	**1,815**	**1,745**	**552**	**111**	**1,036**	**28**	**4,689**

[1]Does not include parcels with DGW 5'-8' that likely require upgrades or off-site solutions.

[2]Does not include 112 parcels that have SPDES permits.

[3]Includes Cesspools with DGW <10', 1/4-acre lots w/no water service, DGW <3', SWAP <5 Year Travel Time and <200' setback from water bodies

2 SCENARIO DEVELOPEMENT

Based upon the identified area wastewater needs, LAI has developed three scenario strategies to enable a discussion of the options.

Scenario I - solely estimates a unit cost for each type of need and calculates a total project cost and prioritize the severe bacterial contamination sites as the 1st phase

Scenario II - service areas where concentrations of parcels with one or more wastewater needs exist are estimated. These service areas are general and do not cover all existing needs. For those properties not in a service area, it is assumed that the property needs will be addressed with on-site solutions.

All parcels with frontage on a street where sewers for a neighborhood system are proposed will connect to the proposed system

Scenario III Same as Scenario II with the difference being service being predominately provided for only those properties with identified needs.

The specific needs areas that were identified in the Needs Analysis Report include:

1. Montauk:
    a. Camp Hero
    b. Ditch Plains
    c. The Docks
    d. West Side of Lake Montauk
    e. East Side of Lake Montauk
    f. Montauk Center and Fort Pond

2. Amagansett

3. East Hampton

4. Springs

5. Wainscott

6. Village East Hampton
    a. Georgica Pond
    b. Hook Pond

The Montauk area has the most widespread needs, as both hydric soils, soils with restrictive layers, small lots, low depth to groundwater and abundance of wetlands are common conditions throughout Montauk.

For this executive level analysis, potential treatment and disposal locations were identified within a reasonable distance of the needs areas. Lots with hydric soils were not eliminated for treatment or disposal as site specific testing should be performed. collection system quantities were estimated to build a to serve the needs area and convey flow to the nearest treatment and disposal site. The approximate number of developed properties were estimated to estimate the size of the treatment and disposal sites.

All buildings were assumed to be residential properties with a design flow of 300-gpd. Collection, treatment and disposal costs were estimated for each solution scenario.

2.1 SITE SELECTION AND EVALUATION CRITERIA

Each study area was evaluated for the presence of the following needs requiring offsite solutions:

- Depth to groundwater < 3-ft (GW needs categories 1 and 2)
- Drinking water supply well contributing area (SWAP), <5 year travel time
- Water body setback < 200-ft
- Quarter acre lots with no public water service

It is noted that the cost effective solution to quarter acre lots with no public water service may be a new public water supply.

3 STUDY AREAS

Figure 3-1 presents the subareas within the Montauk study area and the potential treatment / disposal/reuse sites. Table 3-1 presents the potential treatment and disposal site analysis for sites in Montauk.

3.1 MONTAUK

3.1.1 CAMP HERO

The Camp Hero development has an existing collection and disposal system that is outdated and in need of replacement. This area will be developed in greater detail than the other areas in Montauk as general engineering plans of the existing wastewater system exist.

Camp Hero has an existing collection and disposal system that was constructed in 1982 and serves 27 house. The collection system used orangeburg pipe, a substandard material that is no longer used. The collection system has limited remaining useful life and is in need of replacement. In addition, multiple electrical and control system issues exist with the pump stations used to collect and dispose of the areas wastewater. The solution scenario developed by LAI consists of:

- Full replacement of the collection system using a septic tank effluent system
- Addition of a treatment system
- Reuse of the existing leaching pools

For cost estimating purposes, the collection system is assumed to follow the same layout as the existing system, with treatment and disposal occurring at the existing location. As there is no proposed increase in flow and the system will be discharging treated wastewater instead of septic tank effluent as is now the practice, no improvements are proposed for the dispersal system. A disposal system inspection needs to be conducted to confirm that repair / replacement is not needed.

3.1.2 DITCH PLAINS

The Ditch Plains area is a dense development between the southern end of Lake Montauk and the Atlantic Ocean. Part of this area is located over what formerly was a wetland, and hydric soils or soils with restrictive layers are dominant throughout Ditch Plains. It is strongly suspected that malfunctioning systems in Ditch Plains are a major cause of bacterial contamination of Lake Montauk and closure of the south Lake Montauk beach.

LAI located two nearby sites that appear to be feasible locations for treatment and disposal. The first site is located immediately northeast of the trailer park. It is located in an area that is not cleared and is upgradient of wetlands. Sufficient area does exist outside of all applicable setbacks, however the soils types are identified as hydric. Soils testing will be required if this site is to be used. The second site is northwest of the Ditch Plains development, immediately across Highway 27. This is a Town owned lot located at 6 West Lake Drive that appears to have a building and fenced off livestock areas. There is a small pond on the property, and wetlands mapping shows some minor

wetland areas nearby. There is an area east of the pond that has sufficient area outside setback requirements to site a treatment facility. This area is identified as having hydric soils, therefore site testing would be required for disposal. The area west of the building does not have sufficient area for a large WWTF, however

The second potential treatment / disposal site is located to the northwest of the trailer park. This is also a Town owned lot, however it has not been cleared and does have nearby wetlands that may limit its capacity. LAI's analysis of capacity of both sites is summarized in Table 3-1. These sites capacities assume that groundwater mounding does not restrict the site's capacity. Hydrogeological studies need to be performed to determine the actual site capacities.

The Ditch Plains Development contains approximately 265 houses. Using a design flow of 300-gpd per house, the design flow for the development is 80,000-gpd. The collection system quantities for the development are:

The trailer park appears to accommodate approximately 300 trailers. Using a design flow of 300-gpd per trailer, the design flow for the trailer park is 90,000-gpd.

The site capacity analysis demonstrates that Site #1 may accommodate the flow from both the development and the trailer park. Site # 2 can only accommodate the flow from one or the other unless a variance is granted that allows using MSSDS setback distances.

All site disposal capacities have assumed that there are no limitations due to mounding. Hydrogeological studies need to be performed on all potential disposal sites to determine their disposal capacity with mounding considerations.

3.1.3 OTHER MONTAUK SERVICE AREAS

Other potential neighborhood services areas in Montauk include:

- The Docks
- West Site of Lake Montauk
- East Site of Lake Montauk
- Potential Treatment and Disposal Sites – Docks / W. Lake Montauk
- Montauk Center and Fort Pond

Figure 3-1 Montauk Service Areas and Potential Treatment / Disposal/Reuse Sites

Table 3-1 Montauk Area Potential Treatment and Disposal Sites Analysis

Site ID	PID	Owner	Comments	Available Area Outside Setback Considerations (ft^2)			Maximum Treatment Capacity Using All Available Area (gpd)		Soils Based Loading Rate (gpd/ft^2)	Maximum Disposal Capacity Using All Available Area (gpd)
				MSSDS Setbacks	WWTF Setbacks	Leaching Pool Setbacks	MSSDS Setbacks	WWTF Setbacks		
CH-D1	**300015010100031000**	Town	Exsiting disposal system in hydric / restrictive layer soils. Potential new location restrictive layer soils	25,200	0	43,200	84,000	0	0.4	17,200
DP-D1	**300032000600010000**	Town/County Dep. Parks & Rec.	Site not cleared. Hydric soils indicated, site testing needed to confirm HLR.	131,500	82,750	164,000	438,000	275,000	0.4	65,600
DP-D2	**300032000100015000**	Town	East site has hydric soils, west site restrictive layer	63,225	15,600	87,475	210,000	52,000	0.4	34,900
Dock-D1	**300009000100008000**	Town	Mix of hydric soils and restrictive layer soils, upgradient from wetland	108,500	49,000	144,375	361,000	163,000	0.4	57,700
Dock-D2	**300007000100003000**	County	Good Soils, not cleared, northwest portion of county airport parcel	108,000	48,000	148,000	360,000	160,000	1.0	148,000
LME-D1	**300021000100001000**	County	Restrictive layer soils	181,250	162,500	193,750	604,000	541,000	0.4	77,500
GC-D1	**300019000900005000**	County	Mix of hydric soils, restrictive layer and good soils	***Reuse/disposal only***		1,320,000	n/a	n/a	1.0	1,320,000
FP-D1	**300052000100008000**	State	Good soils	31,625	15,000	45,375	105,000	50,000	1.0	45,300
FP-D2			Good Soils	***Ballfield - reuse/disposal only.***		40,000	n/a	n/a	1.0	40,000
FP-D3	**300048000400043000**	Private	Restrictive layer soils	***Ballfield - reuse/disposal only.***		50,000	n/a	n/a	0.4	20,000
		Total		**624,100**	**372,850**	**782,975**	**2,078,000**	**1,241,000**		**1,809,000**

SCHDS System Classification	Flow Range (gpd)	Property Line Setback	Habitable Building Setback	Surface Water / Wetland
Modified Subsurface Sewage Disposal System (MSSDS)	**1,000 - 15,000**	**75**	**75**	**100-ft**
Wastewater Treatment Facility (WWTF)	**>15,000**	**150**	**200**	**100-ft**

3.2 AMAGANSETT

Figure 3-2 presents the potential Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites. Table 3-2 presents the potential sites for treatment and disposal in East Hampton for non-Montauk areas.

Figure 3-2 Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites

3.3 EAST HAMPTON

Figures 3-3 and 3-4 presents the potential East Hampton North and South, respectively, Service Areas and Potential Treatment / Disposal/Reuse Sites.

3.4 SPRINGS

Figure 3-5 presents the potential Springs Service Areas and Potential Treatment / Disposal / Reuse Sites.

Table 3-2 Non-Montauk Study Areas Treatment and Disposal Sites Analysis

Site ID	PID	Total Site Area (ft^2)	Owner	Comments	Available Area Outside Setback Considerations (ft^2)			Maximum Treatment Capacity Using All Available Area (gpd)		Soils Based Loading Rate (gpd/ft^2)	Maximum Disposal Capacity Using All Available Area (gpd)
					MSSDS Setbacks	WWTF Setbacks	Leaching Pool Setbacks	MSSDS Setbacks	WWTF Setbacks		
SP-D1	**300080000500004000**	1,549,800	Town	~50% of soils are good, 50% have restrictive layer. Lot not cleared, no nearby wetlands	701,250	450,000	893,750	2,337,000	1,500,000	0.7	625,600
SP-D2	**300061000400004000**	1,147,000	Town	Lot ~70% cleared. Restrictive layer	72,000	1,365,000	1,600,000	240,000	4,550,000	0.4	640,000
SP-D3	**300103000100005000**	568,000	Town	~50% of soils are good, 50% have restrictive layer. Lot not cleared, no nearby wetlands	355,750	285,000	461,875	1,185,000	950,000	0.7	323,300
SP-D4	**300080000600024000**	1,013,500	Town	Good soils, lot not cleared, no nearby wetlands.	688,375	580,000	850,938	2,294,000	1,933,000	1.0	850,900
3MH-D2	**300055000100029000, 300055000400027000**	780,700	Town	Good soils, lot not cleared, no nearby wetlands.	93,500	88,000	99,000	311,000	293,000	1.0	99,000
3MH-D1	**300119000200003000**	2,524,000	Town	Good soils, lot not cleared, no nearby wetlands.	1,981,000	1,800,000	2,252,500	6,603,000	6,000,000	1.0	2,252,500
NWH-D1	**300032000100015000**	135,000	County	Good soils, lot not cleared, no nearby wetlands.	93,750	80,000	114,375	312,000	266,000	1.0	114,300
EHW-D1	**300193000300011000**	297,100	Town	Good soils, lot cleared, no nearby wetlands.	115,525	55,000	206,313	385,000	183,000	1.0	206,300
EHW-D2	**300163000300006000**	380,000	Town	Good soils, lot not cleared, no nearby wetlands.	140,000	60,000	260,000	466,000	200,000	1.0	260,000
GP-D1	**300184000100002000**	2,482,000	Town	Good soils, lot not cleared, no nearby wetlands.	1,775,500	1,540,000	2,128,750	5,918,000	5,133,000	1.0	2,128,700
				Total	**6,016,650**	**6,303,000**	**8,867,500**	**20,051,000**	**21,008,000**		**7,500,600**

SCHDS System Classification	Flow Range (gpd)	Property Line Setback	Habitable Building Setback	Surface Water / Wetland
Modified Subsurface Sewage Disposal System (MSSDS)	**1,000 - 15,000**	**75**	**75**	**100-ft**
Wastewater Treatment Facility (WWTF)	**>15,000**	**150**	**200**	**100-ft**

Figure 3-3 East Hampton NorthService Areas and Potential Treatment / Disposal/Reuse Sites

Figure 3-4 East Hampton South Service Areas and Potential Treatment / Discharge Sites

Figure 3-5 SpringsService Areas and Potential Treatment / Discharge Sites

3.5 WAINSCOTT & VILLAGE EAST HAMPTON

Figure 3-6 presents the potential Wainscott & Village of East Hampton Service Areas and Potential Treatment / Disposal / Reuse Sites.

Figure 3-6 Wainscott & Village of East Hampton Service Areas and Potential Treatment / Discharge Sites

4 ZONING ISSUES

For commercial areas, the following Town Code issues are relevant for the development of moderate-income apartments as part of improved wastewater services.

Chapter 255: ZONING
§ 255-2-45 Number of uses.

(4) Apartments within commercial structures shall not be considered an additional use on any lot or property for purposes of this limitation, except within the Limited Business Overlay District.

§ 255-5-50

APARTMENTS WITHIN COMMERCIAL STRUCTURES
(1) All dwelling units created shall be for the use of and available to moderate-income families, who are certified as such on an annual basis by the Office of Housing and Community Development, or other certifying agency as determined by the Town of East Hampton. Owner shall submit a copy of the lease and supporting documentation to the Office of Housing and Development on an annual basis and prior to renting the apartment to a new occupant. The Office of Housing and Community Development shall collect an application fee for each annual renewal and for each new occupant, as set from time to time by the Town Board, and shall certify that the proposed tenant(s), any other occupant(s), and the rental agreement meet the income and rental eligibility requirements set forth in this chapter.

3) The habitable floor area of the apartment shall be at least 450 square feet, but in no case more than 1,200 square feet. The apartment shall be located either on the first or second floor of the building, but shall not be located in a basement or cellar, and the apartment shall contain all services for safe and convenient habitation, meeting the New York State Uniform Fire Prevention and Building Code and the Sanitary Code.

APPENDIX A: GEESE MANAGEMENT TECHNIQUES

See Geese Peace http://www.geesepeace.com/

http://www.lakeaccess.org/urbangeese.html

lake . access
an empact metro project — seeing below the surface

Lake Data | Understanding Lakes | Current Issues | Land Use/GIS | History | Lawn Fertilizer Study

Urban Geese

Increasing urban and suburban development in the U.S. has resulted in the creation of ideal goose habitat conditions- park like open areas with short grass adjacent to small bodies of water. These habitat conditions have in turn enticed rapidly growing numbers of locally breeding geese to live year round on golf courses, parks, airports and other public and private property.

In recent years, biologists have documented tremendous increases in populations of Canada geese that nest predominantly within the United States. Recent surveys suggest that the Nation's resident breeding population now exceeds 1 million birds in both the Atlantic and the Mississippi Flyways and is continuing to increase. In the Mississippi Flyway alone, the 1998 spring Canada goose population estimate exceeded 1.1 million birds, an increase of 21 percent from 1997. (US Fish and Wildlife Service data)

Fast Facts About Giant Canada Geese

- Protected by the Federal Migratory Bird Treaty Act
- Feed by grazing on succulent grasses and small plants
- Weigh 12 pounds or more
- Able to reproduce at 2-3 years of age
- Eggs hatch in 28 days with broods averaging 4 goslings
- Return to the same nesting and feeding areas each year

Common Goose Problems:

- In parks and other open areas near water, large goose flocks denude lawns of vegetation and create an obnoxious mess with their droppings and feather litter.
- Goose droppings in heavy concentrations can over fertilize lawns, contribute to excessive algae growth in lakes that can result in fish kills, and potentially contaminate municipal water supplies.
- Geese have also been involved in a growing number of aircraft strikes at airports across the country, resulting in dangerous takeoff and landing conditions and costly repairs.
- The main problem is having all those **goose droppings on your lawn**!

But Do Geese Really Harm Your Lake?

Some researchers think they do and some think they don't. In any case the geese probably are certainly contributing nutrients that help fuel excessive growths of algae and macrophytes.

The scoop on goose poop:

- The average Canada goose dropping has a dry weight of 1.2 g (~ 0.04 ounces)
- Average droppings per day ~ 82 g/day (dry weight), that's 2.6 ounces/day (about 1/3 cup)
- Each dropping contains 76 % carbon, 4.4 % nitrogen, and 1.3 % phosphorus
- Geese can defecate as many as 92 times a day (numbers reported range from 28-92)
- What goes into a goose generally comes from within the watershed and what comes out also stays in the watershed (at least for resident Giant Canada geese).

(From Sherer, N.M. et al 1995. Phosphorus loadings of an urban lake by bird droppings. Lake and Reservoir Mgmt. 11(4): 317-327.)

Homeowner's Tips for Dealing with Urban Geese

It is that time again when geese will begin searching for nesting sites. If geese are not welcome on your property, here are some tips you can use to discourage their activities.

Prevention is the Key!

Make your property less attractive to geese

- Don't feed the geese
- Leave a 20-30 foot barrier strip of tall grass (6 inches or more) adjacent to lakeshore
- Plant dense hedges or erect fencing near lakeshore areas to reduce access to your lawn
- Check your property frequently for nest building activity in the spring
- Remove any nesting materials found
- Harass geese that frequent your property
- Be as persistent as the geese
- Some folks have tried stringing a wire or string about 10-12 inches high along their shoreline. The geese seem to avoid crossing the string and move on.

The Legalities of Goose Control*
*(*Under federal law, state laws may be more restrictive, contact your state wildlife agency for more information)*

What you **CAN** do

- Harass the birds prior to nesting using noisemakers, dogs, or things like brooms or rakes
- Remove accumulated nesting material (PRIOR TO NESTING)
- Erect fences and barriers to keep geese off your property

What you **CANNOT** do
(unless in possession of a federal permit)

- Injure, capture or kill geese *(except under applicable hunting regulations)*
- Disturb geese on an established nest
- Collect or destroy goose eggs

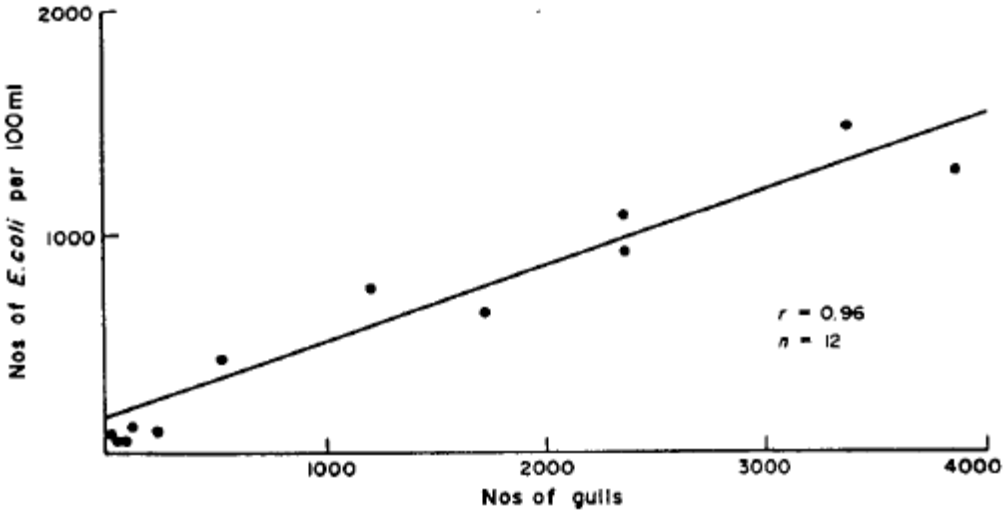


Figure 1 Correlation of mean monthly numbers of gulls roosting on a reservoir with mean monthly numbers of *E.coli* per 100 mL from August 1979 to July 1980 (from Benton et al. 1983).

Valiela et al. (1991) studied the fecal coliform loadings and stocks from various sources in Buttermilk Bay, Massachusetts. Major sources of fecal coliform to the bay were waterfowl (ducks, geese, and swans), surface runoff, groundwater, and streams. From January to March, waterfowl contributed the most fecal coliform (an estimated fecal coliform level of 1.8 x 1011 day-1; or 82% of total loading), but from July to September, they contributed comparatively little (5.7 x 109 day-1; or 7%) (see Figure 2). Though some suggest eliminating the waterfowl as a means of reducing fecal coliform loading, the authors refute this idea. Firstly - eliminating one source still leaves several other sources of contamination (runoff, streams, etc.). Secondly - fecal coliform loading from the birds is highest in the winter (when roosting time is increased), whereas beach closures due to high levels of coliforms occur in the summer, when birds are sparse. They concluded that eliminating birds would not be an efficient means of reducing elevated fecal coliforms leading to beach closures.

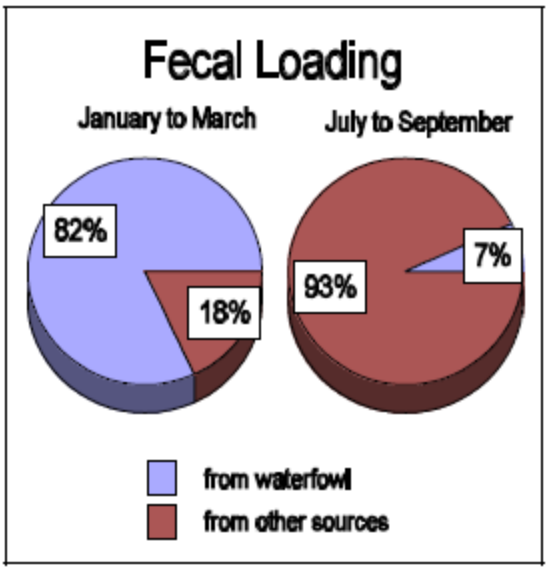


Figure 2 - Fecal coliform loadings in Buttermilk Bay, Massachusetts, during two time periods from waterfowl or other sources (from Valiela et al. 1991).

WORKING DRAFT

Task Report

Scenarios Development Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

December 30, 2013

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 3
2 SCENARIO DEVELOPEMENT 6
2.1 Site Selection and Evaluation Criteria 7
3 STUDY AREAS 8
3.1 Montauk 8
3.1.1 Camp Hero 8
3.1.2 Ditch Plains 8
3.1.3 Other Montauk Service Areas 9
3.2 Amagansett 12
3.3 East Hampton 12
3.4 Springs 12
3.5 Wainscott & Village East Hampton 17
4 ZONING ISSUES 18
APPENDIX A: GEESE MANAGEMENT TECHNIQUES 19

List of Figures

Figure 3-1 Montauk Service Areas and Potential Treatment / Disposal/Reuse Sites 10
Figure 3-2 Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites 12
Figure 3-3 East Hampton NorthService Areas and Potential Treatment / Disposal/Reuse Sites 14
Figure 3-4 East Hampton South Service Areas and Potential Treatment / Discharge Sites 15
Figure 3-5 SpringsService Areas and Potential Treatment / Discharge Sites 16
Figure 3-6 Wainscott & Village of East Hampton Service Areas and Potential Treatment / Discharge Sites 17

List of Tables

Table ES-1 Summary of Wastewater Improvement Needs by Need Type. 3
Table ES-2 Summary of Wastewater Improvement Needs by Need Type & Study Area & Initial Cost Estimates 4
Table ES-3 Numbers of Needs Types in Service Areas 5
Table 3-1 Montauk Area Potential Treatment and Disposal Sites Analysis 11
Table 3-2 Non-Montauk Study Areas Treatment and Disposal Sites Analysis 13

1 EXECUTIVE SUMMARY

The wastewater needs for the Town of East Hampton were defined in the Wastewater Needs Analysis Report and are summarized on Tables ES-1 and ES-2.

Table ES-1 Summary of Wastewater Improvement Needs by Need Type.

	Wastewater Need Type			
1	Bacterial public health considerations based upon insufficient depth to groundwater	# Properties Off-Site Solution Required	# Properties Likely Off-Site Solution Required	Add'l # Properties – WQ Risk
		146	**499**	**1,706**
2	Impermeable/Hydric Soils	At this time considered part of category 1 above.		
3	Malfunctioning systems considerations	Camp Hero System Others suspected		
4	Water quality – TMDL considerations	- At this time, no additional nitrogen removal needs provided other needs addressed. - Agriculture impact needs to be examined and addressed. - N Loading impact on eelgrass concerns Lake Montauk, 3 Mile Harbor & Accabonac - Phosphorus removal appears to be needed for Fort Pond - Georgica Pond needs Watershed Management Plan		
5	Setback requirements	579		
6	Private water supply considerations	**1,383 properties vulnerable**		
7	Public water supply considerations	Minimum 92 properties requiring treatment		
8	Town & County Code & State Law considerations	**- 112 Properties with SPDES**; - **Large Cesspools** need to be abandoned-number unknown - **Large Septic Systems** need permits – number unknown Could be large.		
9	Cost Considerations	Assumed addressed in other categories. Add'l sites to be identified through public participation		
10	Economic sustainability issues	✓ Montauk Center ✓ Others To be specified		

Table ES-2 Summary of Wastewater Improvement Needs by Need Type & Study Area & Initial Cost Estimates

	1				2	3	4	5	6	7	8	9	10
Need Type	**Bacterial public health considerations - insufficient depth to groundwater**		**Cesspool Upgrades Likely Required**		**Impermeable / Hydric Soils Advisory ONLY**	**Malfunctioning systems**	**Water quality – TMDL**	**Setback req'd**	**Private water supply -LP Separation Issues**	**Public water supply factor**	**Town, County Code & State Law considerations**	**Cost Factor**	**Economic sustainability issues**
Area	Off Site Required	Upgrade Req'd -Off Site May Appropriate	GW at 5 - 8 fbg	GW at 8 - 10 fbg									
Amagansett	14	148	306	129			None at this time - To Be Determined (TBD)	125	44	0			
East Hampton	38	40	115	64		27		190	299	72			
Montauk	36	146	337	247				311	632	11			1
Springs	56	74	191	141				313	340	0			
Wainscott	2	4	13	19				26	68	9			
Total	146	412	962	600		27		965	1,383	92	112	0	1
Properties addressed in other categories		Setback - # 5	173	87									
		Bacterial DGW # 1	151								**GRAND TOTAL**		**4,289**
Net Total			638	513									
Percent of Total	3%	10%	15%	12%	0%	1%	0%	22%	32%	2%	3%	0%	0%

Any planning level costs are "Order of Magnitude" estimates and in accordance with industry standards, cost estimates at this stage of planning should be considered as +50% to - 30% of indicated costs. Conventional engineering solutions could result in significantly higher costs than the above estimates. Additionally the number and types of needs require field verification. A lot by lot Wastewater Plan is the methodology used to refine the estimates.

LAI has created service areas that would collect, treat and dispose / reuse wastewater from areas that have concentrations of needs. Due to scattered needs that would be best addressed with a local/individual solution, the areas may not contain all the parcels with needs and will contain nearby and “along the way” parcels that do not have needs as typical engineering practice is that any property with frontage on a street with a proposed sewer will be connected.

Table ES-3 presents the numbers of need types by Service Areas.

Table ES-3 Numbers of Needs Types in Service Areas

Service Area	Developed Parcels with Wastewater Needs in Service Areas							
	# Parcels	Cesspool <10' DGW	<1/4-Acre, No WS	GW Need[1]	DW Need	Setback	Failing System[2]	WW Need Total[3]
Montauk Shoreline #1	73	32	0	1	0	36	0	47
Montauk Shoreline #2	58	17	0	0	0	24	0	28
Montauk Shoreline #3	74	7	4	4	0	44	0	51
Montauk Center	114	7	25	0	0	3	0	31
Montauk Well #1	201	0	0	0	22	0	0	22
Camp Hero	28	0	0	0	0	0	28	28
Ditch Plains Development	276	60	8	0	0	0	0	66
Ditch Plains Trailer Park	300	0	300	0	0	4	0	300
Fort Pond Shoreline #1	94	5	9	2	0	32	0	39
Fort Pond Shoreline #2	40	2	1	0	0	13	0	14
The Docks	64	47	1	4	0	25	0	53
Nepeague #1	29	28	5	1	0	27	0	29
Nepeague #2	33	26	0	2	0	15	0	27
Springs #1	159	57	5	2	0	33	0	85
Springs #2	303	161	14	1	0	67	0	181
3-Mile Harbor #2	416	56	114	0	0	62	0	184
3-Mile Harbor #1	348	15	1	4	0	84	0	88
3-Mile Harbor #3	237	64	8	0	0	67	0	98
Northwest Harbor #1	26	21	3	0	0	2	0	23
East Hampton #1	264	0	2	0	51	0	0	52
East Hampton #2	339	6	44	0	24	0	0	74
Fort Pond Shoreline #1	98	0	0	1	0	0	0	0
Outside Service Areas	16,587	1,204	1,201	8	14	386	0	2,535
DGW 5' - 8'				522				522
SPDES Permits						112		112
	20,161	**1,815**	**1,745**	**552**	**111**	**1,036**	**28**	**4,689**

[1]Does not include parcels with DGW 5'-8' that likely require upgrades or off-site solutions.

[2]Does not include 112 parcels that have SPDES permits.

[3]Includes Cesspools with DGW <10', 1/4-acre lots w/no water service, DGW <3', SWAP <5 Year Travel Time and <200' setback from water bodies

2 SCENARIO DEVELOPEMENT

Based upon the identified area wastewater needs, LAI has developed three scenario strategies to enable a discussion of the options.

Scenario I - solely estimates a unit cost for each type of need and calculates a total project cost and prioritize the severe bacterial contamination sites as the 1st phase

Scenario II - service areas where concentrations of parcels with one or more wastewater needs exist are estimated. These service areas are general and do not cover all existing needs. For those properties not in a service area, it is assumed that the property needs will be addressed with on-site solutions.

All parcels with frontage on a street where sewers for a neighborhood system are proposed will connect to the proposed system

Scenario III Same as Scenario II with the difference being service being predominately provided for only those properties with identified needs.

The specific needs areas that were identified in the Needs Analysis Report include:

1. Montauk:
    a. Camp Hero
    b. Ditch Plains
    c. The Docks
    d. West Side of Lake Montauk
    e. East Side of Lake Montauk
    f. Montauk Center and Fort Pond

2. Amagansett

3. East Hampton

4. Springs

5. Wainscott

6. Village East Hampton
    a. Georgica Pond
    b. Hook Pond

The Montauk area has the most widespread needs, as both hydric soils, soils with restrictive layers, small lots, low depth to groundwater and abundance of wetlands are common conditions throughout Montauk.

For this executive level analysis, potential treatment and disposal locations were identified within a reasonable distance of the needs areas. Lots with hydric soils were not eliminated for treatment or disposal as site specific testing should be performed. collection system quantities were estimated to build a to serve the needs area and convey flow to the nearest treatment and disposal site. The approximate number of developed properties were estimated to estimate the size of the treatment and disposal sites.

All buildings were assumed to be residential properties with a design flow of 300-gpd. Collection, treatment and disposal costs were estimated for each solution scenario.

2.1 SITE SELECTION AND EVALUATION CRITERIA

Each study area was evaluated for the presence of the following needs requiring offsite solutions:

- Depth to groundwater < 3-ft (GW needs categories 1 and 2)
- Drinking water supply well contributing area (SWAP), <5 year travel time
- Water body setback < 200-ft
- Quarter acre lots with no public water service

It is noted that the cost effective solution to quarter acre lots with no public water service may be a new public water supply.

3 STUDY AREAS

Figure 3-1 presents the subareas within the Montauk study area and the potential treatment / disposal/reuse sites. Table 3-1 presents the potential treatment and disposal site analysis for sites in Montauk.

3.1 MONTAUK

3.1.1 CAMP HERO

The Camp Hero development has an existing collection and disposal system that is outdated and in need of replacement. This area will be developed in greater detail than the other areas in Montauk as general engineering plans of the existing wastewater system exist.

Camp Hero has an existing collection and disposal system that was constructed in 1982 and serves 27 house. The collection system used orangeburg pipe, a substandard material that is no longer used. The collection system has limited remaining useful life and is in need of replacement. In addition, multiple electrical and control system issues exist with the pump stations used to collect and dispose of the areas wastewater. The solution scenario developed by LAI consists of:

- Full replacement of the collection system using a septic tank effluent system
- Addition of a treatment system
- Reuse of the existing leaching pools

For cost estimating purposes, the collection system is assumed to follow the same layout as the existing system, with treatment and disposal occurring at the existing location. As there is no proposed increase in flow and the system will be discharging treated wastewater instead of septic tank effluent as is now the practice, no improvements are proposed for the dispersal system. A disposal system inspection needs to be conducted to confirm that repair / replacement is not needed.

3.1.2 DITCH PLAINS

The Ditch Plains area is a dense development between the southern end of Lake Montauk and the Atlantic Ocean. Part of this area is located over what formerly was a wetland, and hydric soils or soils with restrictive layers are dominant throughout Ditch Plains. It is strongly suspected that malfunctioning systems in Ditch Plains are a major cause of bacterial contamination of Lake Montauk and closure of the south Lake Montauk beach.

LAI located two nearby sites that appear to be feasible locations for treatment and disposal. The first site is located immediately northeast of the trailer park. It is located in an area that is not cleared and is upgradient of wetlands. Sufficient area does exist outside of all applicable setbacks, however the soils types are identified as hydric. Soils testing will be required if this site is to be used. The second site is northwest of the Ditch Plains development, immediately across Highway 27. This is a Town owned lot located at 6 West Lake Drive that appears to have a building and fenced off livestock areas. There is a small pond on the property, and wetlands mapping shows some minor

wetland areas nearby. There is an area east of the pond that has sufficient area outside setback requirements to site a treatment facility. This area is identified as having hydric soils, therefore site testing would be required for disposal. The area west of the building does not have sufficient area for a large WWTF, however

The second potential treatment / disposal site is located to the northwest of the trailer park. This is also a Town owned lot, however it has not been cleared and does have nearby wetlands that may limit its capacity. LAI's analysis of capacity of both sites is summarized in Table 3-1. These sites capacities assume that groundwater mounding does not restrict the site's capacity. Hydrogeological studies need to be performed to determine the actual site capacities.

The Ditch Plains Development contains approximately 265 houses. Using a design flow of 300-gpd per house, the design flow for the development is 80,000-gpd. The collection system quantities for the development are:

The trailer park appears to accommodate approximately 300 trailers. Using a design flow of 300-gpd per trailer, the design flow for the trailer park is 90,000-gpd.

The site capacity analysis demonstrates that Site #1 may accommodate the flow from both the development and the trailer park. Site # 2 can only accommodate the flow from one or the other unless a variance is granted that allows using MSSDS setback distances.

All site disposal capacities have assumed that there are no limitations due to mounding. Hydrogeological studies need to be performed on all potential disposal sites to determine their disposal capacity with mounding considerations.

3.1.3 OTHER MONTAUK SERVICE AREAS

Other potential neighborhood services areas in Montauk include:

- The Docks
- West Site of Lake Montauk
- East Site of Lake Montauk
- Potential Treatment and Disposal Sites – Docks / W. Lake Montauk
- Montauk Center and Fort Pond

Figure 3-1 Montauk Service Areas and Potential Treatment / Disposal/Reuse Sites

Table 3-1 Montauk Area Potential Treatment and Disposal Sites Analysis

Site ID	PID	Owner	Comments	Available Area Outside Setback Considerations (ft^2)			Maximum Treatment Capacity Using All Available Area (gpd)		Soils Based Loading Rate (gpd/ft^2)	Maximum Disposal Capacity Using All Available Area (gpd)
				MSSDS Setbacks	WWTF Setbacks	Leaching Pool Setbacks	MSSDS Setbacks	WWTF Setbacks		
CH-D1	**300015010100031000**	Town	Exsiting disposal system in hydric / restrictive layer soils. Potential new location restrictive layer soils	25,200	0	43,200	84,000	0	0.4	17,200
DP-D1	**300032000600010000**	Town/County Dep. Parks & Rec.	Site not cleared. Hydric soils indicated, site testing needed to confirm HLR.	131,500	82,750	164,000	438,000	275,000	0.4	65,600
DP-D2	**300032000100015000**	Town	East site has hydric soils, west site restrictive layer	63,225	15,600	87,475	210,000	52,000	0.4	34,900
Dock-D1	**300009000100008000**	Town	Mix of hydric soils and restrictive layer soils, upgradient from wetland	108,500	49,000	144,375	361,000	163,000	0.4	57,700
Dock-D2	**300007000100003000**	County	Good Soils, not cleared, northwest portion of county airport parcel	108,000	48,000	148,000	360,000	160,000	1.0	148,000
LME-D1	**300021000100001000**	County	Restrictive layer soils	181,250	162,500	193,750	604,000	541,000	0.4	77,500
GC-D1	**300019000900005000**	County	Mix of hydric soils, restrictive layer and good soils	***Reuse/disposal only***		1,320,000	n/a	n/a	1.0	1,320,000
FP-D1	**300052000100008000**	State	Good soils	31,625	15,000	45,375	105,000	50,000	1.0	45,300
FP-D2			Good Soils	***Ballfield - reuse/disposal only.***		40,000	n/a	n/a	1.0	40,000
FP-D3	**300048000400043000**	Private	Restrictive layer soils	***Ballfield - reuse/disposal only.***		50,000	n/a	n/a	0.4	20,000
		Total		**624,100**	**372,850**	**782,975**	**2,078,000**	**1,241,000**		**1,809,000**

SCHDS System Classification	Flow Range (gpd)	Property Line Setback	Habitable Building Setback	Surface Water / Wetland
Modified Subsurface Sewage Disposal System (MSSDS)	**1,000 - 15,000**	**75**	**75**	**100-ft**
Wastewater Treatment Facility (WWTF)	**>15,000**	**150**	**200**	**100-ft**

3.2 AMAGANSETT

Figure 3-2 presents the potential Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites. Table 3-2 presents the potential sites for treatment and disposal in East Hampton for non-Montauk areas.

Figure 3-2 Amagansett Service Areas and Potential Treatment / Disposal/Reuse Sites

3.3 EAST HAMPTON

Figures 3-3 and 3-4 presents the potential East Hampton North and South, respectively, Service Areas and Potential Treatment / Disposal/Reuse Sites.

3.4 SPRINGS

Figure 3-5 presents the potential Springs Service Areas and Potential Treatment / Disposal / Reuse Sites.

Table 3-2 Non-Montauk Study Areas Treatment and Disposal Sites Analysis

Site ID	PID	Total Site Area (ft^2)	Owner	Comments	Available Area Outside Setback Considerations (ft^2)			Maximum Treatment Capacity Using All Available Area (gpd)		Soils Based Loading Rate (gpd/ft^2)	Maximum Disposal Capacity Using All Available Area (gpd)
					MSSDS Setbacks	WWTF Setbacks	Leaching Pool Setbacks	MSSDS Setbacks	WWTF Setbacks		
SP-D1	**300080000500004000**	1,549,800	Town	~50% of soils are good, 50% have restrictive layer. Lot not cleared, no nearby wetlands	701,250	450,000	893,750	2,337,000	1,500,000	0.7	625,600
SP-D2	**300061000400004000**	1,147,000	Town	Lot ~70% cleared. Restrictive layer	72,000	1,365,000	1,600,000	240,000	4,550,000	0.4	640,000
SP-D3	**300103000100005000**	568,000	Town	~50% of soils are good, 50% have restrictive layer. Lot not cleared, no nearby wetlands	355,750	285,000	461,875	1,185,000	950,000	0.7	323,300
SP-D4	**300080000600024000**	1,013,500	Town	Good soils, lot not cleared, no nearby wetlands.	688,375	580,000	850,938	2,294,000	1,933,000	1.0	850,900
3MH-D2	**300055000100029000, 300055000400027000**	780,700	Town	Good soils, lot not cleared, no nearby wetlands.	93,500	88,000	99,000	311,000	293,000	1.0	99,000
3MH-D1	**300119000200003000**	2,524,000	Town	Good soils, lot not cleared, no nearby wetlands.	1,981,000	1,800,000	2,252,500	6,603,000	6,000,000	1.0	2,252,500
NWH-D1	**300032000100015000**	135,000	County	Good soils, lot not cleared, no nearby wetlands.	93,750	80,000	114,375	312,000	266,000	1.0	114,300
EHW-D1	**300193000300011000**	297,100	Town	Good soils, lot cleared, no nearby wetlands.	115,525	55,000	206,313	385,000	183,000	1.0	206,300
EHW-D2	**300163000300006000**	380,000	Town	Good soils, lot not cleared, no nearby wetlands.	140,000	60,000	260,000	466,000	200,000	1.0	260,000
GP-D1	**300184000100002000**	2,482,000	Town	Good soils, lot not cleared, no nearby wetlands.	1,775,500	1,540,000	2,128,750	5,918,000	5,133,000	1.0	2,128,700
				Total	**6,016,650**	**6,303,000**	**8,867,500**	**20,051,000**	**21,008,000**		**7,500,600**

SCHDS System Classification	Flow Range (gpd)	Property Line Setback	Habitable Building Setback	Surface Water / Wetland
Modified Subsurface Sewage Disposal System (MSSDS)	**1,000 - 15,000**	**75**	**75**	**100-ft**
Wastewater Treatment Facility (WWTF)	**>15,000**	**150**	**200**	**100-ft**

Figure 3-3 East Hampton NorthService Areas and Potential Treatment / Disposal/Reuse Sites

Figure 3-4 East Hampton South Service Areas and Potential Treatment / Discharge Sites

Figure 3-5 SpringsService Areas and Potential Treatment / Discharge Sites

3.5 WAINSCOTT & VILLAGE EAST HAMPTON

Figure 3-6 presents the potential Wainscott & Village of East Hampton Service Areas and Potential Treatment / Disposal / Reuse Sites.

Figure 3-6 Wainscott & Village of East Hampton Service Areas and Potential Treatment / Discharge Sites

4 ZONING ISSUES

For commercial areas, the following Town Code issues are relevant for the development of moderate-income apartments as part of improved wastewater services.

Chapter 255: ZONING
§ 255-2-45 Number of uses.

(4) Apartments within commercial structures shall not be considered an additional use on any lot or property for purposes of this limitation, except within the Limited Business Overlay District.

§ 255-5-50

APARTMENTS WITHIN COMMERCIAL STRUCTURES
(1) All dwelling units created shall be for the use of and available to moderate-income families, who are certified as such on an annual basis by the Office of Housing and Community Development, or other certifying agency as determined by the Town of East Hampton. Owner shall submit a copy of the lease and supporting documentation to the Office of Housing and Development on an annual basis and prior to renting the apartment to a new occupant. The Office of Housing and Community Development shall collect an application fee for each annual renewal and for each new occupant, as set from time to time by the Town Board, and shall certify that the proposed tenant(s), any other occupant(s), and the rental agreement meet the income and rental eligibility requirements set forth in this chapter.

3) The habitable floor area of the apartment shall be at least 450 square feet, but in no case more than 1,200 square feet. The apartment shall be located either on the first or second floor of the building, but shall not be located in a basement or cellar, and the apartment shall contain all services for safe and convenient habitation, meeting the New York State Uniform Fire Prevention and Building Code and the Sanitary Code.

APPENDIX A: GEESE MANAGEMENT TECHNIQUES

See Geese Peace http://www.geesepeace.com/

http://www.lakeaccess.org/urbangeese.html

lake . access
an empact metro project — seeing below the surface

Lake Data | Understanding Lakes | Current Issues | Land Use/GIS | History | Lawn Fertilizer Study

Urban Geese

Increasing urban and suburban development in the U.S. has resulted in the creation of ideal goose habitat conditions- park like open areas with short grass adjacent to small bodies of water. These habitat conditions have in turn enticed rapidly growing numbers of locally breeding geese to live year round on golf courses, parks, airports and other public and private property.

In recent years, biologists have documented tremendous increases in populations of Canada geese that nest predominantly within the United States. Recent surveys suggest that the Nation's resident breeding population now exceeds 1 million birds in both the Atlantic and the Mississippi Flyways and is continuing to increase. In the Mississippi Flyway alone, the 1998 spring Canada goose population estimate exceeded 1.1 million birds, an increase of 21 percent from 1997. (US Fish and Wildlife Service data)

Fast Facts About Giant Canada Geese

- Protected by the Federal Migratory Bird Treaty Act
- Feed by grazing on succulent grasses and small plants
- Weigh 12 pounds or more
- Able to reproduce at 2-3 years of age
- Eggs hatch in 28 days with broods averaging 4 goslings
- Return to the same nesting and feeding areas each year

Common Goose Problems:

- In parks and other open areas near water, large goose flocks denude lawns of vegetation and create an obnoxious mess with their droppings and feather litter.
- Goose droppings in heavy concentrations can over fertilize lawns, contribute to excessive algae growth in lakes that can result in fish kills, and potentially contaminate municipal water supplies.
- Geese have also been involved in a growing number of aircraft strikes at airports across the country, resulting in dangerous takeoff and landing conditions and costly repairs.
- The main problem is having all those **goose droppings on your lawn**!

But Do Geese Really Harm Your Lake?

Some researchers think they do and some think they don't. In any case the geese probably are certainly contributing nutrients that help fuel excessive growths of algae and macrophytes.

The scoop on goose poop:

- The average Canada goose dropping has a dry weight of 1.2 g (~ 0.04 ounces)
- Average droppings per day ~ 82 g/day (dry weight), that's 2.6 ounces/day (about 1/3 cup)
- Each dropping contains 76 % carbon, 4.4 % nitrogen, and 1.3 % phosphorus
- Geese can defecate as many as 92 times a day (numbers reported range from 28-92)
- What goes into a goose generally comes from within the watershed and what comes out also stays in the watershed (at least for resident Giant Canada geese).

(From Sherer, N.M. et al 1995. Phosphorus loadings of an urban lake by bird droppings. Lake and Reservoir Mgmt. 11(4): 317-327.)

Homeowner's Tips for Dealing with Urban Geese

It is that time again when geese will begin searching for nesting sites. If geese are not welcome on your property, here are some tips you can use to discourage their activities.

Prevention is the Key!

Make your property less attractive to geese

- Don't feed the geese
- Leave a 20-30 foot barrier strip of tall grass (6 inches or more) adjacent to lakeshore
- Plant dense hedges or erect fencing near lakeshore areas to reduce access to your lawn
- Check your property frequently for nest building activity in the spring
- Remove any nesting materials found
- Harass geese that frequent your property
- Be as persistent as the geese
- Some folks have tried stringing a wire or string about 10-12 inches high along their shoreline. The geese seem to avoid crossing the string and move on.

The Legalities of Goose Control*
*(*Under federal law, state laws may be more restrictive, contact your state wildlife agency for more information)*

What you **CAN** do

- Harass the birds prior to nesting using noisemakers, dogs, or things like brooms or rakes
- Remove accumulated nesting material (PRIOR TO NESTING)
- Erect fences and barriers to keep geese off your property

What you **CANNOT** do
(unless in possession of a federal permit)

- Injure, capture or kill geese *(except under applicable hunting regulations)*
- Disturb geese on an established nest
- Collect or destroy goose eggs

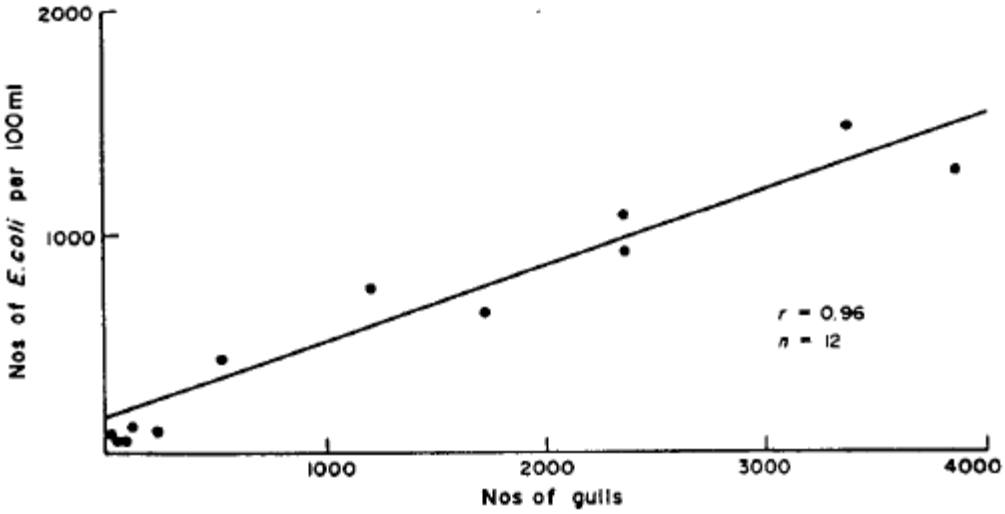


Figure 1 Correlation of mean monthly numbers of gulls roosting on a reservoir with mean monthly numbers of *E.coli* per 100 mL from August 1979 to July 1980 (from Benton et al. 1983).

Valiela et al. (1991) studied the fecal coliform loadings and stocks from various sources in Buttermilk Bay, Massachusetts. Major sources of fecal coliform to the bay were waterfowl (ducks, geese, and swans), surface runoff, groundwater, and streams. From January to March, waterfowl contributed the most fecal coliform (an estimated fecal coliform level of 1.8 x 1011 day-1; or 82% of total loading), but from July to September, they contributed comparatively little (5.7 x 109 day-1; or 7%) (see Figure 2). Though some suggest eliminating the waterfowl as a means of reducing fecal coliform loading, the authors refute this idea. Firstly - eliminating one source still leaves several other sources of contamination (runoff, streams, etc.). Secondly - fecal coliform loading from the birds is highest in the winter (when roosting time is increased), whereas beach closures due to high levels of coliforms occur in the summer, when birds are sparse. They concluded that eliminating birds would not be an efficient means of reducing elevated fecal coliforms leading to beach closures.

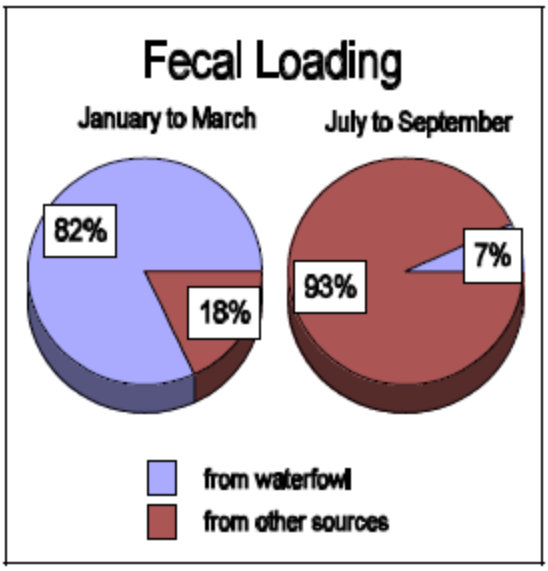


Figure 2 - Fecal coliform loadings in Buttermilk Bay, Massachusetts, during two time periods from waterfowl or other sources (from Valiela et al. 1991).

WORKING DRAFT

Task Report

Wastewater Management Alternatives Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

November 27, 2013

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 WASTEWATER CHARACTERIZATION 4
1.1 Wastewater Quality 4
1.2 Wastewater Nitrogen Sources 9
1.3 Wastewater Phosphorus Sources 9
2 CATEGORIES OF WASTEWATER MANAGEMENT 10
2.1 Individual and On-Site Technology Options 10
2.2 Cluster System Options 10
2.2.1 Pros and Cons of Using Cluster Systems 11
2.3 Treatment Systems Nitrogen & Phosphorus Removal Mechanisms 11
3 TREATMENT SYSTEMS TECHNOLOGIES - INDIVIDUAL AND CLUSTER 15
3.1 Treatment Options 15
3.1.1 Septic Tanks 15
3.1.2 Fixed Film Systems 17
3.1.3 Suspended Growth – Activated Sludge (AS) Systems 19
3.1.4 Integrated Fixed Film and Suspended Growth – Activated Sludge (IFAS) Systems 21
3.1.5 Active Carbon Feed Systems 21
3.1.6 Passive Carbon Feed Systems 22
3.1.7 Net Nitrogen Removal Performance 23
3.1.8 Life Cycle Costs of Individual Systems 23
3.1.9 Approved Wastewater Treatment Systems in Suffolk County 24
3.1.10 Source Separation - Urine Diverting Toilets and Waterless Urinals 25
3.2 Disinfection Options 25
3.2.1 Ozone 26
3.2.2 Chlorine 26
3.2.3 Ultraviolet Disinfection (UV) 26
3.3 Dispersal Options 27
3.3.1 Leaching Pool System 27
2.5.2 Subsurface Drainfields 28
3.3.3 Mound Systems 28
3.3.4 Drip Irrigation for Landscape Irrigation and Challenging Disposal Sites 30
3.4 Reuse Alternatives 31
3.5 Treatment Following Dispersal 31
3.5.1 Nitrogen Removal 31
3.5.1 Phosphorus Removal 32
3.5.2 Permeable Reactive Barrier 33
4 COLLECTION SYSTEMS 35
4.1 Collection System Alternatives 35
4.2 Conventional Gravity Systems 35
4.3 Grinder Pump (GP) Pressure Sewers 35
4.4 Septic Tank Effluent by Gravity (STEG) 37
4.5 Septic Tank Effluent Pressure (STEP) Systems 37
4.6 Vacuum Collection System 38
4.7 Combination Systems 40
5 LIFE CYCLE COSTS OF CLUSTER SYSTEMS 42

WORKING DRAFT

6 FINDINGS 44
REFERENCES..... 45

List of Figures

Figure 1-1 Raw Wastewater BOD_5 by Source 4
Figure 1-2 STE BOD_5 by Source 5
Figure 1-3 Raw Wastewater Total Nitrogen.....6
Figure 1-4 STE Total Nitrogen by Source.....6
Figure 1-5 Total Phosphorus in Single-Source Domestic Raw Wastewater and STE 7
Figure 1-6 STE Total Phosphorus by Source 8
Figure 2-1 Onsite Wastewater Management Systems Options.....12
12
Figure 2-2 Range of Wastewater Collection, Treatment and Reuse / Disposal Options.13
Figure 3-1 Two-Compartment Septic Tank.....16
Figure 3-2 Placement of Effluent Filter 17
Figure 3-3 Typical Fixed Film Process Flow Diagram.....18
Figure 3-4 General Activated Sludge Process Flow Diagram 19
Figure 3-5 Typical Leaching Pool System 29
Figure 3-6 Typical Mound System.....29
Figure 3-7 Typical Drip Irrigation System.....31
Figure 3-8 Permeable Reactive Barrier Cross-Section 34
Figure 4-1 Alternative Wastewater Conveyance Systems 36
Figure 4-2 Grinder Pump System.....36
Figure 4-3 Septic Tank Effluent System 38
Figure 4-4 Vacuum Collection System 39

List of Tables

Table 1-1 Statistics for Raw Wastewater and STE BOD_5 by Source (in mg/L).....4
Table 1-2 Statistics for Raw Wastewater and STE Nitrogen by Source (in mg-N/L) 5
Table 1-3 Statistics for Raw Wastewater & STE Total Phosphorus by Source, mg/L.....7
Table 1-4 Statistics for STE Flow Rate by Source (in gpd) 7
Table 1-5 Median and Normalized Values for Major Constituents by Source 8
Table 1-6 Wastewater Nitrogen Contributions by Source 9
Table 3-1 Nitrogen Removal Performance of Individual Treatment System Types 23
Table 3-2 Life Cycle Costs for Individual Treatment System Types $/lb N removed 24
Table 3-3 Approved Treatment Systems in Suffolk County.....24
Table 3-4 Setback Requirements for SCDHS System Categories.....25
Table 5-1 Cluster System Life Cycle Costs 43

WORKING DRAFT

1 WASTEWATER CHARACTERIZATION

1.1 WASTEWATER QUALITY

Wastewater quality has become stronger during the past 20 years due to water conservation and the use of water conserving devices. According to the Water Environment Research Federation (WERF) 2007 Report Influent Characteristics of the Modern Waste Stream from Single Sources: Literature Review", Tables 1-1 through 1-3 present statistics for raw and septic tank effluent (STE) for BOD_5, Total Nitrogen (TN) series and Total Phosphorus (TP), respectively. Figures 1-1 and 1-2 present frequency distribution of BOD5 data, Figures 1-3 and 1-4 for nitrogen and Figures 1-5 and 1-6 for phosphorus – all Tables and Figures in this subsection are from the 2007 WERF Report.

Table 1-1 Statistics for Raw Wastewater and STE BOD_5 by Source (in mg/L)

	Median		Average		Standard Deviation		Range		Number of Reported Values	
	Raw	STE	Raw	STE	Raw	STE	Raw	STE	Raw	STE
Single Source Domestic	343	156	359	180	220	104	30-1,147	38-861	29	94
Multiple Source Domestic	260	184	273	169	104	44.0	144-580	63-229	13	16
Food	-	561	-	620	-	443	-	74-2,820	3	42
Non-Medical	616	244	1,353	267	1,360	261	171-3,110	28-1,537	6	57
Medical	-	197	-	224	-	112	-	104-431	-	12

- value not reported or calculated for 3 or less reported data values.

Figure 1-1 Raw Wastewater BOD_5 by Source

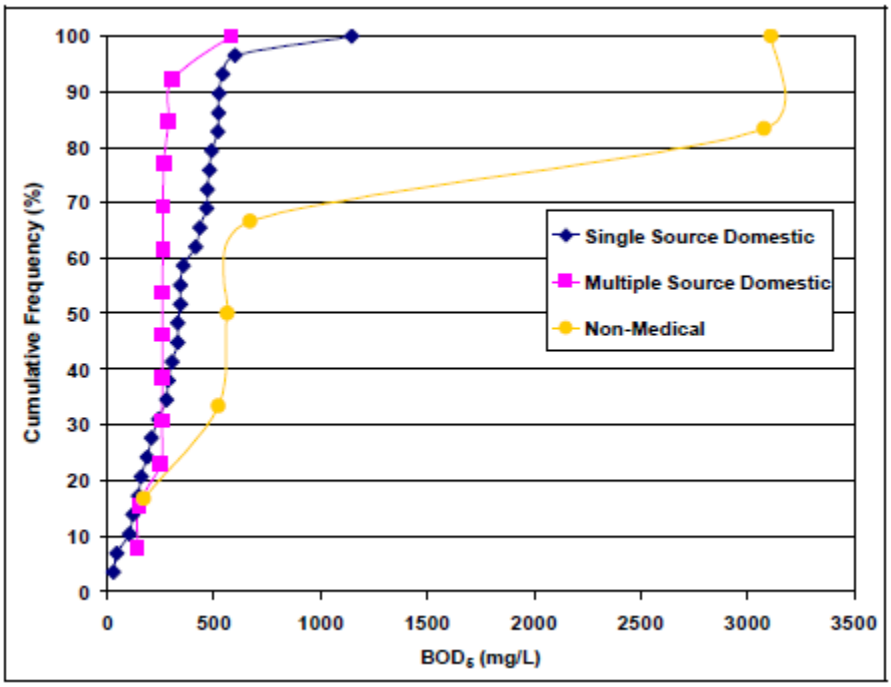


Figure 1-2 STE BOD_5 by Source

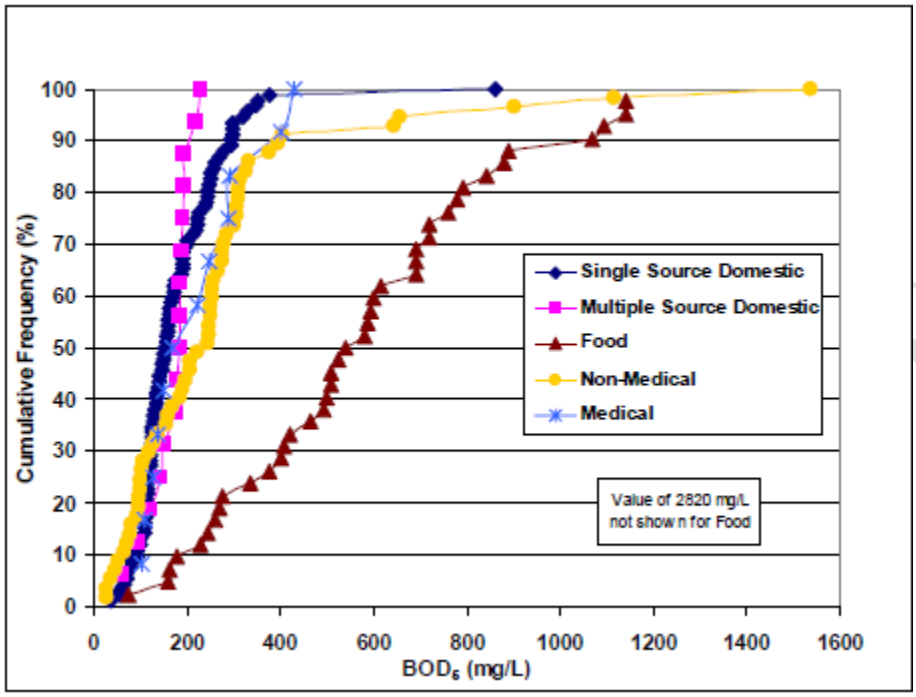


Table 1-2 Statistics for Raw Wastewater and STE Nitrogen by Source (in mg-N/L)

		Median		Average		Standard Deviation		Range		Number of Reported Values	
		Raw	STE	Raw	STE	Raw	STE	Raw	STE	Raw	STE
Total nitrogen	Single-Source Domestic	63	55.4	87.0	57.7	45.2	17.1	44.1-189	26-124	11	43
	Multiple-Source Domestic	-	46	-	49.3	-	21.7	-	29.8-75.3	2	4
	Food	-	86.5	-	75.0	-	36.5	-	24.2-103	-	4
	Non-Medical	-	84.0	-	83.8	-	33.0	-	7-192	1	41
	Medical	-	45.6	-	55.8	-	30.2	-	28.3-125	-	12
Kjeldahl nitrogen	Single-Source Domestic	62	52	78.0	54.2	40.1	14.8	43-123.9	27-94.4	5	25
	Multiple-Source Domestic	-	-	-	-	-	-	-	-	2	2
	Food	-	71	-	65.6	-	17.3	-	30-82	-	7
	Non-Medical	-	100	-	233	-	257	-	30-830	3	26
	Medical	-	-	-	-	-	-	-	-	-	-
Ammonia nitrogen	Single-Source Domestic	47.5	36.1	53.4	37.2	37.7	14.8	8.8-154	0-96.2	12	80
	Multiple-Source Domestic	-	30	-	34.2	-	13.68	-	20.1-55	-	7
	Food	-	-	-	-	-	-	-	-	-	-
	Non-Medical	178	83	289	186	345	229	32.2-767	19.8-890	4	37
	Medical	-	-	-	-	-	-	-	-	-	-
Nitrate nitrogen	Single-Source Domestic	0.16	0.20	0.49	0.82	0.56	1.9	0.05-1.1	0-10.3	5	45
	Multiple-Source Domestic	-	-	-	-	-	-	-	-	-	3
	Food	-	-	-	-	-	-	-	-	-	-
	Non-Medical	-	0.23	-	0.45	-	0.53	-	0-1.4	1	7
	Medical	-	-	-	-	-	-	-	-	-	-

- value not reported or calculated for 3 or less reported data values.

Figure 1-3 Raw Wastewater Total Nitrogen

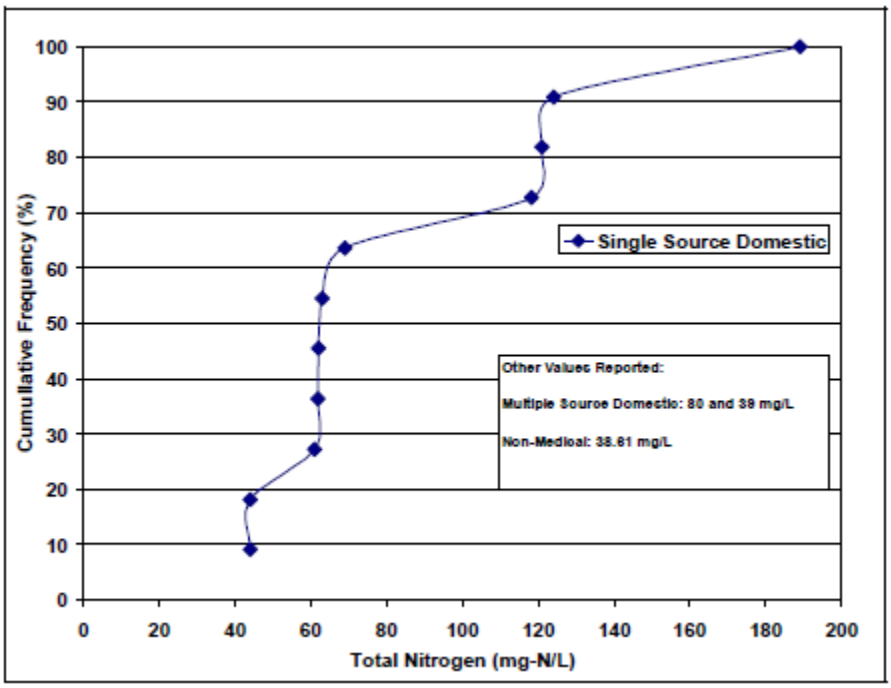


Figure 1-4 STE Total Nitrogen by Source

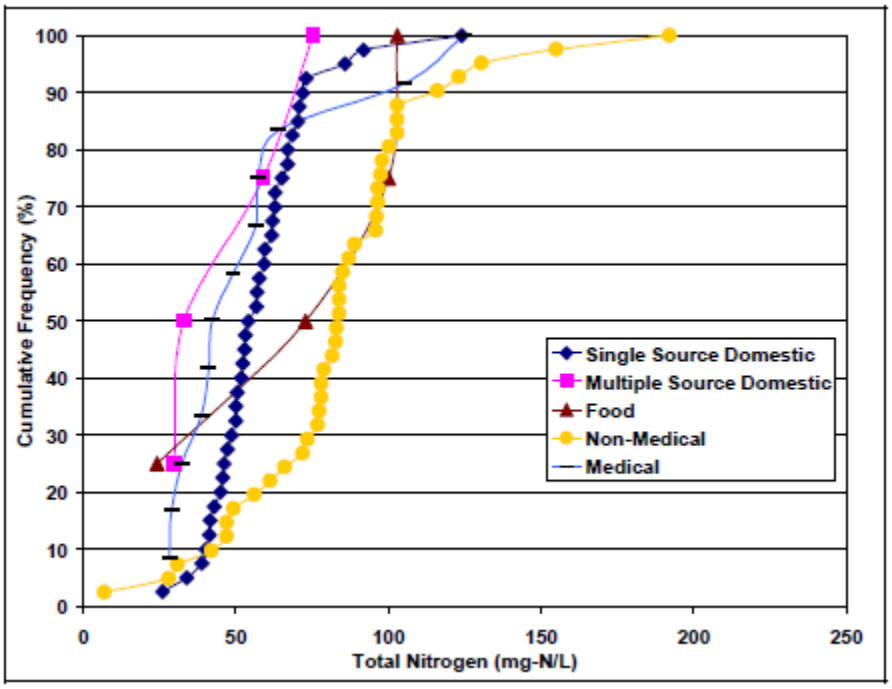


Table 1-3 Statistics for Raw Wastewater & STE Total Phosphorus by Source, mg/L

	Median		Average		Standard Deviation		Range		Number of Reported Values	
	Raw	STE	Raw	STE	Raw	STE	Raw	STE	Raw	STE
Single-Domestic	19	10	19.1	12.2	4.15	7.86	13.05-25.8	3-39.5	8	49
Multiple-Source Domestic	-	6.9	-	7.03	-	1.9	-	5-10	3	6
Food	-	17	-	17.9	-	6.85	-	7-28	-	4
Non-Medical	-	14	-	21.9	-	23.2	-	4.1-100	1	42
Medical	-	-	-	-	-	-	-	-	-	-

- value not reported or calculated for 3 or less reported data values.

Figure 1-5 Total Phosphorus in Single-Source Domestic Raw Wastewater and STE

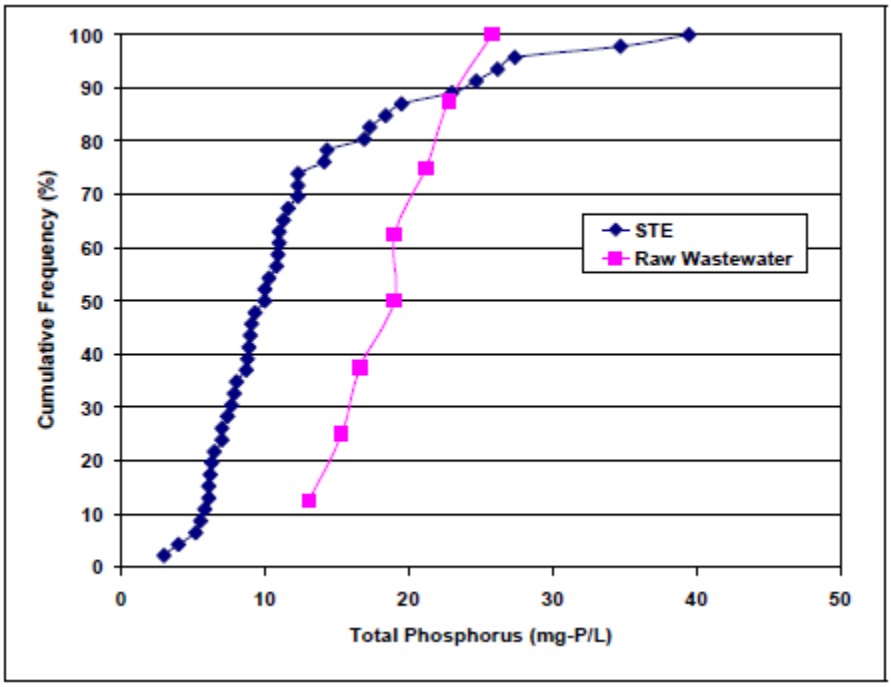


Table 1-4 Statistics for STE Flow Rate by Source (in gpd)

	Median	Average	Standard Deviation	Range	Number of Reported Values
Single-Source Domestic	161	184	84.8	62.9-388	30
Multiple-Source Domestic	-	-	-	-	3
Food	353	814	1,079	73.2-3,791	12
Non-Medical	234	1,554	3,056	30-14,100	26
Medical	-	-	-	-	-

- value not reported or calculated for 3 or less reported data values.

Figure 1-6 STE Total Phosphorus by Source

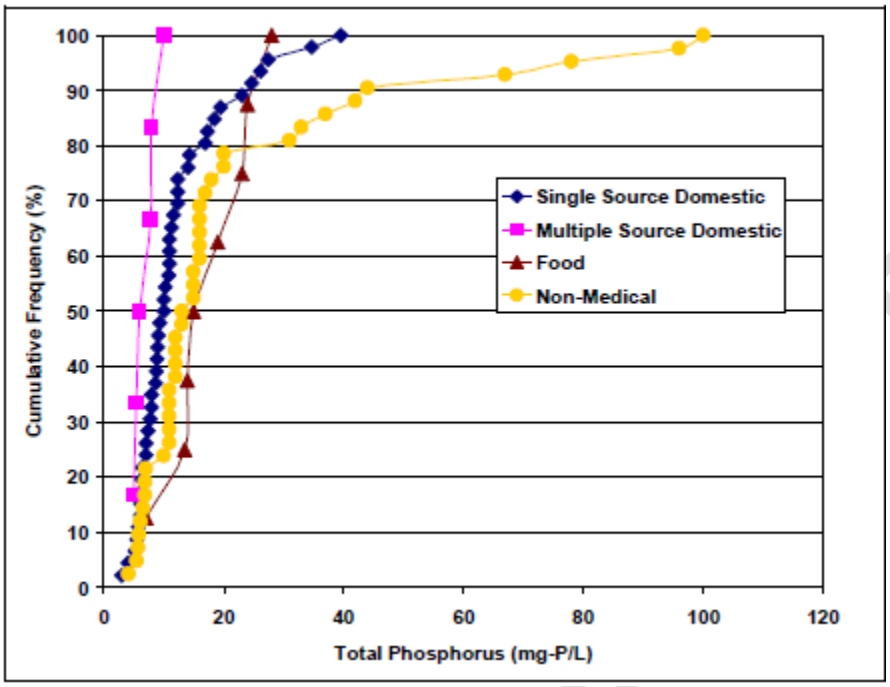


Table 1-5 Median and Normalized Values for Major Constituents by Source

Source	BOD_5 (mg/L)		TSS (mg/L)		Total nitrogen (mg-N/L)		Total phosphorus (mg-P/L)	
	Median Value	Normalized Value	Median Value	Normalized Value	Median Value	Normalized Value	Median Value	Normalized Value
Raw Single-Source Domestic	343	1.27	293	2.41	63.0	1.05	19.0	1.58
Raw Municipal Wastewater	210	0.78	237	1.95	38.9	0.65	7.1	0.59
STE Single-Source Domestic	156	0.57	58	0.48	55.4	0.92	10.0	0.83
STE Multiple-Source Domestic	184	0.68	62	0.51	46.0	0.77	6.9	0.58
STE Food	561	2.07	110	0.91	86.5	1.44	17.0	1.42
STE Non-medical	244	0.91	42	0.34	84.0	1.40	12.0	1.00
STE Medical	197	0.73	48	0.39	45.6	0.76	-	-

- value not reported.

In summary, this Report will use the STE values of TN of 65 mg/l and TP of 6 mg/l.

1.2 WASTEWATER NITROGEN SOURCES

A number of techniques are used to estimate total wastewater nitrogen and its components. The range of assumed average nitrogen loads generated from single family dwellings varies depending on the source referenced. Factors used by regulatory agencies include:

State of Maryland = 30 lbs./yr / dwelling unit
Suffolk County, NY = 10 lbs./yr per person = 4,536. grams/yr = 12.4 grams/day

According to Valiela et al, 1997, typical total N excretion rates per capita is 4.82 kg N/ year - equal to 10.6 lb N/yr-capita. According to the US EPA Onsite Wastewater Treatment Systems Manual (2002), nitrogen contributions by source are presented on Table 1-6.

Table 1-6 Wastewater Nitrogen Contributions by Source

Residential Wastewater Nitrogen Contribution by Source (USEPA, 2002)			
Source	**TN (grams / capita / day)**	**TN (lbs./ capita / year)**	**% of Total**
Garbage Disposal	**0.6**	**0.5**	**5%**
Toilet	**8.7**	**7.0**	**78%**
Bathing, sinks, appliances	**1.9**	**1.5**	**17%**
Approximate Total	**11.2**	**9.0**	**100%**

Numerous researchers (WERF, 2011 and USEPA, 2010) have estimated/determined that urine represents 80 – 85% of wastewater nitrogen. According to references cited by WERF (2011), an adult produces 0.8 – 1.5 liters/day of urine and a child produces approximately half this amount. Furthermore, researchers have determined that 4 kg of N/person per year (10.96 grams/day) is associated with urine.

1.3 WASTEWATER PHOSPHORUS SOURCES

The average person excretes between 2-4 g/day of phosphorus (Etner, et al, 2005, Fewless et al, 2011), with about 50% in urine.

WORKING DRAFT

2 CATEGORIES OF WASTEWATER MANAGEMENT

The categories of wastewater management consist of:

- **Individual,** single family and commercial systems
- **On-site**, serving a commercial development and/or a number of residential dwellings on one lot. Wastewater flows in this category are > 1,000 gpd and require a SPDES permit.
- **Cluster / neighborhood systems**, serving localized areas of development of 2 or more wastewater generating properties. Wastewater flows in this category are > 1,000 gpd, require a collection system and a SPDES permit.
- **Centralized systems** – which are large scale cluster systems and are not applicable to East Hampton

2.1 INDIVIDUAL AND ON-SITE TECHNOLOGY OPTIONS

Figure 2-1 presents the range of technology options available for individual and onsite systems. Treatment, disinfection, and disposal / reuse options that may be applicable to East Hampton are discussed further in the following sections. Technologies are classified as standard or alternative. Suffolk County Department of Health Services (SCDHS) only allows conventional septic tanks and leaching pools and alternate drainfields for single family residences and commercial flows < 1,000 gpd.

2.2 CLUSTER – NEIGHBORHOOD SYSTEM OPTIONS

Figure 2-2 illustrates the range of wastewater generation, collection, treatment and disposal / reuse alternatives available for neighborhood - cluster applications.

Cluster systems have the advantage of being localized, minimizing piping, pump stations and other force main / transmission system costs. In areas where sewer extensions are not cost-effective, multiple small clusters serving all but the most isolated lots may prove to be the most cost effective option. This flexibility eliminates collection system pipes that traverse sparsely or unpopulated areas within the service area. By using multiple, small clusters, high density streets within otherwise low density areas may be cost-effectively served. The disadvantage to this approach, when compared to centralized alternatives, is having multiple facilities to manage. However the internet and improved electronics has simplified this issue. In addition, a centralized system is not feasible for East Hampton and therefore will not be considered as a viable alternative.

Cluster system alternatives require that suitable treatment and, in particular, dispersal/reuse sites exist. Cluster systems can be sited underground and under paved areas if sufficient open space is not available. This flexibility increases the number of candidate treatment sites. Dispersal can be done at multiple locations, if needed.

The general categories of treatment and disposal options for cluster systems are the same as for individual systems. The primary difference from a treatment perspective is that the cluster systems will have part time to full time operations staff that can closely monitor the processes. For this reason, the secondary systems with nutrient removal are all assumed to be capable of achieving the highest level of treatment.

WORKING DRAFT

2.2.1 PROS AND CONS OF USING CLUSTER SYSTEMS

The advantages of using cluster systems include the following:

- Allows targeted sewering and minimizes undesired growth stimulation associated with large, centralized sewers
- Able to achieve advanced tertiary levels of treatment with the same reliability as centralized treatment facilities
- Eliminates long runs of sewer to connect isolated areas of development
- Regular O&M and sampling is cost-effective

The challenges associated with using cluster systems include the following:

- Multiple facilities to manage
- Cost-effectiveness declines with lower density - low density areas can become expensive to cluster compared to onsite options
- Subject to availability of suitable treatment and disposal locations
- Cost / logistics of acquiring treatment and dispersal sites may be challenging

2.3 TREATMENT SYSTEMS NITROGEN & PHOSPHORUS REMOVAL MECHANISMS

Figures 2-1 and 2-2 present the range of onsite and cluster wastewater treatment and disposal alternatives, respectively. Bacteria and virus removal will naturally occur in a properly designed disposal system where a minimum 2-ft of unsaturated soils is maintained between the seasonal high water level and the bottom of the disposal system. The primary purpose of a treatment system, defined as unit processes in addition to or in place of a standard septic tank and leaching pool, is for SCDHS and NYSDEC code and, as needed, TMDL compliance.

Nitrogen removal from wastewater is a two-stage biological process. During the first stage, ammonification, organic nitrogen is converted into ammonia (NH_3), and nitrification whereby ammonia is converted into nitrite (NO_2) and then nitrate-N (NO_3). Ammonification and nitrification occur in aerobic environments where organic matter, alkalinity and a neutral pH (6.0-8.5) exist for the appropriate ammonification, (*Bacillus*, *Clostridium*, *Proteus*, *Pseudomonas*, and *Streptomyces* - called ammonifying bacteria) and nitrification bacteria, *Nitrosomonas and Nitrobacter,* to grow.

The reactions for these biological processes are described as follows:

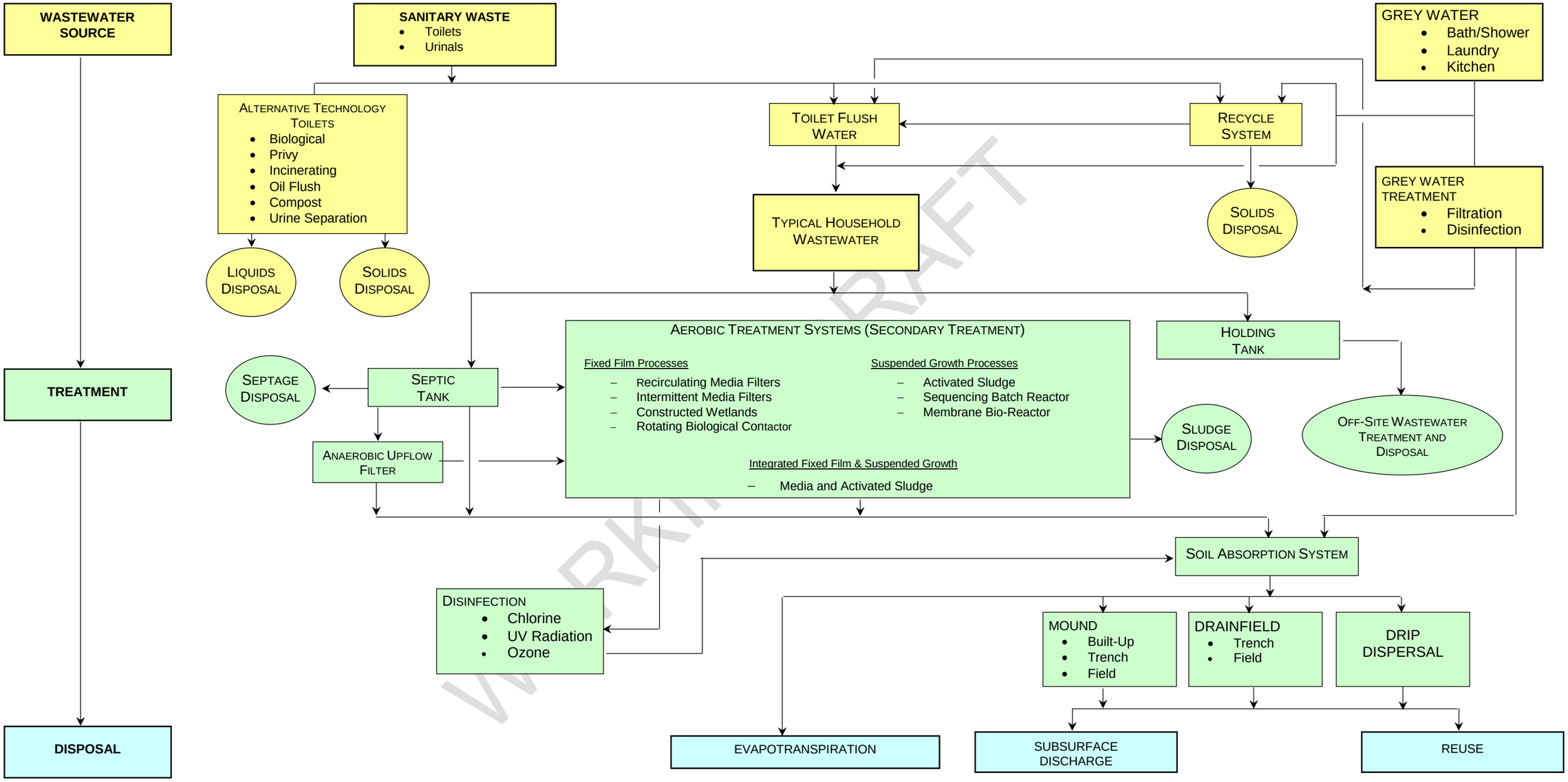
Organic Nitrogen $\rightarrow$ NH_4^+ by ammonifying bacteria

$NH_4^+ + 1.5\ O_2 \rightarrow 2\ H^+ + H_2O + NO_2^-$ *by Nitrosomonas bacteria*

$NO_2^- + 0.5\ O_2 \rightarrow NO_3^-$ *by Nitrobacter bacteria*

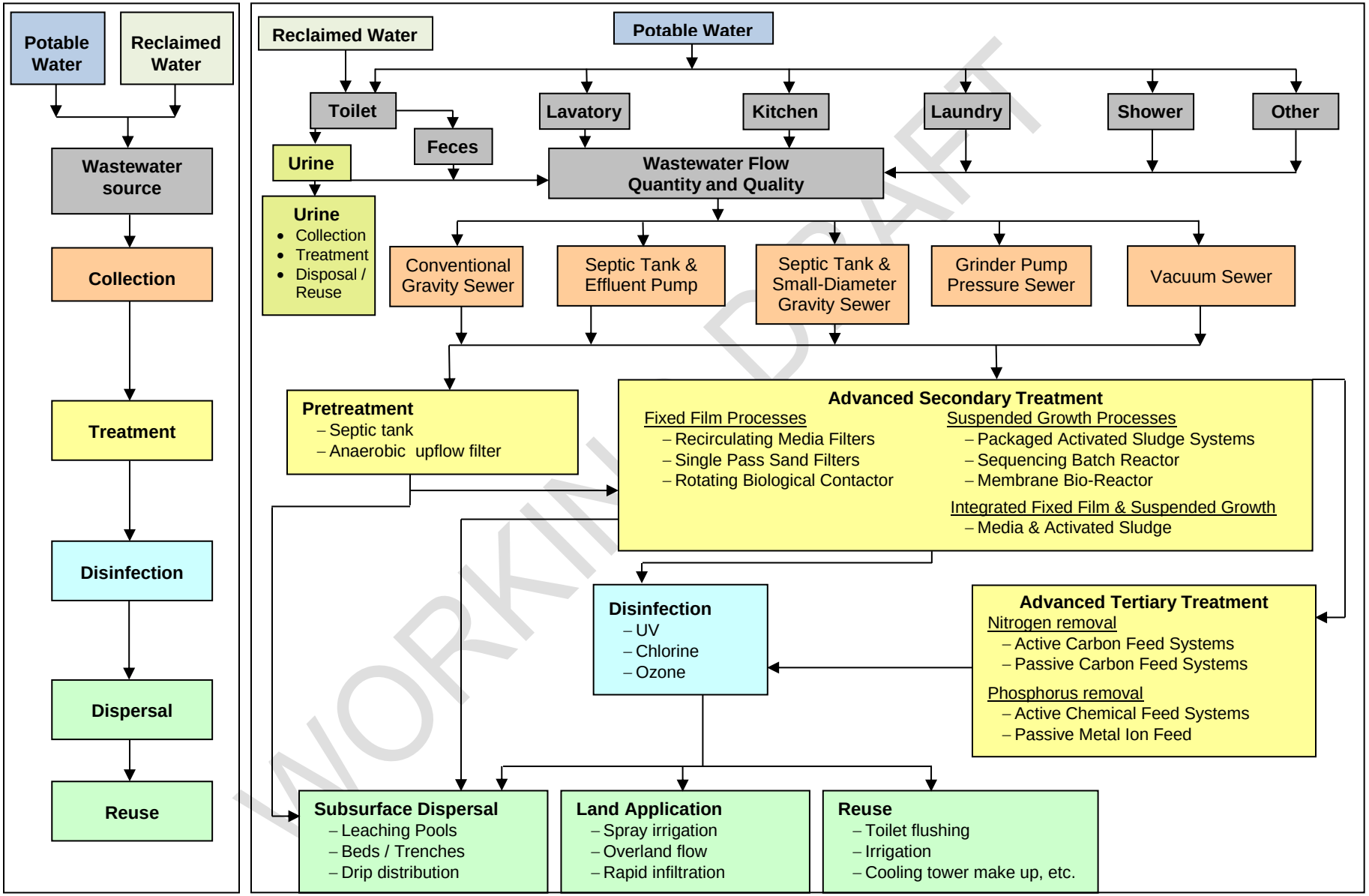
WORKING DRAFT

Figure 2-1 Onsite Wastewater Management Systems Options



WORKING DRAFT

Figure 2-2 Range of Wastewater Collection, Treatment and Reuse / Disposal Options



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Ammonification and nitrification occur in an aerobic environment such as a single pass or recirculating media filter, an aeration tank (in which activated sludge type microorganisms grow), or a septic system drainfield (which can be conceptualized as a single-pass media filter). The nitrification reaction consumes 7.1 mg of alkalinity for each mg of ammonia nitrified and therefore has the potential to lower the pH of the treated wastewater (US EPA, 1993). Nitrification will stop occurring if the pH drops significantly below 6.0.

As can be seen in the above reactions, nitrogen has not been removed from wastewater – it has been transformed to nitrate-N. To remove nitrogen from wastewater, nitrate-N must be reduced / converted to nitrogen gas (N_2), which is harmlessly released to the atmosphere. This natural process is called denitrification. Denitrification occurs in an anaerobic environment that has sufficient available labile carbon. The denitrification reaction is generally described as follows:

$$6NO_3^- + 5CH_3OH + H_2CO_3 \rightarrow 3N_2 + 8H_2O + 6HCO_3^-$$

Heterotrophic denitrification requires a carbon source following the nitrification step. This can be achieved by recycling sludge or by adding a carbon source via active or passive carbon feed approaches, as discussed later in this Section. Autotrophic denitrification does not require an external carbon source, and is accomplished by using reduced sulfur compounds as electron donors. Autotrophic denitrification processes are still in the experimental stages and are not widely in use. Heterotrophic denitrification systems are commonly used for wastewater treatment with the primary variation being the method of supplying the carbon source required to convert nitrates to nitrogen gas.

Phosphorus removal occurs by a complex series of physical (through sorption) and biogeochemical reactions. Physical processes have been shown to be reversible by the USGS in sandy soils. Biogeochemical processes rely upon biologically mediated chemical reactions that transform the soluble phosphorus to a solid form using iron, aluminum and calcium, which removes phosphorus from the water. However certain iron-phosphorus compounds will solubilize solid phosphorus under anaerobic conditions. Also certain biogeochemical phosphorus removal reactions will not occur when wastewater is pretreatment as the organic matter that fuels the reactions is removed. Therefore care must be exercised when installing nitrogen removing systems as they may then prevent the phosphorus removal that was previously occurring with standard septic systems.

The reversibility of phosphorus sorption is sometimes referred to/measured as the Phosphorus retardation factor. In summary for phosphorus sensitive freshwaters, field studies need to be performed to understand the existing phosphorus removal processes.

WORKING DRAFT

3 TREATMENT TECHNOLOGIES - INDIVIDUAL AND CLUSTER

Treatment systems consist of the following techniques:

1. **Individual treatment systems** – small flows. Standard septic tanks and leaching pools, disposal beds or trenches are used for single residential or commercial properties in Suffolk County. Wastewater flows in this category are < 1,000 gpd.

2. **On-site treatment systems**, serving a commercial development and/or a number of residential dwellings on one lot. Wastewater flows in this category are > 1,000 gpd and require a SPDES permit.

3. **Cluster treatment systems**, serving localized areas of development of 2 or more wastewater generating properties. Wastewater flows in this category are > 1,000 gpd, require a collection system and a SPDES permit.

Wastewater treatment technologies are commonly grouped according to the following performance categories with respect to effluent total nitrogen:

Category	*Expected Effluent TN*
1. Secondary Treatment	< 30 mg/l
2. Advanced Secondary Treatment	< 20 mg/l
3. Secondary Treatment with Nutrient Removal	
a. Biological Nutrient Removal	<8-10 mg/l
b. Enhanced Nutrient Removal	<3-5 mg/l – considered to be the Limits of Technology by US EPA

Wastewater treatment technologies fall within one of the following categories:

1. Fixed Film Systems
2. Suspended Growth – Activated Sludge (AS) Systems
3. Integrated Fixed Film and Suspended Growth Systems (IFAS)
4. Active or Passive Carbon Feed with Denitrification Filter after pretreatment by one of the above technologies. While other techniques exist for providing the electron donor needed for denitrification, passive or active carbon feed systems are the simplest and most widely used.

3.1 TREATMENT OPTIONS

3.1.1 SEPTIC TANKS

Septic tanks may have one or two compartments. Two-compartment tanks perform better at settling solids and are the only recommended option. When the wastewater flows into the tank, the heavy solids settle to the bottom to form a layer of sludge. Lighter materials (grease, fats, small food particles, etc.) float on the surface forming a

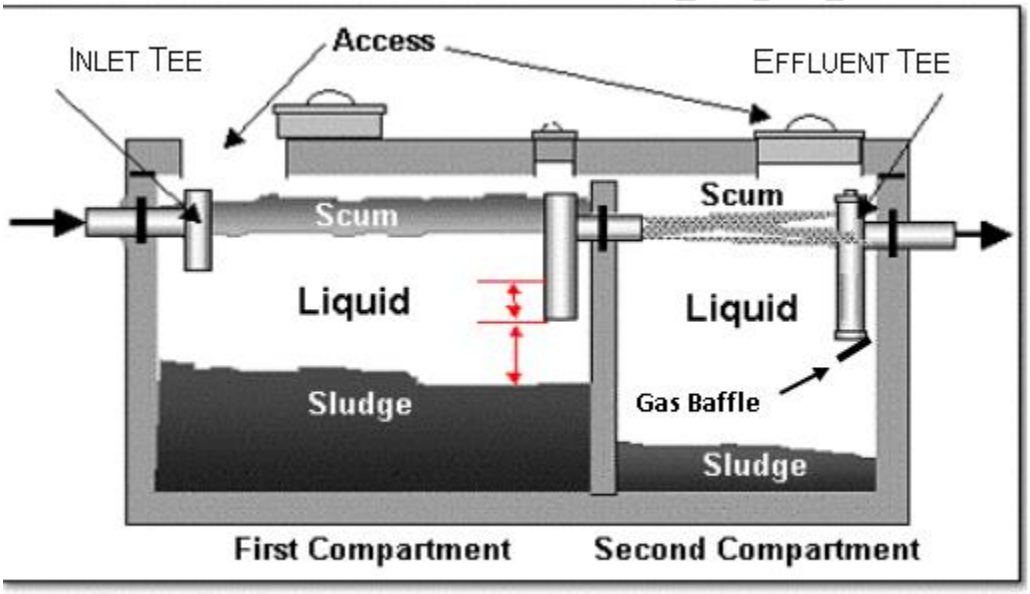
WORKING DRAFT

layer of scum. Between these two layers is a liquid of suspended materials and water-soluble chemicals. Figure 3-1 shows a typical two-compartment septic tank. In Suffolk County, the majority of septic tanks are round in configuration. The function of a round septic tank is the same as the rectangular one shown in Figure 3-2.

The division into two compartments increases the efficiency of the system at removing suspended solids, which increases the life of the drainfield. When the wastewater flows to the second compartment it is already substantially clarified (much of the solid material has settled out of the liquid). Moreover, there is little turbulence in the second chamber because the wastewater enters more slowly. Minor settling of finer suspended solids occurs in the second compartment as well.

Excessive discharge of solids to the drain field can cause it to clog and lose efficiency in treatment and dispersal of the normal liquid flow, with surface breakout possible. If the problem persists, the drainfield may need to be replaced. Septic tank effluent filters provide a relatively inexpensive means of preventing solids discharge.

Figure 3-1 Two-Compartment Septic Tank

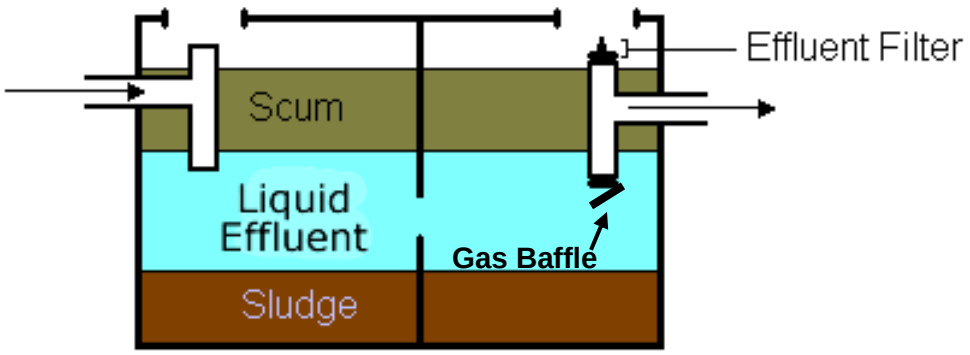


Effluent filters are devices that can be affixed to outlets of septic tanks and grease traps as shown on Figure 3-2. New tanks can easily accommodate the filter installation, while previously installed tanks can often be easily retrofitted. The filter is a primary screening barrier designed to reduce the volume of solids passing out of the tank to the disposal area.

Until recently, most of the information on the effectiveness of effluent filters has been intuitive and anecdotal. TSS levels in unfiltered effluent range from 60-120 mg/L. Zabel Environmental Technology's model A100 (a larger residential unit) in tests performed by Tennessee Technological University averaged a 49 percent reduction in TSS and a 32 percent reduction in BOD. The actual performance in any particular situation will depend on a number of factors, the most important of which is daily flow. Importantly, the filters

prevent high solids concentrations from being discharged to the drainfield/leaching pool, prolonging the life of the dispersal/disposal area.

Figure 3-2 Placement of Effluent Filter



Typical Effluent Filter

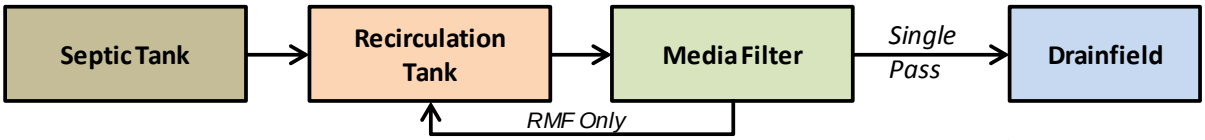
3.1.2 FIXED FILM SYSTEMS

Fixed film technologies can be used for both onsite and cluster systems. Fixed film technologies include:

- Single Pass Media Filters
- Recirculating Media Filters (RMF), including Rotating Biological Contactors (RBC)

The media contained within each fixed film system is typically sand, gravel, foam, peat, textile or plastic media. Figure 3-3 is a process flow diagram for a typical RMF system.

Figure 3-3 Typical Fixed Film Process Flow Diagram



Single pass media filters represent the simplest type of treatment. However, they are very limited when it comes to nitrogen removal. This is because they treat septic tank effluent, which has the solids separated prior to treatment. Separating the sludge prior to treatment results in a carbon-limited system. While these systems excel in nitrification (provided that sufficient alkalinity exists) denitrification is limited by the availability of carbon.

Recirculating Media Filters (RMF) utilize media with a high surface area to volume ratio as a substrate for a biofilm to grow on. Wastewater and air are mixed, using fans and/or spray heads, and contacted with the biofilm that grows on the media. The media effluent is split between recirculating and discharging to the next stage of the treatment process. Recirculation flows are directed to the recirculation tank where some denitrification (typically 50+%) and dilution of the septic tank effluent flow occurs. The primary process control on these systems is the recirculation ratio. Water is pumped in frequent short cycles, with total pump run times typically being less than an hour per day. RBCs use an engineered surface that is rotated half-submerged through the wastewater stream. A biofilm grows on the surface and aerates when the film is not submerged.

Recirculating media filters have the advantage of not needing energy intensive aeration and mixing, as compared to suspended growth systems. Also, secondary clarifiers and return sludge pumps are not necessary. Fixed film processes are also more resistant to varying flows and loads than suspended growth systems. This is due to the stability of the biofilm during periods of varying loading. These systems are more reliable and require less operator involvement than processes that utilize the suspended growth technology.

Sludge production is also much lower for these systems, when compared to systems that utilize suspended growth technology. The result is simplicity and lower O&M costs, along with consistency of treatment results.

Pros of individual fixed film systems include:

- Consistent and typically complete nitrification
- Simple, stable and reliable process
- Low energy use
- Low sludge production

Cons associated with individual fixed film systems include:

WORKING DRAFT

- Larger footprint compared to activated sludge systems for larger conventional systems
- Carbon addition needed for complete denitrification
- Alkalinity addition may be needed, very likely needed in Suffolk County due to low alkalinity source water

3.1.3 SUSPENDED GROWTH – ACTIVATED SLUDGE (AS) SYSTEMS

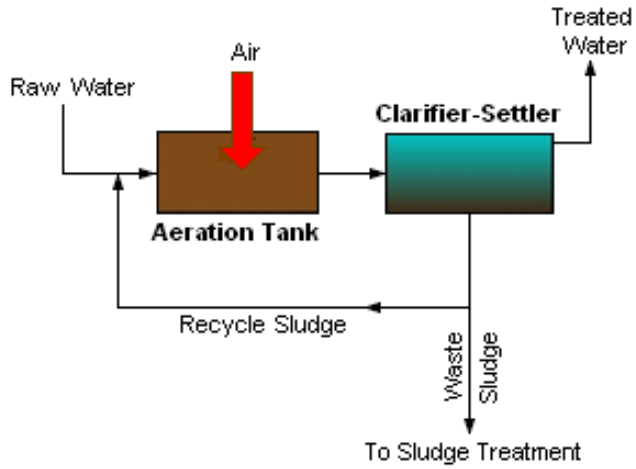
The generic options for suspended growth technologies are applicable to both onsite and cluster systems. Options include:

- Conventional and Modified Activated Sludge Processes
- Sequencing Batch Reactors (SBR), only applicable to cluster systems
- Membrane Bioreactors (MBR), only applicable to cluster systems

Figure 3-4 is a general process flow diagram for a conventional Activated Sludge system.

Suspended growth processes treat wastewater using the same nitrification and denitrification mechanisms as fixed film processes. The difference is that in the activated sludge process, bacteria and solids are maintained in suspension within an aeration tank. These bacteria grow as they absorb nutrients. A secondary clarifier is needed following the aeration tank to settle the biosolids into what is then called activated sludge. Suspended growth systems rely on processes that are typically monitored on a daily or even hourly basis at larger treatment facilities. In larger facilities, sludge is separated into Return Activated Sludge (RAS) and Waste Activated Sludge (WAS). In individual and small cluster systems, this is not typically done, resulting in lower levels of treatment.

Figure 3-4 General Activated Sludge Process Flow Diagram



By maintaining the sludge within the treatment process, there is sufficient carbon to achieve high levels of denitrification, when properly configured and operated. Factors that are monitored / adjusted at larger treatment facilities include:

- WAS / RAS ratio

WORKING DRAFT

- Mixed Liquor Suspended Solids (MLSS)
- Food to Microorganism Ratio (F/M)
- Oxygen / redox levels
- Aeration cycles
- Recirculation ratio
- Sludge Age

All of the above factors affect nitrification (conversion of ammonia to nitrate-N) primarily and also denitrification (conversion of nitrate-N to nitrogen gas). When these factors are adjusted and monitored properly to match influent flows and loads, suspended growth systems are capable of reliably meeting advanced tertiary (< 3-mg/L) standards for nitrogen removal. This process and its many variations are the standard for large-scale wastewater treatment worldwide. However, when these factors are not monitored and / or not even adjustable, as is the case with all OSTDS and many small to medium sized cluster systems, the reliability of the suspended growth process decreases dramatically.

SBRs are unique in that they utilize a batch process to combine treatment stages in a single tank. These units have great treatment potential, however, they are highly reliant on the close supervision of skilled operators. For this reason, they are not recommended for lower flows where full time specialized operations are not required or economically feasible.

MBRs utilize the same suspended growth technology, however replace the secondary clarifiers with membranes within the aeration tank. These processes have a range of treatment options, depending on the type of membranes used. Specialized operations and high life-cycle costs limit the feasibility of MBRs to areas with space constraints and/or a higher required treatment levels. These systems operate at a high bacteria concentration, referred to as Mixed Liquor Suspended Solids (MLSS), and a long sludge age, thereby reducing the amount of sludge production and adding stability to the process during varying flows and loads. The major concern with activated sludge processes is washout of the solids in the clarifier. By substituting membranes for the clarifier, MBRs eliminate this mode of failure. However, nitrification performance is still dependent on the same factors as conventional suspended growth systems.

Typical individual suspended growths systems do not have most of the functionality of larger systems and are packaged in a single tank. While this lack of functionality simplifies the system and reduces installation costs, the result is less operator control and generally poor performance compared to the larger centralized systems. The energy use and sludge production is higher than the fixed film systems. The economies of scale must reach a point where the higher O&M costs are offset by the lower construction costs. Typically, flows should exceed 50,000 – 100,000 gpd (depending on the type of suspended growth system) before systems that are properly designed and operated start to become competitive with fixed film systems on a total life cycle cost basis. The reliability of activated sludge systems is highly dependent on the operations staff.

Pros of individual suspended growth systems include:

- Smaller footprint due to single tank configuration
- Lower installation costs
- Generally not carbon-limited

WORKING DRAFT

Cons associated with individual suspended growth systems include:

- Many factors affecting performance are not monitored or adjustable
- Relative stability of biological process when faced with varying flows and loads is low
- Reliance on settling of suspended solids introduces possibility of solids carryover to the drainfield
- Inconsistent nitrification and consequently inconsistent denitrification
- Energy intensive process – property owners are able to disconnect electricity
- Higher sludge production
- High dependence on operator attention and skill

3.1.4 INTEGRATED FIXED FILM AND SUSPENDED GROWTH – ACTIVATED SLUDGE (IFAS) SYSTEMS

Integrated fixed film and suspended growth (IFAS) processes combine the fixed film and suspended growth technologies in one treatment process. This is achieved by adding media to the aeration tank shown on Figure 3-4. By combining both processes, resistance to process upsets is increased over the suspended growth process alone. The addition of a fixed film media to the aeration tank in these processes increases the treatment capacity and reduces the footprint of the aeration tank. This technology has the same dependency on operator attention and skill for applications that require high levels of nitrogen removal.

Pros of individual IFAS systems include:

- Small footprint
- Lower installation costs
- Not carbon-limited
- More stable than traditional suspended growth systems

Cons associated with individual IFAS systems include:

- Many factors affecting performance are not monitored or adjustable
- Less stable and reliable than traditional fixed film processes
- Reliance on settling of suspended solids introduces possibility of solids carryover to the drainfield
- Inconsistent nitrification
- Energy intensive process
- Higher sludge production than fixed film systems

3.1.5 ACTIVE CARBON FEED SYSTEMS

The primary limitation on nitrogen removal in both fixed film and the simplified suspended growth systems is available carbon for the denitrifying bacteria after nitrification. If the nitrification system fully nitrifies, meaning that ammonia is less than 1 mg/L in the nitrification system, then an anaerobic environment and a carbon source (electron donor) are all that is needed to convert the nitrate to nitrogen gas. Active carbon feed systems use a chemical feed system that stores and doses a chemical

WORKING DRAFT

carbon source into an anaerobic tank following a nitrification system that achieves complete nitrification. Examples of active carbon feed sources are:

- Methanol
- Micro C
- Glycerin / glycerol

Pros associated with active carbon feed include the following:

- Fast reaction rate minimizes retention time and associated footprint
- Low capital cost for installation if non-toxic/non-hazardous carbon source used

Cons associated with active carbon feed include the following:

- Need for chemical storage, containment
- Hazardous materials storage when methanol is used
- Generates sludge and consumes some treatment plant capacity for backwash treatment
- Requires operator attention and relies on monitoring equipment to prevent overfeed or underfeed
- Ongoing cost of chemicals

3.1.6 PASSIVE CARBON FEED SYSTEMS

Passive carbon feed systems use a carbon-rich media to supply carbon for denitrification. The leaching of labile carbon from media used in passive carbon feed systems is biologically mediated. There is neither a concern with overfeeding nor underfeeding, provided the systems are appropriately sized.

The Nitrex™ system is an example of a passive carbon feed system. The Nitrex™ system is an upflow filter that contains a carbon-rich media that slowly releases labile carbon to facilitate denitrification.

Passive systems have the advantage of reliability and simplicity, inconsequential sludge production and minor increase in operator attention beyond that required for the nitrification system. The disadvantages of passive systems are larger footprints and higher construction costs than active feed systems. Passive systems have a 40 +/- year useful life which can make them competitive on a life cycle cost basis.

Pros of passive carbon feed systems include:

- Simple, stable process
- Little/no energy use
- Inconsequential sludge production
- No chemical storage
- No ongoing chemical costs

Cons associated with passive carbon feed systems include:

WORKING DRAFT

- Larger footprint
- Higher installation costs
- Media replacement every 40 +/- years

For the Record, LAI is the developer of the Nitrex™ system, which is the only passive carbon feed system approved for use in Suffolk County.

3.1.7 NET NITROGEN REMOVAL PERFORMANCE

Table 3-1 presents the nitrogen removal performance of the various technologies for low flow (individual or small cluster) systems. As described herein, smaller flow suspended growth / IFAS systems do not have the same functionality as larger centralized systems that can achieve Total Nitrogen (TN) < 3 mg/L. For larger cluster systems and centralized WWTFs, all technology types can be designed and operated to achieve TN < 3 mg/L. Table 3-1 shows the net nitrogen load to groundwater from one equivalent dwelling unit (EDU) being served by each of the listed technologies. This number takes into account the fact that a drainfield / leaching pool systems remove approximately 50% of the nitrogen load from a conventional septic system's wastewater. When wastewater is treated, there will be significantly less nitrogen removal in the disposal system as compared to conventional septic systems, as described on Table 3-1.

Table 3-1 Nitrogen Removal Performance of Individual Treatment System Types

System Type	Onsite System Category	Eff. TN Conc. Prior to Disposal	% Disposal System Attenuation	Effluent TN Conc. to GW	Total % Removal
		(mg/L)	*(%)*	*(mg/L)*	*%*
Standard Leaching Pool System					
1	Standard Septic Tank / Leaching Pool System	65	50%	32.5	50%
Secondary Treatment Systems					
1	Suspended Growth	25	25%	18.75	71%
2	IFAS	25	25%	18.75	71%
3	Fixed Film	19	25%	14.25	78%
Secondary System with Nutrient Removal					
4	Carbon Feed & PreTreat	3	5%	2.85	96%
5	Cluster Systems	3	5%	2.85	96%

3.1.8 LIFE CYCLE COSTS OF INDIVIDUAL SYSTEMS

Typical capital, O&M and life cycle costs for individual systems are presented on Table 3-2. These costs can vary extensively from site to site depending on access / installation issues and local labor and market conditions. The ranges presented are based on similar systems installed in other areas. For a proper comparison, technologies need to be viewed first in terms of achieving treatment requirements and then cost effectiveness.

Table 3-2 Life Cycle Costs for Individual Treatment System Types $/lb N removed

System Type	Onsite System Category	Total % N Removal	Capital Cost ($)		Annual O&M Cost ($)		Use ful Life time	Present Worth of O&M		Life Cycle Cost[1] ($)		Life Cycle Cost per kg/yr Nitrogen Removed[2]	
		%	Low	High	Low	High	(yr)	Low	High	Low	High	Low	High
Standard Leaching Pool System													
1	Standard Septic Tank / Leaching Pool System	50%	$3,000	$4,500	$40	$60	60	$686	$1,030	$3,686	$5,530	n/a	n/a
1	Suspended Growth	71%	$12,500	$17,500	$774	$1,039	60	$13,275	$17,828	$25,775	$35,328	$6,021	$2,454
2	IFAS	71%	$12,500	$17,500	$774	$1,039	60	$13,275	$17,828	$25,775	$35,328	$6,021	$2,454
3	Fixed Film	78%	$15,500	$20,500	$603	$831	60	$10,347	$14,259	$25,847	$34,759	$4,549	$2,200
Secondary System with Nutrient Removal													
4	Carbon Feed & PreTreat	96%	$25,500	$31,000	$608	$836	60	$10,433	$14,345	$35,933	$45,345	$3,893	$2,344

[1]*Salvage Value = 0. Costs are generalized and assume no site specific access or installation issues*
[2]*As compared to a septic tank / leaching pool system – this represents the net gain above existing conditions*

3.1.9 APPROVED WASTEWATER TREATMENT SYSTEMS IN SUFFOLK COUNTY

For flows less than 1,000-gpd, the only systems currently approved in Suffolk County are standard and alternative leaching pool systems. Table 3-3 lists the systems that are approved for use for flows between 1,000 – 15,000 gpd in Suffolk County. These systems are classified as Modified Subsurface Sewage Disposal Systems, and have their own set of setback and treatment characteristics. These systems were independently evaluated and found to be capable of achieving TN<10 mg/l.

Systems with flow rates greater than 15,000 gpd are classified as wastewater treatment facilities. There is not a list of approved technologies for wastewater treatment facilities as each one is custom engineered for the site specific design requirements. The setback distances from wastewater treatment systems as compared to modified subsurface disposal systems are presented in Table 3-4.

Table 3-3 Approved Treatment Systems in Suffolk County

System Name	Manufacturer	Treatment System Classification
Cromaglass	Cromaglass Corporation	Activated Sludge - Sequencing Batch Reactor (SBR)
Nitrex	Lombardo Associates, Inc.	Fixed Film / Passive Carbon Feed
BESST	Purestream ES, LLC	Activated Sludge - Single Sludge Process
Bioclere	Aqua Point	Fixed Film - Modified Trickling Filter
STM-Aerotors	WesTech	IFAS Systems

WORKING DRAFT

Table 3-4 Setback Requirements for SCDHS System Categories

SCHDS System Classification	Flow Range	Property Line Setback	Habitable Building Setback	Surface Water / Wetland
Standard and Alternate Leaching Pool Systems	< 1,000 gpd	10-ft	10-ft	100-ft
Modified Subsurface Sewage Disposal System	1,000 - 15,000 gpd	75 -150 ft	75 - 200 ft	100-ft
Wastewater Treatment Facility	>15,000 gpd	150 - 350 ft	200 - 400 ft	100-ft

3.1.10 SOURCE SEPARATION - URINE DIVERTING TOILETS AND WATERLESS URINALS

Urine diversion is gaining interest as an alternative for nitrogen removal. Urine diversion can rely upon waterless urinals and urine diverting toilets to separate urine from the remaining wastewater. The urine would be stored in a separate tank for collection. The urine would either be treated at a central facility or harvested for use as a fertilizer.

While the use of urine diverting toilets may be practical for new construction and waterless urinals for commercial buildings, LAI does not consider these options as an immediately viable alternative for retrofitting existing homes and commercial buildings due to implementation challenges, including public acceptance issues. While not in widespread use, urine diversion toilets have proved effective and acceptable to users in a number of studies, in particular in northern Europe (WERF, 2011).

A 2011 WERF Report (Fewless et al, 2011) on Urine Diversion concluded "review of European pilot projects indicates that 80% of users like the idea of urine diversion, 75-85% were satisfied with design, hygiene, and seating comfort of NoMix toilets, 85% thought that urine-based fertilizer was a good idea (50% of farmers), and 70% would purchase food grown with urine-based fertilizer. However, 60% of users also encountered problems, indicating that NoMix toilets require further development."

The Town of Falmouth MA is currently evaluating the use of urine diverting and compost toilets as part of its septic nitrogen management program and intends to perform a demonstration project to evaluate the efficacy of this approach.

LAI recommends that urine separation and recovery/reuse be performed on a pilot/demonstration basis at public facilities, such as community bathrooms, to determine the feasibility of this approach as part of the Town's Comprehensive Plan.

3.2 DISINFECTION OPTIONS

The potential disinfection options for on-lot systems are:

- Ozone
- Chlorine
- Ultraviolet (UV)

WORKING DRAFT

3.2.1 OZONE

Ozone disinfection operates by bubbling ozone through the wastewater. Ozone (O3) is a strong oxidant and is highly toxic to microorganisms. The process by which ozone disinfects also destroys the ozone molecule, leaving only molecular oxygen (O2) and inert organics in the disinfected wastewater. Ozone disinfection is also subject to concerns over the lack of disinfectant residuals to deter bacterial regrowth. Bromate, a known carcinogen, is a potential disinfection by-product for water that contains bromide. Ozone disinfection also has the highest energy costs of the three disinfection systems considered. Ozone treats for the emerging contaminants – pharmaceuticals and personal care products.

Ozone has the following advantages:

- Strong disinfecting power
- No hazardous material storage necessary
- No need to remove prior to discharge
- No Trihalomethanes (THM) or Haloacetic acid (HAA) formation

Ozone has the following disadvantages:

- No residual to prevent bacterial regrowth
- Moderate capital cost
- High operating cost
- Equipment available for small flow applications is limited
- Potential bromate formation for bromide-containing water

3.2.2 CHLORINE

The use of chlorine for wastewater disinfection has been practiced for the past century. A variety of technologies are used including tablets, gas, and chlorine dioxide. Due to its deleterious environmental effects, dechlorination may be required. Chlorination of waters containing organic materials, such as treated wastewater, has a strong potential to form THM and HAA acids. Both are known carcinogenic disinfection by-products.

Chlorine has the following advantages:

- Maintenance of residual to prevent bacterial regrowth

Chlorine has the following disadvantages:

- THM and HAA formation potential is high for treated wastewater
- Hazardous chemical delivery and storage is necessary
- Dechlorination is normally necessary to avoid undesirable impacts to aquatic organisms.

3.2.3 ULTRAVIOLET DISINFECTION (UV)

UV disinfection operates by exposing the wastewater to a UV light source of sufficient intensity to kill infectious organisms in the wastewater. UV does not maintain a residual

WORKING DRAFT

to prevent bacterial regrowth. This lack of residual disinfectant and the potential for bacterial regrowth has been a concern with this method.

UV has the following advantages:

- No hazardous material storage necessary
- No need to remove prior to discharge
- No THM, HAA or bromate formation
- Mechanically simple system
- Low operating and maintenance costs

UV has the following disadvantages:

- No residual to prevent bacterial regrowth

UV disinfection is the simplest and lowest cost option for disinfection, and is now widely used.

3.3 DISPERSAL OPTIONS

The potential dispersal options are:

- Standard leaching pools
- Disposal beds / trenches
- Alternate systems
- Elevated sand mounds
- Drip irrigation
- Reuse alternatives

Standard leaching pools are typically used where depth to groundwater is not an issue. As the depth to groundwater decreases, the need for alternate leaching pool systems and / or elevated sand mounds becomes necessary for onsite disposal. Drip irrigation systems have the shallowest profile and can be beneficial for reducing the required height of the elevated sand mound, or even eliminating the need in some cases. Drip irrigation can also be used for reuse applications to offset the potable water demand for landscape irrigation.

The primary candidate application for water reuse in East Hampton is likely to be golf course irrigation. There is a significant water demand at the area golf courses that could be offset by beneficially reusing highly treated effluent from nearby cluster wastewater treatment systems. Other water reuse application could include building reuse such as toilet water supply and/or cooling tower make-up water. These potential applications are not expected to exist for East Hampton.

3.3.1 LEACHING POOL SYSTEM

Leaching pools are typically used in place of perforated pipe and gravel for the distribution and storage of wastewater in East Hampton. Leaching pools systems are constructed of concrete, plastic or other material, with the bottom open for infiltration of

WORKING DRAFT

the wastewater into the soil. The shape of leaching chambers and their layout on sites may vary, however they are typically cylindrical precast concrete structures in East Hampton. Leaching Pools are typically placed over either native soil or specified fill soil and are not underlain by gravel as with distribution piping in a conventional disposal trench.

Effluent from a septic tank or other pretreatment process flows by gravity to the leaching pools and percolates in the natural soil, as presented on Figure 3-5. Evapotranspiration and infiltration into the natural soil are mechanisms by which water is removed from the disposal system. As with conventional subsurface disposal systems, septic tanks are the most common pretreatment unit used, but other processes may be used instead of or in addition to a septic tank.

As with conventional subsurface trench and bed absorption systems, the use of leaching pools is limited by site conditions including soil type and depth, permeability, depth to ground water, and topography. If properly sited, designed, constructed and maintained, leaching chambers should be an efficient and cost-effective method for onsite wastewater treatment and disposal, and should have long service lives.

3.3.2 SUBSURFACE DRAINFIELDS

A conventional gravity system relies upon gravity to deliver the wastewater to the drainfield and this tends to do a poor job of evenly distributing the effluent throughout the drain field. With a gravity-fed system, every time water is used in the house, the soil receives another dose of effluent. During periods of high water use by the household, the soil in the drain field may become saturated, which reduces its capacity to treat the effluent. If the soil is continuously oversaturated, it will become clogged and eventually cease to act as an effective filter for the wastewater.

In a pressure distribution system a pump chamber is added that delivers septic tank effluent to the drainfield in controlled timed doses. The goal of a pressure distribution system is to create unsaturated flow in the soil absorption system. Delivering septic tank effluent in controlled pressurized doses ensures that the wastewater is equally distributed across the soil absorption bed, thus reducing the potential for the localized clogging that often occurs in conventional gravity dosed systems. Research has also shown that discharging effluent in controlled, properly timed doses gives the absorption bed a drying period between doses that can result in enhanced treatment with regard to pathogen and nutrient removal.

3.3.3 MOUND SYSTEMS

A mound system, like a conventional system, consists of a septic tank and a soil absorption bed. In the mound system, however, sand is added where suitable native soil is insufficient. Figure 3-6 shows a typical mound system. Clarified effluent from the septic tank is pumped, in controlled pressurized doses, to an aboveground, freestanding sand layer. The sand layer, placed upon a specially prepared area of native soil, serves as the medium on which the biogeochemistry activities of secondary treatment occur.

WORKING DRAFT

Figure 3-5 Typical Leaching Pool System

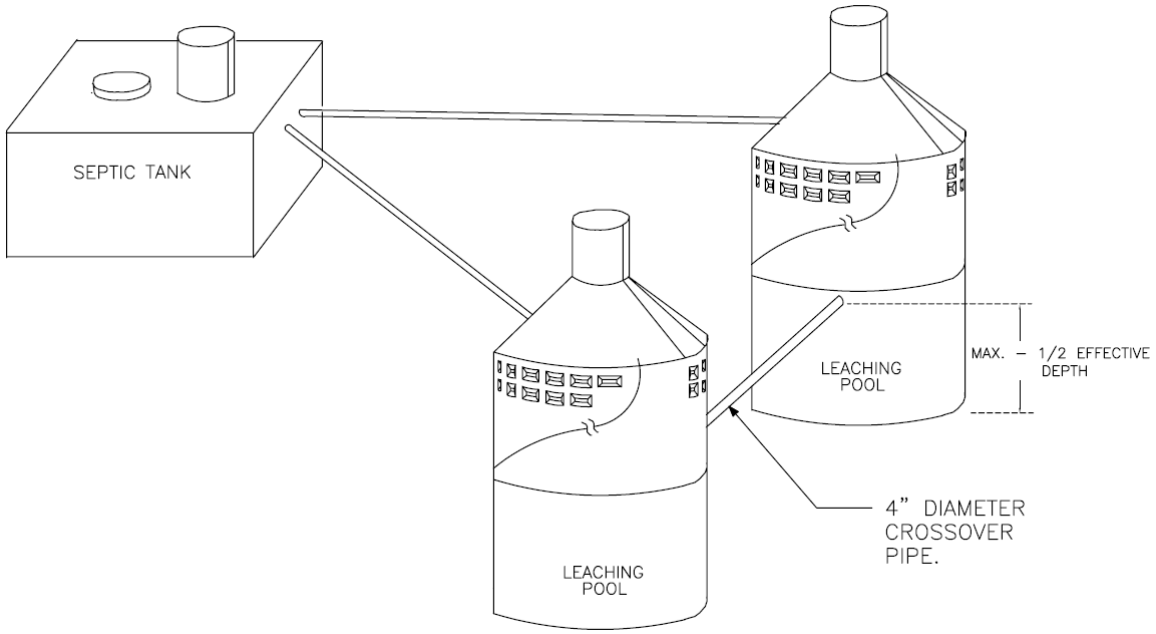
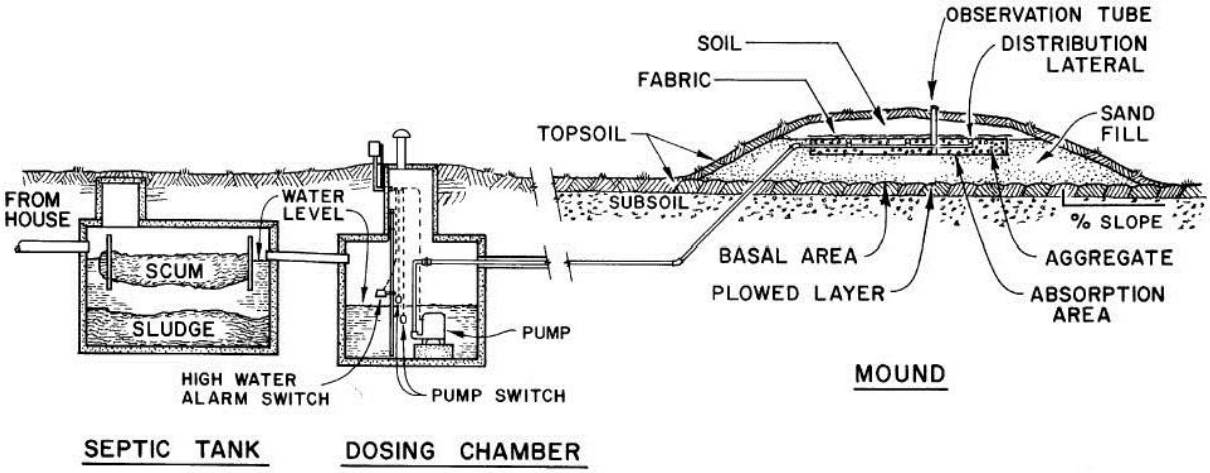


Figure 3-6 Typical Mound System



Source: Converse and Tyler (1987)

Mound systems are generally utilized to overcome site restrictions of shallow soil cover over impermeable layers (bedrock, shale, etc.), and/or a high water condition.

Some advantages of a mound system are as follows:

- They enable the use of some sites that otherwise would be unsuitable for other type systems
- The natural soil utilized in a mound system is usually the top layer (generally the most permeable)

- There is no direct point discharge to a ditch, stream, or other body of water
- Construction damage is minimized since little excavation is required in the mound area.

Some disadvantages of a mound system are as follows:

- Construction costs are typically much higher than those of conventional systems.
- Since there is usually limited permeable topsoil available at mound system sites, extreme care must be taken not to damage this layer with construction equipment.
- The location of the mound may affect drainage patterns and limit land use options.
- All systems require pumps or siphons.
- Mounds may not be aesthetically pleasing in some cases.

3.3.4 DRIP IRRIGATION FOR LANDSCAPE IRRIGATION AND CHALLENGING DISPOSAL SITES

Drip irrigation can be used for both disposal and reuse. Drip subsurface soil disposal is a shallow slow rate pressure-dosed system used for land application of pretreated wastewater. Subsurface drip disposal systems have three basic design principles, which are different from conventional subsurface disposal systems. They are uniform distribution of effluent, dosing and resting cycles and very shallow placement of trenches. This type of system uses small diameter piping with underground drip emitters, and must be preceded by pretreatment, usually
secondary levels which conforms to the manufacturer's specifications for the particular emitter used. Effluent must be adequately filtered before distribution through the underground emitter system. Figure 3-7 shows the layout of a typical drip irrigation system.

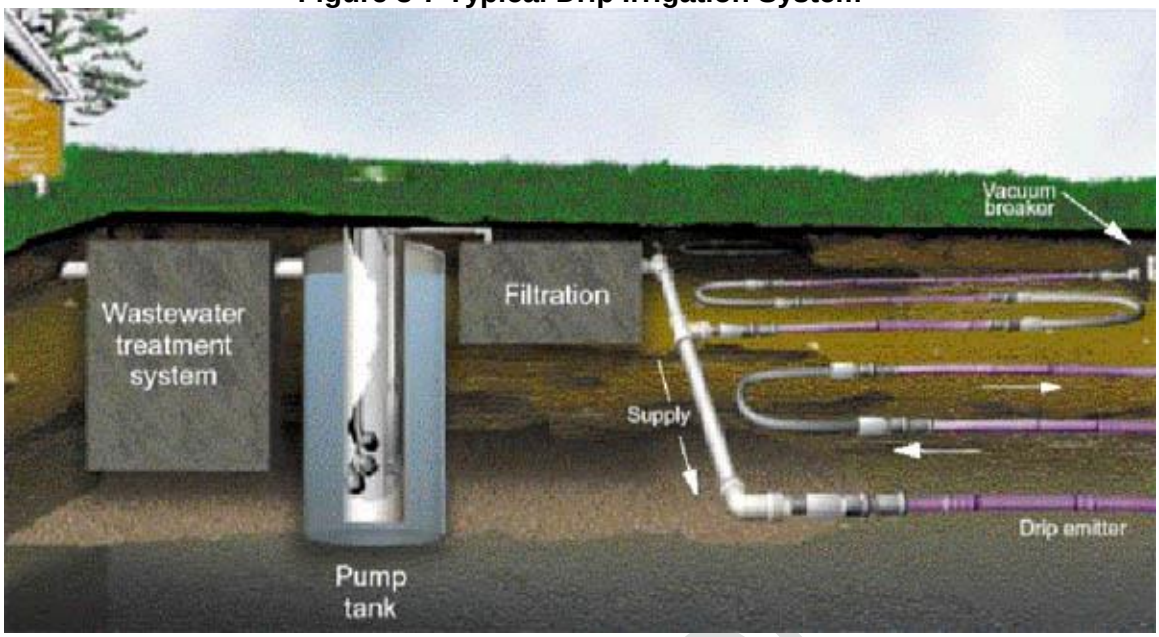
Subsurface drip irrigation systems have the capability of equally distributing effluent at a relatively low application rate over the entire absorption field to prevent saturation of the soil. Wastewater is applied at a controlled rate in the plant root zone, which tends to minimize percolation of the effluent and maximize nutrient uptake by vegetation covering the dispersal area.

Subsurface drip irrigation systems are often used for sites with adverse conditions such as: soils that are unsuitable for conventional absorption systems; insufficient depth to a restrictive horizon or ground water; and steep slopes.

Drip irrigation systems require a reliable source of power. An additional pretreatment process is necessary after the septic tank and prior to final subsurface disposal. Routine maintenance is necessary to ensure the proper functioning of these systems.

WORKING DRAFT

Figure 3-7 Typical Drip Irrigation System



Source: Texas Agricultural Cooperative Extension http://agrilifeextension.tamu.edu/

3.4 REUSE ALTERNATIVES

Landscape irrigation, primarily for local golf courses, is the most likely reuse opportunity for treated wastewater reuse in East Hampton. Other reuse alternatives may include:

- Cooling water make-up
- In-building reuse for toilet flushing water (requires dual plumbing)

The above reuse alternatives are unlikely to be feasible in East Hampton.

3.5 TREATMENT FOLLOWING DISPERSAL

3.5.1 NITROGEN REMOVAL

Nitrogen removal is achieved primarily in the wastewater treatment units. Nitrogen removal has also been shown to occur, in varying degrees, in the following zones:

- Disposal system
- Unsaturated soils between disposal system and groundwater
- Interface between saturated / unsaturated soils
- Within the groundwater aquifer
- At / near the interface of groundwater / surface water (the hyporheic zone)

The mechanisms through which nitrogen may be removed in these zones include the following:

- Denitrification in carbon-rich soils

WORKING DRAFT

- Ammonia adsorption to soils (limited to carrying capacity of the soils), nitrification and then denitrification.
- Ammonia volatilization in unsaturated soils

Assigning nitrogen removal values within zones beyond the treatment facility requires site specific information. Literature values range between 25% and 50% for removal in the septic system drainfield, with the Kropf (2007) study referencing a recent local study projecting 25% TN removal in the drainfield. For the purposes of this study, LAI is using the assumption of 50% removal, with sensitivity analysis of 25% removal, between the effluent of the septic tank or treatment process and the body of water receiving the groundwater to which the system discharges.

Other factors affecting groundwater nitrogen concentration include:

- Dilution from infiltrating rainwater
- Dilution of nitrogen by the groundwater aquifer
- Nitrogen mass leaving the aquifer for aquifers that are not closed systems

Although some wastewater nitrogen after treatment is in the organic form, the amount is small, usually 1-3 mg/l after wastewater treatment, including septic drainfields. Consequently to be conservative and as practiced by a number of regulatory agencies, including SCDHS, all wastewater nitrogen is assumed to be 100% in nitrate-N form prior to entering the groundwater aquifer (USGS 2007, USGS 2010, Caraco and Cole, 2001, Walker et al, 1973, Cape Cod Commission, 1992, Katz, 2010). Therefore, for groundwater aquifer management purposes, Total Nitrogen (TN) is managed rather than solely nitrate-N.

3.5.1 PHOSPHORUS REMOVAL

Phosphorus removal occurs by one or more of the following processes (Lombardo et al, 2005):

- Sorption (either absorption or adsorption) onto a media that has a defined capacity to remove phosphorus, usually expressed as mg of P/gram of media.

- Precipitation – in which iron, aluminum and/or calcium are added to cause the dissolved phosphorus to precipitate and be removed from solution. Numerous other compounds are included in the resulting sludge. Active chemical feed systems are used to remove phosphorus by precipitation.

- Mineralization – similar to precipitation, except that mineralization targets predominately the phosphorus compounds, and is typically biologically mediated. There is no sludge produced as the minerals are incorporated into the media and are characterized as passive chemical feed systems.

WORKING DRAFT

Active Chemical Feed Systems

Phosphorus removal in wastewater systems is typically achieved by alum or ferric chloride chemical feed systems that when added results in a sludge/solid material with a phosphorus precipitate.

Passive Chemical Feed Systems

Passive chemical feed systems in which solid iron or aluminum is embedded in a media. By biological activity the iron or aluminum is solubilized and then mineralizes the dissolved phosphorus so that the phosphorus is removed from the liquid.

Sorption

A number of media, including sand, have the capacity to sorb phosphorus. Special clay materials, such as LECA, have been developed for phosphorus removal by sorption. The life of the media affects its utility and cost-effectiveness. Also some media are known to desorb (i.e. release) phosphorus, which results in slowing of phosphorus travel time as compared to water – also referred to as retardation factor.

3.5.2 PERMEABLE REACTIVE BARRIER

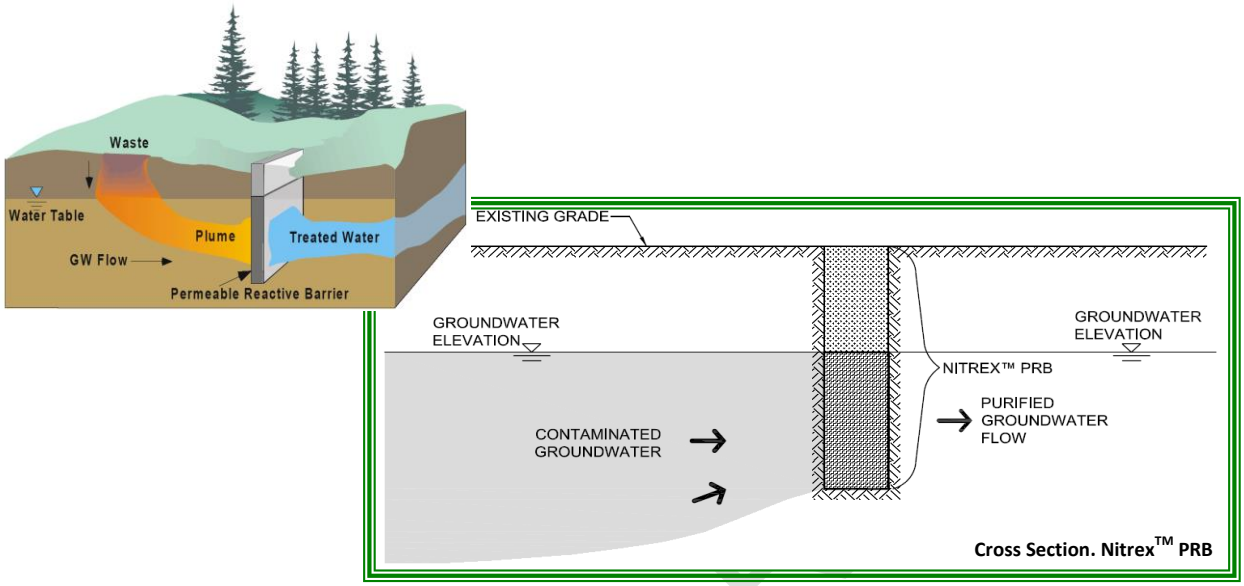
As described in USEPA 2010, Chapter 6 Decentralized Wastewater Treatment Systems, Guidance for Federal Land Management in the Chesapeake Bay Watershed, Permeable Reactive Barriers (PRB) are treatment units that are placed in groundwater and remove contaminants by providing the environment for biogeochemical and physical reactions to occur. Specific types of PRBs have been developed to remove nitrate and phosphorus from groundwater plumes that would otherwise adversely affect surface water quality.

For nitrate removal, PRBs typically consist of a trench filled with a degradable carbon source and are sited to intercept high-nitrate groundwater plumes before they enter surface waters (Figure 3-8). As the plumes pass through the anaerobic carbon-rich barrier, bacteria convert nitrate molecules to nitrogen gas. In areas where receiving waters are already eutrophic, the trenches provide immediate relief by removing nitrate from the incoming groundwater. Addressing the source of the high-nitrate plume (i.e., densely sited septic systems) would also produce results, but any measureable effects would likely take several years/decades (USEPA 2010,) because of slow effluent plume movement in most soils and could be more expensive and require more maintenance than installing PRBs.

PRBs are typically installed as long, narrow trenches perpendicular to the incoming plume and parallel to the shoreline. The most effective ones for removing nitrate from plumes are filled with a carbon-based media mix that controls for changes in pH. Such systems have been successfully demonstrated in North America and Europe (USEPA 2010).

WORKING DRAFT

Figure 3-8 Permeable Reactive Barrier Cross-Section



WORKING DR

4 COLLECTION SYSTEMS

4.1 COLLECTION SYSTEM ALTERNATIVES

Collection system alternatives consist of:

- Conventional Gravity
- Grinder Pump- pressure sewer
- Septic Tank Effluent, both gravity (STEG) and pumped (STEP)
- Vacuum

with a flowchart of the options for wastewater conveyance on Figure 4-1.

4.2 CONVENTIONAL GRAVITY SYSTEMS

Conventional gravity systems collect untreated wastewater directly from properties and convey it to treatment and disposal / reuse facilities. The collection mains are a minimum of 8 inches in diameter with manholes every 200 feet. Because the wastewater contains solids, conventional collection mains must always be constructed at a slope that maintains a scouring velocity within the pipe. In areas where it is not possible for wastewater to reach the treatment plant solely by gravitational flow, pump stations and force mains are installed to lift the wastewater to a part of the collection system that can reach the treatment facility. Deep excavation may be necessary to attain self-cleansing velocity (minimum of 2 feet per second) in the sewer under gravity flow. Pump stations can also be used to minimize costs associated with installation of deep sewers. Alternatively, low lying properties may have individual pumps.

Conventional gravity sewers have the following advantages:

- Low maintenance
- No on-lot equipment needed for individual properties

Conventional gravity systems have the following disadvantages:

- High inflow/infiltration potential
- Deep cuts are needed when grade is not favorable
- Larger pipes with steeper slopes compared to STEG systems
- Manholes are needed, adding cost
- Large inherent excess capacity that maybe viewed as growth stem

Conventional gravity systems are most applicable to areas where the grade allows the sewer to remain relatively shallow and multiple pump stations are not necessary.

4.3 GRINDER PUMP (GP) PRESSURE SEWERS

In Grinder Pump (GP) pressure sewer systems (see Figure 4-2), small-diameter sewers are used in conjunction with on-lot grinder pumps located at each property. The grinder pump shreds solids and discharges the wastewater into the pressurized collection system. Wastewater is conveyed by the collection system either to a treatment facility or to a pump station/gravity sewer, and then ultimate transport to a treatment facility. Deep cuts are not necessary due to this being a pressurized system.

WORKING DRAFT

Figure 4-1 Alternative Wastewater Conveyance Systems

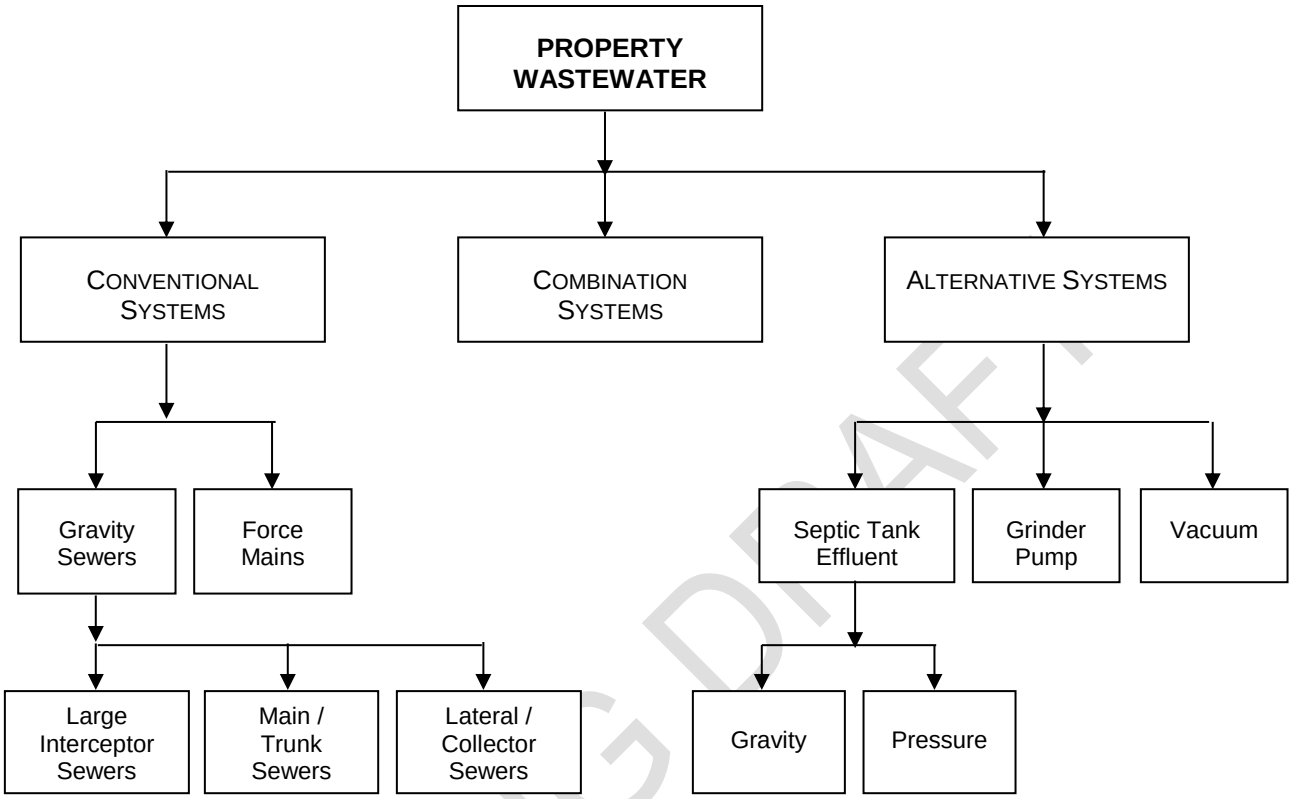
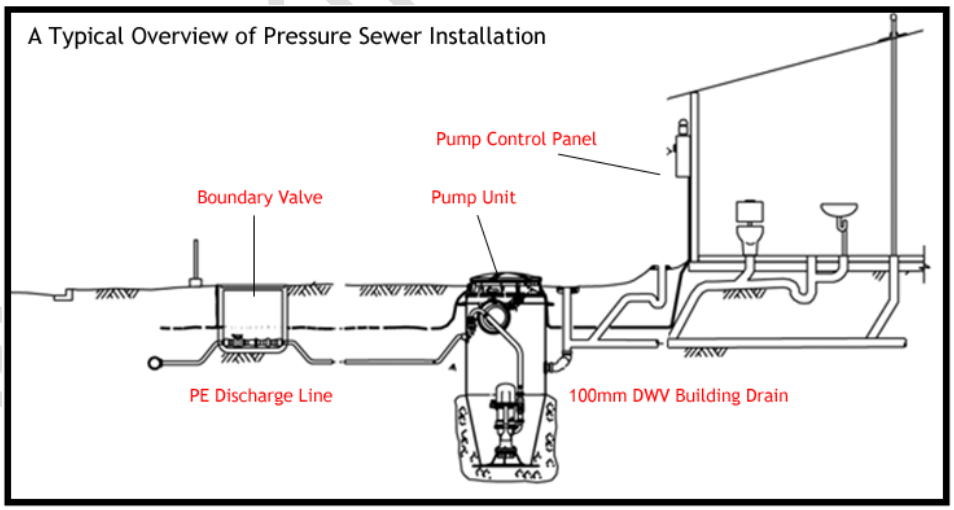


Figure 4-2 Grinder Pump System



Grinder Pump Pressure Sewers are most applicable under the following conditions:

- Long sewer runs in flat areas where excavation is complicated by rock, bad soils and/or high groundwater
- Areas that have multiple low spots where many pump stations would be required for gravity systems

Individual properties located in low spots where the number of properties is too low to make a pump station cost effective.

Grinder Pump Pressure Sewers have the following disadvantages:

- Operations and maintenance requirements at each property
- Higher capital cost associated with pumps and electric connections
- Emergency storage or back-up power needed
- Higher pump costs as compared to STEP systems

4.4 SEPTIC TANK EFFLUENT BY GRAVITY (STEG)

Small-diameter sewers are used in conjunction with an on-lot septic tank in septic tank effluent collection systems, see Figure 4-3. For gravity systems, the septic tank effluent is transported through a 4-inch minimum diameter to the treatment/dispersal site. Small diameter pipes are permitted because large solids are retained in the septic tank and only liquid is transported.

STEG systems have the following advantages:

- Small diameter pipes and less slope required
- Lower potential for infiltration compared to larger gravity sewers
- Potential for variable grade sewers, eliminating the need for pump stations
- Less expensive cleanouts are used in place of manholes
- Eliminates the need for a Primary Settling Tank at the treatment facility, reducing sludge odors
- Potential for salvaging existing septic tanks

STEG systems have the following disadvantages:

- Installation or replacement of septic tank
- Pumping and general maintenance of septic tank required

4.5 SEPTIC TANK EFFLUENT PRESSURE (STEP) SYSTEMS

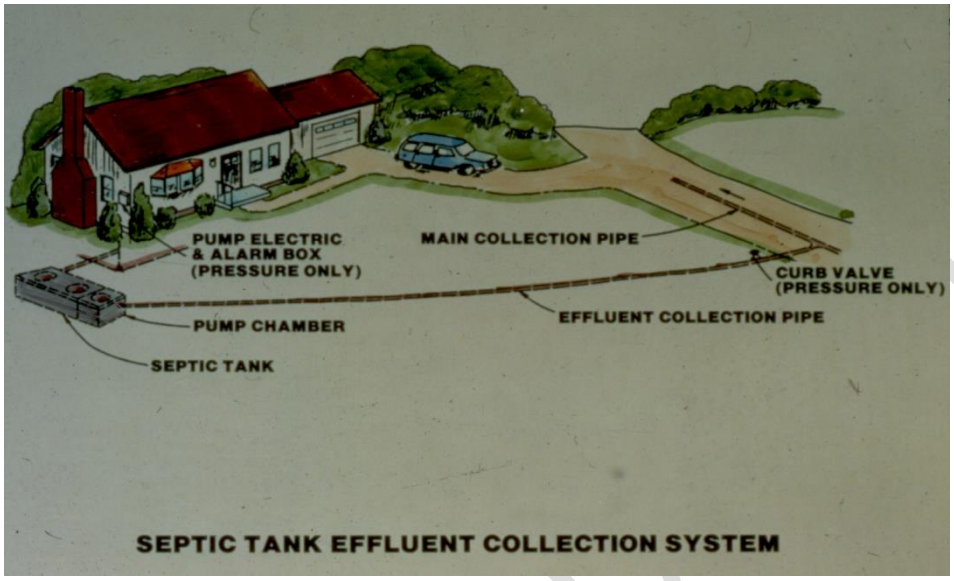
STEP systems work like STEG systems, with the difference being that the effluent is pumped with a STEP system. Wastewater from a home first flows into a septic tank, then effluent from the septic tank is pumped through 1.5 to 2 inch minimum diameter pipe to the treatment/dispersal/reuse site.

This technology is most applicable under the following conditions:

- Long sewer runs in flat areas where excavation for sewer is complicated by rock, bad soils and/or high groundwater
- Areas that have multiple low spots where many pump stations would be required for gravity systems
- Individual properties located in low spots where the number of properties is too low to make a pump station cost effective
- Potential for salvaging existing septic tanks

WORKING DRAFT

Figure 4-3 Septic Tank Effluent System



STEP systems have the following disadvantages:

- Septic tank installation required
- Additional operations and maintenance requirements at each property
- Capital cost associated with pumps and electric connections
- Emergency storage or back-up power needed

4.6 VACUUM COLLECTION SYSTEM

Vacuum sewer systems operate through a central vacuum source constantly maintaining a vacuum on small – mid size diameter collection mains. Every home is provided with a vacuum unit that is equipped with a valve connecting the unit to the vacuum line. Sewage from the home unit is drawn into the line by the pressure differential created by the vacuum source. The sewage is then drawn into a central station and then pumped either into a pressurized main or into a gravity sewer for conveyance to a treatment facility. Vacuum systems centralize the power requirements, thereby eliminating the need for emergency storage or back-up power at each property.

Vacuum systems are most applicable under the following conditions:

- Long sewer runs in flat areas where excavation is complicated by rock, bad soils and/or high groundwater
- Variable grade areas that would require multiple pumps stations for a gravity system

Vacuum systems have the following disadvantages:

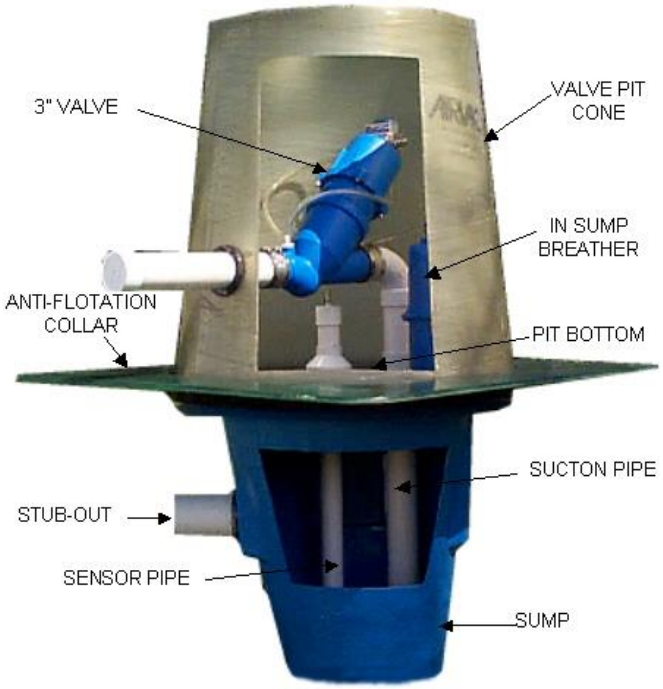
WORKING DRAFT

- Higher capital cost for smaller systems
- Installation and maintenance of valves at each connection is necessary
- More complex system

The economies of scale do not generally favor vacuum systems when less than 100 to 200 connections exist. In addition, as with STEP and Pressure Sewer systems, it is not applicable in areas with steep grades that allow for gravity collection.

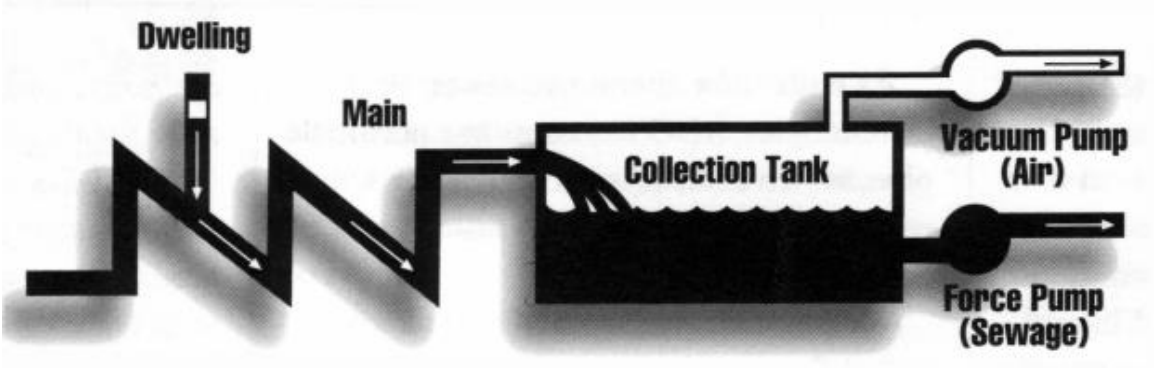
Figure 4-4 Vacuum Collection System

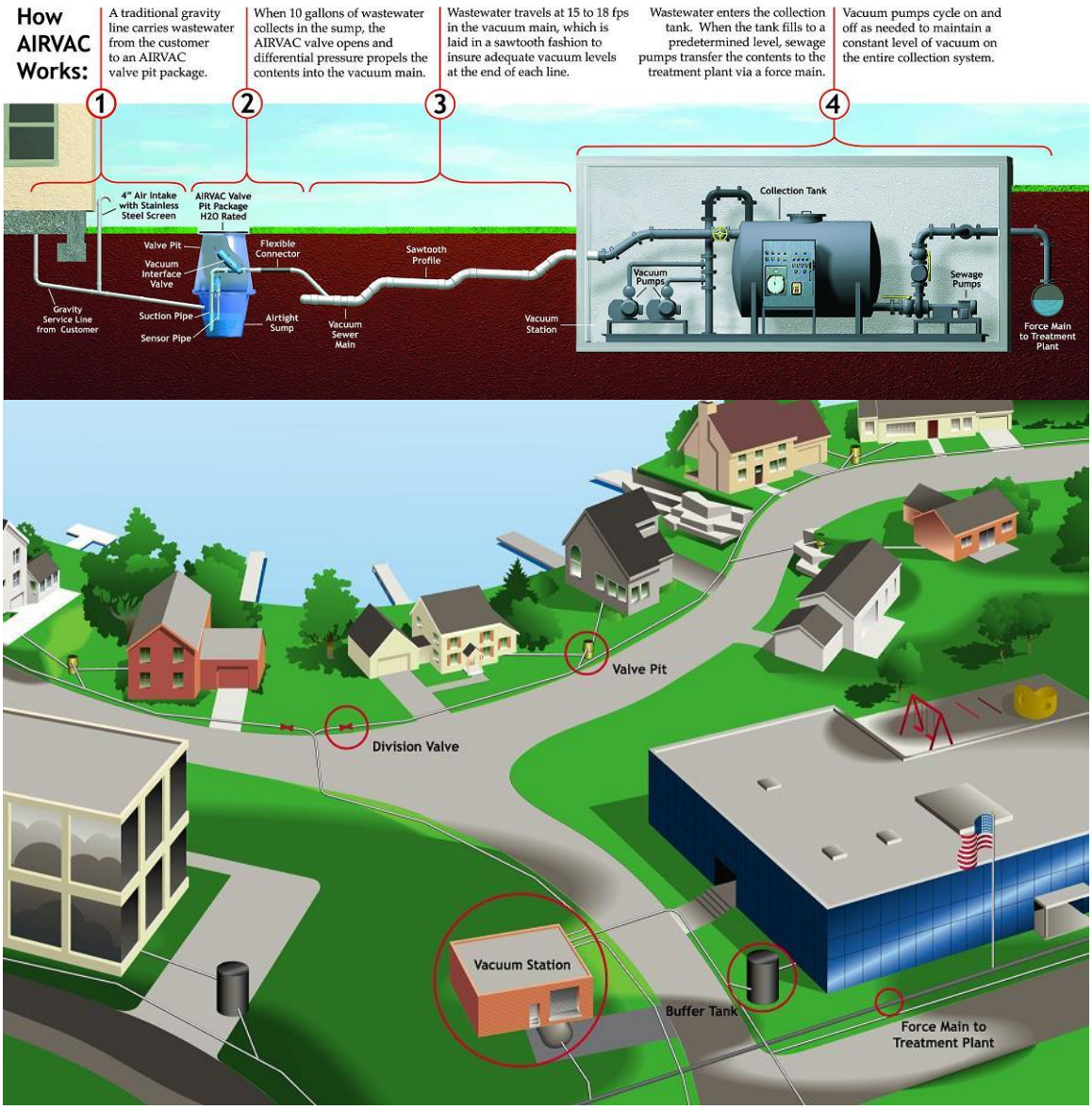
Vacuum Valve



Vacuum Pit

G DRAFT


Dwelling
Main
Collection Tank
Vacuum Pump
(Air)
Force Pump
(Sewage)


How AIRVAC Works:
A traditional gravity line carries wastewater from the customer to an AIRVAC valve pit package.
When 10 gallons of wastewater collects in the sump, the AIRVAC valve opens and differential pressure propels the contents into the vacuum main.
Wastewater travels at 15 to 18 fps in the vacuum main, which is laid in a sawtooth fashion to insure adequate vacuum levels at the end of each line.
Wastewater enters the collection tank. When the tank fills to a predetermined level, sewage pumps transfer the contents to the treatment plant via a force main.
Vacuum pumps cycle on and off as needed to maintain a constant level of vacuum on the entire collection system.
1
2
3
4
4" Air Intake with Stainless Steel Screen
AIRVAC Valve Pit Package H2O Rated
Valve Pit
Vacuum Interface Valve
Flexible Connector
Sawtooth Profile
Gravity Service Line from Customer
Suction Pipe
Sensor Pipe
Airtight Sump
Vacuum Sewer Main
Vacuum Station
Collection Tank
Vacuum Pumps
Sewage Pumps
Force Main to Treatment Plant
Valve Pit
Division Valve
Vacuum Station
Buffer Tank
Force Main to Treatment Plant

4.7 COMBINATION SYSTEMS

Grinder pumps and STEP/STEG systems are generally not mixed, however combination STEP and STEG systems are relatively common. Use of STEG and/or STEP systems with conventional sewers is not recommended when the conventional sewer is concrete due to corrosion concerns. Grinder pump systems discharging to conventional gravity sewers are relatively common. In general, when conditions favor gravity systems and there are a small number of low-lying properties, pumped systems will be installed on those properties. For conventional gravity systems, the low-lying properties will be fitted with grinder pumps and for STEG systems, the low-lying properties will be fitted with STEP systems.

WORKING DRAFT

5 LIFE CYCLE COSTS OF CLUSTER SYSTEMS

Table 5-1 summarizes the life cycle costs associated with cluster systems, presented on a cost per equivalent dwelling unit (EDU). The budgetary cost estimates presented in Table 5-1 are for planning purposes only. Actual costs are site-specific and typically range between -30% and +50% of the planning level estimates.

Cluster system costs include the capital and operating costs associated with the collection system. While the treatment system costs are similar per property for purely residential cluster systems, the collection system costs can vary significantly based on factors such as density, grade, number of pump stations required, bedrock, utility conflicts and other site-specific conditions. The costs presented in Table 5-1 use the following assumptions:

- 90 single family residences will be connected to the system
- Typical length of connection house to street sewer, 50 – 100 ft.
- One house per 50 – 100 feet of street.
- 85% of properties will flow by gravity to either an area pump station or directly to the treatment facility.
- One area pump station
- 15% of properties will require a pumping system to connect to the nearest intercepting sewer
- Design flow / EDU = 225-gpd
- Interest Rate = 5%, Useful Life = Term = 60 years (salvage value = 0)
- Typical installation with respect to soils, grade and, utilities and access.
- Standard leaching pools / trenches / beds for disposal of treated wastewater

For a typical cluster system approach, the lifecycle cost per EDU is lowest for septic tank effluent collection systems (STEG / STEP). In general, fixed film treatment systems have marginally higher capital costs with significantly lower operating costs, resulting in a lower life cycle cost per EDU.

WORKING DRAFT

Table 5-1 Cluster System Life Cycle Costs

Collection System Type	Treatment System Type	Life Cycle Cost Analysis					
		Total Capital Cost	Annual O&M Cost ($)	Use ful Life time	Present Worth O&M	Life Cycle Cost ($)	Life Cycle Cost per kg/yr Nitrogen Removed
Septic Tank Effluent	*Suspended Growth*	$41,478	$934	60	$17,684	$59,163	$6,409
	IFAS	$41,478	$934	60	$17,684	$59,163	$6,409
	Fixed Film w/ Carbon Feed	$43,853	$624	60	$11,817	$55,670	$6,031
Conventional Gravity	*Suspended Growth*	$44,159	$934	60	$17,684	$61,843	$6,700
	IFAS	$44,159	$934	60	$17,684	$61,843	$6,700
	Fixed Film w/ Carbon Feed	$46,534	$624	60	$11,817	$58,351	$6,321
Grinder Pump / Pressure Sewer	*Suspended Growth*	$45,412	$934	60	$17,684	$63,096	$6,835
	IFAS	$45,412	$934	60	$17,684	$63,096	$6,835
	Fixed Film w/ Carbon Feed	$47,787	$624	60	$11,817	$59,604	$6,457

WORKING DRAFT

6 FINDINGS

Collection system alternatives that are most applicable to East Hampton are:

- Septic Tank Effluent
- Vacuum Systems

Both systems offer either centrally powered collection (vacuum) for which back-up power is easily provided or onsite storage (septic tank excess volume) that provides capacity to continue to convey wastewater during power outages. Conventional gravity / grinder pump systems are not recommended for East Hampton.

Treatment system alternatives for onsite systems are limited by current SCDHS regulations. Assuming that the regulations are expanded to include approval of systems for individual residences up to 1,000-gpd, the following systems are recommended:

- Fixed Film Systems
- Passive carbon feed

Activated sludge systems require more frequent operator attention to maintain treatment performance under varying flows and loading conditions. For small cluster systems, SCDHS regulations require daily operator visits. However the cost of daily or even weekly / monthly sampling and inspections for individual onsite systems would make these systems cost prohibitive. In addition, these systems are used nationwide with typical maintenance intervals being semi-annual or annual. Under these conditions, activated sludge systems are not recommended.

For cluster systems and larger community systems with flows > 15,000 gpd, all treatment systems can be relied upon when properly designed and operated.

Disposal / reuse alternatives include:

- Standard and alternate leaching pool systems
- Trench and bed systems
- Drip irrigation for disposal and/or reuse

Reuse alternatives should be considered to the maximum extent feasible. Local golf courses provide the best opportunities for treated water reuse.

DISCLOSURE

As shown on Table 3-3, Lombardo Associates, Inc. is the developer of the Nitrex™ technology. The SCDHS in its June 2013 report Alternative On-Site Sewage Disposal Systems, Task Ix–Summary Report, concluded that "The Nitrex™ System was the only treatment system that consistently met 10 mg/L total nitrogen in the discharge."

WORKING DRAFT

REFERENCES

1. Cape Cod Commission, "Technical Bulletin 91-001, Nitrogen Loading", April 1992, Barnstable MA.

2. Caraco, N., and J. Cole. 2001. Human influence on nitrogen export: A comparison of mesic and xeric catchments. Mar. Freshw. Res. 52:119-125.

3. Converse, J. C. and E. J. Tyler. 1987. On-Site Wastewater Treatment Using Wisconsin Mounds on Difficult Sites. Transactions of the ASAE. 1987. American Society of Agricultural Engineers. vol. 30. no. 2. pp. 362–368.

4. Etnier, C., D. Braun, A. Grenier, A. Macrellis, R. J. Miles, and T. C. White. 2005. *Micro-Scale Evaluation of Phosphorus Management: Alternative Wastewater Systems Evaluation.* Project No. WU-HT-03-22. National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO.

5. Fewless, K.L.; Sharvelle, S.; and L.A. Roesner, Source Separation and Treatment of Anthropogenic Urine", Water Environment Research Foundation (WERF), Alexandria, VA, 2011

6. Katz, Brian G., Dale W. Griffin, Peter B. McMahon (USGS); Harmon S. Harden (FSU); Edgar Wade, Richard Hicks (FL DEP); Jeffrey P. Chanton (FSU), "Fate of Effluent-Borne Contaminants Beneath Septic Tank Drainfields Overlying a Karst Aquifer", Journal of Environmental Quality, March 18, 2010.

7. Kropf, Christian A. and Thomas, Brent, Regional Water Planning Commission, "Septic Nitrate-N Baseline Data and Risk Assessment Study for Washoe County Phase I: Prioritization Of Study Areas & Assessment Of Data Needs", December 7, 2007.

8. Lombardo P., W. Robertson, A. Mehrotra, C. Ptacek and D. Blowes. 2005. *Phosphorus Geochemistry in Septic Tanks, Soil Absorption Systems, and Groundwater*. Project No. WU-HT-03-21. Prepared for the National Decentralized Water Resources Capacity Development Project, Washington University, St. Louis, MO, by Lombardo Associates, Inc., Newton, MA

9. Morgan, David S., Stephen R. Hinkle, 2007, U.S. Geological Survey and Rodney J. Weick, Oregon Department of Environmental Quality, "Evaluation of Approaches for Managing Nitrate Loading from On-Site Wastewater Systems near La Pine, Oregon", USGS Scientific Investigations Report 2007-5237

10. US EPA Onsite Wastewater Treatment Systems Manual, 2002, EPA/625/R-00/008.

11. USEPA, 2010, Guidance for Federal Land Management in the Chesapeake Bay Watershed, Chapter 6. Decentralized Wastewater Treatment Systems, EPA841-R-10-002, May 12, 2010.

WORKING DRAFT

12. USGS Fact Sheet, 2007, “Questions and Answers About the Effects of Septic Systems on Water Quality in the La Pine Area, Oregon”, Publication 2007-3103

13. USGS, Nitrate-N Movement in Groundwater from the Land Application of Treated Municipal Wastewater and Other Sources in the Wakulla Springs Springshed, Leon & Wakulla Counties, Florida, 1966-2018 (USGS Report 2010-5099). (USGS, 2010)

14. Valiela et al, 1997, Nitrogen Loading From Coastal Watersheds To Receiving Estuaries: New Method And Application, *Ecological Applications,* 7(2), 1997, pp. 358–380.

15. Walker, W.G., Bouma, J., Keeney, D.R. and F.R. Magdoff, “Nitrogen transformations During Subsurface Disposal of Septic Tank Effluent in Sands: I. Soil Transformations”, J. Environmental Quality, Vol. 2, No. 4, 1973.

16. Water Environment Research Federation (WERF) 2007 Report Influent Characteristics of the Modern Waste Stream from Single Sources: Literature Review.

WORKING DRAFT

WORKING DRAFT

Task Report

Financing Alternatives and User Charge Analysis Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

December 4, 2013

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 FINANCING OPTIONS SUMMARY 3
1.1 Practical Public Grant and Loan Funding Sources Overview 3
2 PROGRAM FINANCING 4
2.1 Government Financing Options 4
2.1.1 State Revolving Fund (SRF) Loans 4
2.1.2 Green Innovation Grant Program (GIGP) 7
2.1.3 Environmental Protection Fund Local Waterfront Revitalization Program 7
2.1.4 Watershed Plans – Department of State 8
2.1.5 Clean Vessel Assistance Program Program (CVAP) 8
2.1.6 USDA Rural Utility Service (RUS) 8
2.1.7 HUD Community Development Block Grant (CDBG) Program 9
2.1.8 Department of Commerce Economic Development Administration (EDA) Funding 9
2.2 Local Financing Options 9
2.2.1 Town-Wide 10
2.2.2 Service-Area-Wide 13
2.3 Financial Characteristics of East Hampton 13
2.4 Addressing Financial Hardships 14
3 AFFORDABILITY ANALYSIS 16
3.1 Federal Guidelines 16
3.2 State of New York Guidelines 16
3.3 Affordability Analysis 17
4 FEE COLLECTION MECHANISMS 21

List of Figures

Figure 3-1 Hardship Eligibility Curve 17

List of Tables

Table 2-1 CWSRF Financing Options Matrix 6
Table 2-2 East Hampton, Town, Single Family Residence, Median Price 11
Table 2-3 East Hampton, Town, Single Family Residence, Units Sold 12
Table 2-4 East Hampton, Town, Single Family Residence, Sales Dollars ($Million) 12
Table 3-1 Residential Affordability Indicators 16
Table 3-2 Target Service Charge Chart 17
Table 3-3 East Hampton Financial Metrics 18
Table 3-4 East Hampton Financial Capability Score 19
Table 3-5 East Hampton Financial Metrics 19
Table 3-6 EPA Affordability Analysis Matrix 19
Table 3-7 East Hampton Families - Income & Below Poverty Level 20
Table 4-1 Fee Collection Option Analysis 21

1 FINANCING OPTIONS SUMMARY

1.1 PRACTICAL PUBLIC GRANT AND LOAN FUNDING SOURCES OVERVIEW

The practical public grant and loan funding sources for the East Hampton Comprehensive Wastewater Management Plan include Town, County, State, and federal funding through US EPA/State Revolving Fund (SRF) and 319 Program grants/loans. The SRF program as administered by the NYS Environmental Facilities Corporation (EFC) is by far the largest source of funding for Clean Water Projects addressing wastewater and stormwater issues. Funding for wastewater projects is primarily available through provision of low-interest loans. There are grants for green stormwater projects and no-interest loans for innovative wastewater projects. Suffolk County's ¼% tax water quality improvement fund and NYS Department of State watershed grants are additional funding sources.

Public-private partnerships (P^3) for needed wastewater facilities are another mechanism for project financing. P^3 options include:

- Design Build (DB)
- Design-Build-Operate (DBO)
- Design-Build-Own-Operate (DBOO)

with many variations on these options. These options are discussed in the Scavenger Waste Report. At this point in the Comprehensive wastewater Management Planning process opportunities for P^3 have not yet been identified.

2 PROGRAM FINANCING

2.1 GOVERNMENT FINANCING OPTIONS

Grants and loans for wastewater projects are available under several Federal, New York State and Suffolk County programs. Major programs that are available include:

- **Federal/State Combined Sources**
  - State Revolving Funds (SRF) Program through the NYS Environmental Facilities Corporation (EFC)
  - US EPA Nonpoint Source Section 319 Grant Program through the EFC Green Innovation Grant Program (GIGP)
- **Federal Sources**
  - USDA Rural Utilities Service (RUS)
  - HUD Community Development Block Grants
  - Department of Commerce Economic Development Administration
  - US EPA Hardship Grants Program for Rural Communities
- **State**
  - Water Quality Improvement Program Grants – application deadline Dec. 13, 2013
  - Environmental Protection Fund (EPF) Local Waterfront Revitalization Program (LWRP) funding from the NYS Department of State (NYSDoS).
- **County**
  - Suffolk County Water Quality Protection and Restoration Program is an additional potential funding source – with approximately $2 million/year provided by a portion of the dedicated ¼% sales tax. However procedures / applications for County funding have not, as of the date of this Report, been established.

with the SRF programs being the largest applicable to East Hampton and which has annual appropriations. The major federal and state programs are briefly described below.

2.1.1 STATE REVOLVING FUND (SRF) LOANS

Capital for the state SRF program is provided a minimum 20 percent by the state and 80 percent by US EPA. The State has broad discretion to establish program priorities and project eligibility criteria. The New York Clean Water State Revolving Fund (CWSRF) finances facilities that improve, maintain or protect water quality. The CWSRF provides financing to recipients for planning, design, and construction of eligible water quality projects.

EFC offers SRF Market Rate financing to applicants whose projects are not eligible for CWSRF subsidized financing. The SRF programs for which communities may be eligible:

- Clean Water State Revolving Fund (CWSRF), which distributes approximately $1 billion to public entities in New York. The repayment period for loans is 20 years for standard loans, but can be increased to 30 years. Subsidized (50% of market rates) interest rates is based upon current bond rates, which currently is 2.08 %.

- All financing applications are required to be accompanied by documentation of:
    1) State Environmental Quality Review Act (SEQR) completion;
    2) signoff by the NYS Office of Parks, Recreation and Historic Preservation (SHPO),
    3) Sewer district formation or increase, if applicable,
    4) Bond Resolution adopted by the applicant;
    5) Executed contract for engineering planning services, if such services are to be funded by the CWSRF. EFC will continue to only fund projects for which an approvable engineering report has been submitted and that are listed on the Annual List.

If these items are not submitted in acceptable and complete form by February 1, 2014, applicants are notified that the project relating to such items may be deemed to have been bypassed as of such date.

For listing a project on the draft IUP Annual or Multi-Year PPL in a future Intended Use Plan (IUP), EFC recommends that PLUS be utilized, or a project listing form be submitted, by May 1 to ensure that there will be sufficient time for reviewing and scoring the project for inclusion in the next draft IUP. To ensure that a project is listed on the final IUP Annual or Multi-Year PPL, PLUS must be utilized or a listing form must be submitted by the end of the comment period for the draft IUP, as well as an approvable engineering report, a project schedule, and a Smart Growth Assessment Form. For planning purposes, EFC suggests that all PLUS submissions or listing forms and information be submitted no later than August 1 to allow time for review and follow-up questions, if necessary.

The CWSRF was authorized by the Governor and the State Legislature in 1989 to make three interest-free long-term direct financings of up to $3.0 million each for innovative projects. Since the enactment of this legislation, two innovative projects have been funded. Financing for one additional innovative technology demonstration project remains available. In the event EFC identifies a project to be funded as an innovative project, notification will be posted on EFC's website. A description of the CWSRF Innovative Technology Demonstration Program is available on the EFC website at www.efc.ny.gov.

Below are key dates related to the IUP and the annual CWSRF subsidized funding.

- October 1, 2013 Effective Date of 2014 IUP
- December 1, 2013 Deadline for Submittal of hardship Applications for Categories A & B projects pursuing hardship financings in FFY 2014
- February 1, 2014 Financing Applications Due for all projects
- April 1, 2014 Deadline for Submittal of Hardship Applications for Inclusion in Category D of the FFY 2015 IUP

- September 30, 2014 End of the 2014 IUP year.

Table 2-1 presents the CWSRF Financing Options Matrix, as developed by EFC.

Contact:
Dwight Brown
SRF Program Services Coordinator
518-402-7396
CWSRFinfo@efc.ny.gov

Table 2-1 CWSRF Financing Options Matrix

CWSRF Financing Options Matrix

Timing	Short-Term		Long-Term	
SRF Project Score	Above the Subsidy Line	Cat E or projects otherwise not eligible for subsidy	Above the Subsidy Line	Below the Subsidy Line or Cat E
Option	**Interest-Free**	**Market-Rate**	**Subsidized-Interest**	**Market Rate (other than Bond Guarantee)**
Benefit	0% Interest (50% of project for Cat. A, B; 100% of project for Cat. D)	AAA/Aaa Borrowing Rates	AAA/Aaa Borrowing Rates, Plus 50% interest rate subsidy for up to 30 years	AAA/Aaa Borrowing Rates
			Economies of scale in pooled bond issue	
Interest Rate Subsidy Timing	No Interest Expense	Based on SRF borrowing costs in the high-grade tax-exempt short-term municipal markets	Available from Closing	Not Available Initially; available in the year the project score is above a future subsidy line (municipal recipients only)
Fees (as a % of SRF – Financed project costs unless otherwise noted)	None		a. 1.0% Direct Expenses b. Sliding Scale State Bond Issuance Charge	
			c. 0.25% Annual admin fee on outstanding balance	c. Annual admin fee on outstanding balance (0.25% if interest-subsidy is provided)
Availability	Available for up to 3 years or readiness for long-term financing, whichever is sooner, for a recommended minimum term of six months		Ongoing, may be financed pursuant to a pool schedule. Repayment term up to 30 years	
Project Status	Approved Engineering Report, environmental review completed and other approvals as necessary for short-term financing.		Final costs known; Project approvals in place. Plans and Specifications, major contracts awarded, permits in place.	

2.1.1.1 SEPTIC SYSTEM REPAIR GRANTS / LOAN PROGRAM

The Town may wish to expand the septic system repair rebate program that was part of the Harbor Overlay District. Also SRF funds can be used to fund local septic system repairs, however the systems must be publicly owned. For reference purposes, LAI implemented the 1st On-Site Wastewater Disposal District in New York State in 1980 that received grants for septic system repairs.

Currently EFC administers the Kensico Septic System Rehabilitation Reimbursement, http://www.efc.ny.gov/OtherPrograms/KensicoSepticSystemRehabilitationProgram.aspx, Program, funded by the New York City Department of Environmental Protection, which provides reimbursement to property owners in the Kensico Reservoir Watershed Basin to assist in the cost of rehabilitating their failing septic system. Property owners who have received a Notice of Violation on or after November 30, 2008 or believe their septic system is failing may be eligible to obtain up to 50% of eligible costs up to a maximum reimbursement of $25,000.

2.1.2 GREEN INNOVATION GRANT PROGRAM (GIGP)

The Green Innovation Grant Program (GIGP) supports projects that incorporate unique ideas for stormwater management, utilizing innovative green infrastructure design and cutting-edge green technologies. Administered by the New York Environmental Facilities Corporation (EFC), funding is provided to selected projects to the extent that funds are available. Recipients will receive a grant for up to 90% of project construction costs (including eligible planning and design costs). All recipients are responsible for providing a minimum local match of 10% from local or State (non-federal) funds.

A grant application must include a Feasibility Study - signed and stamped by a NYS licensed Professional Engineer (PE). GIGP provides funding for highly-visible projects which:

- Protect and improve water quality;
- Spur innovation in stormwater management;
- Build capacity locally and beyond by inspiring others to build and maintain green infrastructure;
- Facilitate the transfer of new technologies and practices to other areas in NYS.

GIGP funding availability and program opportunities are expected to be specified in the spring 2014 with grant applications expected to be due by August 2014.

2.1.3 ENVIRONMENTAL PROTECTION FUND LOCAL WATERFRONT REVITALIZATION PROGRAM

On an annual basis, the NYS Department of State solicits grant applications from local governments for 50/50 matching grants from the New York State Environmental Protection Fund's Local Waterfront Revitalization Program, http://www.dos.ny.gov/communitieswaterfronts/grantOpportunities/epf_lwrpGrants.html.

The 2013-14 Request for Applications closed August 12, 2013. It is expected that the 2014-15 Request for Applications will be issued in late spring 2014.

2.1.4 WATERSHED PLANS – DEPARTMENT OF STATE

Watershed plans for water bodies in New York's coastal zone are eligible for competitive Environmental Protection Fund (EPF) Local Waterfront Revitalization Program (LWRP) funding from the NYS Department of State (NYSDoS). According to NYSDoS, grant applications for preparation of watershed plans typically do well and receive funding.

A 2014 call for project applications for EFP LWRP funds to be issued by the State is expected sometime in the spring or early summer of 2014. As only municipalities are eligible to apply, the Town and/or the Village of East Hampton will need to apply for a grant to perform watershed plans for Georgica Pond (whose watershed is in both the Town and Village), Hook Pond (Village watershed) and Fort Pond (Town). The EPF LWRP grant program requires a 50:50 local match, which can be in the form of salary/wages, supplies/equipment, and cash toward contractual services (i.e. preparation of a watershed plan by a consulting firm). If awards are given, municipalities need only certify to the NYSDoS that local procurement guidelines have been followed.

2.1.5 CLEAN VESSEL ASSISTANCE PROGRAM PROGRAM (CVAP)

The Clean Vessel Assistance Program (CVAP) is a federally funded program that provides grants to marinas for the installation, renovation, and replacement of pumpout stations for the removal and disposal of recreational boater septic waste.

CVAP provides up to 75% of eligible project costs up to $60,000 to marinas, municipalities and not-for-profit organizations for installing pumpout boats and up to $35,000 for installing or upgrading stationary pumpout units or upgrading pumpout boats. Additional CVAP grants are also available for the operation and maintenance of pumpout facilities, as well as educational projects that address the benefits, use, and availability of pumpout stations.

CVAP grants are federally funded through the United States Fish & Wildlife Service and administered by New York State Environmental Facilities Corporation. Clean Vessel Act funding is supported through the Sport Fish Restoration Fund and purchase of fishing equipment and motor boat fuels.

CVAP Contact:
Lynne Vandenburgh
Senior Program Analyst
518-402-7461
CVAP@efc.ny.gov

2.1.6 USDA RURAL UTILITY SERVICE (RUS)

Communities with populations less than 10,000 people can fund wastewater projects through RUS, formerly Farmers Home Administration (FmHA). RUS offers low interest

loans depending on the criteria set by RUS for award. With East Hampton's population being greater than 20,000, this program is not applicable to East Hampton.

2.1.7 HUD COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) PROGRAM

HUD provides block grants to participating states, which allocate funds to local governments that perform development activities, principally for people with low to moderate incomes. HUD requires that 70 percent of grant funds be used to benefit low- and moderate-income people. Detailed eligibility requirements vary by state. Funded activities include wastewater, drinking water, and economic development projects.

State of New York Contact:
Joseph Rabito, Deputy Commissioner
New York State Office of Community Renewal
Hampton Plaza
38-40 State Street, 9th Floor
Albany, New York 12207
Phone: (518) 474-2057
Fax: (518) 474-5247

Suffolk County
Yves R. Michel, Commissioner of Economic Development & Workforce Housing
Department of Community Development
P.O. Box 6100
Hauppauge, NY 11788-0099
Phone: (631) 853-6088
Fax: (631) 853-5688

2.1.8 DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION (EDA) FUNDING

EDA grants are intended to help distressed communities attract new industry, encourage business expansion, diversify local economies, and generate long-term jobs. Water and wastewater facilities designed primarily to serve industry and commerce are among the many projects that can be funded under this program.

Contact:

Andrew Reid
Philadelphia Regional Office
The Curtis Center
601 Walnut Street, Suite 140 South
Philadelphia, PA 19106-3323
P: 267-687-4317
E: areid@eda.gov

2.2 LOCAL FINANCING OPTIONS

Local financing options include Town-wide charges and/or those based on the service area receiving the wastewater management service.

- Town-Wide
  - ✓ Taxes – general property
  - ✓ Taxes - through local assessment districts
  - ✓ Real Estate Transfer taxes

- Service-Area-Wide
  - ✓ User-charges
  - ✓ Connection fees

2.2.1 TOWN-WIDE

2.2.1.1 SPECIAL DISTRICT FINANCING

Local Town-wide financing options include all financing options that are derived from the Town at large through public means. Under these structures, everyone in the community supports the wastewater system financially due to the shared benefit of water quality improvement, even though the water quality protection system(s) may not provide service directly to all of the property owners.

The primary community-wide financing structure is the property tax. Property taxes have historically been used to pay for infrastructure work such as wastewater systems. This is normally done by increasing the property tax rate (the mil rate) for the entire community. Typically communities determine the percent of the wastewater system's capital cost that will be borne by the Town. The tax burden is based on the relative value of each property and is independent of the wastewater capacity or generation from a property.

Alternative structures are also possible, such as establishing special districts, with examples being enabling legislation in Town Law

- ✓ § 190-g Water quality treatment districts;
- ✓ § 190-e Wastewater disposal districts
- ✓ Watershed Protection Improvement Districts
- ✓ Business Improvement Districts

The Watershed Protection Improvement District was recently adopted by the State to specifically enable a District to perform a wide range of water quality protection measures under one district.

The Town of East Hampton has the following Districts that are assessed taxes based upon property assessment:

- ✓ Scavenger Waste District, Chapter 210 of Town Code, as the method for providing funds for the Scavenger Waste Facility. It is Assessment District # 40 with a 2012/2013 tax rate of 3.75/$1,000 of assessed valuation.

- ✓ Camp Hero Sewer District as the funding mechanism for the Camp Hero wastewater system. The Camp Hero Assessment District (#41) has a 2012/2013 tax rate of $282.58/$1,000 of assessed valuation.

2.2.1.2 OTHER TOWN FINANCING OPTIONS & POTENTIAL REVENUE

Private Donations

Chapter 22 of the Town Code provides a mechanism for private donations to be used for control or remediation of pollution to town surface waters.

"Mansion tax" Financing Option

Based upon the position that the wastewater-water quality problems are a legacy from past development, the Town may wish to impose a tax on the sale of property with value of $1,000,000 or more, such as the State's "Mansion Tax", with the tax income dedicated predominately for wastewater improvements and also water quality protection measures.

The amount of the tax and the property value at which it becomes effective should be determined following the definition of financing needs.

For reference purposes, the "Mansion Tax" is a New York State tax imposed on the purchase of residential property for $1 million or more, excluding the sale of personal property and most closing costs. The tax requires the purchaser of the property to pay 1% of the purchase price to the state. This tax applies to transactions for individual condos and co-ops as well as one to three family homes, see Tax Law Article 31 and Part 575 of the Real Estate Transfer Tax Regulations (20 NYCRR).

Tables 2-2 through 2-4 present statistics on property sales in East Hampton from Suffolk Research Services (http://www.suffolkresearch.com/) from which we have projected the tax revenue likely to accrue from a "Mansion type tax" for water quality protection.

Table 2-2 East Hampton, Town, Single Family Residence, Median Price

Year	Value	% Change
2003	590,000	0
2004	692,500	17.37
2005	849,000	22.59
2006	913,000	7.53
2007	1,100,000	20.48
2008	990,000	-10
2009	907,721	-8.31
2010	945,000	4.1
2011	875,000	-7.4
2012	955,000	9.14
2013	900,000	-5.75

Copyright© 1991-2013, Suffolk Research Service, Inc., Hampton Bays, NY,

Assuming that 50% of the properties sold are valued > $1,000,000 and they represent 67% of the sales dollars (from Table 2-4), a 1% tax would generate approximate $ 6.7

million per year. Fees from this tax would support a $100+/- million capital improvement program, depending upon a variety of financing factors.

A benefit of a Mansion type tax is that it does not affect lower valued properties – which according to Table 2-2 would exclude approximately 50% of property sales. Whether the buyer or seller pays is discretionary.

Community Preservation Fund (CPF) Type Fee

As described in the Community Profile Report, the Community Preservation Fund receives approximately $20 million / year from the 2% fee assessed on real estate transfers. A similar tax could be imposed and its revenue be dedicated for wastewater-water quality system improvements. A 1% tax on real estate transfers would generate approximately $10 million per year.

A disadvantage of a CPF type tax is that it affects all property sales. Whether the buyer or seller pays is discretionary.

Table 2-3 East Hampton, Town, Single Family Residence, Units Sold

Year	Value	% Change
2003	789	0
2004	999	26.61
2005	885	-11.41
2006	645	-27.11
2007	648	.46
2008	396	-38.88
2009	334	-15.65
2010	562	68.26
2011	491	-12.63
2012	601	22.4
2013	627	4.32

Copyright© 1991-2013, Suffolk Research Service, Inc., Hampton Bays, NY

Table 2-4 East Hampton, Town, Single Family Residence, Sales Dollars ($Million)

Year	Value	% Change
2003	672.5	0
2004	1,070.5	59.18
2005	1,253.5	17.09
2006	953.1	-23.96
2007	1,256.0	31.77
2008	672.0	-46.5
2009	530.9	-20.98

2010	968.7	82.46
2011	714.3	-26.26
2012	1,113	55.82
2013	1,019.6	-8.39

Copyright© 1991-2013, Suffolk Research Service, Inc., Hampton Bays, NY,

Administration of Wastewater System Fees

Should the Town elect to impose a self-funding fee, the Town may wish to engage the NYS EFC in some type of fiduciary oversight role to ensure funds are properly managed and used, especially in light of understood historic mismanagement of CPF funds.

2.2.2 SERVICE-AREA-WIDE

Local service-area financing options include revenues that are derived only from the property owners served by the wastewater system. They can take the following forms:

- **User-charges** – which are periodic (monthly, quarterly, or semiannual) fees paid by all property owners in the wastewater system. User charges can be structured as a fixed fee per connection, a fee based on actual wastewater flows (flat rate or a usage based multi-step rate structure with a minimum monthly fee), or a fee based on allocated capacity (regardless of actual usage). User-charges can be implemented to raise revenues for capital, O&M, or both.
- **Connection fees** are typically a one-time payment or assessment made at the time the wastewater system is built or when the property connects to the system. The fee is typically the proportionate share of the capital costs. Connection fees are assessed based on the principal that the property is being improved by the wastewater system. Connection fees can be assessed based on lot size, street frontage, water demand/wastewater generation capacity, or as a fixed amount per equivalent dwelling unit (EDU), with non-residential properties assessed based upon similar EDU capacity criteria.

- **Betterment Fees** are assessed on properties for the capital costs of service that is not included in the user charge.

A combination of property taxes, user fees, and connection fees is frequently used to finance public wastewater projects. For reference purposes, it is common that user fees for O&M services alone (no debt payment) are $50./month per residential property ($600/year).

2.3 FINANCIAL CHARACTERISTICS OF EAST HAMPTON

Communities fund wastewater projects through municipal (or county or other locality) bonds. Municipal bond interest rates will depend on the community's bond rating. The Town of East Hampton's current Moody's municipal bond rating is Aa3. Per the Town's financial advisor, as of November 17, 2013, municipal bond rates applicable for general obligation (GO) bonds for East Hampton are approximately:

- 20 year 3.58 %
- 30 year 4.21 %

Under current market conditions, the rates for revenue bond issues are:

- 20 year 4.34 %
- 30 year 5.01 %

2.4 ADDRESSING FINANCIAL HARDSHIPS

Various techniques have been used throughout the US to provide temporary or permanent relief of partial or all capital cost assessments to special needs groups such as low-income and elderly. Bond counsel and financing specialists will need to be involved should East Hampton wish to utilize these techniques.

As described in EPA's comments on **Rate Options to Address Affordability Concerns for Consideration by District of Columbia Water and Sewer Authority,** http://water.epa.gov/infrastructure/sustain/upload/2009_05_26_waterinfrastructure_pricings_AffordOptions.pdf in developing an affordability program for wastewater rates, a Town/utility will need to consider a number of aspects of the program:

(1) identification of groups is the intended beneficiary of subsidies,
(2) establishment of criteria and methods for assessing eligibility for participation in the program,
(3) the objectives of the assistance program,
(4) the particular nature and extent of subsidies, and
(5) the source of funds to pay for the subsidies.

Target groups for subsidies can be

- Elderly (specified age, typically 65 and over);
- Disabled (usually require a doctor's certification);
- Low income (criteria vary widely);
- Unemployed;
- Households facing temporary financial emergencies (criteria vary widely);
- Combination (e.g., low income AND elderly, low income AND disabled); and
- Owners/tenants – Programs are commonly limited to owner-occupants of single family residences or tenants of single family residences;

A financing-user charge impact analysis needs to be performed to determine the impact of subsidies on other users of the system that will be paying the subsidy.

Grants may be available for connection and assessment fees for low-income families and the elderly. Developing fee deferral programs for the elderly and low-income households in which the fees accumulate as a property lien and are paid when the property is sold may also be advantageous.

The Town of East Hampton has a number of existing tax deferral programs for special needs categories. These include:

- ✓ Town Code Chapter 255, Article II, Senior Citizens Tax Exemption and Extensions
- ✓ Town Code Chapter 255, Article V, Veterans Exemptions
- ✓ Town Code Chapter 255, Article VI, Exemption for Disabled Persons with Limited Incomes
- ✓ Town Code Chapter 255, Article VII, Exemptions for Volunteer Fire Fighters and Ambulance Workers

3 AFFORDABILITY ANALYSIS

The affordability of the customer base to pay in accordance with the necessary fee structure are assessed using US EPA guidelines, as discussed herein.

3.1 FEDERAL GUIDELINES

US EPA (1997) developed guidelines to assess the affordability of wastewater fees using a two-phased approach, (See Environmental Protection Agency, Office of Water, Office of Wastewater Management, "Combined Sewer Overflows— Guidance for Financial Capability Assessment and Schedule Development," EPA 832-B-97-004, February 1997).

Phase 1 determines the Residential Indicator using the projected fees as a percent of the local median household income (MHI). EPA's guidance on the affordability of investment in wastewater systems uses an average household rate of 2 percent of MHI. The indicator characterizes whether the costs impose a low, mid-range or high financial impact on residential users.

EPA's criteria compare the revenues collected by a water/wastewater system to the MHI in a service area, not to individual household income; see Congressional Budget Office Study 2002 at http://www.cbo.gov/doc.cfm?index=3983&type=0&sequence=7

EPA's affordability assessment guidelines are the annual cost as a percentage of median household income with Table 3-1 benchmarks presented for comparison.

Table 3-1 Residential Affordability Indicators

Financial Impact	Residential Indicator (cost as % MHI)
Low	< 1.0 %
Mid-Range	1.0 - 2.0
High	> 2.0 %

3.2 STATE OF NEW YORK GUIDELINES

State Comptroller's Approval

The State Comptroller's approval is required if debt is proposed to be issued by the Town, and the "cost of the district or extension" to the "typical property" or, if different, the "typical one or two family home" as stated in the notice of hearing, is above the average estimated cost thresholds of:

Sewer $ 774
Water $ 685

NYS EFC Interest Rate Subsidy

For wastewater treatment projects serving residential areas where the system cost for an equivalent dwelling unit exceeds the Target Service Charge (TSC) on the EFC

hardship curve illustrated on Figure 3-1 and Table 3-2, EFC offers a long-term financing program with a greater interest rate subsidy.

The maximum total cost of a project eligible for a Reduced Interest Rate Financing due to financial hardship is $18 million. Hardship financing is available to projects with a maximum project cost of $25 million. However, the reduced interest rate financing will only be provided for project costs up to $18 million. Hardship determinations are not available to applicants with an MHI greater than 150% of the Statewide MHI or $83,405, based on the 2010 census. East Hampton's 2010 MHI is $72,800.

Figure 3-1 Hardship Eligibility Curve

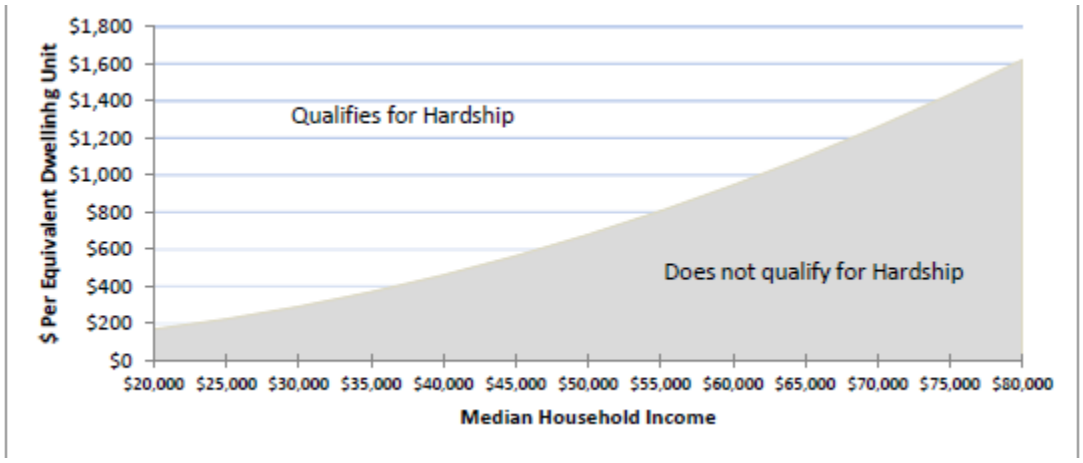


Table 3-2 Target Service Charge Chart

Median Household Income (MHI)	Target Service Charge (TSC)
$20,000	$170
$25,000	$225
$30,000	$292
$35,000	$371
$40,000	$462
$45,000	$565
$50,000	$680
$55,000	$807
$60,000	$946
$65,000	$1,097
$70,000	$1,260
$75,000	$1,435
$80,000	$1,620

3.3 AFFORDABILITY ANALYSIS

US EPA (1997) guidelines to assess the affordability of wastewater fees uses a two-phased approach, with Phase 2 being addressed in the Community Profile report and the results presented on Tables 3-3 and 3-4.

Phase 1 determines the Residential Indicator using the projected fees as a percent of the local median household income (MHI) and are presented on Table 3-5, based upon the 2011 Median Household Income (MHI).

Table 3-6 presents the EPA Affordability Analysis Matrix. Based upon the EPA guideline, user charges < $1,500 / year ($125/month) would be considered a low burden.

Table 3-3 East Hampton Financial Metrics

Indicator	No.	Description	East Hampton, NY
Debt	1	**Bond rating (Moody's)**	Aa3
		Overall net debt *($ million)*	$ 118,918,205
		Full market value of taxable property ($ million)	$27,844,868,055
	2	**Overall net debt** *(as % of full market value of taxable property)*	0.43%
SocioEconomic	3	**Unemployment Rate**	6.2%
		National Unemployment Rate	7.3%
		New York State Unemployment Rate	7.6%
	4	**Median Household Income** *2010*	$72,800
		Median Household Income *2011*	$76,054
		National MHI (2010), 2010 dollars	$52,762
		Median household income *(2010)* **– as a percentage of national MHI**	138%
		Per Capita Income, 2010 dollars	$28,889
		Persons per household (2010)	2.52
		Persons below poverty level, percent *(2011)*	3.7%
Financial Management	5	**Property tax collection rate**	100.0%
		Property tax revenues ($ million)	$48.3 million
		Median Taxable Property Value *(Year = 2013)*	
		Per Property Taxes AVG TOWN TAXES	$1,947
		Millage Rate *($1 per assessed thousand)*	286.81
	6	**Property tax revenues** *(as % of full market value of taxable property)*	0.18%
		Sales Tax Rate	8.75%

However, the Town will need to examine the range of household incomes and unemployment, as affordability of lower income households, especially those below the poverty level of $23,500 for a family of four, will be an issue that will need to be addressed.

Table 3-4 East Hampton Financial Capability Score

Financial Capability Indicators Score	
Category	East Hampton
Bond Rating (Moody's)	3
Overall net debt (as % of full	3
Unemployment as compared to National Average	3
Mean Household Income as % of	3
Property Tax Revenues as % of Full	3
Property Tax Revenue Collection	3
Average	3.00

Table 3-5 East Hampton Financial Metrics

Indicators	East Hampton	
Est. Median Household Income (MHI) *(2011)*	$76,054	
User Charges		
% MHI	Annual	Monthly
1.0%	$761	$63
2.0%	$1,521	$127
2.5%	$1,901	$158

Table 3-6 EPA Affordability Analysis Matrix

Financial Capability Indicators Average Score	Residential Indicator		
	Low (<1.%)	Mid-Range (1.0 - 2.%)	High (above 2.%)
Weak (Below 1.5)	Medium Burden	High Burden	High Burden
Mid-Range (1.5 and 2.5)	Low Burden	Medium Burden	High Burden
Strong (above 2.5)	Low Burden	Low Burden	Medium Burden

While the calculations suggest that a monthly fee of $125 would be a low burden, it is expected that such a fee will be a significant burden for low-income property owners. To understand the implications on East Hampton households, Table 3-7 presents the US Census statistics on East Hampton family income levels and the number below poverty levels. As 33% of households have incomes <$50,000, proactively addressing the affordability issue is recommended.

Table 3-7 East Hampton Families - Income & Below Poverty Level

East Hampton, NY			
INCOME AND BENEFITS (IN 2011 INFLATION-ADJUSTED DOLLARS)	**US Census - 2011**		
Total households	8,734	8,734	Cum %
Less than $10,000	299	3.4%	3.4%
$10,000 to $14,999	172	2.0%	5.4%
$15,000 to $24,999	548	6.3%	11.7%
$25,000 to $34,999	806	9.2%	20.9%
$35,000 to $49,999	1,061	12.1%	33.0%
$50,000 to $74,999	1,438	16.5%	49.5%
$75,000 to $99,999	1,104	12.6%	62.1%
$100,000 to $149,999	1,370	15.7%	77.8%
$150,000 to $199,999	798	9.1%	87.0%
$200,000 or more	1,138	13.0%	100.0%
Total	8,734	100%	
Median household income (dollars)	$ 76,054		
Mean household income (dollars)	$ 118,191		

PERCENTAGE OF FAMILIES AND PEOPLE WHOSE INCOME IN THE PAST 12 MONTHS IS BELOW THE POVERTY LEVEL	
All families	3.7%
With related children under 18 years	7.4%
With related children under 5 years only	5.5%
Married couple families	1.7%
With related children under 18 years	3.0%
With related children under 5 years only	0.0%
Families with female householder, no husband present	23.3%
With related children under 18 years	39.1%
With related children under 5 years only	63.2%
All people	7.6%
Under 18 years	9.4%
Related children under 18 years	9.4%
Related children under 5 years	10.7%
Related children 5 to 17 years	9.1%
18 years and over	7.2%
18 to 64 years	8.1%
65 years and over	4.2%
People in families	5.3%
Unrelated individuals 15 years and over	16.7%

4 FEE COLLECTION MECHANISMS

Alternative fee collection mechanisms include property assessments, betterments and annual user fees.

Table 4-1 illustrates impact on using property taxes as a financing option.

Table 4-1 Fee Collection Option Analysis

Indicators	East Hampton
Total Property Taxes - Residential, Commercial & Other *(2013)*	$48,300,000
Millage Rate *($1 per thousand)*	279.10
Equalization Rate	0.730%
Median Taxable Property Assessed Value *(2013)*	$5,775
Median Taxable Property Value *(2013)*	$791,096
Per Property Taxes	$1,612
Per Property Taxes AVG TOWN TAXES	$1,947
Potential User Rates	$1,200
User Rate as % of Existing Property Taxes	74.5%

According to the Town's August 2013 Bond Prospectus, property is assessed at approximately 0.73% of valuation. 2013 property taxes are computed based upon the mil rate of $286.81/ $1,000 of assessed valuation.

As can be seen on Table 4-1, potential user fees could be a significant percent of existing taxes for properties with values less than $800,000 +/-.

WORKING DRAFT

Task Report

Management and Legislative Alternatives Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

December 4, 2013

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 LEGISLATIVE OPTIONS FOR IMPLEMENTING COMPREHENSIVE PLAN 3
1.1 Legislative Options 3
1.2 Recommended Legislative Option.....3
2 MANAGEMENT CATEGORIES OF THE COMPREHENSIVE PLAN..... 6
3 MANAGEMENT RESPONSIBILITIES & SERVICE LEVELS 8
3.1 Management Components 8
3.2 Ownership & Management Options and Responsibilities 8
4 EPA WASTEWATER MANAGEMENT OPTIONS..... 15
4.1 Current Management Practices in East Hampton.....15

List of Tables

Table 3-1 Matrix of Wastewater Systems Ownership Options 9
Table 3-2 Typical MMR Responsibilities for the Range of Decentralized Systems 14
Table 4-1 Overview of U.S. EPA Management Level Options 16

1 LEGISLATIVE OPTIONS FOR IMPLEMENTING COMPREHENSIVE PLAN

This Report describes the options for implementing the to-be-selected Comprehensive Wastewater Management Plan (CWWMP).

The issues that the legislative options need to address are:

- ✓ Institutional ownership of publicly-owned wastewater management and water quality restoration systems;
- ✓ If desired, public institutional operation and potentially ownership of privately-owned wastewater management and water quality restoration systems (EPA Levels 4 and 5 – see Section 4);
- ✓ Other needed facilities for water quality protection, including a comprehensive water quality monitoring program.

1.1 LEGISLATIVE OPTIONS

The options are establishment of special districts through the use of New York State enabling legislation in Town Law are:

- ✓ § 190-g Water quality treatment districts;
- ✓ § 190-e Wastewater disposal districts
- ✓ Watershed Protection Improvement Districts
- ✓ Business Improvement Districts

These options are described in Town Law Article 12, 12-A and 12-C. Assemblyman Fred Thiele introduced legislation that has been enacted as Chapter 378 of the laws of 2012 (A7119-A), for the establishment, extension, powers and expenses of watershed protection improvement districts.

1.2 RECOMMENDED LEGISLATIVE OPTION

The Watershed Protection Improvement District, or a special Town District similar in structure as or a modification of the Town's Scavenger Waste District, are the recommended legislative options.

The Watershed Protection Improvement District (WPID) enables the Town to perform a wide variety of activities for watershed improvement and is believed to be the preferred option, pending finalization of the CWWMP, Town Board review and Town attorney review.

Although the WIPD does not have its own section in Town Law, the enabling legislation amended §§190, 193, 198, 202, 202-b, 209-a & 209-d of Article 12 of Town Law as described below, with ***emphasis added***.

§ 190. Establishment or extension of improvement districts……the town board of any town may establish or extend in said town ……***watershed protection improvement***

district,……and provide improvements or services, or both, in any such district, wholly at the expense of the district…

§ 193 ….Paragraph a of subdivision 1 is amended to read as follows:

a. Whenever a petition shall be presented to the town board pursuant to this article, for the establishment or extension of a…… ***watershed protection improvement district***, the board shall adopt an order and enter the same in the minutes of its proceedings, reciting in general terms the filing of such petition, the boundaries of the proposed district, the improvements proposed, the maximum amount proposed to be expended for the improvement as stated in the petition or the maximum amount to be expended for the performance or supplying of services if a maximum amount is stated in the petition, the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home, and specifying the time when and place where said board will meet to consider the petition and to hear all persons interested in the subject thereof, concerning the same. The board shall cause a copy of such order, certified by the town clerk, to be published at least once in the official paper, the first publication thereof to be not less than ten nor more than twenty days before the day set therein for the hearing as aforesaid, and shall also cause a copy thereof to be posted on the signboard of the town maintained pursuant to subdivision six of section thirty of this chapter, not less than ten nor more than twenty days before the day designated for the hearing as aforesaid. In the event that the town maintains a website, such information may also be provided on the website. Prior to the publication of a copy of the order, the board shall cause to be prepared, and file for public inspection with the town clerk, a detailed explanation of how the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home was computed.

§ 198 of the town law is amended by adding a new subdivision 10-g to read as follows:

10-g. ***Watershed protection improvement district***.

After a ***watershed protection improvement district*** has been established, the town board may take such action as may be required to adopt plans and specifications and enter into a contract or contracts, or take such other actions as may be required, for the protection and restoration of groundwater, surface waters, and drinking water quality as it may deem to be necessary or desirable, including but not limited to stormwater treatment projects and wetland construction.

§ 4. Subdivision 3 of section 202 of the town law, as amended by chapter 658 of the laws of 1990, is amended to read as follows:

The expense of the establishment of a …… ***watershed protection improvement district***, ……shall be assessed, levied and collected from the several lots and parcels of land within the district for each purpose in the same manner and at the same time as other town charges, except as otherwise provided by law. In the event that any order adopted pursuant to section two hundred nine-d of this chapter for the establishment of a…… watershed protection improvement district, or …….or that any petition for the establishment of a……..or for watershed protection improvement district….., shall be assessed by the town board in proportion as nearly as may be to the benefit which each

lot or parcel will derive therefrom, the amount to be raised for the payment of the principal and interest of the bonds issued for ……..watershed protection improvement district pursuant to such petition or order, shall be assessed on the lands within such district in the same manner as provided in the case of trunk sewers.

§ 5. Subdivision 2 of section 202-b of the town law, as amended by chapter 511 of the laws of 1989, is amended to read as follows:

2. The town board may, on behalf of a ……..***watershed protection improvement district***,….within the limitations of section one hundred ninety-eight of this chapter, acquire additional apparatus and equipment and replace obsolete, inadequate, damaged, destroyed or worn-out apparatus and equipment, and it may construct additional facilities and appurtenances thereto or reconstruct or replace obsolete, inadequate, damaged, destroyed or wornout facilities and appurtenances thereto……

§ 6. Subdivision 1 of section 209-a of the town law, as amended by chapter 397 of the laws of 1995, is amended to read as follows:

1. the term "improvement district" shall include only a ……***watershed protection improvement district***…..

§ 7. Subdivision 1 of section 209-d of the town law, as amended by chapter 397 of the laws of 1995, is amended to read as follows:

1. Subsequent to the date of the filing of the map, plans and report in the office of the town clerk as required in section two hundred nine-c of this article the town board may adopt an order and enter the same in the minutes of its proceedings reciting a description of the boundaries of the proposed district or extension in a manner sufficient to identify the lands included therein as in a deed of conveyance, the improvements proposed, the maximum amount proposed to be expended for the improvement, the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home, the proposed method of financing to be employed, the fact that a map, plan and report describing the same are on file in the town clerk's office for public inspection and specifying the time when and the place where said board will meet and hold a public hearing to hear all persons interested in the subject thereof, concerning the same…...

If a….. ***watershed protection improvement district***…. is proposed, such order may contain a statement that the cost of constructing……for watershed protection improvement purposes shall be assessed by the town board in proportion as nearly as may be to the benefit which each lot or parcel will derive therefrom. Prior to the publication of the order, the board shall cause to be prepared, and file for public inspection with the town clerk, a detailed explanation of how the estimated cost of hook-up fees, if any, to, and the cost of the district or extension to, the typical property and, if different, the typical one or two family home, was computed.

2 MANAGEMENT CATEGORIES OF THE COMPREHENSIVE PLAN

This section provides a preliminary overview of the management options for implementing the CWWMP, pending finalization of the CWWMP.

- Septic System Inspection prior to property transfer, with potential phasing of repairs based upon environmental risks to minimize the burden on lower income property owners;
- Requiring septage pumping of septic systems on a ~ 5 year schedule along with the use of effluent filters;
- Automating/simplifying scavenger waste hauler documentation process
- Training and certification of Pumpers as Septic Inspectors.

Prior to discussing management options, a definition of what is to be managed is needed to provide context. The following categories of the CWWMP are anticipated to be developed:

- ***Neighborhood Wastewater Systems to serve areas with malfunctioning – Problematic Septic Systems***

  This category applies to the properties that require an off-site solution that would be served by a cluster-neighborhood wastewater system.

- ***Upgrades to Septic Systems to achieve Advanced Tertiary Treatment (AWT)***

  This category applies to properties that are required by Town/County/State code and/or in environmentally sensitive areas that require additional nitrogen or phosphorus removal

- ***On Property Upgrades to Septic Systems to Avoid Bacterial Contamination***

  This category applies to properties that have malfunctioning septic systems, which can be upgraded on-site.

- ***Properties Requiring a Public Water Supply***

  This category represents properties that are at risk from well water contamination with the appropriate solution being connection to the Suffolk County Water Authority water supply system.

- ***Water Quality Monitoring Program***

  This category is for activities associated with monitoring ground and surface water quality.

The estimated total number of properties in the above management categories is defined in the Needs Analysis and Scenarios Reports. Also the number of properties within each category may change based on subsequent refined studies. As

improvements are made and additional data is collected, the number and location of properties in each of the categories may change. An adaptive management program is recommended to update properties assigned to the various management categories based on improved understandings on a periodic basis.

3 MANAGEMENT RESPONSIBILITIES & SERVICE LEVELS

3.1 MANAGEMENT COMPONENTS

The management components of the improvements to be performed as part of the CWWMP are:

- Ownership
- Administration
- Operations & Maintenance, including repair & replacement
- Monitoring
- Use Fees

The public ownership options include:

- A single Town-wide entity
- Multiple separate entities for each project or watershed area or category (such as an on-site wastewater disposal district and multiple watershed protection improvement districts)

The private options are:

- Maintain ownership of individual systems with property owner
- Privatization whereby a private entity could own and operate neighborhood wastewater systems. Many details will need to be addressed.

3.2 OWNERSHIP & MANAGEMENT OPTIONS AND RESPONSIBILITIES

The ownership options for wastewater systems consist of:

1. Public
2. Private
   - 2.1. Property Owner
   - 2.2. Other
     - 2.2.1. Private for-profit entity
     - 2.2.2. Private non-profit entity

Management responsibilities for wastewater system ownership include:

- Administration
  - Program management for implementation of capital improvements
  - Use regulation
  - Regulatory compliance reporting
  - Customer service, billing, and collections
  - User-charge system
  - Financial

- Operations
  - Monitoring

- Maintenance and routine repair
- Major repair/replacement

3.2.1 OWNERSHIP

Ownership refers to the entity that has legal responsibility, liability, and authority regarding all aspects of a wastewater system. Ownership is sometimes referred to as the institutional structure of a wastewater system, and generally falls into the following categories:

- Public - Municipal
- Property Owner
- Outsourced to:
  - Private For-Profit
  - Public (such as a cooperative)
  - Private Non-Profit Entity

The ownership options in New York are defined by existing enabling legislation as described in Town Law that defines the responsibilities, authorities, composition, and functioning of the ownership entity.

Traditionally, centralized and neighborhood wastewater systems publicly funded have been owned and managed by public entities, while onsite and neighborhood wastewater systems that are privately funded, have been owned and managed privately with public oversight. Table 3-1 describes the range of potential ownership structures.

Table 3-1 Matrix of Wastewater Systems Ownership Options

Ownership Institution	Infrastructure
Public	Added to existing unit
	Independent public entity
Private	Property Owner
	Special purpose entity
	For-profit corporation
	Non-profit corporation

The ownership of a wastewater system may constrain the available financial and institutional management system options available. For example, privately owned systems are unable to obtain public funding in the form of grants whereas publicly owned systems are eligible. Low interest septic system rehabilitation loan programs under the EPA/State Revolving Fund Program (SRF) can be used for private and public systems.

The administration and monitoring, maintenance, and repair (MMR) options are discussed in the following sections. An owner can either perform some or all of these activities internally or have them performed by others, i.e. outsourced.

3.2.2 ADMINISTRATION

Administrative functions are:

- Ownership Management
- Program Management for Capital Improvements
- Use Regulation
- Regulatory Compliance Reporting
- Customer Service, Billing, and Collections
- User-Charge System
- Financial

Ownership Management

The ownership management function can consist of:

- Oversight of the outsourced entity's activities;
- Performance of all activities by the owner's manager directly or within a Responsible Management Entity (RME);
- Combination of above.

At a minimum, ownership management (directly or through its agent) maintains records on the wastewater system and submits required compliance performance reports to regulatory agencies, and educates system users.

Ownership administration management costs include:

- General administration
- Professional services for engineering, legal, and accounting
- Insurance
- Office space and other overhead
- Customer service, billing, and collection

Program Management for Capital Improvements

For capital improvement projects, there is a significant need for management of the proposed system's capital facilities planning and implementation. These activities are usually outsourced to an experienced engineering or program management-type firm, with the public entity defining what is performed internally, based upon advice from its professional engineers.

Use Regulation

Onsite Sewage Treatment and Disposal Systems for individual homes are regulated by the Suffolk County Department of Health Services (SC DHS). Permits must be obtained from the SC DHS to install or make repairs to these systems. Town Code Chapter 210 Section 3-1 requires a permit from the Town for any on-site wastewater system as well.

All wastewater systems with flows greater than 1,000 gpd are regulated by the NYS DEC and require SPDES permits. Systems from 1,000 gpd to 15,000 gallons per day

are permitted by SC DHS as the agent for NYSDEC.

Regulatory Compliance Reporting

As wastewater systems increase in size, their regulatory reporting requirements generally increase. Owners must provide for gathering and transmission of the required regulatory compliance reporting information. Monitoring requirements for systems with individual SPDES discharge permits are at least monthly.

Customer Service, Billing, and Collections

Customer service issues range from responding to odor complaints to change of use, including service termination and the addition of new service connections. Billing and collections are vital functions of any RME/business. Many private and public utilities provide this service for other utilities.

A key issue is the ability of the RME to take enforcement action for non-payment of fees.

Typical enforcement options include:

- Property liens
- Water shut-off, when central water is available
- Civil actions (small claims court)

Owners must ensure that all stakeholders understand the legal mechanisms and proper notification procedures as well as the impact of non-payments of fees on the financial viability of the utility. Owners can contract with private organizations that guarantee user-charge payments. These organizations provide the revenue cash flow and will place liens (or use other legal instruments) on the property of non-paying users, naturally for a fee.

User-Charge System

The primary cost categories for user-charges associated with wastewater systems are:

- Capital Costs amortization
- Administration Costs
- Operation and Maintenance Costs
- Repair & Small Capital Equipment Funds
- Large Capital Equipment Replacement-Depreciation Funds

Capital costs are the total installed costs of the wastewater system, including engineering (planning, design and construction management), land, financing, administration, etc. and construction costs. Capital costs for decentralized systems can be paid for in one or more of the following ways:

- Federal or state grants and loans
- Local fees/revenues
- User-charges, in which a portion or all of the capital costs are amortized over a fixed term (such as 20-30 years)
- Connection charges, in which users pay a fee when the wastewater system is constructed or when users connect

- Property taxes in which all property owners in an entire community, regardless of whether the property owners are served by the decentralized system or a special tax district, finance some or all of the wastewater system's capital cost.
- Unique taxing mechanisms, such as dedicated taxes, in which revenues are restricted for payment of wastewater system capital costs
- Private entity building the wastewater system, as in a new parcel development
- Private entity providing design, build, own, operate and finance services.

A key determinant of which financing options are available is the ownership of the system, as many public funding sources are restricted from being used for private property.

O&M costs include the annual cost of operating and maintaining the system arising from:

- Labor
- Electricity use
- Chemicals
- Equipment servicing
- Residuals removal and ultimate disposal
- Routine repair and replacement (R&R) for equipment with useful life < 10 years
- Equipment and major component replacement

A repair and replacement (R&R) fund should be established for equipment with a useful life of less than 10 years. This fund is used to pay for small equipment repair/replacement when it fails or on a scheduled basis (to avoid damaging impacts). Establishing an annual repair fund contribution ensures that funds are available when needed. A repair fund also levels impacts of needed repairs on necessary user-charge rates.

A major financial challenge with wastewater systems is the funding for future major asset replacements of major capital equipment. This funding is sometimes referred to as a depreciation funding.

Therefore, user-charge systems need to be established to cover:

- Amortization of capital costs, if any
- Annual actual O&M costs
- Repairs, when needed (R&R account)
- Major asset replacement, when needed (Depreciation account)

Typically, funding of future major equipment replacement has been a challenge for public entities. Inclusion of replacement-depreciation fund contributions in user-charge systems is essential so that funds are available when major repairs are required. An affordability challenge exists when the user-charge includes significant capital amortization for upgrades. To mitigate the user charge impact, initiation of depreciation funding could be delayed a few years after system start-up.

Some states require that privately owned cluster systems maintain the replacement-depreciation fund (sometimes referred to as the reserve fund) with the regulatory authority having access to those funds, should the private entity not repair/replace the system when necessary to maintain permit compliance. In addition to actual fund

contributions, numerous financial instruments (such as bonds or letters of credit) provide equivalent financial assurances. Depreciation funding is recommended to be included in the management structure to ensure that funds exist to replace major equipment at the end of its useful life.

GASB 34 (Government Accounting Standards Board 2000) requires replacement-depreciation funding of municipal systems, for proper asset management.

Financial

The financial issues associated with decentralized systems are:

- Budgeting, cash flow management, accounts payable, and accounts receivable, as with any business operations
- Capital resources procurement

The owner will need to establish a budget for any wastewater system, in particular for user-charge determination. Projected revenues will need to provide excess amounts (usually 115%-125%) of expenses, for unforeseen conditions, revenue shortfalls, and to maintain a good credit rating. Cash flow difficulties arise when the timing of expenses outpaces revenue receipts. In part for this reason, capitalizing the first year, or preferably two, of operating expenses is typically performed.

3.2.3 OPERATIONS

The maintenance, monitoring, and repair (MMR) activities required for wastewater systems are heavily influenced by system capacity and effluent requirements. Maintenance and repair activities are dictated by the equipment, while monitoring requirements are dictated by permits and environmental setting. Table 3-2 presents typical MMR responsibilities for conventional OnSite Treatment & Disposal Systems (OSTDS), medium and large cluster systems.

A monitoring program, specific to the proposed East Hampton improvements will need to be developed and will need to demonstrate compliance with public health and water quality requirements.

Table 3-2 Typical MMR Responsibilities for the Range of Decentralized Systems

MMR Activity	Conventional OSTDS	Medium AWT Cluster	Large AWT Cluster
Maintenance	Residuals removal every 5-7 years	Treatment, collection, dispersal system maintenance activities	Ongoing treatment, collection, dispersal system maintenance activities
Monitoring	Inspections every 3-5 years	Monthly inspections / Operation Activities	Daily Inspections / Operation Activities
		Monthly sampling	Daily sampling
	Remote monitoring systems available	On-call personnel	Full-time personnel
		SCADA system	SCADA system
Repair	Component repair, as needed	Preventative repair and replacement program	Preventative repair and replacement program
			Full-time personnel
		On-call personnel	Redundant systems
Administration	Varies by degree of oversight (Education, Permit Applications, Inspections, etc.)	Discharge permit	Discharge permit
		Compliance reporting	Compliance reporting
	System use regulation through Washoe County	Moderate customer service	Full customer service
		System use regulation	System use regulation

4 EPA WASTEWATER MANAGEMENT OPTIONS

The United States Environmental Protection Agency (U.S. EPA) recommends five model management programs for decentralized wastewater systems:

1. System inventory (awareness of maintenance needs)
2. Management through maintenance contracts
3. Management through operating permits
4. Responsible Management Entity (RME) operation and maintenance
5. RME ownership and management

Each of these model management programs is summarized in Table 4-1, with full descriptive reports at www.epa.gov/owm/mtb/decent/index.htm.

A mixture of ownership and management options is not uncommon. Many publicly owned systems are managed in varying degrees by private entities, commonly referred to as public-private partnerships. An owner can outsource any or all of the management activities for a cluster system. Ownership can be held by a public utility, a private for-profit or non-profit entity.

4.1 CURRENT MANAGEMENT PRACTICES IN EAST HAMPTON

The current wastewater management practices in East Hampton are described in the Community Profile Report. In general the Town has excellent regulations; however they have not been enforced for years.

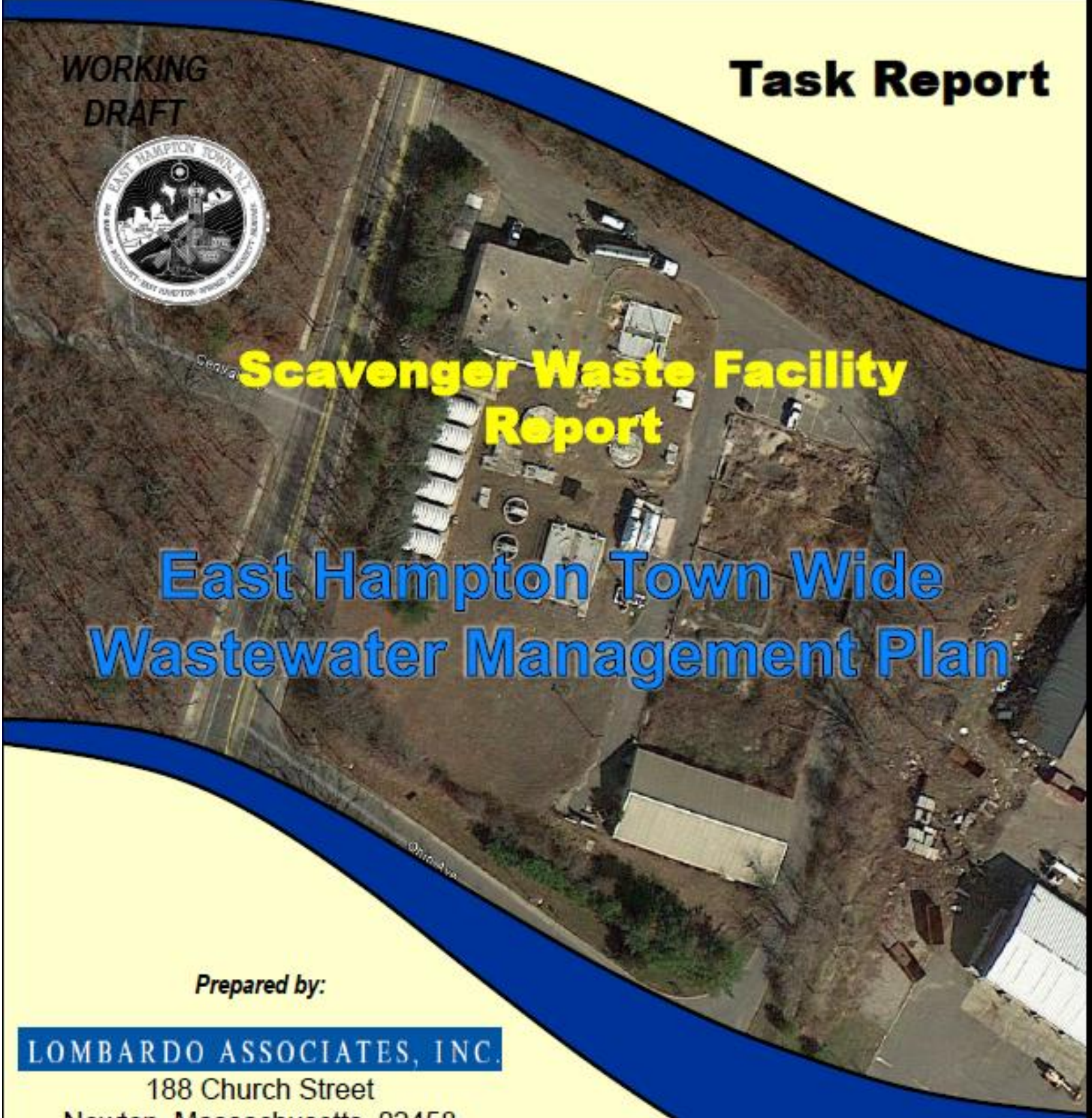
Table 4-1 Overview of U.S. EPA Management Level Options

Management Model	Objectives	Basic Features
Management Model 1 ***Inventories and Maintenance Reminders***	• Owner awareness of permitting program, installation, and O&M needs • Compliance with codes, regulations	• Only conventional onsite systems • Prescriptive design/site requirements • Owner education to improve O&M • Inspections only during construction and complaint evaluations • Create and maintain system inventory
	• Maintain prescriptive program for sites that meet code criteria (MP 1)	• Allowances for specified alternatives where code is not met
Management Model 2 ***Maintenance Contracts (Cont.)***	• Permit only approved alternative systems on sites not quite meeting criteria	• O&M contracts and reporting required for alternative systems • Inspections and owner education as in MP 1 • Create and maintain inventory
Management Model 3 ***Operating Permits***	• Onsite system designs based on site conditions and performance requirements • System performance assumed by O&M task completion and verified through permit renewal inspections	• Wider variety of designs allowed • Performance of required O/M tasks governs operating permit renewal • Onsite Wastewater Treatment System (OWTS) monitoring/inspections required • Property sale and change-of-use compliance-assurance inspections • Create and maintain inventory
Management Model 4 ***Responsible Management Entity Operation and Maintenance***	Responsible public or private entity assumes O&M and inspection/monitoring responsibilities for all systems in management area	• Performance governs acceptability • Operating permits ensure compliance • All systems are inspected regularly • Monthly/yearly fees support program • Owner responsible for all costs • Create and maintain inventory
Management Model 5 ***Responsible Management Entity Ownership***	• Public or private RME owns and operates all systems in management area • Similar to centralized sewer system service approach	• Performance governs acceptability • All systems are inspected regularly • Monthly/yearly fees support program • Users relieved of all O&M responsibilities • RME funds installation and repairs • Create and maintain inventory

Source: Cluster Wastewater Systems Planning Handbook, 2004

WORKING DRAFT

Task Report



Scavenger Waste Facility Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

Revised April 28, 2014

With team members:

FPM group

WOODS HOLE GROUP

TABLE OF CONTENTS

1 OVERVIEW 6

2 EAST HAMPTON SCAVENGER WASTE TREATMENT & TRANSFER STATION FACILITIES 8

3 SCAVENGER WASTE FLOWS 12

4 SCAVENGER WASTE QUALITY 17

Scavenger Waste Quality Data 17
Scavenger Waste Quality Data Analysis 22

5 SWF OPERATING PROCEDURES 23

5.1 Inventory and Billing Procedures 23
5.2 Scavenger Wastes Removal 24
5.3 Pump Out Reports 24

6 PERMITS AND REGULATORY ISSUES 27

6.1 SPDES Permit Requirements 27
6.2 Regulatory Requirements 27
6.2.1 Notice of Violations – Letter Dated May 23, 2011 27
6.2.2 Corrective Action Plan 28
6.2.3 Transfer Station Permit Application 29
6.2.4 Marina Waste Tank 30
6.2.5 SWF Influent and Groundwater Sampling Requirements 30
6.3 Waste Transfer Regulations 30
6.3.5 Truck to Truck Transfer Recommendation 31
6.4 Scavenger Waste Carters & 2013 Volumes of Scavenger Waste Transported & Trucks 31

7 NON-EAST HAMPTON SCAVENGER WASTE TREATMENT / DISPOSAL OPTIONS 34

Riverhead Facility 34
Bergen Point Facility 36
Clear Flo Technologies Facility 36
Yellow Trading Ltd. Facility 36

8 FINANCIAL ANALYSIS 37

SWF Revenues and Expenditures 2000 - 2013 37
Scavenger Waste Costs to Property Owners 37

9 CURRENT OPERATIONAL PROCEDURES, CONTRACTS & COSTS 40

Current Mode of Operation 40
STES Agreement 40
Environmental Services Inc. (ESI) Agreement for Scavenger Waste Removal 40
Survey of East Hampton Carters 41
Transportation Costs & Estimate of Competitive Fee 42
Rain Inflow from Uncoverd Sludge Drying Beds – Costs and Solutions 42
Electricity Use By Soil Odor Filter and EQ Tank Aeration 43

10 SWF ALTERNATIVES EVALUATIONS 45

Candidate Wastewater Treatment Systems For Receipt/Treatment of Wastewater Only Pumpings 45
NOV Causes & Management Options 45
Closing of East Hampton SWF 46
Siting of a New SWF at an Alternate East Hampton Location 46
Environmental Impacts of Existing and Alterante Sites 47
Intermunicipal Agreements 47

Working Draft

Permanent or temporary self-sustaining transfer facility at existing SWF 47
Estimated User Charges for Upgraded SWF 49
Public Private Partnerships (P^3) 51
Grease Management 53
11 SWF CONCLUSIONS & RECOMMENDATIONS 54
12 SWF FINDINGS 56
APPENDIX A1 – SWF NOV 58
APPENDIX A2 – NYSDEC LETTER EXTENDING CAP SCHEDULE 62
APPENDIX A3 – NYSDEC COMMENTS ON TRANSFER STATION PERMIT APPLICATION 63
APPENDIX A4 – SCDHS LETTER MARINA WASTE TANK 65
APPENDIX A5 – NYSDEC EMAIL CONFIRMING NO SAMPLING REQUIRED WITH NO DISCHARGE 66
APPENDIX B – 2011 CORRECTIVE ACTIONS PLAN REPORT 68
APPENDIX C – MINUTES OF OCTOBER 2, 2013 MEETINHG WITH EH SCAVENGER WASTE TRANSPORTERS 76
APPENDIX D – TRANSFER STATION PERMIT APPLICATION 79

List of Figures

Figure 1-1 Location Map for SWF 6
Figure 1-2 Aerial Photograph of SWF 7
Figure 2-1 SWF Process Flow Diagram 10
Figure 2-2 SWF Site Plan 11
Figure 5-1 SWF as Transfer Station Process Flow Diagram – October 2013 23
Figure 5-2 Riverhead Scavenger Waste Report Form 26
Figure 6-1 Portable Spill Containment Equipment Examples 32
Figure 7-1 Riverhead Scavenger Waste Treatment Facility 35
Figure 10-1 Potential alternate location for New SWF 46
Figure 10-2 Potential alternate location for New SWF 47

List of Tables

Table 2-1 SWF Tanks/Facilities with Storage Capacity (gal) 8
Table 3-1a SWF Historical Flow Data – STES Data 12
Table 3-1b SWF Historical Flow Data – STES & Town Data & Disposal Rates 12
Table 3-2 Scavenger Waste Flows to Bergen Point - 2006 - 2013 13
Table 3-3 Scavenger Waste Flows to Riverhead 2006 – 2012 13
Table 3-4 2010 - 2012 Scavenger Waste Flows from East Hampton 14
Table 3-5 Scavenger Waste Flows by Carter 2004 - 2013 15
Table 3-6 Daily Scavenger Waste Flows at EH SWF – 2011 - 2013 16
Table 4-2 SWF Influent Water Quality – BOD/TSS for 2007 – 2011 & 2011 NH_3-N + NO_3-N 17
Table 4-3 SWF 2011 Sludge Removal 18
Table 4-1 SWF Weekly BOD/TSS Data 2007 – 2011 19
Table 4-4 SWF Influent Quality – 2013 Partial 21
Table 4-5 Scavenger Waste Design Standards & EH Values 22
Table 5-1 Representative Tabulation of Influent Source Quantity & Location 25
25

Working Draft

Table 6-1 SWF Effluent Discharge Limits and Monitoring Requirements.....27
Table 6-2 Regulatory Correspondence Summary.....28
Table 6-3 2013 Volumes of Scavenger Waste Transported & Trucks.....33
Table 7-1 Non-East Hampton Scavenger Waste Treatment Options.....34
Table 8-1 SWF Financial Summary.....38
Table 8-2 Current Monthly STES Fees.....39
Table 9-1 STES Scope of Work 41
Table 9-2 Sludge Drying Beds Rain Inflow Costs 43
Table 10-1 SWF NOVs Causes and Likely Solutions 45
Table 10-2 SWF Transfer Facility Likely Overhead Costs 48
Table 10-3 SWF Recommended Design Approach & Criteria 49
Table 10-4 Estimated User Charges for Upgraded SWF – Wastewater Only 50
Table 10-5 Estimated User Charges for Upgraded SWF – Combined Waste Facility 51
Table 11-1 SWF Conclusions & Recommendations 54
Table 11-2 SWF Options Summary Analysis.....55

CAVEAT as of April 28, 2014

A number of requested data has not yet been received as well as tabulating some of the data is beyond the budgeted efforts. In LAI's opinion, we do not anticipate that receipt of additional data and further data analysis will materially affect the conclusions in the report.

YELLOWED HIGHLIGHTED ITEMS ARE PLACEHOLDERS AND/OR ITEMS REQUIRING UPDATING

Working Draft

Working Draft

1 OVERVIEW

The East Hampton Scavenger Waste Facility (SWF), located at 262 Springs Fireplace Road, was designed in 1983 and has been operating for approximately 30 years. The facility has a NYSDEC permitted discharge capacity of 45,000 gallons per day (gpd) and receives scavenger waste from the Town of East Hampton and likely in the past from nearby communities. The Town operated the facility until September of 2001 when the Town contracted operations and maintenance (O&M) to Severn Trent Environmental Services (STES) for a 5-year term.

It is understood that the Town contracted with a private operator due to insufficient Town personnel having the proper operator licenses and management difficulties. In 2011, after two 5-year terms, the Town chose to retain STES on a month to month basis. Ross Hilber (rhibler@stes.com; (516) 674-6032 ext. 228) is the STES area manager and Fred Nero (fnero1952@yahoo.com; 631-276-1029) is the on-site operator. Mr. Nero has worked at the SWF since it was operated by the Town. As of January 2012 the SWF was converted to a transfer station only, with a current limit of 10,000 gpd on a 12 day rolling average. The Town may increase the transfer station flow provided it makes NYSDEC required SWF improvements, as described in this Report. Figure 1-1 is a SWF location map and Figure 1-2 is an aerial photograph of the SWF.

Figure 1-1 Location Map for SWF

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

Figure 1-2 Aerial Photograph of SWF

Scavenger waste consists of:

- Regularly scheduled pumpouts of septic tanks due to sludge and/or scum accumulation (typically every 3-5+ years)
- Grease trap pumpouts from restaurants and other kitchens
- Emergency pumpouts of malfunctioning systems and holding tanks

In addition to scavenger waste, marina pumpouts wastes are brought to the SWF for treatment. Marina pumpout stations are located in areas where no discharge is permitted and are listed in the Community Profile Report.

The Scavenger Waste Water System is Special Assessment District # 40 and the 2012/2013 tax assessment was $3.75/$1,000 assessed valuation.

2 EAST HAMPTON SCAVENGER WASTE TREATMENT & TRANSFER STATION FACILITIES

The SWF consists of the following unit processes:

- Liquid Treatment:
  - Receiving Station with bar screen and aerated grit chamber
  - Equalization / Blending Tank
  - Coagulant Feed / Flash Mixer / Flocculation Tank
  - Primary Clarifier
  - Acid Chemical Feed
  - Rotating Biological Contactors
  - Secondary Clarifier
  - Methanol Chemical Feed
  - Denitrification Filter
  - Leaching Pools

- Solids Treatment
  - Sludge Thickener
  - Aerobic Digestion Tank
  - Sludge Drying Beds

Figure 2-1 presents a process flow diagram for the SWF with Figure 2-2 being the site plan. Table 2-1 presents the existing tanks and areas with storage capacity at the SWF and their associated volumes.

Table 2-1 SWF Tanks/Facilities with Storage Capacity (gal)

Unit Process	# of Tanks	Length (ft)	Width (ft)	Diameter (ft)	Depth (ft)	Vol. Each (gal)	Total Vol. (gal)	Surface Area (ft^2)	Tank Closed (C) or Open (O)
Flow EQ	2	26	15		14	40,841	81,682	780	C
Primary Clarifier	1			16	10	15,039	15,039	201	O
Sludge Thickening Tank	1			15	10	13,218	13,218	177	O
Rotating Biological Contactors	6	26.4	13		4.5	11,552	69,313	2,059	O
Secondary Clarifier	1			11	10	7,108	7,108	95	O
Aerobic Digester	2	15	40		15.25	68,442	136,884	1,200	C
Sludge Drying Beds (uncovered)	5	100	40		5.3	158,576	792,880	20,000	O
Sludge Drying Beds (covered)	1	100	50		5.3	198,220	198,220	5,000	O
Marina Waste Tank	1					2,500	2,500		C
						Total Tank Volume (gallons)	**1,316,844**		
						Total Tank Volume Covered (gallons)	**221,066**		
						Total Tank Volume Open (gallons)	**1,095,779**		

Working Draft

Wastewater from marina pumpout stations is typically a high strength waste that can be problematic for treatment facilities. To address this, the SWF has a separate tank designed to segregate the marina waste and to slowly bleed it in with the normal scavenger wastewater. This tank is located along the north edge of the sludge drying beds under the parking area, and is not currently in use.

In the SCDHS letter dated April 6, 2012, the tank is identified as a SC Tank #5, and is a 2,500-gallon tank that was placed in the Temporarily Out of Service Status in 2005. The letter recommended that the tank be removed.

Transfer Station Operations

The operation of the SWF as a transfer station consists of:

- Receiving Station with bar screen
- Equalization Tank with separate sections for wastewater and grease

Due to a broken valve, grease wastes are dumped directly into the grease compartment of the equalization tank.

Working Draft

Figure 2-1 SWF Process Flow Diagram

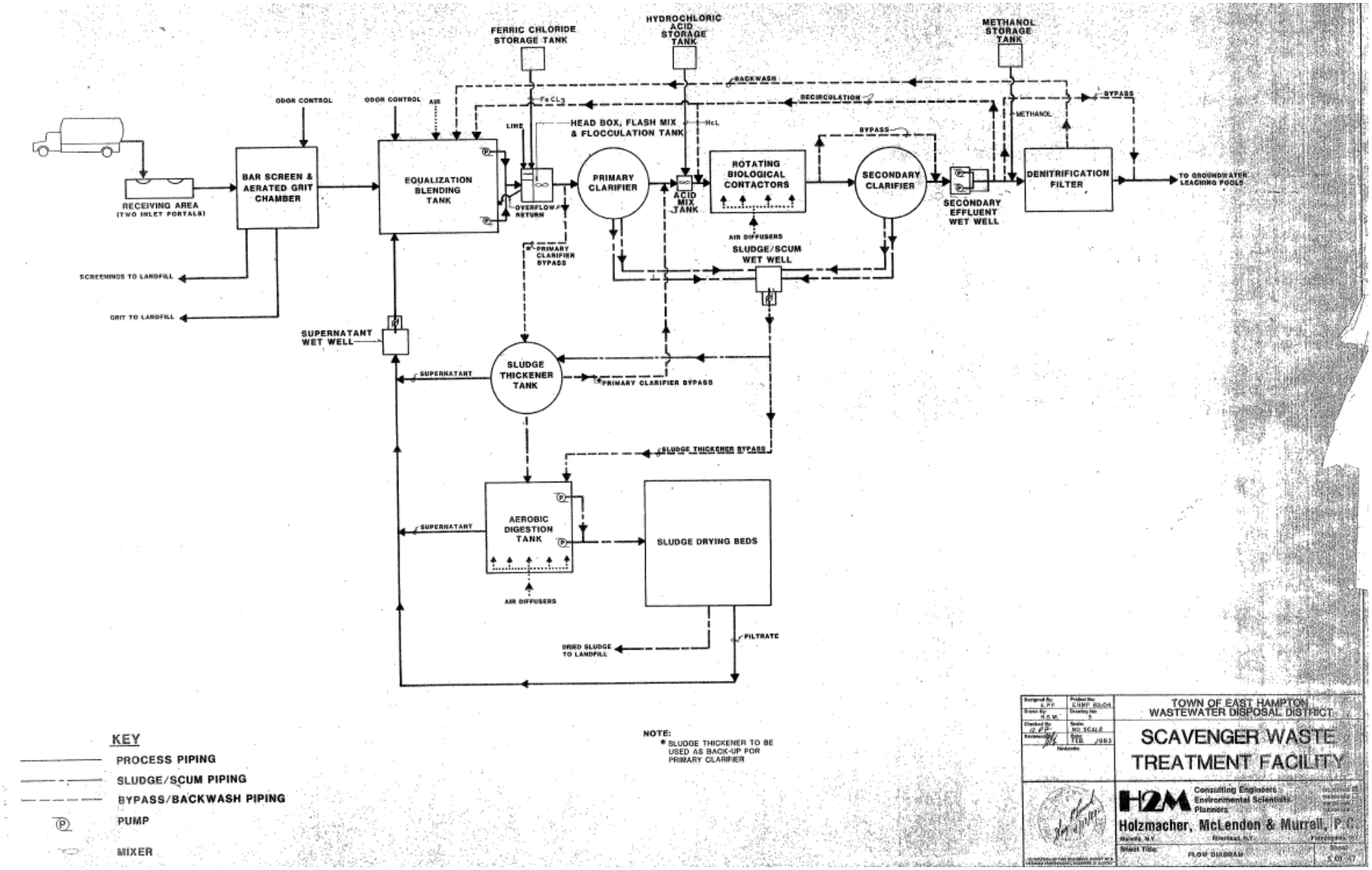
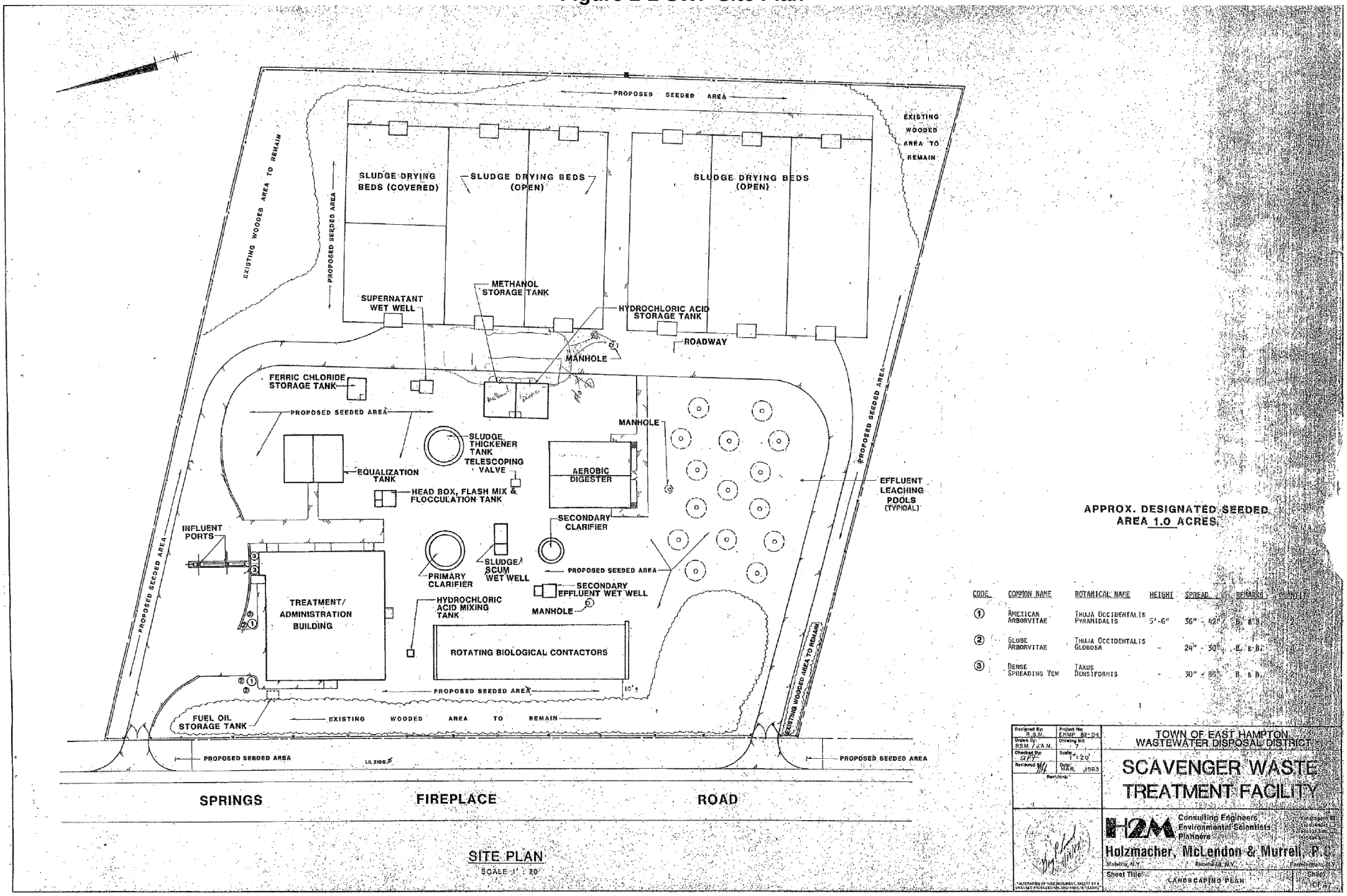


Figure 2-2 SWF Site Plan



Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

3 SCAVENGER WASTE FLOWS

Scavenger wastes generated in East Hampton are understood to have been brought to:

- EH SWF
- Riverhead Wastewater Treatment Plant
- Bergen Point Wastewater Treatment Plant
- Clear-Flo in Lindenhurst
- Yellow Trading Company in Yaphank for grease only

LAI contacted each of the facilities to obtain data on East Hampton scavenger waste flows that were brought to their facilities. Table 3-1a presents the scavenger waste flows received at the East Hampton SWF based upon data provided by STES. Table 3-1b presents annual flow data from the Town records and STES. The reason for the variance between the two data sources is unknown.

Table 3-1a SWF Historical Flow Data – STES Data

Peak Factor		Period of Record Data				Monthly Flows at East Hampton Scavenger Waste Treatment Facility - ADF gpd									Transfer Station	
6 day/wk		2003 - 2013 Period														
1.167		Max (gal)	Min (gal)	Avg (gal)	Avg (gpd)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
31	Jan	22,449	4,140	13,802	445	22,449	13,213	16,317	20,849	18,911	17,150	10,181	10,069	10,707	7,839	4,140
28	Feb	23,000	4,796	13,367	477	14,375	21,008	17,346	23,000	14,917	16,850	9,229	9,229	9,842	6,442	4,796
31	Mar	22,667	6,884	15,991	516	22,667	20,686	19,735	21,513	20,607	18,554	9,597	13,548	14,000	8,106	6,884
30	Apr	31,185	7,408	20,335	678	28,634	31,185	28,626	23,226	29,264	18,938	15,672	17,267	15,750	7,716	7,408
31	May	35,526	8,633	24,542	792	34,298	35,526	33,103	34,966	35,115	15,928	19,871	18,403	25,290	8,825	8,633
30	Jun	45,308	8,338	28,778	959	45,308	39,435	44,549	45,198	34,891	13,560	21,272	22,221	32,667	8,338	9,119
31	Jul	61,416	9,085	36,546	1,179	60,236	61,416	57,007	54,236	42,640	25,125	27,040	22,054	34,059	9,085	9,108
31	Aug	66,472	9,315	40,193	1,297	64,001	64,102	56,925	66,472	53,855	35,107	23,634	23,333	34,962	10,421	9,315
30	Sep	47,623	7,525	26,943	898	41,613	47,623	36,638	41,925	31,948	19,709	19,756	18,531	23,042	8,062	7,525
31	Oct	37,141	6,074	20,945	676	30,466	37,141	36,234	30,241	27,645	16,267	17,349	13,511	15,468	6,074	-
30	Nov	28,544	8,116	16,918	564	22,111	21,333	28,219	28,544	24,539	11,999	12,503	13,164	15,567	8,116	-
31	Dec	30,860	6,202	16,223	523	24,444	23,935	22,545	30,860	19,589	13,247	11,478	13,849	12,306	6,202	-
	Max	66,472	4,140	22,882												
365	Totals	35,189	7,946	22,956	63	34,378	34,828	33,218	35,189	29,606	18,577	16,516	16,306	20,375	7,946	5,579

Table 3-1b SWF Historical Flow Data – STES & Town Data & Disposal Rates

Annual Flows at East Hampton Scavenger Waste Treatment Facility gal/yr											
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	STS data	10,896,110	10,392,380	11,009,170	9,262,420	5,812,050	5,167,030	5,101,450	6,374,500	2,486,100	
	Town data	2,055,840	10,133,660	10,859,620	8,970,000	5,510,900	4,888,900	4,905,000	5,241,000	2,314,200	1,456,500
STS data - Town data		8,840,270	258,720	149,550	292,420	301,150	278,130	196,450	1,133,500	171,900	
	% variance	81.1%	2.5%	1.4%	3.2%	5.2%	5.4%	3.9%	17.8%	6.9%	
Disposal Fee Range /1,000 gal		$ 50	$ 70	$ 75	$ 75	$ 90	$ 90	$ 115	$ 115	$ 135	$ 135
					$ 90		$ 115				

Working Draft

Table 3-2 presents the scavenger waste deliveries to Bergen Point. Scavenger waste flows to Riverhead are presented on Table 3-3. Table 3-4 presents the flows to the other facilities and calculates the total East Hampton scavenger waste flow for 2010 - 2012. It is noted that

Total EH flows for 2012 & 2013 = Riverhead + Bergen Point + Clear Flo + YTC

as EH flows were sent to another facility for 2012 - current.

Table 3-2 Scavenger Waste Flows to Bergen Point - 2006 - 2013

East Hampton Scavenger Waste Deliveries to Bergen Point WWTP (gpd -6 day / week)								
	2006	2007	2008	2009	2010	2011	2012	2013
January						903	9,634	2,108
February						333	10,000	0
March						301	3,011	0
April						622	4,044	3,636
May						1,505	4,004	4,328
June						2,489	4,138	2,353
July						4,516	2,108	2,013
August						7,527	5,118	6,981
September						4,667	3,422	5,756
October						2,710	903	0
November						3,558	2,178	0
December						3,011	903	0
Average	3,545	1,536	2,126	2,426	1,227	2,696	4,081	3,077
Million Gallons per year	1.10900	0.48050	0.66500	0.75900	0.38400	0.8435	1.2768	0.7120

Table 3-3 Scavenger Waste Flows to Riverhead 2006 – 2012

East Hampton Scavenger Waste Flows Discharged at Riverhead WWTP (gpd - 6 day week)							
	2006	2007	2008	2009	2010	2011	2012
January	677	23	88	903	2,706	90	3,304
February	0	25	369	3,696	525	100	6,192
March	0	267	173	926	23	346	5,495
April	233	18	342	179	381	128	6,063
May	0	324	55	301	346	549	8,248
June	622	694	2,823	183	513	214	10,640
July	602	997	6,838	1,761	45	0	15,479
August	625	931	10,711	1,415	369	501	23,649
September	156	779	5,507	2,271	47	517	11,371
October	151	165	997	367	218	361	7,115
November	97	9	373	0	47	23	3,838
December	151	55	2,932	173	45	531	3,635
Annual Average	278	360	2,623	996	440	282	8,782

Working Draft

Table 3-4 2010 - 2012 Scavenger Waste Flows from East Hampton

	2010 Average Daily Flow (gpd)						
	East Hampton	Riverhead	Bergen Point	Clear Flo		YTC	Total - All Flow
				Grease	Septic		
Jan	10,069	2,706		0	903	waiting on data	13,678
Feb	9,229	525		7	0		9,761
Mar	13,548	23		129	1,677		15,377
Apr	17,267	381		0	1,867		19,514
May	18,403	346		129	3,548		22,427
Jun	22,221	513		267	10,517		33,518
Jul	22,054	45		0	8,000		30,099
Aug	23,333	369		0	6,452		30,154
Sep	18,531	47		7	160		18,744
Oct	13,511	218		0	258		13,987
Nov	13,164	47		230	0		13,441
Dec	13,849	45		0	0		13,895
Total (MGD)	5.95	0.16	0.38	0.0233	1.0223		7.16
Annual Average	**16,306**	**440**	**1,052**	**64**	**2,801**		**20,663**

YTC = Yellow Trading Company

	2011 Average Daily Flow (gpd)						
	East Hampton	Riverhead	Bergen Point	Clear Flo		YTC	Total - All Flow
				Grease	Septic		
Jan	10,707	90	903	13	0	waiting on data	11,713
Feb	9,842	100	333	7	0		10,282
Mar	14,000	346	301	26	0		14,673
Apr	15,750	128	622	0	0		16,501
May	25,290	549	1,505	0	226		27,571
Jun	32,667	214	2,489	13	267		35,649
Jul	34,059	0	4,516	26	613		39,214
Aug	34,962	501	7,527	6	0		42,996
Sep	23,042	517	4,667	7	0		28,232
Oct	15,468	361	2,710	10	452		19,000
Nov	15,567	23	3,558	40	0		19,189
Dec	12,306	531	3,011	0	0		15,848
Total (MGD)	7.44	0.10	0.98	0.0045	0.0480		8.58
Annual Average	**20,375**	**282**	**2,696**	**12**	**132**		**23,497**

YTC = Yellow Trading Company

	Preliminary 2012 Average Daily Flow (gpd)						
	East Hampton	Riverhead	Bergen Point	Clear Flo		YTC	Total (1)
				Grease	Septic		
Jan	7,839	3,304	9,634	135	0	waiting on data	13,074
Feb	6,442	6,192	10,000	7	6,857		23,056
Mar	8,106	5,495	3,011	168	6,194		14,867
Apr	7,716	6,063	4,044	350	6,533		16,991
May	8,825	8,248	4,004	387	7,710		20,349
Jun	8,338	10,640	4,138	407	6,400		21,584
Jul	9,085	15,479	2,108	655	8,500		26,741
Aug	10,421	23,649	5,118	516	8,629		37,913
Sep	8,062	11,371	3,422	800	8,383		23,977
Oct	6,074	7,115	903	645	8,868		17,531
Nov	8,116	3,838	2,178	267	12,783		19,066
Dec	6,202	3,635	903	1,032	14,235		19,806
Total (MGD)	2.90	3.21	1.49	0.1646	2.8932		7.75
Annual Average	**7,946**	**8,782**	**4,081**	**451**	**7,927**		**21,241**

(1) Total = Riverhead+Bergen Pt+Clear Flo+YTC as EH flows were sent to Bergen Pt, however flows do not balance as less flow went to BP than received at EH SWF

..

Table 3-5 presents the Scavenger Waste Flows by Carter for the period 2004 – 2013, based upon data provided by the Town of East Hampton.

Working Draft

Table 3-5 Scavenger Waste Flows by Carter 2004 - 2013

East Hampton Scavenger Waste Delivered wastes by Carter and Year										% of Annual Total				
Carter / Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Direct Drainage							6,000	19,500					1%	
Eastern	62,000	64,000	86,000	154,000	78,500					2%				
Hampton	2,606,000	4,673,000	4,000,000	318,000			727,500					14%		
McMahon	485,600	426,700	425,000	632,500	635,500	421,000	214,500	158,000	73,500	13%	9%	4%	7%	5%
J&J								97,700	60,000				4%	4%
Ott	2,670,000	2,979,500	2,587,000	2,317,000	2,152,500	1,784,000	1,474,500	1,662,000	899,500	44%	36%	28%	72%	62%
Aqua Nova	10,500													
Norsic	1,318,500	1,029,500	808,500	822,200	588,500	672,500	589,500	226,000	249,000	12%	14%	11%	10%	17%
Quackenbush					867,000	1,706,500	1,964,000	121,500	174,500	18%	35%	37%	5%	12%
Ray Serva														
S&P	316,500	124,300	299,500	545,900										
Schenck	1,633,800	754,500	679,000	636,800	511,900	321,000	265,000	29,500		10%	7%	5%	1%	
Sessa	1,023,700	807,700	85,000	84,500	55,000					1%				
Totals	**10,126,600**	**10,859,200**	**8,970,000**	**5,510,900**	**4,888,900**	**4,905,000**	**5,241,000**	**2,314,200**	**1,456,500**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 3-6 presents daily flow for 2011 – 2013 and the data indicates that:

Peak summertime daily flow	60,000 gpd
Peak summertime 3 day average flow	50,000 gpd
Average flow during the summer period	28,000 gpd

The data on Table 3-2 indicates that:

Annual average flows 2003 – 2007	35,000+/- gpd
Annual average flows 2008 – 2012	22,000+/- gpd

It is unclear as to the cause of the decline in flows to the EH SWF. However it is understood that some carters were being banned from using the SF due to unpaid invoices.

The data suggests:

- Prior to 2012 when the EH SWF became a transfer station, flows to Riverhead were a minor percent of EH scavenger waste flows.
- Based upon 2012 data, Riverhead receives the majority of EH scavenger waste flows during the peak summertime period.

Working Draft

Table 3-6 Daily Scavenger Waste Flows at EH SWF – 2011 - 2013

East Hampton Scavenger Waste Flows July and August from 2009 to 2013

	2009		2010		2011		2012		2013		
Date	July	August	July	August	July	August	July	August	July	August	
1	49,000	25,500	38,500	12,500	54,000	5,000	-	16,000	9,500	13,000	
2	25,500	1,000	30,000	23,500	7,000	19,000	13,600	10,400	12,500	-	
3	53,000	16,500	9,000	33,500	30,000	22,000	25,600	7,600	19,000	9,500	
4	5,000	31,000	14,500	21,000	34,000	36,000	-	7,600	-	-	
5		24,500	4,500	26,500	25,000	42,000	13,200	-	14,500	7,500	
6	18,500	16,500	20,000	25,000	28,000	13,000	2,800	6,000	10,500	19,500	
7	36,500	20,500	12,000	5,000	29,000	16,000	6,400	18,400	-	8,500	
8	25,500	19,500	19,000	3,000	33,000	16,000	-	13,600	18,500	3,500	
9	25,000	5,500	24,500	30,000	30,000	28,000	7,900	6,800	17,000	12,000	
10	30,000	24,500	13,000	29,000	-	45,000	18,000	2,400	18,500	2,000	
11	12,000	20,500		25,500	20,000	63,000	15,200	8,400	-	-	
12	2,500	18,000	18,500	34,000	26,000	41,000	10,000	-	-	11,000	
13	34,000	38,500	12,000	20,000	29,000	22,000	5,500	12,000	6,000	6,000	
14	20,500	32,500	17,000	13,000	40,000	17,000	2,400	19,200		10,500	Facility
15	21,500	7,000	31,000	4,000	38,000	18,000	-	10,800		11,000	down to
16	27,000	1,500	15,500	25,000	13,000	30,000	10,800	9,200		5,000	make
17	42,000	13,500	14,500	26,500	11,000	28,000	10,800	6,400		4,500	repairs to
18	13,500	47,500		15,000	20,000	30,000	12,800	5,500		0	EQ tank
19	3,500	52,500	25,000	22,000	35,000	31,000	8,400	-		16,500	valve
20	32,000	9,000	23,500	16,500	41,000	23,000	5,600	7,200	13,000	11,500	
21	23,500	28,000	28,500	22,500	41,000	9,000	3,600	11,200	-	6,000	
22	26,500	19,000	21,500	8,500	46,000	26,000	-	14,800	11,000	13,000	
23	21,000	3,500	31,500	23,500	20,000	37,000	9,200	11,600	19,000	5,500	
24	31,000	15,500	11,000	13,000	32,000	34,000	9,400	500	17,500	7,500	
25	18,000	22,500	1,500	20,500	8,000	32,000	14,400	6,400	14,500	-	
26	3,500	12,500	40,000	25,500	24,000	41,000	17,000	-	6,500	24,500	
27	23,000	28,000	24,000	39,500	32,000	10,000	3,200	11,800	2,000	6,000	
28	20,500	37,500	29,500	11,500	32,000	-	4,000	20,000	-	14,000	
29	17,500	9,000	29,000		30,000	32,000	-	12,000	18,500	12,000	
30	18,500	4,000	22,500	27,500	21,000	12,000	8,000	6,800	14,000	3,500	
31	23,000	29,000	5,000	17,500	17,000	16,000	14,300	-	4,000	1,500	
	702,500	634,000	586,000	620,000	846,000	794,000	252,100	262,600	246,000	245,000	Total for month (gallons)
	22,661	**20,452**	**18,903**	**20,000**	**27,290**	**25,613**	**8,132**	**8,471**	**7,935**	**7,903**	**Average daily flow (gpd)**
	53,000	**52,500**	**40,000**	**39,500**	**54,000**	**63,000**	**25,600**	**20,000**	**19,000**	**24,500**	**Maximum**
	2.34	2.57	2.12	1.98	1.98	2.46	3.15	2.36	2.39	3.10	Max/Average
	3 day running average										
	22,063	20,552	18,603	20,103	27,218	26,540	8,116	8,490	7,868	8,075	Average daily flow (gpd)
	42,500	37,833	31,167	29,500	42,667	49,667	14,400	14,600	18,000	14,833	Maximum
	7,833	7,333	9,333	11,000	14,667	14,000	2,400	2,300	-	3,167	Minimum
	1.93	1.84	1.68	1.47	1.57	1.87	1.77	1.72	2.29	1.84	Max/Average

2011 was last period East Hampton Facility operated as a treatment facility

2012 and 2013 - Facility was operating under the 10,000 gpd/ 12 day rolling average limitation

Working Draft

4 SCAVENGER WASTE QUALITY

Influent raw scavenger waste quality has been monitored weekly for years as part of the SPDES permit requirements and continuing to date. LAI has recommended that the influent quality and groundwater monitoring not be tested while the SWF is solely used as a transfer station. By its email of 28 October 2013, NYSDEC has indicated that continued testing of influent scavenger waste and groundwater is not required while the site is used solely as a transfer station**. Sampling termination while SWF is operated as a transfer station would save approximately $4,000/month.**

SCAVENGER WASTE QUALITY DATA

Table 4-1 presents the weekly influent BOD and TSS for the period 2007 – 2011 with annual averages of BOD/TSS and monthly averages for NH_4-N + NO_3-N presented on Table 4-2. Table 4-3 presents sludge removal quantities for 2011 and show a significant amount (i.e. 15% of influent flow) is disposed of as sludge.

Table 4-2 SWF Influent Water Quality – BOD/TSS for 2007 – 2011 & 2011 NH_3-N + NO_3-N

East Hampton Scavenger Waste Influent Quality - Annual Average (mg/l)				EH SWF Influent Strength 2011					
Year	BOD	TSS	% Solids		NH_3-N	NO_3-N	NH_3-N + NO_3-N	ALK	TDS
2007	2,861	3,032	0.30%	January	26.5	3.3	29.8	169	639
2008	2,488	5,466	0.55%	February	19.9	3.4	23.3	135	542
2009	2,021	2,956	0.30%	March	17.3	4.9	22.2	114	467
2010	2,764	4,043	0.40%	April	25.3	5.5	30.8	118	454
2011	2,842	6,058	0.61%	May	31.7	8.3	40	130	464
Average	**2,595**	**4,311**	**0.43%**	June	52	5.7	57.7	208	468
Max/Avg Ratio	**3.49**	**3.70**		July	50.1	8.9	59	182	499
				August	39	8	47	182	604
Design Value	**9,060**	**15,940**		September	37.5	9.8	47.3	125	516
				October	42.3	5.3	47.6	122	551
				November	30.5	4.7	35.2	94	612
				December	29	3.6	32.6	113	699
				Avg	**33.43**	**5.95**	**39.38**		
				Max/Avg Ratio	**3.00**	**3.00**	**3.00**		
				Design Value	**100**	**18**	**118**		
				(1) The NO_3-N data is suspect as one would not expect any NO3-N in wastewater					

It is noted that Total Nitrogen (TN) values cannot be determined as TKN and organic nitrogen were not measured.

Working Draft

Table 4-3 SWF 2011 Sludge Removal

2011		
Sludge Removed from Plant (gallons)		% Solids
January	24,000	0.11%
February	24,000	0.11%
March	64,000	3.50%
April	24,000	3.50%
May	40,000	3.50%
June	80,000	3.50%
July		
August	200,000	3.50%
September	136,000	3.50%
October	88,000	3.50%
November	134,000	3.50%
December	70,000	3.50%
Total	**884,000**	
5,807,750	**Flow to Plant (gpy)**	
15.2%	**% of Flow removed as sludge**	

Table 4-4 presents the SWF Influent Quality for a part of 2013 as the additional raw data needs to be added to the table.

Working Draft

Table 4-1 SWF Weekly BOD/TSS Data 2007 – 2011

East Hampton Scaveneger Waste Influent Quality (mg/l)

	2007					2008					2009			
	BOD		TSS			BOD		TSS			BOD		TSS	
MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg
Jan	3,500		2,600		Jan	1,000		1,200		Jan	2,500		2,000	
	2,300		1,200			2,200		4,900			1,300		1,200	
	7,800		2,900			2,400		2,000			2,200		7,900	
	2,000		1,400			2,100		3,100			1,500		1,300	
	8,544		7,800		Avg		1,925		2,800	Avg		1,875		3,100
Avg		4,829		3,180										
Feb	7,704		1,100		Feb	1,700		2,200		Feb	2,200		7,100	
	4,500		1,900			5,100		6,100			1,200		2,000	
Avg		6,102		1,500		1,400		3,500			220		410	
						2,200		2,400			5,000		6,300	
					Avg		2,600		3,550	Avg		2,155		3,953
Mar	580		1,300		Mar	1,400		4,000		Mar	2,800		5,900	
	8,652		2,400			1,000		1,600			1,600		1,500	
	10,260		15,000			2,700		4,600			1,600		3,200	
	5,000		3,500			2,300		3,900			1,100		1,400	
	2,100		3,300		Avg		1,850		3,525		2,400		6,200	
Avg		5,318		5,100	Apr	1,500		2,600		Avg		1,900		3,640
Apr	720		1,400			1,400		1,900		Apr	1,400		2,300	
	4,400		6,700			3,500		3,900			1,900		2,500	
	1,300		3,000			3,100		2,200			1,500		2,800	
Avg		2,140		3,700		4,700		8,900			460		330	
			6,600		Avg		2,840		3,900	Avg		1,315		1,983
May	2,700		6,100		May	3,500		7,100		May	500		500	
	4,400		10,000			570		280			1,800		3,400	
	3,400		2,300			530		430			1,400		1,300	
	2,300					2,500		3,200			2,700		6,600	
Avg				6,250	Avg		1,775		2,753	Avg		1,600		2,950
Jun	5,200	3,200	4,700		Jun	4,300		6,500		Jun	2,500		3,000	
	890		970			2,900		7,900			2,700		1,000	
	1,700		1,300			980		1,100			1,700		1,200	
	2,800		1,700			3,700		3,300			1,800		1,000	
Avg				2,168	Avg		2,970		4,700	Avg		2,175		1,550
Jul	880	2,648	1,100		Jul	790		420		Jul	1,400		900	
	1,000		530			1,200		2,700			4,500		5,500	
	2,000		2,300			1,300		1,200			3,000		3,900	
	2,200		2,100			2,800		54,000			1,300		2,900	
	2,000		2,000			1,300		500			1,400		1,400	
Avg				1,606	Avg		1,478		11,764	Avg		2,320		2,920
Aug	1,400	1,616	5,700		Aug	1,700		3,300		Aug	2,100		2,000	
	1,200		1,300			2,700		5,300			840		860	
	2,200		3,600			1,200		660			4,200		2,700	
	1,100		890			1,800		2,200			6,000		5,900	
Avg				2,873	Avg		1,850		2,865	Avg		3,285		2,865
Sept	640	1,475	310		Sept	2,500		2,700		Sept	3,400		4,500	
	5,400		17,000			3,300		5,500			1,000		920	
	5,100		6,000			1,100		1,800			2,700		4,900	
	2,000		1,100			1,800		3,100			970		1,900	
Avg				6,103		4,400		11,000			2,200		3,400	
		3,285	860		Avg		2,620		4,820	Avg		2,054		3,124
Oct	380				Oct	4,800		5,000		Oct	1,600		5,700	
	2,900		2,200			2,600		4,400			1,200		1,300	
	730		630			1,900		19,000			5,200		4,300	
	650		870			2,000		650			740		1,400	
	1,200		900	1,092	Avg		2,825		7,263	Avg		2,185		3,175
Avg					Nov	390		310		Nov	580		780	
Nov	1,200	1,172	1,400			640		970			2,200		4,700	
	890		290			1,000		2,700			1,600		2,300	
	1,400		1,300			2,000		3,500			1,500		2,900	
	2,400		1,100		Avg		1,008			Avg		1,470		2,670
Avg				1,023	Dec	1,000		2,700	1,870	Dec	650		460	
Dec	1,400	1,473	690			2,100		2,700			3,200		3,800	
	3,000		4,900			3,400		2,500			1,700		9,400	
	350		390			20,000		55,000			910		530	
	4,700		3,400			1,000		1,600			3,000		2,100	
	2,000		1,300				5,500			Avg		1,892		3,258
Avg		2,290	1,300	1,997					12,900					
Annual Avg	**2,861**		3,032			**2,488**		5,466			**2,021**		2,956	
Max	**10,260**		**17,000**			**20,000**		**55,000**			**6,000**		**9,400**	
Min	**350**		**290**			**390**		**280**			**220**		**330**	
Max/Avg ratio	**3.6**		**5.6**			**8.0**		**10.1**			**3.0**		**3.2**	
	BOD		TSS			BOD		TSS			BOD		TSS	
	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg

Working Draft

East Hampton Scaveneger Waste Influent Quality (mg/l)									
2010					2011				
	BOD		TSS			BOD		TSS	
MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg
Jan	1,300		2,000		Jan	920		740	
	2,700		4,600			2,000		2,500	
	3,800		4,100			5,800		19,000	
	3,000		1,600			2,000		2,600	
Avg		2,700		3,075	Avg		2,680		6,210
						1,600		2,100	
Feb	5,300		8,700		Feb	1,100		1,600	
	5,300		4,600			7,500		36,000	
	900		2,600			4,200		4,900	
	1,300		1,600						
Avg		3,200		4,375	Avg		4,267		14,167
Mar	3,100		5,600		Mar	1,200		2,400	
	430		380			3,000		3,500	
	1,600		3,000			2,400		2,900	
	1,600		2,800			2,200		2,700	
	19,000		14,000			1,700		39,000	
Avg		5,146		5,156	Avg		2,325		12,025
Apr	1,300		3,400		Apr	3,900		1,600	
	350		460			2,000		1,700	
	900		1,100			5,300		18,000	
	1,800		4,600			1,100		1,400	
Avg		1,088		2,390	Avg		3,075		5,675
May	6,900		9,000		May	1,100		1,800	
	1,600		2,800			3,300		3,200	
	2,000		6,400			2,200		2,400	
	3,100		3,200			780		800	
Avg		3,400		5,350	Avg		2,093		2,133
Jun	6,200		7,300		Jun	1,900		3,300	
0	1,600		1,300			1,700		2,400	
0	1,900		8,400			1,900		1,100	
0	3,000		5,300			4,000		3,000	
0	4,700		3,700		Avg		2,533		2,167
Avg		3,480		5,200					
Jul	1,500		1,700		Jul	920		1,200	
0	2,900		14,000			1,300		1,400	
0	3,300		5,700			1,100		1,400	
0	1,900		2,900			1,400		1,100	
Avg		2,400		6,075	Avg		1,267		1,300
Aug	2,000		3,100		Aug	3,700		3,400	
0	3,100		3,500			4,200		18,000	
0	4,100		6,500			380		480	
0	1,200		670			7,000		11,000	
0	2,000		1,600						
Avg		2,480		3,074	Avg		3,820		8,220
Sept	2,100		5,800		Sept	1,300		1,000	
0	3,600		4,800			2,300		3,400	
0	1,800		5,100			3,200		3,700	
0	1,400		2,800			760		610	
Avg		2,225		4,625	Avg		2,087		2,570
Oct	1,400		1,300		Oct	1,200		1,600	
	730		780			600		890	
	1,600		2,900			2,100		3,100	
	2,000		8,000			4,100		2,200	
Avg		1,433		3,245	Avg		2,267		2,063
Nov	1,400		3,200		Nov	2,300		8,600	
	3,800		2,100			1,000		27,000	
	4,500		3,400			1,200		140	
	500		1,700			2,700		4,400	
Avg		2,550		2,600		5,600		5,500	
Dec	1,300		3,500		Avg		2,560		9,128
	2,000		3,100		Dec	1,100		2,300	
	730		410			4,800		4,600	
	5,400		5,100			7,700		12,000	
						2,900		4,500	
Avg		2,358		3,028	Avg		5,133		7,033
	2,764		4,043			**2,842**		6,058	
	19,000		**14,000**			**5,133**		**14,167**	
	350		**380**			**1,267**		**1,300**	
	6.9		**3.5**			**1.8**		**2.3**	
	BOD		TSS			BOD		TSS	
MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg	MONTH	Weekly	Monthly Avg	Weekly	Monthly Avg

Working Draft

Table 4-4 SWF Influent Quality – 2013 Partial

East Hampton NY Scavenger Waste Influent Quality - Composite sample

Date	BOD	TSS	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Iron	Lead	Nickel	Selenium	Silver	Thallium	Zinc	Mercury	1,1,1-Trichloro ethane	1,1,1,2-Tetra chloro ethane	1,1,2,2-Tetra chloroethane	1,1,2-Trichloro ethane	1,1-Dichloro ethane	1,1-Dichloro ethene	1,2-Dichloro benzene	1,2-Dichloro ethane
	mg/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2-Jan-13	3,800	12,200	<1200	<200	<100	<100	<.2	7.41	45.7	377	<.8	<100	<.2	<200	9.79	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9-Jan-13	1,390	2,450	<60	<10	<5	<5	0.03	3.36	12.8	65.2	0.04	6.98	<.01	<10	7.03	0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
30-Jan-13	1,140	1,130																						
6-Feb-13	533	760																						
13-Feb-13	539	680																						
20-Feb-13	1,470	640																						
28-Feb-13	342	610																						
6-Mar-13	1,470	3,160	<60	19.70	<5	6.30	0.07	13.80	55.00	514.00	0.12	19.30	0.02	<10	10.3	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13-Mar-13	2,300	6,200	<60	30.40	<5	5.40	0.12	7.60	41.00	445.00	0.09	23.00	0.03	<10	7.94	8.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20-Mar-13	1,200	4,250	<60	<10	<5	5.40	0.12	7.60	41.00	445.00	<.04	<5	<.01	<10	7.94	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
27-Mar-13	766	840														0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

East Hampton NY Scavenger Waste Influent Quality - Composite sample

	1,2-Dichloro propane	1,3-Dichloro benzene	1,4-Dichloro benzene	2-Chloro ethylvinyl ether	Benzene	Bromo dichloro methane	Bromoform	Bromo methane	Carbon tetra chloride	Chloro benzene	Chloro ethane	Chloro form	Chloro methane	Chrysene	cis-1,3-Dichloro propene	Dibromo chloro methane	Ethyl benzene	m,p-Xylene	Methylene Chloride	o-Xylene	Tetra chloro ethene	Toluene	trans-1,2-Dichloro propene	trans-1,3-Dichloro propene	Trichloro ethene	Trichlorofluoromethane	Vinyl Chloride
	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
2-Jan-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	1.8	1.1	<1.0	160	<1.0	<1.0	<1.0	<1.0	<1.0
9-Jan-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	1.7	<1.0	<1.0	190	<1.0	<1.0	<1.0	<1.0	<1.0
30-Jan-13																											
6-Feb-13																											
13-Feb-13																											
20-Feb-13																											
28-Feb-13																											
6-Mar-13	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	170	<1.0	<1.0	<1.0	<1.0	<1.0
13-Mar-13	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1	260	<1.0	<1.0	<1.0	<1.0	<1.0
20-Mar-13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1	200	<1.0	<1.0	<1.0	<1.0	<1.0
27-Mar-13	<1.0	<1.0	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1	140	<1.0	<1.0	<1.0	<1.0	<1.0

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

SCAVENGER WASTE QUALITY DATA ANALYSIS

The important design parameters for a scavenger waste facility are:

- BOD
- TSS
- Total Nitrogen
- Oil & Grease

Table 4-5 presents industry Scavenger Waste Design Standards and average and peak values of East Hampton SWF influent scavenger wastes. In examining the data, it is LAI's opinion that a significant amount of scavenger waste is strong wastewater/weak septage, which is likely due to septic systems being pumped frequently either because they are malfunctioning or as a preventive measure to protect the leaching pools/drainfields from malfunctioning.

Table 4-5 Scavenger Waste Design Standards & EH Values

Septage and Wastewater Characteristics & EH SWF Quality					
				SWF Values	
Parameter (mg/l unless otherwise noted)	EPA Suggested Septage Design Value	Typical Wastewater Design Value	Typical Septic Tank Effluent	Average	Peak / Design
Total Solids	40,000	720			
TSS	15,000	220	503	4,311	15,940
BOD	7,000	400	450	2,595	9,060
COD	15,000	1,000	1,050		
TKN	700	70	70	Not measured	
NH_3-N	150	60	41	39	118
Total P	250	10	17		
Alkalinity (as $CaCO_3$)	1,000	150	17		
Grease	8,000	150	164		
pH (S.U.)	6				

Working Draft

5 SWF OPERATING PROCEDURES

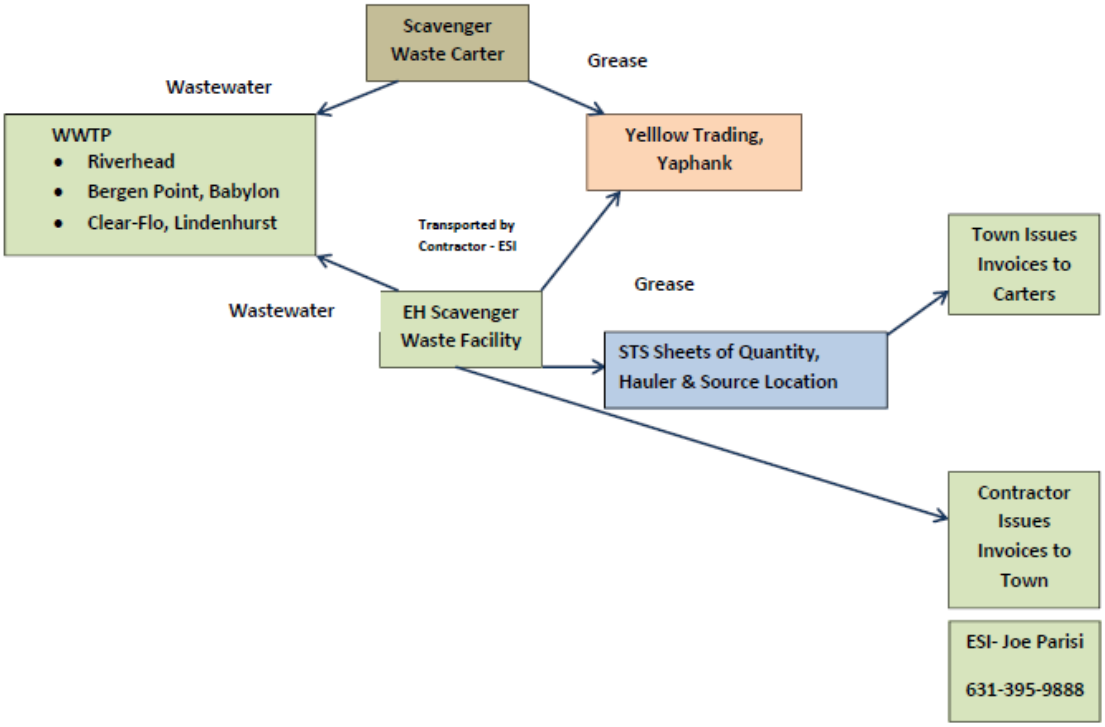
5.1 INVENTORY AND BILLING PROCEDURES

According to Patricia Sanfilippo of the Town's Sanitation Department, the process used to collect data and process fees from the Town's Scavenger Waste Facility is as follows:

- Severn Trent Environmental Services, Inc. (STES) collects and maintains the data of the amount of waste that is dropped off at the Scavenger Facility
- On a monthly basis, STES supplies the Sanitation Department with a listing by vendor of how much waste was dropped off
- The Sanitation Department is responsible for tallying the number of gallons dropped off , entering these amounts into a spreadsheet, and then finally into the Waste Works system in order to generate bills, post the receivables, and track revenues
- Once payments are received, the accounts are updated in the Waste Works systems and the checks are deposited in the bank
- The Finance/Budget Office receives copies of the deposit slips and deposit detail to be entered in the Town's accounting system
- The Finance/Budget Office receives invoices from the contractor, Environmental Services, Inc. (ESI) of Yaphank, NY, who removes scavenger wastes from the SWF.

A process flow diagram for current operations is presented in Figure 5-1.

Figure 5-1 SWF as Transfer Station Process Flow Diagram – October 2013



5.2 Scavenger Wastes Removal

ESI has the contract with the Town for removal of scavenger wastes brought to the SWF. ESI's contract with the Town, dated April 9, 2013, is for six (6) months with the contract provision that

1.4 DURATION OF CONTRACT

A. The contract will be for a six (6) month period with an option to extend for an additional six (6) if mutually agreed upon.

The contract was renewed by the Town on October XX, 2013 for six months – through April xx, 2014. ESI's fees for scavenger waste removal are $0.13/gallon for wastewater and $0.30/gallon for grease.

5.3 Pump Out Reports

Although required by Section 210-2-4 Town Code as follows:

§ 210-2-4. Pump-out reports.

A. With every delivery of scavenger waste to the scavenger waste plant, each carter of scavenger waste licensed pursuant to this chapter shall file with the Superintendent of the scavenger waste plant a report or reports stating the address and exact location of each cesspool, septic tank, on-site wastewater disposal facility or sewage treatment plant from which waste contained in the vehicle in question has been removed. Said report(s) shall be on a form approved by the Town Board. Such form shall, with regard to each pump-out operation performed, at least include:

(1) The name and address of the property owner.
(2) The name and address of the system owner, if different.
(3) The date of the pump-out.
(4) The approximate quantity of the pump-out.
(5) The type of waste pumped.
(6) The signature of the customer (property owner or system owner).

pump-out reports of waste brought to the SWF are tabulations prepared by STES based upon carter supplied information. Table 5-1 is a representative tabulation of the sources of scavenger wastes. Presumably, if the information was accurate, the Town could identify which septic systems are malfunctioning as evidenced by excessive pumping.

This type of information is also required at the Riverhead scavenger waste receiving station, with the Riverhead form presented as Figure 5-2.

Consequently, the information on sources of SWF flows is not readily available and the information that exists will have data quality challenges.

Working Draft

Table 5-1 Representative Tabulation of Influent Source Quantity & Location

SEVERN TRENT ENVIRONMENTAL SERVICES
EAST HAMPTON SCAVENGER WASTE FACILITY
159 Pantigo Road, East Hampton, NY 11937

John K. Ott Cesspool Service
P.O. Box 5070
East Hampton, NY 11937

CP = CESSPOOL
SP = SEPTIC TANK
GT = GREASE TRAP
O = OTHER

16,000

! PLEASE PRINT CLEARLY!

DATE / DRIVERS SIGNATURE	GALLONS	TYPE / INTL'S	NAME / ADDRESS / STREET / TOWN
DATE: 7-1-13 SIGNATURE: [illegible]	2000	ST	NAME: DEVON YACHT CLUB ADDRESS: ABRAHAMS LANDING TOWN / ZIP: AMAC PHONE #: 267-8820
DATE: 7-1-13 SIGNATURE: [illegible]	2000	CP	NAME: DEVON YACHT CLUB ADDRESS: ABRAHAMS LANDING TOWN / ZIP: AMAC PHONE #: 267-8820
DATE: 7-1-13 SIGNATURE: [illegible]	1,500	CP	NAME: DEVON YACHT CLUB ADDRESS: ABRAHAMS LANDING TOWN / ZIP: AMAC PHONE #: 267-8820
C DATE: 7-2-13 SIGNATURE: Gap III	Boat wash no charge 2,500	O	NAME: Sag Harbor Marina ADDRESS: Bay St. TOWN / ZIP: Sag Harbor PHONE #: 725-2368
DATE: 7-2-13 SIGNATURE: Gap III	2,000	SP	NAME: Moss ADDRESS: 56 Acabonac rd TOWN / ZIP: E.H. PHONE #: 329-0927
DATE: 7-2-13 SIGNATURE: Gap III	1,000	SP	NAME: Nancy Fried ADDRESS: 8th st + Gardiner Ave TOWN / ZIP: springs PHONE #: 871-0533
DATE: 7-3-13 SIGNATURE: Gap III	2,500	SP	NAME: Food + Company ADDRESS: Pantigo Rd TOWN / ZIP: E.H. PHONE #: 329-1000
DATE: 7-3-13 SIGNATURE: Gap III	2,000	SP	NAME: Robert ADDRESS: 117 Egypt LN TOWN / ZIP: E.H. PHONE #: 324-0327
DATE: 7-3-13 SIGNATURE: Gap III	2,000	CP	NAME: Virginia ADDRESS: 1 Island rd. TOWN / ZIP: E.H. PHONE #: 324-0035

Figure 5-2 Riverhead Scavenger Waste Report Form

TOWN OF RIVERHEAD
SCAVENGER WASTE REPORT

Hauler _____

Date Pumped _____

Location Name _____

Address _____

_____

Tax Map No. _____

TOWNSHIP _____

Diagram: Locating building and cesspool, give North and feet of distance, approximately.

I hereby state that the above is true and correct.

_____

Dated: _____ Bill # _____

Work

6 PERMITS AND REGULATORY ISSUES

6.1 SPDES PERMIT REQUIREMENTS

The SWF has an existing SPDES permit to discharge up to 45,000 gpd. The facility is currently operating as a temporary transfer station with a limit of 10,000-gpd on a 12 day rolling average. The effluent discharge limits and monitoring requirements associated with the SPDES permit are presented on Table 6-1.

Table 6-1 SWF Effluent Discharge Limits and Monitoring Requirements

Constituent	Flow (30-day avg. gpd)	BOD (mg/L)	TSS (mg/L)	pH	TN (mg/L)	TDS (mg/L)	Oil & Grease (mg/L)	Total Phenols (µg/L)
Limit	**45,000**	**20**	**20**	**6.5 - 8.5**	**10**	**1,000**	**15**	**2**
Monitoring Frequency	Flow Meter	Weekly	Weekly	Daily	TKN, TN Weekly	Weekly	Weekly	Weekly

Constituent	Cyanide (µg/L)	Selenium (µg/L)	Mercury (µg/L)	Arsenic (µg/L)	Cadmium (µg/L)	Hexavalent Chromium (µg/L)	Copper (µg/L)	Iron (µg/L)	Lead (µg/L)
Limit	400	20	1.4	50	10	100	1,000	600	50
Monitoring Requirement	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly

Constituent	Nickle (µg/L)	Silver (µg/L)	Zinc (µg/L)	Methylene Chloride (µg/L)	Chloro form (µg/L)	1,4-Dichloro benzene (µg/L)	1,2-Dichloro ethane (µg/L)	1,1-Dichloro ethene (µg/L)	Toluene (µg/L)
Limit	200	100	5,000	5	7	3	0.6	5	5
Monitoring Requirement	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly

6.2 REGULATORY REQUIREMENTS

A number of regulatory requirements need to be addressed associated with use of the SWF as a Treatment Facility or Transfer Station. Table 6-2 summarizes the regulatory correspondences, which are contained in Appendix A.

6.2.1 NOTICE OF VIOLATIONS – LETTER DATED MAY 23, 2011

Due to numerous exceedances of the facility's SPDES permit with respect to effluent water quality requirements, the New York State Department of Environmental Conservation (NYSDEC) issued a Notice of Violation (NOV) by letter of May 23, 2011 that requires the Town to implement corrective actions. The NOV identified 129 exceedances for the period of February 2008 to March 2011, categorized as follows:

Working Draft

Table 6-2 Regulatory Correspondence Summary

Date of Correspondance	Summary of Key Parts	Comments
May 23, 2011	NYSDEC letter, NOV - requires CAP to address permit violations	Original Schedule 24 months
March 8, 2012	NYSDEC Letter extending CAP schedule by 90 days	Construction to be complted by February 2014, Startup by March 2014
July 27, 2012	NYSDEC Letter - review comments on Transfer Station permit application	Improvements identified in application need to be complted prior to approval
April 6, 2012	SCDHS Letter, Marina Waste Tank	Removal of tank recommended
October 28, 2013	NYSDEC email confirming influent and groundwater sampling not required	Sampling not required as long as no discharge. Status update on plans for the SWF was requested in the email.

- Total Nitrogen – 17 exceedances
- BOD_5 – 52 exceedances
- Total Suspended Solids (TSS) – 56 exceedances
- Iron and Mercury – 4 exceedances

A copy of the NOV is in Appendix A1. The NOV required that a Corrective Actions Plan (CAP) be submitted by June 23, 2011. The CAP was submitted in November 2011, and subsequently approved by NYSDEC.

6.2.2 Corrective Action Plan

The CAP, attached as Appendix B, proposed the following actions:

- Cease discharge and operate as a temporary transfer station
- Produce a Technical Design Report that would assess the current condition of the SWF and identify the required improvements
- Evaluate public / private partnership alternatives
- Design and construction of required improvements for selected alternative

The schedule for completion of these tasks was 24 months, which was subsequently extended by 90 days at the request of the Town. The required completion date for construction of the proposed improvements is February 2014. A copy of the NYSDEC letter approving this extension is in Appendix A2.

The Town ceased discharging and started operations as a transfer station on January 1, 2012.

Working Draft

6.2.3 Transfer Station Permit Application

The Town submitted a permit application in April 2012, Appendix C, to operate the SWF as a 6 NYCRR Part 360 Transfer Station with a daily capacity of 45,000-gpd. A copy of the transfer station permit application is in Appendix C. The New York State Department of Environmental Conservation (NYSDEC), by its letter of July 27, 2012 copy of which is in Appendix A3, reviewed the permit application and had the following comments with respect to additional requirements that were needed prior to permit approval:

- SEQRA review of submitted Environmental Assessment Form must be completed

- Record of Compliance review for STES

- Demonstration that the proposed transfer station is consistent with the local solid waste management plan

- Contingency plan for emergency conditions

- 6 NYCRR 360,11.2(a)(3) states that the engineering report accompanying the permit application must include all of the following information, some of which was missing from the submitted report:

  (i) a description of the general operating plan for the proposed facility, including the origin, composition, and expected weight or volume of all solid waste to be accepted, the maximum time any such waste will be stored, where all waste will be disposed of, and the proposed capacity operating hours, and the expected life of the facility;

  (ii) a description of all machinery and equipment, including the design capacity;

  (iii) a proposed transfer plan specifying the transfer route, the number and type of transfer vehicles to be used, and how often solid waste will be transferred to the disposal site;

  (iv) a description of the facility's drainage system and water supply system;

  (v) a plan for hiring and training equipment operators and other personnel who will operate the facility; and

  (vi) a contingency plan that details an alternative solid waste handling system for periods when not operating, or for delays in transporting solid waste due to undesirable conditions, such as delivery of unauthorized waste, fires, dust, odor, vectors, unusual traffic conditions, equipment breakdown or other emergencies.

In Section 5 of the submitted engineering report, all listed improvements are to be implemented prior to permit approval, specifically with respect to odor control and spill containment

Working Draft

6.2.4 Marina Waste Tank

In the SCDHS letter dated April 6, 2012, copy of which is in Appendix A4, as part of the SCDHS site inspection, the marina waste tank was identified as a SC Tank #5, and is a 2,500-gallon tank that was placed in the Temporarily Out of Service Status in 2005. The letter recommended that the tank be removed.

6.2.5 SWF Influent and Groundwater Sampling Requirements

LAI requested and receive confirmation from NYSDEC that the influent and SWF site groundwater testing was no longer required as long as the SWF was operating as a transfer station and not discharging. A copy of the email confirming that sampling is no longer required is in Appendix A5.

The Town Board needs to direct STES to terminate, until further notice, influent and groundwater sampling.

6.3 Truck to Truck Waste Transfer Regulations

To address the question of the legality of transferring scavenger waste from smaller trucks to larger trucks, LAI reviewed NYSDEC regulations and communicated with NYSDEC permitting personnel in Stony Brook and Albany. The Town of East Hampton does not currently have jurisdiction nor any regulations regarding truck to truck transfers. Following is a summary of the NYSDEC regulations.

The practice of transferring loads from one truck to another for the purpose of consolidating loads is not considered a transfer station, per the transfer station definition in 6 NYCRR 360 1.1(b)(172). The requirement is that the consolidation is done “as a part of the initial collection process” and “occurs along the collection route where the point of transfer changes from day to day”.

The transfer point has to be different each time and along the collection route. Therefore, if the transferring is taking place at a stationary location, that stationary location must have a transfer station permit in accordance with Part 360. Individual cesspool trucks need a Part 364 permit.

Relevant requirements of Part 364 are:

§364.3 Permit Application Procedures.

(a) General.
(1) Any person who requires a permit, pursuant to this Part; for the collection, removal, transport, transfer or disposal of solid waste, or for transfer incidental to transport or storage incidental to transport, shall apply for such a permit in accordance with this Part.

(2) Applications shall be completed and submitted on forms prescribed by the department and shall indicate the type of the waste involved, vehicles that the applicant will use, any transfer or storage facilities the applicant will use, (except where such transfer or storage is, incidental to transport), and the place or places where and the manner in which the applicant will finally treat, store or dispose of the collected waste.

Working Draft

The application shall also contain such analyses, plans, reports, fees, insurance certificates, and other data as the department may require.

§364.6 Operation Requirements.
(e) A permittee shall submit a report to the department annually, or more frequently if the department deems necessary, on forms prescribed by the department. A permittee shall retain for three years the records on which such reports are based, and shall make such records available, upon request, to the department during normal business hours."

6.3.5 Truck to Truck Transfer Recommendation

To address the environmental concern with truck to truck transfer practice that is performed along the collection route and legal according to NYSDEC, LAI recommends that the Town require through its licensing of scavenger waste carters in ***§ 210-2-1. License required*** and ***§ 210-2-2. Application for scavenger waste carter's license***. that carters state on the Town's license application form whether they will be performing truck to truck transfers and if so, what practices and equipment will be used for portable spill containment during waste transfer, all of which needs to be approved by the Town.

6.4 Scavenger Waste Carters & 2013 Volumes of Scavenger Waste Transported & Trucks

The scavenger waste carters that are understood to be operating in East Hampton are:

McMahon Plumbing
518 Montauk Highway
Amagansett, NY 11930
John Stafford
631-267-3471
joan@haroldmcmahon.com
http://www.haroldmcmahon.com/projects.php

John K. Ott Cesspool
P.O. Box 5070
East Hampton, NY 11937
Lucille Garypie
631-537-2231
luegap@gmail.com
http://www.johnkott.com/

Quackenbush Cesspool Service
176 Three Mile Harbor Road
East Hampton, NY 11937
Jimmy Quackenbush
631-907-4426
quackcesspools@ymail.com
http://www.hamptonseptic.com/

Schenck Cesspool Service
62 Newtown Lane
East Hampton, NY 11937
Rodney Herrin
631-324-0142
rodneyherrlin@schenckfuels.com
http:/www.schenckfuels.com

Working Draft

J&J Carting
P.O. Box 2375
Montauk, NY 11954
Mr. Jay Libath
631-335-6510
jasonlibath@yahoo.com

Norsic & Son
P.O. Box 5047
Southampton, NY 11969
Skip Norsic
631-283-0604
snorsic@emilnorsic.com
http://norsic-1.calls.net/cesspool.html

Hampton Septic
36 Bunker Hill Road
Amagansett, NY 11930
Patrick Schutte
631- 267-7515
hssinc@optonline.net
http://www.hamptonssepticservices.com/

Figure 6-1 Portable Spill Containment Equipment Examples

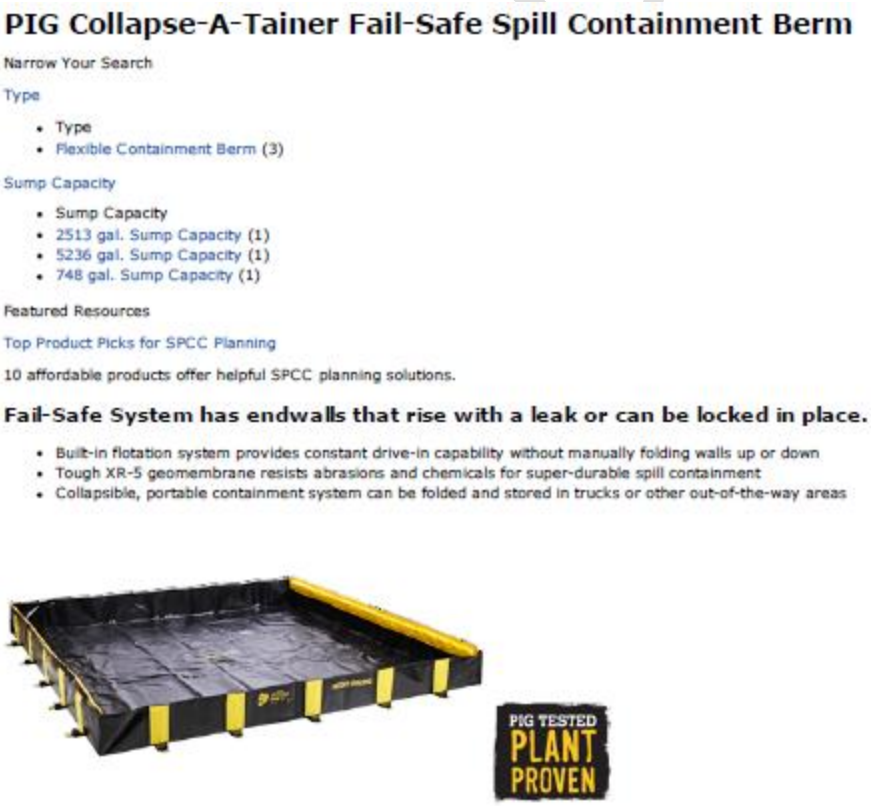


Table 6-3 presents the 2013 volumes of scavenger waste transported and trucks by carter and quantities discharged to the various disposal locations as reported by the carters to the NYSDEC in their 2013 Annual Reports.

Table 6-3 2013 Volumes of Scavenger Waste Transported & Trucks

East Hampton Scavenger Waste Carters - NYSDEC Permit Information - 2013 Annual Report																			
					East Hampton Scavenger Waste Facility (gpy)					Riverhead (gpy)				Clear Flo (gpy)			Bergen Point (gpy)		
	No. of Permitted Vehicles	Gal Pumped / truck	% of Carter To EH SWF	% of EH SWF Flows from Carter	Grease	Resid Raw Wastewater	Resid Septage	Non-Resid Raw Wastewater	Non-Res Septage	Sludge	Raw Wastewater	Resid Septage	Non-Res Septage	Grease	Non-Resid Raw Wastewater	Resid Septage	Non-Resid Raw Wastewate	Resid Septage	Carter Total
Hampton Septic	7	552,314	3%	5%	2,500			120,700			496,000	87,600		42,000	1,385,500	244,500	1,261,400	226,000	3,866,200
John K. Ott Cesspool	2	843,750	85%	61%			1,440,000					247,500							1,687,500
J&J Carting	1	50,000	100%	2%		50,000													50,000
Norsic & Son	10	377,000	9%	14%	6,500	268,500	30,000		35,000	75,000	515,000	337,000	2,503,000						3,770,000
McMahon Plumbing	1	154,700	100%	7%	2,200		152,500												154,700
Quackenbush Cesspool Service	4	682,236	8%	10%	29,000		202,000					88,443				1,487,000		922,500	2,728,943
Schenck Cesspool Service	3	107,833	9%	1%			29,500					294,000							323,500
Subtotals			19%	100%	40,200	318,500	1,854,000	120,700	35,000	75,000	1,011,000	1,054,543	2,503,000	42,000	1,385,500	1,731,500	1,261,400	1,148,500	12,580,843
Facility Totals					2,368,400					4,643,543				3,159,000			2,409,900		12,580,843
Waste Type as % of Total					2%	13%	78%	5%	1%	2%	22%	23%	54%	1%	44%	55%	52%	48%	

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.

7 NON-EAST HAMPTON SCAVENGER WASTE TREATMENT / DISPOSAL OPTIONS

In addition to the SWF, out of Town Scavenger Waste Treatment Facilities are:

- Riverhead Wastewater Treatment Plant, Riverhead, NY
- Bergen Point Wastewater Treatment Plant, Babylon, NY
- Clear Flo Technologies, Inc., N. Lindenhurst, NY
- Yellow Trading Ltd., Yaphank, NY

Table 7-1 lists the facilities along with their fees and distances from the EH SWF.

Table 7-1 Non-East Hampton Scavenger Waste Treatment Options

Scavenger Waste Disposal Option	Disposal Fee ($/1,000-gal)			Round-Trip Distance	Days of Operation	Hours of Operation	Comments
	WW	Grease	Credit[1]				
Riverhead WWTF	$99			60	Monday - Sunday	7:00 a.m. - 5:00 p.m.	
Bergen Point	$62	not accepted		152			Site is subsidized by County 1/4% sales tax
Clear-Flo				140	Mon-Sat	Open 24 hours	
					Sunday	7:00 AM - 3:00 PM	
Yellow Trading	Brown Grease	$210	$100 [2]	90			Wastewater not accepted
	Yellow Grease						
EH SWF	$ 135	$ 260		0	Mon - Sat	7:00 a.m. - 5:00 p.m.	

(1) Brown grease credit is 30% of market rate. Recoverable brown grease is typically 30% of grease tank pumping

(1) Yellow grease (cooking oil) credit is 30% of market rate. Recoverable yellow grease is high %

(2) Estimate of November 1, 2013 market conditions

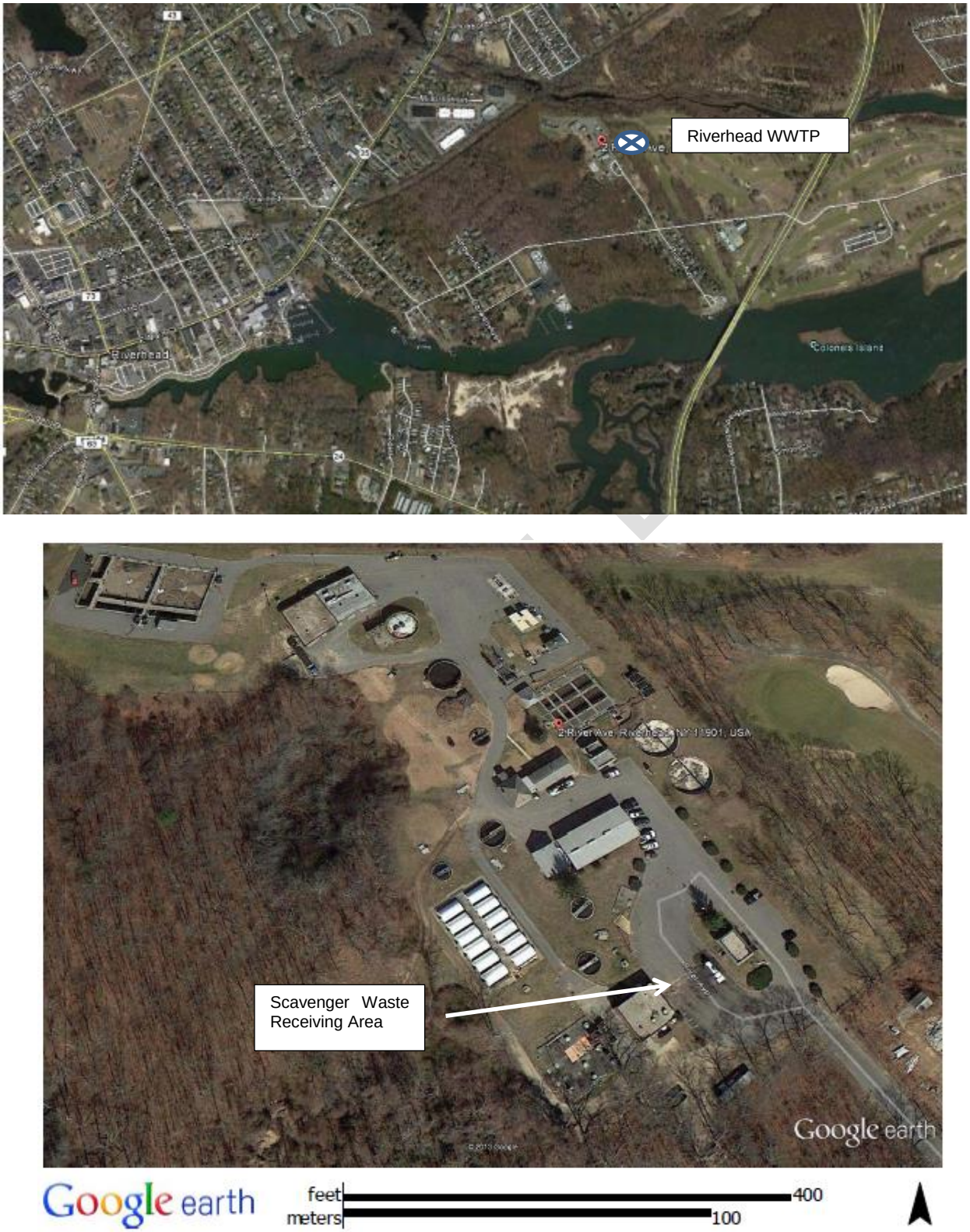
RIVERHEAD FACILITY

The Riverhead facility, with location map and treatment aerial photo presented on Figure 7-1, is in the process of upgrading to a 1.5 MGD treatment facility. The flow is comprised of two components; a reserved flow of 1.4 mgd for the Sewer District and a reserved flow of 0.1 mgd for the Scavenger Waste Plant.

The current disposal fee is $99. per 1000 gallons. This is to be revised based upon a Cost of Service Study being performed by the Riverhead Sewer District and is expected to be completed by the end of 2013. Round trip from East Hampton facility to Riverhead is 60 miles and the round trip takes 2 hours without traffic delays.

Working Draft

Figure 7-1 Riverhead Scavenger Waste Treatment Facility



BERGEN POINT FACILITY

The current disposal fee is $62 per 1000 gallons. Round trip from East Hampton SWF to Bergen Point is 152 miles and the round trip takes 4 hours without traffic delays.

The Bergen Point WWTP average dry weather flow to the plant is 26 MGD. Its scavenger waste permit volume is limited to 0.5 MGD monthly average and 0.56 MGD daily maximum. Total permitted monthly average plant flow is 30.5 MGD, which includes the aforementioned 0.5 MGD of scavenger waste.

Bergen Point charges $62. / 1,000 gallons. The system benefits from the County ¼ % sales tax subsidy.

CLEAR FLO TECHNOLOGIES FACILITY

The Clear Flo Technologies facility is located at the following address:

Clear Flo Technologies, Inc.
1110A Route 109
N. Lindenhurst, NY 11757
(631) 956-7600 Voice (631) 956·7020 Fax

And has the following hours of operation:

Monday – Saturday:	Open 24 hours
Sunday:	7:00 AM - 3:00 PM

YELLOW TRADING LTD. FACILITY

The Yellow Trading Ltd. (YTL) Facility is a grease recovery facility only located at the following address:

Yellow Trading Ltd.
40 Zorn Blvd
Yaphank, NY 11980
631-395-9888

This facility does not accept scavenger waste or marina pumpouts.

Based upon discussions with Mr. Joe Parisi of YTL, there are credits for the amount of brown (grease trap pumpings) and yellow (cooking oils) grease either brought to or made available for pick-up by YTL. For planning purposes, the credit is 30% of the grease waste value, as reported by the Jacobsen Report and Chicago Mercantile Exchange.

Working Draft

8 FINANCIAL ANALYSIS

SWF REVENUES AND EXPENDITURES 2000 - 2013

Working with information provided by the Town's Budget office, LAI has prepared Table 8-1 which presents a financial summary for the SWF for the period 2000 - 2013. Table 8-2 presents the breakdown of STES monthly expenses for a randomly chosen month.

Key observations from the financial analysis are:

- ✓ Tax payments for the Scavenger Waste Facility have averaged:
  a. $480,000 for past 5 years
  b. $338,000 for past 14 years

  Tax payments represent approximately 40% of the revenue the SWF receives Based upon 20,000 developed properties, tax payments are an average $20/property/year.

- ✓ Overhead costs for facility operation as a transfer station are $0.18 +/- / gallon

Town Code Chapter 210, SCAVENGER WASTE states in § 210-4-6. Tax rate.

"The town shall each year establish the tax rate required to cover the cost of debt service on the scavenger waste treatment plant, as well as future capital purchases and administrative costs incurred by the Town of East Hampton Wastewater Disposal District. Operating and maintenance costs of the scavenger waste treatment plant itself shall ordinarily be met through the collection of permit fees and user fees as prescribed herein."

As can be seen on Table 8-1, the tax has been used to offset operating and maintenance costs, contrary to Town code § 210-4-5 and no funds have been put aside for future capital purchases. For the past 5 and 13 years, 13% and 24%, respectively, of the tax has been used for debt service.

Town code § 210-4-5. Fees for use of scavenger waste facility states that the fees for use of the scavenger waste treatment plant shall be set so as to ensure to the extent practicable that annual operating and maintenance costs of the plant are met by the monies so collected each year.

SCAVENGER WASTE COSTS TO PROPERTY OWNERS

Based upon the Table 3-5 flow data, approximately 5,000,000 gallons per year of scavenger waste are generated each year in East Hampton. Using a cost of $400./1,000 gallons that is charged to property owners for removal, transport and disposal of scavenger wastes, approximately $ 2,000,000. is expended each year for scavenger waste management by East Hampton property owners.

It is LAI's opinion that the annual scavenger wastes costs to property owners could be reduced to <$700,000 through correction of malfunctioning wastewater systems, and reducing the frequency of septic tank maintenance pumping to every 5 years and use of effluent filters.

Working Draft

Table 8-1 SWF Financial Summary

East Hampton Scavenger Waste Transfer Station & Camp Hero Wastewater System Financial Summary - Accuracy is considered sufficient for Engineering NOT Accounting Purposes

Year					Scavenger Waste								Camp Hero								Grand Total	Average Unit Cost				Assessed Fee ($/gal)
					Severn Trent	Septic Hauling		LIPA	Cameron Eng	Debt	Insurance	Misc	Total	Severn Trent	Hampton Septic		LIPA	SCWA	Cameron Eng	Interest	Total		SWF Flows (gallons)	SWF Cost/gal	Transfer of Septage	Transfer Station Overhead Cost ($/gal)	
	EH Labor	Labor OH	SWF OH	Repairs		'3 MILE HARBOR TRAILER PAR__	Transfer of Septage			P&I				Pump Install-Emergency	Septage Pumping	Repairs									cost/gal		
2013		partial year financials			$ 150,780		$ 356,091	$ 22,475	$ 3,250	$ 54,102	$ 4,256	$ 444,892	$ 1,035,845		$ 10,904	$ 2,240	$1,082				$ 14,226	$ 1,050,071	1,456,500	$ 0.711	$ 0.244	$ 0.467	$ 0.135
2012					$ 289,138	$ 15,008	$ 404,295	$ 53,272	$ 36,753	$ 55,140	$ 4,519	$ 49,518	$ 907,642	$ 10,664	$ 2,755	$ 1,260	$ 836	$ 594	$ 1,250		$ 17,359	$ 925,001	2,486,100	$ 0.365	$ 0.163	$ 0.202	$ 0.135
2011			$ 10,644		$ 858,872				$ 36,454	$ 56,248	$ 10,644	$ -	$ 972,862			$ 4,550	$ 463	$ 500		$ 50	$ 5,563	$ 978,425	5,241,000	$ 0.186			$ 0.115
2010			$ 7,409		$ 937,336				$ 8,978	$ 59,374	$ 7,409	0	$ 1,020,507									$ 1,020,507	5,101,450	$ 0.200			$ 0.090
2009			$ -		$ 942,046				$ 8,658	$ 77,767	$ 10,353	0	$ 1,038,824									$ 1,038,824	5,167,030	$ 0.201			$ 0.090
2008			$ -		$ 1,061,958				$ 16,793	$ 77,399	$ 9,709	0	$ 1,165,859									$ 1,165,859	5,812,050	$ 0.201			$ 0.075
2007	$ 1,875	$ 324	$ -		$ 1,107,609				$ 9,140	$ 83,379	$ 17,770	30890.12	$ 1,250,986									$ 1,250,986	9,262,420	$ 0.135			$ 0.075
2006	$ 7,500	$ 1,427	$ -		$ 773,558				$ 2,208	$ 81,509	$ 14,818	$ 375	$ 881,395		$ 2,275		$5,453				$ 7,728	$ 889,123	11,009,170	$ 0.080			$ 0.070
2005	$ 7,500	$ 1,538	$ -		$ 681,270				$ 3,070	$ 89,291	$ 10,000	$ 400	$ 793,068		$ -		$ -				$ -	$ 793,068	10,392,380	$ 0.076			$ 0.070
2004	$ 7,500	$ 574	$ -		$ 929,891				$ 31,085	$ 91,408	$ 10,000	$ 13,795	$ 1,084,253		$ -		$ -				$ -	$ 1,084,253	10,896,110	$ 0.100			$ 0.050
2003	$ 7,500	$ 3,324	$ -		$ 536,727				$ 27,329	$ 97,986	$ 10,000	$ 147,184	$ 830,051		$ -		$ -				$ -	$ 830,051	10,755,340	$ 0.077			
2002	$ 750	$ 57	$ 5,043		$ 786,779					$ 99,412	$ 10,000	$ -	$ 902,041									$ 902,041					
2001	$ 164,554	$ 73,948	$ 35,720	$ 15,474	$ 175,125		$ 77,903	$ 53,868		$ 100,201	$ 18,000	$ 7,178	$ 721,972									$ 721,972					
2000	$ 203,310	$ 99,976	$ 68,449	$ 26,856	$ 9,042		$ 103,363	$ 47,215	$ -	$ 90,038	$ 20,000	$ 18,740	$ 686,991		$ -		$ -				$ -	$ 686,991					

Average Monthly Expenditures

2013					$ 12,565	$ -	$ 29,674	$ 1,873	$ 271	$ 4,509	$ 355		$ 86,320	$ -	$ 909	$ 187	$ 90	$ -	$ -	$ -	$ 1,185	$ 87,506				
2012					$ 24,095	$ 1,251	$ 33,691	$ 4,439	$ 3,063	$ 4,595	$ 377		$ 75,637	$ 889	$ 230	$ 105	$ 70	$ 49	$ 104	$ -	$ 1,447	$ 77,083				
2011					$ 71,573	$ -	$ -	$ -	$ 3,038	$ 4,687	$ 887		$ 81,072	$ -	$ -	$ 379	$ 39	$ 42	$ -	$ 4	$ 464	$ 81,535				
2010					$ 78,111	$ -	$ -	$ -	$ 748	$ 4,948	$ 617		$ 85,042	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 85,042				
2009					$ 78,504	$ -	$ -	$ -	$ 721	$ 6,481	$ 863		$ 86,569	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 86,569				
2008					$ 88,497	$ -	$ -	$ -	$ 1,399	$ 6,450	$ 809		$ 97,155	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 97,155				
2007					$ 92,301	$ -	$ -	$ -	$ 762	$ 6,948	$ 1,481		$ 104,249	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 104,249				
2006					$ 64,463	$ -	$ -	$ -	$ 184	$ 6,792	$ 1,235		$ 73,450	$ -	$ 190	$ -	$ 454	$ -	$ -	$ -	$ 644	$ 74,094				
2005					$ 56,773	$ -	$ -	$ -	$ 256	$ 7,441	$ 833		$ 66,089	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 66,089				
2004					$ 77,491	$ -	$ -	$ -	$ 2,590	$ 7,617	$ 833		$ 90,354	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 90,354				
2003					$ 44,727	$ -	$ -	$ -	$ 2,277	$ 8,165	$ 833		$ 69,171	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 69,171				
2002					$ 65,565	$ -	$ -	$ -	$ -	$ 8,284	$ 833		$ 75,170	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 75,170				
2001	$ 13,713	$ 6,162	$ 2,977	$ 1,289	$ 14,594	$ -	$ 6,492	$ 4,489	$ -	$ 8,350	$ 1,500		$ 60,164	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,164				
2000	$ 16,943	$ 8,331	$ 5,704	$ 2,238	$ 754	$ -	$ 8,614	$ 3,935	$ -	$ 7,503	$ 1,667		$ 57,249	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 57,249				

Revenues

Year				Tax Installment as % of total Revenue	Scavenger Waste								Camp Hero				Tax Install as % of Total
					Tax Installments	PILOT	Disposal Fees	Permits	Misc.	Total	Profit/Deficit		Tax Payment	Interest	Total		
											2013 Value is Projected Accumulated deficit						
2013				77%	$ (746,950)	$ (3,017)	$ (220,446)	$ (2,000)	$ (2,976)	$ (975,390)	**$ (505,262)**		$ (19,900)	$ (81.47)	$(19,981.47)		77%
2012				21%	$ (103,800)	$ (401)	$ (380,922)	$ (4,755)	$ (252)	$ (490,130)	**$ (417,512)**			$ (128)	$ (128.39)		21%
2011				51%	$ (595,377)	$ (2,124)	$ (566,002)	$ (8,235)	$ (1,744)	$ (1,173,482)	**$ 200,620**		$ (18,151)	$ (174)	$(18,324.76)		51%
2010				43%	$ (478,113)	$ (1,432)	$ (620,670)	$ (6,486)		$ (1,106,701)	**$ 86,193**						43%
2009				45%	$ (478,486)	$ (1,384)	$ (591,733)	$ (3,000)		$ (1,074,602)	**$ 35,778**						45%
2008				1%	$ (3,997)	$ (12)	$ (573,255)	$ (3,250)		$ (580,514)	**$ (585,345)**						1%
2007				18%	$ (167,280)	$ (571)	$ (766,753)	$ (1,250)		$ (935,854)	**$ (315,132)**						18%
2006				10%	$ (93,968)	$ (346)	$ (837,451)	$ (5,000)	$ (7,711)	$ (944,477)	**$ 63,081**		$ (7,000)	$ (3,062)	$(10,061.71)		10%
2005				10%	$ (88,418)	$ (325)	$ (770,284)	$ (3,750)		$ (862,777)	**$ 69,709**						10%
2004				35%	$ (268,247)	$ (1,134)	$ (497,221)	$ (3,250)		$ (769,852)	**$ (314,401)**						35%
2003				35%	$ (283,800)	$ (1,463)	$ (513,294)	$ (3,750)		$ (802,308)	**$ (27,743)**						35%
2002				60%	$ (458,300)	$ (2,517)	$ (298,316)	$ (2,750)		$ (761,883)	**$ (140,158)**						60%
2001				64%	$ (475,097)	$ (4,077)	$ (264,023)	$ (1,750)		$ (744,947)	**$ 22,975**						64%
2000				67%	$ (490,729)	$ (4,833)	$ (234,731)	$ (3,250)		$ (733,542)	**$ 46,551**						67%
Average				40%	$ (338,040)	$ (1,688)	$ (509,650)	$ (3,748)	$ (3,171)	$ (854,033)							40%
			last 5 years	50%	$ (480,545)					$ (964,061)							50%

Tax Installments, Debt Service & Balance

Year	Tax Installments	Debt Service	Diff Tax Install-Debt	Debt Service as % of Tax
2013	$ 746,950	$ 54,102	$ 692,848	7%
2012	$ 103,800	$ 55,140	$ 48,660	53%
2011	$ 595,377	$ 56,248	$ 539,129	9%
2010	$ 478,113	$ 59,374	$ 418,739	12%
2009	$ 478,486	$ 77,767	$ 400,718	16%
2008	$ 3,997	$ 77,399	$ (73,402)	1937%
2007	$ 167,280	$ 83,379	$ 83,901	50%
2006	$ 93,968	$ 81,509	$ 12,459	87%
2005	$ 88,418	$ 89,291	$ (873)	101%
2004	$ 268,247	$ 91,408	$ 176,839	34%
2003	$ 283,800	$ 97,986	$ 185,814	35%
2002	$ 458,300	$ 99,412	$ 358,888	22%
2001	$ 475,097	$ 100,201	$ 374,896	21%
2000	$ 490,729	$ 90,038	$ 400,691	18%
Average	$ 338,040	$ 79,518	$ 258,522	24%
past 5 years	$ 480,545	$ 60,526	$ 420,019	13%

Draft

Table 8-2 Current Monthly STES Fees

East Hampton Scavenger Waste Transfer Station & Camp Hero Wastewater System Financial Summary																									
						Severn Trent Fees								Other SWF Fees/Costs							Revenue				
						Scavenger Waste Treatment Plant				Camp Hero															
Year	Month					STS Monthly Fee	Lab Costs for Incoming Wastes	Misc. Utilities	Repairs	Misc. Utilities	Repairs	Subtotal STS Fee		Cameron Engineering	Electricity	Other Utilities	Other Costs (Insurance, etc.)	Transfer Station Disposal Fees	Subtotal Other Fees	Total Expenses	Revenue from Carters	Other Sources	Town Subsidy	Total Revenue	Net Profit / Loss
	June																								
	July					$ 18,500	$ 3,846	$ 616	$ 3,511		$ 1,080	$ 27,553													
	August																								
2013	eptember																								
	October																								
	Novembe																								
	December																								

Working Draft

9 CURRENT OPERATIONAL PROCEDURES, CONTRACTS & COSTS

CURRENT MODE OF OPERATION

On January 1, 2012 the SWF ceased discharging and was converted to a transfer station with a NYSDEC permit that limits the quantity of scavenger waste that can be received to 10,000 gpd. As shown on Table 8-1, the Town is paying STES for managing a site that can only receive a maximum of 10,000 gpd on a 12 day rolling average.

Given that 3 to 4 scavenger waste trucks per day will cause the SWF to not be able to accept any additional flows, it is recommended that the SWF limit its hours of operation to only mornings until additional capacity is permitted.

STES AGREEMENT

By contract with a start date of January 1, 2012, STES provides the services as described on Table 9-1 for

- ✓ Lump sum base monthly fee of $17,500. Base fee shall be payable monthly in advance on the first day of each month for the duration of the agreement. During the months of June through September the base fee will be $18,500.
- ✓ Labor rate for extra services shall be billed $90.00 per hour portal to portal with a minimum of four (4) hours.
- ✓ A service charge of 15% will be added to the actual cost of the item provided by Severn Trent Environmental Services (parts and supplies, chemicals, sludge/septage disposal, outside laboratory analysis, reagents, materials for repairs, repairs by subcontractors, etc.).

ENVIRONMENTAL SERVICES INC. (ESI) AGREEMENT FOR SCAVENGER WASTE REMOVAL

By the Town's Request for Bids EH13-006 and contract agreement April 9, 2013, ESI provides services of transfer, transport and disposal of septage waste from the Town of East Hampton Scavenger Waste Treatment facility. ESI's fees are:

Septage	$0.13 / gallon	Grease	$0.30 / gallon

In its bid, ESI states that it will bring wastes to Bergen Point. ESI recently was awarded the contract for the period April 15, 2014 – April 14, 2015 at the following rates:

Septage	$0.125 / gallon	Grease	$0.25 / gallon	Sludge	$1.00 / gallon

Based upon LAI's survey this fee is very competitive. As shown on Table 8-1, the costs/gallon to the Town in 2012 for solely transfer and disposal payments to ESI/others was $0.163/gallon.

Working Draft

Table 9-1 STES Scope of Work

Task	Description
A. General	
1	Severn Trent Environmental Services (STES) shall provide personnel to operate and manage the facility as a transfer station operation. STES shall provide personnel to manage the facility 8 hours per day Monday through Saturday. The facility would be closed on Sundays and Holidays.
2	STES will inspect the pump station at Camp Hero on weekly basis. Inspections will include verifying proper pump operation.
	The Town shall provide STES with desired policy of Transfer station operation regarding incoming loads to the facility. Information to be provided includes whether all trucks are charged full loads or estimated quantity for partial loads and whether grease loads are acceptable or not.
B. Headworks Operation	
1	STES shall operate the headworks facility which consists of screening and grit removal. Accumulated grit and screenings will be transferred to a dumpster for disposal pickup.
2	STES will continue to provide testing of each load entering the facility. Testing will consist of onsite pH measurement and visual observation of unusual color or grease content or unusual odor such as chemical smells. Based on the basic screening test and visual observations, STES will have the right to reject loads to the Transfer station it deems would be rejected by the off-site disposal facility. The basis for rejection will be the same criteria used when the scavenger facility was in full operation. Prior to the start of the transfer station STES and the Town will establish the procedures to utilize should any loads be rejected by the designated off-site disposal facility. STES will not be responsible for loads rejected by the off-site facility.
3	During the period the Scavenger Waste Facility is operated as a transfer station, STES assumes the requirement of the influent sampling plan will not be required. Note this is a requirement under the current permit. The Town should include this item when discussing the temporary ceasing of discharge and utilizing the facility as a transfer station.
C. Reporting and Recordkeeping	
1	Monthly Discharge Monitoring Reports (DMR) shall be completed and submitted to all agencies that are required to receive such reports, with the Owner receiving a copy of all reports. Note: Failure to continue to submit DMR's each month is considered a violation even if there is no discharge since the permit would be still active.
2	STES will log and record all incoming loads received by the facility and provide the information to Town for billing purposes. Waste loads will be stored in the aerated equalization tank and pumped out as needed to maintain tank levels. Waste removed from the tank will be trucked to an off-site disposal facility to be determined by the Town. The Town will contract directly for the off-site disposal. STES will provide the management of the tanks and coordinate with the selected carter.
3	STES and the designated representative of the Town will have a teleconference call every two week to update Town officials on the status of the Transfer station operation and any upcoming work that would require Town approval. A written monthly report will be submitted to the Town with a summary of the transfer operation, amount of loads received and amount of loads trucked for off-site disposal, and any outstanding issues.
Emergency Services	
1	STES does not anticipate emergency calls for the operation of the transfer station however an emergency rate is provided for response if needed which, will include Camp Hero. Severn Trent Environmental Services shall provide emergency services twenty-four (24) hours per day seven (7) days a week. The emergency services will be billed at a rate as described in Attachment B, four (4) hour minimum portal to portal.
D. Exercising of Equipment	
1	STES will exercise idle equipment to maintain operational readiness should the Town decide to cease transfer operation and resume treatment operations. Exercising of equipment will consist of running the motors, drives, etc. for a set period of time. Accumulated rainwater will be pumped from the cleaned process tanks.
E. Maintenance Parts and Supplies	
1	STES will continue to perform preventive maintenance on the on-line equipment still in use for the operation of the transfer station. STES will maintain mowing of lawn during growing season.
2	All parts and supplies necessary for the operation and monitoring of the transfer station shall be considered an extra item. Pre-approval will be required for all costs over $1000.
K. Exceptions	
1	Utility Costs - gas, electric, water and fuel oil.
2	Costs associated with loads rejected by off-site disposal facility.
3	Chemical Costs
4	Sludge Removal & Tank cleanings
5	Grit and screenings disposal
6	Repair or replacement of Bio-filters
7	Leaching Pool Cleanings
8	Subcontracted services
9	Outside laboratory analysis as outlined in the influent sampling plan.
10	Annual Emergency Generator Inspection/Tune-ups

SURVEY OF EAST HAMPTON CARTERS

On October 2, 2013, Councilwoman Sylvia Overby, Town Director of Natural Resources and Environmental Protection Kim Shaw and LAI met with the East Hampton carters.

Working Draft

Minutes of that meeting are presented in Appendix C. Of particular note is that transporters stated that if EH SWF disposal costs exceeded $0.135/gallon, the EH SWF would not be competitive with the Riverhead Facility which is $0.099/gallon. This implies that transportation costs would be ~ $0.035/gallon.

TRANSPORTATION COSTS & ESTIMATE OF COMPETITIVE FEE

LAI has surveyed local haulers as well as based upon our industry knowledge have computed the costs per gallon for transport of scavenger waste from the EH SWF to Riverhead, as a representative example of competitiveness.

One source estimates $ 0.10 / gallon for hauling wastewater in 8,000 – 10,000 gallon capacity tanker trucks for a distance of 70 miles.

A local hauler stated their costs at $125/hour for a 4,000 gal tanker. At 30 - 40 miles/hr speed that is ~$3.00- $4.00/mile. Assuming a 2 hour trip at $250 for 70 miles, then the transport cost would be $.0625/gallon.

Another transporter that has large trucks and transport wastes to Bergen Point stated that transport only costs from East Hampton would be ~ $0.10 / gallon. Riverhead is stated as not having sufficient space for large tanker trucks.

While summer traffic is a serious consideration, it is understood that large tanker trucks travel during late night and early morning hours to avoid traffic delays.

ESI's contract with the Town suggests that transportation costs, including their overhead and profit, to Bergen Point are $0.068/gallon.

are consequently for the purposes of this study, LAI is of the opinion that it is reasonable to assume that transport costs would be approximately:

- ✓ $0.065/gallon for transport to Riverhead
- ✓ $0.070/gallon for transport to Bergen Point

As the Bergen Point disposal fees is $0.037/gallon lower than Riverhead, this analysis confirms statements made by some transporters that the EH waste costs of transport to and disposal at Riverhead and Bergen Point are approximately equivalent.

This means that typical costs to transporters for transport and disposal of scavenger wastes from EH is approximately $0.15 +/- / gallon. This value is higher than the ESI bid price of $0.13 / gallon as described in Section 9.3, which is likely lower due to economies of scale. Whether that rate prevails in future bids remains to be determined.

Consequently, this analysis demonstrates that an East Hampton SWF fee that would be competitive with other options is in the range of $0.135 - $0.160/gallon.

RAIN INFLOW FROM UNCOVERD SLUDGE DRYING BEDS – COSTS AND SOLUTIONS

Five of the six sludge drying beds are uncovered, with an underdrain system that collects and transfers rain inflow to the influent storage tank. This flow is stored and

Working Draft

pumped along with the scavenger waste. Per the dimension of the beds presented previously in Table 2-1, the surface area of the uncovered beds is 20,000-ft^2.

The sludge drying beds nearly flush with grade and would not require a raised structure to cover. There are many alternatives for covering the beds to eliminate the rain inflow. At LAI's request, STES provided a preliminary cost estimate for filling the beds with sand, mounding them so that water would roll off and covering them with a HDPE liner. The budgetary cost for this covering solution is approximately $250,000. A nearly 7 year payback period does not make this an attractive course of action.

LAI has investigated and developed two low-cost methods for preventing rain infiltration to SWF wastewater system as:

- Cover beds with impermeable, flexible liner and pump accumulated water to grassed areas and/or disposal pools
- Install temporary plug into discharge pipe from sand drying beds to storage tank. Install simple drainage pit within sand drying beds and pump accumulated rain to grassed areas and/or disposal pools

Table 9-2 presents the annual inflow, the cost of pumping the inflow and the simple payback period for installing the simplified techniques based on the cost savings associated with not hauling and locally disposing the rain inflow from the sludge drying beds.

Table 9-2 Sludge Drying Beds Rain Inflow Costs

Rainfall (in/yr)	45	45
% Evaporated	50%	50%
Total Uncovered Area - Sludge Drying Beds (ft^2)	20,000	20,000
Inflow from Rain (gal/yr)	280,500	280,500
Pumping Cost ($/gal)	$0.13	$0.13
Annual Cost of Inflow, Sludge Drying Beds	$36,465	$36,465
Preliminary Estimate for Covering all 5 Beds by either plugging discharge pipe or lining beds &	High Estimate	Low-End Estimate
	$75,000	$30,000
Payback period (years)	2.06	0.82

ELECTRICITY USE BY SOIL ODOR FILTER AND EQ TANK AERATION

As can be seen on Table 8-1, the SWF incurs approximately $50,000 per year for electricity cost. Based upon LAI's review of the plant's operation, it appears that the electricity is consumed primarily for:

Working Draft

- Soil Odor Filter fan – which is understood to be 30 HP
- EQ Tank aeration system – which is understood to be 20 HP

with balance for building lights and minor equipment.

It is LAI's opinion that the existing Soil Odor Filter system, with annual electricity cost of $35,000+/, should be shut down as the EQ Tank is the only area with foul air being actively vented. A local odor filter using carbon canisters or a small odor filter should be sufficient. A maximum budget of $15,000 would be sufficient and therefore the payback would be less than one (1) year.

The EQ aeration system, with annual electricity cost of $15.000+/, in LAI's opinion should also be shut down and only operated on an as needed basis. With an EQ tank that is sealed and a local odor filter, LAI's sees no reason for aeration for odor control. Aeration would be used only for mixing purposes as needed.

This action would result in an annual savings of $35,000+.

Working Draft

10 SWF ALTERNATIVES EVALUATIONS

CANDIDATE WASTEWATER TREATMENT SYSTEMS FOR RECEIPT/TREATMENT OF WASTEWATER ONLY PUMPINGS

Pumpouts from holding tanks and or failing systems are a low-strength wastewater similar to residential and commercial wastewater. This type of waste would not be expected to cause any issues at a WWTF treating residential and/or commercial wastewater. The local East Hampton treatment facilities that potentially could accept low-strength scavenger waste pumpouts are located at the Montauk Manor and Rough Riders Landing in Montauk. Site studies will need to be performed to determine their capacity to accept wastewater and property owner approval would be needed. Given the distance to these locations, the age of the facilities, likely needed improvements, these sites being residential/tourist sites and the likely limited capacity, pursuit of this option is not expected to be fruitful and therefore is not recommended.

NOV CAUSES & MANAGEMENT OPTIONS

LAI has reviewed all available water quality data, inspected the SWF and interviewed the contract operator as part of the SWF facilities evaluation. The NOV causes, likely solutions and comments are briefly described on Table 10-1.

Table 10-1 SWF NOVs Causes and Likely Solutions

Type of NOV	Likely Cause	Likely Solution	Comments
BOD & TSS violations	Overdosing of methanol to denitrification system	Better methanol feed control. As it is recommended that the existing treatment system be replaced, this issue will be addressed by a new facility if that route is selected by the Town.	As the current scavenger waste facility will need to be replaced / upgraded if it continues operation, this issue will be addressed in any new facility design
Mercury	Likely due to load with high influent mercury content	High mercury content load should have been identified by testing of influent loads that are routinely saved for this purpose	Lack of management is likely the cause of why this violation was not determined. Dental wastes are a suspect for mercury levels.

The mercury (Hg) violations occurred on

31 Oct 2008 with 1.5 ug/l — 26 August 2008 influent had 230 ug/l

31 May 2010 with 94 ug/l — no previous sample had excessively high Hg levels.

Working Draft

CLOSING OF EAST HAMPTON SWF

This option entails closure of the EH SWF with the result that carters will be required to transport and dispose scavenger wastes at Riverhead, Clear flo or Bergen Point – as many have been doing since January 2012 when the EH SWF was converted to a maximum 10,000 gpd transfer station. With the enforcement of Town Codes and repair of malfunctioning septic systems that are generating high volumes, in LAI's opinion, of scavenger wastes, the quantities of scavenger waste are expected to be reduced by > 50++% from current levels. The benefits of this option are:

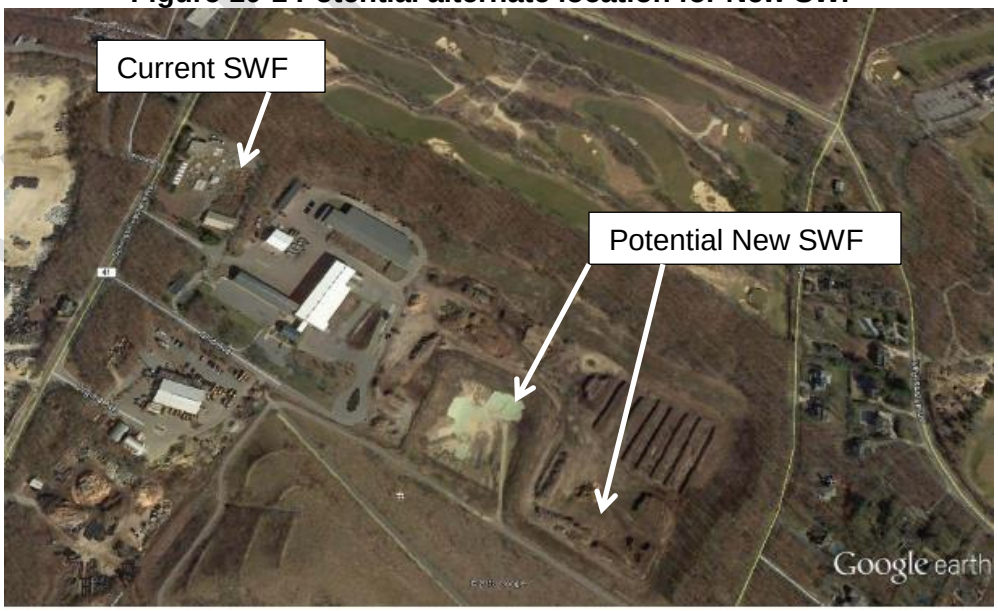
1. **$500,000 annual tax would no longer need to be assessed.**
   Funds could potentially be used for Town share of any needed wastewater improvement projects. Assuming Town receives 20 year - 2% loans from NYS EFC, this annual tax would support approximately $8,000,000 of capital costs.
   If funds are not used for other purposes, annual average tax savings per property, assuming 20,000 properties would be $20 - $25.

2. **SWF Land alternate use - sale**
   If the EH SWF was longer needed, the site's 3.5 acres could be used for other Town purposes and/or sold. If entire site was sold, it is understood that the market value would be approximately **$X,000,000.**

SITING OF A NEW SWF AT AN ALTERNATE EAST HAMPTON LOCATION

LAI has reviewed land use, zoning and the other Community Profile characteristics of the Town and with Town staff input, identified the only potentially viable candidate site as the solid waste area where composting is performed as well as brush storage. There is sufficient land at that location as shown on Figure 10-1. An alternate location could be the industrial land/sand pit between route 27 and the railroad tracks, just south of the airport off of Georgica's Lane and near Hedges Lane as shown on Figure 10-2.

Figure 10-1 Potential alternate location for New SWF



Working Draft

Figure 10-2 Potential alternate location for New SWF

ENVIRONMENTAL IMPACTS OF EXISTING AND ALTERANTE SITES

The environmental acceptability of a SWF at the existing and alterante sites needs to be determined.

INTERMUNICIPAL AGREEMENTS

LAI contacted the Suffolk County Department of Public Works and Riverhead Sewer District regarding the terms of a potential inter-municipal agreement for long-term use of their wastewater treatment plant to accept and treat East Hampton's scavenger wastes.

No response has yet been received from either Riverhead or SC DPW.

PERMANENT OR TEMPORARY SELF-SUSTAINING TRANSFER FACILITY AT EXISTING SWF

For a permanent or temporary self-sustaining transfer facility at the existing SWF site, the NYSDEC requirements for a 45,000 gpd transfer station are:

- ✓ Spill containment for receiving area
- ✓ Rebuild Soil Odor Filter

Other site/facility improvements would be needed and desirable and include:

- ✓ Automated influent tracking
- ✓ Covering of sludge drying beds
- ✓ Repairs at operations building
- ✓ Electrical-instrumentation upgrades

Working D

There are a range of levels of sophistication and consequently costs associated with the necessary improvements. To determine the financial viability of a self-sustaining permanent or temporary self-sustaining transfer facility at the existing SWF site, LAI prepared a preliminary budget for overhead (OH), i.e. all costs except for transport and disposal at an out of East Hampton facility, assuming the lowest likely costs for the needed site improvements, with the costs presented on Table 10-2. As determined in the financial analysis, section 8, the current facility is incurring an OH cost of $0.18 +/- / gallon. Table 10-2 assumes the average flows that were brought to the EH SWF for the period 2008 – 2011. While there could be some value engineering performed to optimize the Table 10-2 budget, LAI is of the opinion that there would not be any materially significant changes that would alter the conclusions of this analysis.

Based upon the transport cost analysis of Section 9.5, it is LAI's opinion that an EH SWF **transfer station OH costs cannot exceed $0.035 +/- / gallon to be competitive.**

For a financially self-sufficient facility, this is not possible as the projected overhead cost is $0.091 per gallon, with labor representing 50+/-% of annual costs. To achieve an OH of $0.035/gallon requires that annual OH costs do not exceed $200,000 +/-.

In LAI's opinion, a market competitive permanent or temporary self-sustaining transfer facility at the existing SWF site can only be achieved by the Town continuing its practice of assessing taxes in the amount of approximately $500,000 annually, as it has for the past 5 years, and therefore subsidizing the SWF operation as a transfer station.

Table 10-2 SWF Transfer Facility Likely Overhead Costs

EH SWF Transfer Station at 45,000 gpd capacity - Overhead			
		Labor	$ 250,000
		Engineering	$ 24,000
		LIPA	$ 50,000
		Insurance & Misc	$ 20,000
		New Debt*	$ 100,000
		Repair & Replacement Fund	$ 15,000
		Depreciation Fund	$ 30,000
		Contingency	$ 20,000
		Total	$ 509,000
		Gal/yr	5,600,000
		Average gpd 6 day week	17,900
Transfer Station Overhead ($/gal)			**$ 0.091**
10 yr 3%	Amort. Fact	0.12	
*CIP assumed		$800,000	$96,000

Working Draft

ESTIMATED USER CHARGES FOR UPGRADED SWF

In LAI's opinion, for long term planning purposes the existing SWF needs to be replaced with a State-of-the-Art facility. The existing concrete tanks, as described on Table 2-1, are candidates for being used in an upgraded SWF and the operations building could be potentially be gutted and rehabilitated.

Based upon LAI's review of the East Hampton scavenger waste flows and quality as described in Sections 3 and 4, it is LAI's opinion that, for planning purposes, Table 10-3 presents the recommended design approach and criteria for an upgraded East Hampton SWF.

Table 10-3 SWF Recommended Design Approach & Criteria

Waste Type	Design Approach	Design Criteria	Comments
Grease	Storage Tank for reclamation	TBD	Have separate storage for brown & yellow grease. Negotiate with reclaimer to reduce costs. If only one vendor, sole source may be justified.
Septage	Separate treatment train for septage & wastewater	12,000 gpd	Through education and use of effluent filters, reduce pumping frequency to every 5 – 7 years for typical residence.
Wastewater		33,000 gpd	This flow should decrease over 5 – 10 years such that treatment system could be used to treat wastewater from nearby neighborhood.

As can be deduced from Table 8-1, increased volumes can produce economies of scale. The increased volumes would most likely come from Southampton locations.

Table 10-4 separately presents the estimated charges for an upgraded SWF that would only treat wastewater and septage separately and provides cost/gallon with the Town paying for debt service and depreciation funding. Please note that financing for the capital costs assumes a NYS EFC loan of 2%. This scenario assumes that the operations building is rehabilitated to contain new dewatering equipment. There are a number of new low-cost septage dewatering systems now available and would be evaluated if the Town wishes to pursue this option.

The concrete tanks at the existing SWF are in good condition and potentially have a value in an upgraded SWF of approximately $300,000 - $1,000,000 depending on the extent to which they are used in an upgraded SWF.

LAI has not developed a grease management cost estimate due to the numerous variables. However for conceptual planning purposes, it is proposed that grease management would consist of holding tanks that would utilize the existing holding tanks. The Town may wish to only convert the SWF to a wastewater only treatment plant and direct grease and septage loads to Riverhead / Bergen Point, with the plan that the wastewater only plant will be converted to serve nearby areas. Table 10-5 presents the estimated charges for an upgraded/new SWF that would treat all scavenger wastes.

Working Draft

Table 10-4 Estimated User Charges for Upgraded SWF – Wastewater Only

EH SWF Wastewater Only 33,000 gpd Capacity		
Amort. Fact	20 yr 2% Capital Cost	$ 2,800,000
0.06116	Annual debt service	$ 171,248
Environmental Permitting Studies		
$ 600,000	Annual debt service	$ 36,696
	Truck Acceptance Labor	$ 150,000
	Treatment System Labor	$ 45,000
	Engineering	$ 36,000
	Monitoring	$ 10,000
	Chemicals	$ 30,000
	LIPA	$ 10,000
	Insurance & Misc	$ 15,000
	Sludge Removal	$ 10,000
	Repair & Replacement Fund	$ 20,000
	Depreciation Fund	$ 70,000
	Contingency	$ 25,000
	Total	$ 628,944
	Gal/yr	5,000,000
	Average gpd 6 day week	15,982
	Cost ($/gal) with debt service & Permitting	**$ 0.126**
	Cost ($/gal) w/o Debt & Deprec fund	**$ 0.070**
	Debt & Deprec funding ($/yr)	**$ 277,944**

(1) Environmental issues are significant risk factor as studies may determine site is not appropriate for disposal given the history of contamination in the area and sensitive aquifer location

(2) Costs are "Order of Magnitude" estimates and according to industry standards, cost estimates at this stage of planning, costs should be considered as +50% to - 30% of indicated costs.

EH SWF Septage Only 12,000 gpd Capacity		
Amort. Fact	20 yr 2% Capital Cost	$ 1,600,000
0.06116	Annual debt service	$ 97,856
Environmental Permitting Studies		
$ 300,000	Annual debt service	$ 18,348
	Truck Acceptance Labor	$ 75,000
	Treatment System Labor	$ 30,000
	Engineering	$ 24,000
	Monitoring	$ 10,000
	Chemicals	$ 25,000
	LIPA	$ 10,000
	Insurance & Misc	$ 15,000
	Sludge Removal	$ 40,000
	Repair & Replacement Fund	$ 15,000
	Depreciation Fund	$ 40,000
	Contingency	$ 40,000
	Total	$ 440,204
	Gal/yr	1,800,000
	Average gpd 6 day week	5,753
	Cost ($/gal)	**$ 0.245**
	Cost ($/gal) w/o Debt & Deprec fund	**$ 0.158**
	Debt & Deprec funding ($/yr)	**$ 156,204**

(1) Environmental issues are significant risk factor as studies may determine site is not appropriate for disposal given the history of contamination in the area and sensitive aquifer location

(2) Costs are "Order of Magnitude" estimates and according to industry standards, cost estimates at this stage of planning, costs should be considered as +50% to - 30% of indicated costs.

Working Draft

Table 10-5 Estimated User Charges for Upgraded SWF – Combined Waste Facility

EH SWF Combined 45,000 gpd Capacity		
Amort. Fact	20 yr 2% Capital Cost	$4,400,000
0.06116	Annual debt service	$ 269,104
Environmental Permitting Studies		
$ 750,000	Annual debt service	$ 45,870
	Truck Acceptance Labor	$ 225,000
	Treatment System Labor	$ 75,000
	Engineering	$ 36,000
	Monitoring	$ 15,000
	Chemicals	$ 55,000
	LIPA	$ 20,000
	Insurance & Misc	$ 20,000
	Sludge Removal	$ 50,000
	Repair & Replacement Fund	$ 30,000
	Depreciation Fund	$ 110,000
	Contingency	$ 75,000
	Total	$1,025,974
	Gal/yr	6,000,000
	Average gpd 6 day week	19,178
	Cost ($/gal)	**$ 0.171**
	Cost ($/gal) w/o Debt & Deprec fund	**$ 0.108**
	Debt & Deprec funding ($/yr)	**$ 424,974**
(1) Environmental issues are significant risk factor as studies may determine site is not appropriate for disposal given the history of contamination in the area and sensitive aquifer location		
(2) Costs are "Order of Magnitude" estimates and according to industry standards, cost estimates at this stage of planning, costs should be considered as +50% to - 30% of indicated costs.		

PUBLIC PRIVATE PARTNERSHIPS (P^3)

Currently the SWF operations are performed by a private firm. As the Town does not have the management or licensed operators to operate the SWF, LAI recommends that the SWF operations be performed by private firms. The Town may wish to re-bid the work for operations of the SWF as a transfer station as it is currently paying a gross rate of $104/hour for the operator through STES.

For any new SWF, again as the Town does not have the management or licensed operators to operate the SWF, LAI recommends that the SWF operations be performed by private firms until such time that the SWF system is stable and that the Town has the appropriate management capacities.

Working Draft

Privatization of design/construction of new facilities not expected to produce any value as project scale is too small. Should Town implement a new SWF or continue transfer station, private operators should be utilized for at least 1st 5 years of operation.

The P^3 options, as developed by the Water Design-Build Council http://info.waterdesignbuild.com/Portals/183438/docs/project_delivery_guide%20web.pdf are:

DESIGN-BUILD (DB)

Has two basic variations to achieve project priorities: (1) fixed-price or (2) progressive.

Fixed-Price Design-Build

A delivery method in which the owner establishes a stipulated dollar amount (which may include allowances) for design and construction when the design-build contract is signed, based on a defined scope, requirements and project schedule. The owner provides a preliminary or conceptual design of the project.

- The DB firm proposals are required to carry out the owner provided design.

This delivery method is used when owners are very clear on their design preferences and want to use integrated delivery to allow selection of a design-builder based on a combination of qualifications, schedule, and cost.

Progressive Design-Build (PDB)

PDB is a one- or two–phased delivery method in which design, cost-estimating, and final pricing of the project are performed during the first phase. And, if the owner and designbuilder reach agreement on the final pricing and schedule, then final design, construction, and commissioning are completed during the second phase. Final pricing with this method is often based on a guaranteed maximum price (GMP) with provision for shared cost savings between the owner and the design-builder.

- The owner selects the design-builder primarily on qualifications.
- The selected design-builder completes the design to between 30 and 60 percent and then submits a lump sum or guaranteed maximum price for the completion of the project to the owner for approval.
- If the design-builder and owner cannot reach agreement on an acceptable price, the owner can take the partially completed design and use it as the basis for completing the design and proceeding with a design-bid-build procurement or can negotiate with another qualified design-build team.

This delivery method is preferred when a project lacks definition or when an owner prefers to remain directly involved in the design process while leveraging the schedule and collaboration advantages provided by design-builder.

CONSTRUCTION MANAGEMENT AT-RISK (CMAR)

CMAR is a delivery method in which the project design is the responsibility of an engineering firm retained by the owner. Construction is the responsibility of a separate contractor, who also performs preconstruction

Working Draft

services during design development.

- Owner retains a design engineer.
- A CMAR firm is retained under a separate contract early in the design phase.
- The design engineer designs the project.
- The CMAR firm provides construction-related advice during design development and acts as general contractor if the owner and CMAR firm can agree on a price.
- Procurement is based on qualifications—option for fee proposal.
- Contractor provides guaranteed maximum price (GMP) and schedule at approximately 60% design development.
- Owner is still both the buyer and project integrator.
- Contractor is only responsible for following the design detail in the construction process; not for overall performance of the project.

This delivery method is used when required by applicable state law which otherwise restricts the use of design-build, or when an owner wants to capture a number of the benefits of design-build delivery while controlling project definition and design, and also retaining design integration risk.

Design-Build-Operate (DBO)

DBO comprises all the design-build components (design, permitting, procurement, construction and testing), but expands to include operation and maintenance of the completed facility. DBO is particularly suited for use by owners in circumstances that include:

- Incorporating new or emerging water or wastewater technology.
- Limited staff resources.
- Transferring operational performance risk to a third party.
- Finding an efficient delivery method that encompasses both the capital and O&M components of a new project.

This delivery method is preferred when an owner wants the contractor to assume responsibility for operations and maintenance, assuming performance risk with a guarantee for a specified time period.

GREASE MANAGEMENT

Grease treatment techniques that create biofuels are an emerging technology that may have applicability to the Town of East Hampton's grease management issues. The lack of reliable grease production data inhibits the analysis, however it is likely that a grease processing facility at an existing wastewater treatment plant, such as Riverhead, would enable a grease recovery project to be economically viable versus an East Hampton alone facility which would be subject to wide variations of incoming quantities. A pilot project at Torrington, CT will be evaluating a new process developed by RPM Sustainable Technologies of Storrs, Conn http://www.registercitizen.com/general-news/20131127/machine-converting-brown-grease-to-bio-fuel-nears-installation-in-torrington.

Working Draft

11 SWF CONCLUSIONS & RECOMMENDATIONS

Table 11-1 contains LAI's SWF recommendations and Table 11-2 presents the SWF Options Summary Analysis.

Table 11-1 SWF Conclusions & Recommendations

Option / Issue	Conclusions	Recommendations
Legal	Flow control and Scavenger waste code for septic inspections not being performed. Determine whether haulers consolidating wastes are practicing within NYSDEC regulations.	Enforce codes
Immediate / Interim	Optimizing current operations would save $12,000 + per month	1.Terminate sampling 2.Reduce operating hours to 4 hours / day
Close SWF	Capacity at Riverhead & Bergen Point exists at a competitive rate. If closed, $500,000 annual tax avoided and land sale would produce revenue. Tax could fund $8 million of wastewater system improvements and greater amounts if Town share is < 100% of capital costs. 3.5 acre land sale would generate approximately $X.Y million, which could also support wastewater improvement initiatives.	This is a highly attractive option but is a Town Policy decision. If closed and land sold, converting portion of site to a neighborhood treatment/disposal system should be consider. Treatment/disposal system would require 1.25 +/- acres and could be virtually entirely below ground. Treatment system could be sized to serve site's new use.
Operate as 45,000 gpd Transfer Station	Is not economically competitive unless Town subsidizes operations at ~$500,000 per year	Re-evaluate if site is to be used as a upgraded SWF
Treatment Facility at New Location	Portion of solid waste composting area appears attractive	Site may be more desirable as it enables consolidation of solid waste and SWF truck monitoring. Sale/reuse of existing SWF site would offset loss of existing SWF tanks/building that could be reused.
Treatment Facility at Current Location	Separate storage for grease and reclaim. Separate treatment for: -Wastewater	**Grease** – negotiate with reclaimer **Wastewater** – Appears financially attractive & self-sustaining, especially if reused for local wastewater treatment

Working Draft

	-Septage	**Septage** – Local facility expensive unless subsidized. A combined scavenger waste facility is economically attractive provided Town continues debt service and depreciation funding – which can be reduced by any grants.
Grants	State 75% grants are available with grant submission deadline of December 13, 2013	Submit grant application for treatment facility at current location to not lose opportunity. Should Town decide to not pursue this option, any grant award does not need to be accepted.
Privatization – Private Public Partnerships (P^3)	Current O&M operations are privatized Privatization of design/construction of new facilities not expected to produce any value as project scale is too small. Should Town implement new facility or continue transfer station, private operators should be utilized for at least 1st 5 years of operation	Maintain private operators as Town does not have internal operations and management staff. Grants restrictions for privatization. Privatization will require larger facility as validated by the only proposer to Town's P^3 RFP.

Table 11-2 SWF Options Summary Analysis

East Hampton Scavenger Waste Options - Analysis Summary						
Immediate / Interim	reduce hours & terminate sampling	Save $12,000+ per Month	Town Tax assessment	Cost / gallon with Town Tax Assessment	Cost / gallon without Town Tax Assessment & No grants	Comments
Close SWF		~$500,000 tax assessment eliminated				
Operate as 45,000 gpd Transfer Station	not recommended - unless part of upgrade					EH flows to be reduced in future. SWF use for non EH flow and/or neighborhood wastewater system
Treatment Facility at New Location	at solid waste composting area	Capital Cost $ 4.4 +/- million	$ 380,000	$ 0.10	0.163	
Treatment Facility at Current Location	upgrade SWF	Capital Cost $ 4.0 +/- million				

Working Draft

12 SWF FINDINGS

1. **SWF closure is an attractive financial option if coupled with a wastewater systems improvement program that will significantly reduce the production of scavenger waste quantities.**

   Non-East Hampton scavenger waste facilities have sufficient capacities at competitive rates.

   Portion of EH SWF site could be retained for a neighborhood wastewater treatment system and to serve new use at EH SWF site. Also may be able to integrate a pumped wastewater facility to enhance economics.

2. **SWF upgrade is financially viable and competitive provided Town continues tax assessment for debt service and depreciation funding. Grants will reduce required Town tax assessment**

3. **Town scavenger code needs to be enforced, in particular for:**

   a. **Flow control**
   b. **Documentation of properties being pumped**
   c. **Septic inspections to reduce over 5 - 10 years the wastewater from malfunctioning systems being pumped.**

4. **Town tax payers have provided approximately $500,000 per year for operation of the SWF. This tax payment has been approximately 50% of SWF's annual revenues. Tax could alternately support $8+ million of wastewater improvement projects.**

5. **As can be seen on Table 8-1, the tax has been used to offset operating and maintenance costs and no funds have been put aside for future capital purchases. For the past 5 and 13 years, 13% and 24%, respectively, of the tax has been used for debt service. Town Code implies that tax is not to be used ordinarily to support O&M costs.**

6. **Sampling of influent waste and groundwater wells should be terminated while site is used as a transfer station. This will save the Town $4,000 +/- per month.**

7. **Due to the low restricted volume of 10,000 gpd that can be received, the SWF should be operated for 4 hours per day while it operates as a 10,000 gpd transfer station. This should save the Town $8,000+ per month.**

8. **It is understood that some EH haulers are consolidating loads from smaller to larger trucks. The practice needs to be in compliance with NYSDEC rules. The Town should address whether the only allowable NYSDEC practice, without a permit, of transfer [points being on Town roads is acceptable.**

Working Draft

9. **Expanding the SWF to a 45,000 gpd transfer station is not economically competitive and self-sustaining without an annual Town tax payment of approximately $500,000. Expanding the transfer station capacity should only be considered, if at all, as part of a phased approach to an upgraded SWF.**

10. **Converting the SWF to a pumped wastewater facility appears economically attractive, especially if converted to a neighborhood treatment site when pumped wastewater flows are expected to diminish in 5 – 10 years.**

11. **Provide storage for transfer of yellow and brown grease and negotiate with reclaimer for resource recovery and to lower grease management costs.**

12. **Require grease traps on all buildings producing wastewater from food service operations.**

Working Draft

APPENDIX A1 – SWF NOV

New York State Department of Environmental Conservation
Division of Water, Region 1
Stony Brook University
50 Circle Road, Stony Brook, New York 11790-3409
Phone: (631) 444-0405 • **Fax:** (631) 444-0424
Website: www.dec.ny.gov

Joe Martens
Commissioner

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 23, 2011

Mr. William Wilkinson, Supervisor
Town of East Hampton
159 Pantigo Road
East Hampton, NY 11937

Subject: Notice of Violation
SPDES No: NY0199079
Town of East Hampton Scavenger Waste Treatment Plant

Dear Mr. Wilkinson:

The New York State Department of Environmental Conservation (Department) is responsible for the implementation and enforcement of the provisions of Article 17 of the Environmental Conservation Law (ECL), the rules and regulations promulgated thereunder, and the provisions of State Pollutant Discharge Elimination System (SPDES) permits issued under Article 17.

The Department has documented (see attached Table 1) that the above referenced facility has discharged wastewater in exceedance of limits set in its SPDES permit. The Discharge Monitoring Reports (DMR) submitted to this office for the period of February 2008 to March 2011 shows exceedances of Total Nitrogen, CBOD5, Total Suspended Solids, Total Mercury and Total Iron. This is in violation of ECL Sections 17-0511, 17-0803 and 6 NYCRR Section 751.1(a).

Please be advised that ECL Section 71-1929 provides for a maximum penalty of $37,500 for each violation of Article 17 of the ECL and/or the rules and regulations promulgated hereunder. Additionally, each day that you fail to comply with the ECL and/or the rules and regulations promulgated thereunder, constitutes a separate and distinct violation.

The violations listed above appear to be an ongoing problem. You are hereby advised to end your noncomplying discharge. It will be necessary for you to prepare and submit a corrective action plan with a schedule of compliance to this office by **June 23, 2011.** The corrective action plan is to include:

1. Steps already taken to reduce, eliminate, and prevent recurrence of the noncompliance. Include specific actions taken and the date on which they were implemented.

2. If the noncompliance has not been corrected by the date of report preparation, the anticipated time it is expected to continue.

3. Steps scheduled to be taken to reduce, eliminate, and prevent recurrence of the noncompliance. You must include specific dates on which significant actions will be conducted.

4. Where the noncompliance is claimed to be eliminated, the laboratory analyses of at least three weekly effluent samples in order to substantiate compliance.

Please be advised that by undertaken action in accordance with the advice given in this Notice, you are not relieved of liability for penalties or any other applicable enforcement measures that may be taken by this agency. Our office of Legal Affairs may be contacting you in the future.

Any questions, comments, or reply to this Notice of Violation should be made in writing and sent to my attention at the above address.

Sincerely,

William H. Spitz
Regional Water Manager

Encl: Table 1- DMR Violations

cc: C. Elgut, Esq., Acting Regional Attorney
V. Schmit, P.E, Chief, Compliance Assurance Section
T. Leung, P.E., DEC R-2
J. Sun, Ph.D., P.E. DEC R-2
M. O'Brien, STES

	A	B	C	D	E	F	G	H
1	TABLE - 1							
2	DMR Violations - NY 0199079 EAST HAMPTON (T) SCAVENGER WTF 2/2008 THRU 3/2011							
3	Parameter Desc	Limit Unit	Statistical Base	Mon. Date	Limit	DMR Value	% Exceedence	No. of Exceedence
4	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	02/29/2008	20.	43.	115	1
5	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	03/31/2008	20.	27.	35	2
6	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	04/30/2008	20.	47.	135	2
7	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	11/30/2008	20.	160.	700	3
8	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	12/31/2008	20.	56.	180	4
9	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	01/31/2009	20.	160.	700	4
10	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	02/28/2009	20.	140.	600	4
11	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	03/31/2009	20.	65.	225	2
12	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	04/30/2009	20.	92.	360	2
13	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	05/31/2009	20.	48.	140	1
14	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	6/39/2009	20.	79.	295	4
15	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	07/31/2009	20.	65.	225	4
16	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	01/31/2010	20.	37.	85	2
17	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	02/28/2010	20.	36.	80	4
18	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	03/31/2010	20.	71.	255	2
19	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	04/30/2010	20.	36.	80	1
20	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	05/31/2010	20.	51.	155	2
21	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	08/31/2010	20.	40.	100	1
22	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	10/31/2010	20.	25.	25	1
23	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	12/31/2010	20.	39.	95	2
24	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	01/31/2011	20.	82.	310	3
25	BOD, 5-day, 20 deg. C	mg/L	DAILY MX	03/31/2011	20.	31.	55	1
26	Mercury, total (as Hg)	ug/L	DAILY MX	10/31/2008	1.4	1.5	7	1
27	Mercury, total (as Hg)	ug/L	DAILY MX	05/31/2010	1.4	94.	6611	1
28	Iron, total (as Fe)	ug/L	DAILY MX	03/31/2009	600.	820.	37	1
29	Iron, total (as Fe)	ug/L	DAILY MX	03/31/2011	600.	880.	47	1
30	Nitrogen, total (as N)	mg/L	DAILY MX	01/31/2009	10.	15.	50	1
31	Nitrogen, total (as N)	mg/L	DAILY MX	02/28/2009	10.	18.	80	2
32	Nitrogen, total (as N)	mg/L	DAILY MX	03/31/2009	10.	19.	90	2
33	Nitrogen, total (as N)	mg/L	DAILY MX	06/30/2009	10.	17.	70	1
34	Nitrogen, total (as N)	mg/L	DAILY MX	01/31/2010	10.	20.	100	3
35	Nitrogen, total (as N)	mg/L	DAILY MX	02/28/2010	10.	18.	80	1
36	Nitrogen, total (as N)	mg/L	DAILY MX	03/31/2010	10.	23.	130	3
37	Nitrogen, total (as N)	mg/L	DAILY MX	01/31/2011	10.	27.	170	3
38	Nitrogen, total (as N)	mg/L	DAILY MX	02/28/2011	10.	21.	110	1
39	Solids, total suspended	mg/L	DAILY MX	02/29/2008	20.	44.	120	2
40	Solids, total suspended	mg/L	DAILY MX	03/31/2008	20.	40.	100	4
41	Solids, total suspended	mg/L	DAILY MX	04/30/2008	20.	76.	280	3
42	Solids, total suspended	mg/L	DAILY MX	06/30/2008	20.	45.	125	3
43	Solids, total suspended	mg/L	DAILY MX	07/31/2008	20.	24.	20	1
44	Solids, total suspended	mg/L	DAILY MX	08/31/2008	20.	42.	110	2

	A	B	C	D	E	F	G	H
45	Solids, total suspended	mg/L	DAILY MX	09/30/2008	20.	27.	35	2
46	Solids, total suspended	mg/L	DAILY MX	11/30/2009	20.	32.	60	1
47	Solids, total suspended	mg/L	DAILY MX	12/31/2008	20.	79.	295	4
48	Solids, total suspended	mg/L	DAILY MX	01/31/2009	20.	56.	180	4
49	Solids, total suspended	mg/L	DAILY MX	02/28/2009	20.	40.	100	2
50	Solids, total suspended	mg/L	DAILY MX	03/31/2009	20.	39.	95	1
51	Solids, total suspended	mg/L	DAILY MX	05/31/2009	20.	29.	45	1
52	Solids, total suspended	mg/L	DAILY MX	06/30/2009	20.	80.	300	2
53	Solids, total suspended	mg/L	DAILY MX	07/31/2009	20.	52.	160	2
54	Solids, total suspended	mg/L	DAILY MX	09/30/2009	20.	51.	155	1
55	Solids, total suspended	mg/L	DAILY MX	01/31/2010	20.	78.	290	1
56	Solids, total suspended	mg/L	DAILY MX	02/28/2010	20.	32.	60	2
57	Solids, total suspended	mg/L	DAILY MX	04/30/2010	20.	22.	10	1
58	Solids, total suspended	mg/L	DAILY MX	05/31/2010	20.	69.	245	3
59	Solids, total suspended	mg/L	DAILY MX	06/30/2010	20.	71.	255	1
60	Solids, total suspended	mg/L	DAILY MX	07/31/2010	20.	23.	15	1
61	Solids, total suspended	mg/L	DAILY MX	08/31/2010	20.	59.	195	2
62	Solids, total suspended	mg/L	DAILY MX	09/30/2010	20.	21.	5	1
63	Solids, total suspended	mg/L	DAILY MX	10/31/2010	20.	29.	45	2
64	Solids, total suspended	mg/L	DAILY MX	12/31/2010	20.	67.	235	4
65	Solids, total suspended	mg/L	DAILY MX	01/31/2011	20.	50.	150	1
66	Solids, total suspended	mg/L	DAILY MX	03/31/2011	20.	55.	175	2
67								
68	Note:							
69	No. of Total BOD5 Limit Violations = 52							
70	No. of Total Suspended Solids Limit Violations= 56							
71	No. of Total Nitrogen Limit Violations= 17							
72	No. of Total Iron Limit Violations= 2							
73	No. of Total Mercury Limit Violations= 2							

APPENDIX A2 – NYSDEC LETTER EXTENDING CAP SCHEDULE

New York State Department of Environmental Conservation
Division of Water, Region 1
Stony Brook University
50 Circle Road, Stony Brook, New York 11790-3409
Phone: (631) 444-0405 • **Fax:** (631) 444-0424
Website: www.dec.ny.gov

Joe Martens
Commissioner

March 8, 2012

Mr. John C. Jilnicki, Esq.
Town Attorney
Town of East Hampton
159 Pantigo Road
East Hampton, NY 11937

Re: SPDES No: NY0199079 - Town of East Hampton Scavenger Waste Treatment Plant
Request for additional 90-days to Proposed Schedule of CAP

Dear Mr. Jilnicki:

The Department is in receipt of your February 29, 2012 letter requesting an additional ninety (90) days to the proposed schedule as outlined in the approved Corrective Action Plan ("CAP"). Based on the reasons provided in your letter and conditioned upon the plant not discharging prior to completion of Task 8, the Department hereby approves your schedule extension request with the following due dates, the task numbers coincide with the December 1, 2011 CAP:

Task 3. Development of Technical Design Report -	due June 29, 2012
Task 5. Development of Plans & Specifications -	due November 30, 2012
Task 8. Construction of Improvements -	due February 28, 2014
Task 9. Start-up and Testing -	due March 31, 2014

We look forward to receiving and reviewing your Engineering Report and Plans & Specifications. Should you have any questions, please do not hesitate to contact the undersigned at (631) 444-0405.

Sincerely,

William H. Spitz
Regional Water Manager

cc: Tony Leung, P.E. M.B.A., DEC-R-1
Joe Sun, Ph.D., P.E. DEC R-1

APPENDIX A3 – NYSDEC COMMENTS ON TRANSFER STATION PERMIT APPLICATION

New York State Department of Environmental Conservation
Division of Materials Management, Region 1
Stony Brook University
50 Circle Road, Stony Brook, NY 11790-3409
Phone: (631) 444-0378 • **Fax:** (631) 444-0213
Website: www.dec.ny.gov

Theresa

RECEIVED 7/27/12 BC

Joseph Martens
Commissioner

July 27, 2012

The Honorable William J. Wilkinson
Town Supervisor
Town of East Hampton
159 Pantigo Road
East Hampton, NY 11957

✓ Board
✓ J Silmili
✓ L Bernard
7/27/12

JUL 2012 Received East Hampton Supervisor's Office

Re: 6 NYCRR Part 360 Transfer Station Permit Application
Scavenger Waste Treatment Plant

Dear Supervisor Wilkinson:

The New York State Department of Environmental Conservation (the Department) has completed its technical review of the above referenced permit application, prepared by Cameron Engineering & Associates, LLP and dated April 2012. On July 19, 2012 a meeting was held at our Stony Brook office between the Department staff and your consultant Mr. Mark Wagner and Mr. Jon Sharrer of Cameron to discuss our questions and comments.

Attached hereto is a detailed accounting of the topics that we discussed at the meeting; Cameron committed to providing all outstanding information. However, in addition to several administrative issues, such as the SEQRA review and the Record of Compliance review for Severn-Trent, there are two major technical concerns that must be addressed and resolved before the Department would be able to issue a permit for the operation of the Scavenger Plant as a Part 360 septage/grease transfer station. Both require infrastructure upgrades to the existing facility.

The first concern is the lack of adequate secondary containment for both the area where the raw septage is unloaded and the area where tanker trucks going to the treatment plant are loaded. The application identifies measures that will be taken to upgrade each of these areas so that they can provide containment of accidental spills. However, before the Department can issue the permit, adequate secondary containment must exist, not simply be planned.

The second concern is of a similar nature, having to do with the operating condition of the facility's biofilter. Again, the application identifies this equipment as being in need of new media, the piping network needs to be inspected, and the unit must be restored to original design standards. Odors have the highest likelihood of being the primary environmental impact from this facility, and the Department will not issue a permit until the biofilter is at 100% efficiency.

Resolution of these issues will require action by the Town. The Department can proceed with the administrative issues and with incorporating any outstanding information or plans from Cameron, but issuance of a permit is contingent on the two items discussed above.

If you have any questions or wish to discuss these matters further, please don't hesitate to call this office to speak to me or Peter Hourigan of my staff.

Sincerely,

Syed H. Rahman, P.E.
Regional Materials Management Engineer

Attachment

cc. Ajay R. Shah, P.E., Regional Engineer
Sue Ackerman, Environmental Analyst
Peter D. Hourigan, P.E., Environmental Engineer 2
Lija Jacob, Environmental Engineer

Mark Wagner, C.E.P., Principal, Cameron Engineering

Wor

APPENDIX A4 – SCDHS LETTER MARINA WASTE TANK

COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

JAMES L. TOMARKEN, MD, MPH, MBA, MSW
Commissioner

April 6, 2012

Town of East Hampton
159 Pantigo Rd.
East Hampton, NY 11937

APR 2012
Received
East Hampton
Supervisor's Office

Re: SCDHS ID#: 3-0126
File Reference: 00031
East Hampton Scavenger Site
262 Springs Fireplace Rd.
East Hampton, NY 11937

Gentlemen:

On 2/28/12 a representative of our department inspected the above referenced facility. This inspection revealed the following:

SC Tank #5 (2,500 gal. industrial waste): The records of this office indicate that this tank was placed in "temporarily out of service" (TOS) status in 2005 and has not been used since. TOS is a status granted by this office for a 2 year period. If requested in writing, permission may be granted to keep the tank in TOS status for an additional 2 years. It should be noted that this tank is regulated by the EPA. The EPA may require the removal of this tank after 1 year in TOS status. It is recommended that this tank be removed if it is not to be used.

A re-inspection will be made within 30 days to verify that the above items have been corrected. Failure to comply with this directive will result in the issuance of a violation and possible fines.

Please contact me at 631-854-2533 if you have any questions regarding this correspondence.

Very truly yours,

Walter T. Petrule
Associate Public Health Sanitarian
Office of Pollution Control

Public Health
Prevent. Promote. Protect.

DIVISION OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL - 15 HORSEBLOCK PLACE, FARMINGVILLE, NY 11738
PHONE #631-854-2502/ FAX# 631-854-2505

APPENDIX A5 – NYSDEC EMAIL CONFIRMING NO SAMPLING REQUIRED WITH NO DISCHARGE

Pio Lombardo

From:	Wann-Joe Sun <wxsun@gw.dec.state.ny.us>
Sent:	Monday, October 28, 2013 11:04 AM
To:	jjilnicki@EHamptonNY.Gov
Cc:	cbrennan@EHamptonNY.Gov; Soverby@EHamptonNY.Gov; wwilkinson@ehamptonny.govl; Anthony Leung; William Spitz; Pio Lombardo <Pio@lombardoassociates.com
Subject:	Fwd: Re: FW: East Hampton Scavenger Waste Facility - Lab analysis of influent wastewater
Attachments:	Letter.SPDES.0199079.2012-03-08.approval of request for additional 90 days tp proposed schedule of CAP.pdf

Dear Mr. Jilnicki:

This is to confirm that all samplings can be suspended if there is no discharge at the East Hampton Scavenger waste facility.

By the way, the Department has not heard from the Town of East Hampton for almost a year about what the Town intends to do with this facility. Please give us an update on the status of this facility and what is your selected alternative developed from your Comprehensive Wastewater Management Plan.

As a reminder, from our March 8, 2012 letter to you, the Town is supposed to complete construction of an upgraded plant by February 28, 2014 and start-up and testing by March 31, 2014 (see attached).

Your prompt response is urgently requested.

Respectfully,

Joe Sun

Joe Sun, Ph.D., P.E.
Environmental Engineer II
Division of Water
NYSDEC-Region 1
Phone: 631-444-0426
Fax: 631-444-0424
email: wxsun@gw.dec.state.ny.us
>>> Syed Rahman 10/25/2013 12:35 PM >>>
Hi Mr. Lombardi:
The lab analysis of the effluent at scavenger waste and groundwater testing may be our Division of Water requirement. I am forwarding this to our Regional Water Manager Mr. William Spitz for a response.

>>> Pio Lombardo <Pio@lombardoassociates.com> 10/24/2013 12:57 PM >>>

My apologies, as there was another person in my database with a similar name as yours

From: Pio Lombardo
Sent: Thursday, October 24, 2013 12:54 PM
To: Jacob, Lija
Cc: East Hampton Town Attorney (jjilnicki@EHamptonNY.Gov); Kimberly Shaw; Sylvia Overby (Soverby@EHamptonNY.Gov)
Subject: East Hampton Scavenger Waste Facility - Lab analysis of influent wastewater

Mr. Rahman & Ms. Jacob

It is my understanding that NYSDEC sent an email of 2+/- years ago to the Town of East Hampton indicating that lab analysis of influent scavenger waste and groundwater testing was not required if the facility was just a transfer station. To eliminate unnecessary costs, Lombardo Associates, Inc. is recommending that the weekly scavenger waste sampling which is costing the Town $3,500+ per month be suspended until a discharge is proposed by the Town and approved by NYSDEC and any system operational.

In this regard, the Town will appreciate a letter from NYSDEC indicating that there is no need for influent scavenger waste sampling while the Town operates the facility as solely a transfer station. If you have any questions in this regard, please do not hesitate to contact me.

Sincerely,

Pio Lombardo, P.E., DEE

Pio Lombardo, P.E. | Lombardo Associates, Inc. | Environmental Engineers Consultants | 188 Church Street | Newton, MA 02458 Tel: 617-964-2924 | Cell: 617-529-4191| Fax: 617-332-5477 | Email: Pio@LombardoAssociates.com | www.LombardoAssociates.com
| CONFIDENTIALITY NOTICE: This e-mail message, including any attachments, is for the sole use of intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

Work

APPENDIX B – 2011 CORRECTIVE ACTIONS PLAN REPORT

CORRECTIVE ACTION PLAN

PREPARED FOR

TOWN OF EAST HAMPTON

FOR

SCAVENGER WAST TREATMENT FACILITY

PREPARED BY

CAMERON ENGINEERING & ASSOCIATES, LLP

NOVEMBER 2011

TABLE OF CONTENTS

1. PROJECT DESCRIPTION 1
2. PRELIMINARY ANALYSIS 1
3. OPTIONS 2
4. DISCUSSION OF OPTIONS 3
5. SELECTED CAP 4
6. SCHEDULE 5
7. SPDES PERMIT MODIFICATION 6

1. Project Description

The Town of East Hampton owns a Scavenger Waste Treatment Facility (Facility) with a permitted capacity of 45,000 gallons per day (gpd). The Facility is approaching 30 years of operating service. The Town has conducted a number of upgrades and improvements since the Facility opened and has contracted the operations and maintenance to a private firm Severn Trent Environmental Services (STES). The New York State Department of Environmental Conservation (DEC) has cited the Town via a Notice of Violation (NOV) that requires the Town to develop and implement a Corrective Action Plan (CAP) to address the deficiencies causing the exceedances of the Facility's SPDES Permit. The following sections describe the nature of the violations, potential options available to the address the violations, the recommended option and a proposed schedule for implementation of the proposed CAP.

2. Preliminary Analysis

The Town directed its consultant Cameron Engineering & Associates, LLP (CEA) to investigate the DEC's NOV to determine the extent of the violations and to develop a CAP that would be approvable by the DEC and form the basis of implementing a course of action to satisfactorily address the NOV. CEA reviewed the NOV and performed an analysis including review of data, visitation to the Facility and interviews with the operating staff. The Facility is operated on a contract basis by Severn Trent Environmental Services (STES). The NOV identified 129 exceedances for the period of February 2008 to March 2011. The analysis effort categorized the exceedances as follows:

1. Total Nitrogen	17 exceedances - 13% of all exceedances
2. BOD5	52 exceedances - 40% of all exceedances
3. Total Suspended Solids (TSS)	56 exceedances - 43% of all exceedances
4. Iron and Mercury	4 exceedances - 3% of all exceedances

CEA additionally interviewed personnel of STES to verify operating conditions and to obtain an update on Facility processing systems and equipment in order to better define the causes of the above exceedances. Preliminary analysis of the violations is as follows:

- **Total Nitrogen:** The bulk of these violations occurred during the winter months of January, February and March. Cold wastewater temperatures affecting nitrification, high Dissolved Oxygen concentrations affecting denitrification and uneven methanol addition affecting carbon addition are the leading causes of these exceedances.

- **Carbonaceous Biochemical Oxygen Demand (cBOD):** The bulk of these violations are believed to be associated with excessive methanol addition. The methanol is required as a carbon source for the denitrification filter however, any unused methanol due to overfeeding will show up in the denitrification filter effluent as cBOD. The methanol feed as noted above is currently uneven. Exacerbating this situation is the current SPDES effluent limitation for cBOD is set a 20 mg/L which is more stringent than most wastewater treatment facilities discharging to groundwater.
- **Total Suspended Solids (TSS):** These exceedances are directly associated with solids passing through the dentrification filter. There are no additional downstream filtering steps prior to discharge to the leaching pools. Exacerbating this situation is the current SPDES effluent limitation for TSS is set at 20 mg/l which is more stringent than most wastewater treatment facilities discharging to groundwater.
- **Iron and Mercury:** These exceedances are directly associated with the influent waste delivered to the Facility. It should be noted that Iron is an element present in the local groundwater. Formerly, the Facility used Ferric Chloride as a settling agent, this chemical has been replaced with aluminum sulfate. Exceedances for iron have reduced since the switch to alum sulfate from ferric chloride. The Facility is not designed to remove heavy metals except to the extent that they may settle out in the sludges collected in the Facility processes.

From a preliminary standpoint, CEA believes that there is a direct connection between the Total Nitrogen, cBOD and TSS exceedances. Improvements to the dentrification process, methanol feed and a new effluent filtering system will likely significantly reduce these exceedances. The cold weather impact on nitrification will require additional analysis. Consideration for requesting a modification from the DEC to the existing SPDES permit effluent limitations may be appropriate as well. Modifying the permit to reflect effluent limitations of similar groundwater discharge facilities is not unreasonable. The heavy metal exceedances will require investigation into the sources of incoming wastewater.

3. Options

The Town has a number of options that may be available to address the NOV. These include, but are not limited to the following:

- **Option 1:** Evaluate the Facility to determine cause of NOV, identify the necessary improvements, prepare a Technical Design Report, prepare Contract Documents, and proceed to implement (construct) the necessary improvements to bring the Facility into compliance with its existing SPDES permit.

- **Option 2:** Temporarily discontinue discharge of effluent from the Facility and operate the Facility as a transfer station until such time the Facility is brought into compliance with its existing SPDES permit. This could be after completion of Option 1 identified above or in conjunction with Option 3 discussed below.
- **Option 3:** Enter into some form of public-private partnership arrangement that transfers all or a portion of the responsibility of the Facility's operation and maintenance (O&M) and capital improvements to a private entity. The responsibility to make the necessary improvements to achieve compliance could be made part of the contractual relationship between the Town and the private entity. The private entity would assume liability for meeting permit limitations.

4. Discussion of Options

- **Option 1:** The Town is facing a deadline for permit compliance of the Facility by the end of this year. The traditional evaluation, development of a Technical Design Report, Contract Documents, regulatory approval of engineering documents, bidding and construction phase will likely require at least a 1-1/2 to 2 year schedule (depending on the level of needed improvements) to achieve compliance. Although this CAP option would outline the necessary corrective measures, the non-compliance condition (violations of the SPDES) would continue to occur until the improvements to the Facility were constructed and on line.

- **Option 2:** This option would have the Facility ceasing the discharge until such time as it could be brought into compliance with the existing SPDES permit. The Town would temporarily cease the effluent discharge and provide transfer of the scavenger waste by a licensed and permitted hauler(s) to a permitted facility such as the Bergen Point STP in Babylon. The Town would "winterize" the Facility by emptying tanks and performing maintenance on equipment to prepare it for a period of inactivity. This option ensures that additional permit violations would not occur and would allow the Town time to more fully evaluate the merits of both Option 1 and Option 3.

- **Option 3:** There is interest on the Town's part in exploring the possibility of having the private sector participate in the operation/maintenance and possibly the ownership of the Facility. Private sector participation could be in the form of a long-term lease or even the sale of the asset. Such an arrangement could make the private entity responsible for the improvements necessary to achieve compliance and responsible for the Facility discharge by transferring the SPDES permit to the entity. The Town may wish to continue to own the asset as its needs may change in the future and therefore retain the ability to reassume

operational responsibility for the Facility. The DEC would have to approve the arrangement and the transfer of the SPDES permit.

In discussions with the Town regarding these options, the merits of Option 2 provide the most flexibility and mitigate incurring further violations by ceasing the discharge of the effluent. By operating as a transfer station, the Town is able to continue to provide the service to its residents and commercial entities and maintain the SPDES permit in force.

5. Selected CAP

While a preliminary investigation has identified possible causative factors associated with the NOV parameters, a more detailed evaluation and development of a Technical Design Report (TDR) will be required. The TDR will provide the following information to the Town and the DEC:

1. Review of capacity of unit processes
2. Review of past 3 years of operating records
3. Review nitrification and denitrification operating conditions
4. Assessment of equipment conditions and respective reliability/redundancy
5. Analysis of current SPDES permit and basis for possible request for modification
6. Identification of required Facility improvements including calculations, sizing, manufacturer information and schematic layouts
7. Preliminary cost information

Once the TDR is completed it will be submitted to the DEC for its review and approval. Upon receipt of the DEC's approval of the TDR, the Town will then develop the Contract Documents (Plans & Specifications) for the prescribed improvements. These documents would provide the technical details on the improvements identified and selected in the approved TDR. Once completed, the Plans & Specifications would be submitted to the DEC for approval. A final cost estimate would be prepared at this time to assist the Town in undertaking the financing of the improvements.

Upon receipt of approval of the Plans & Specifications by the DEC, the Town would proceed with the procurement of a qualified contractor(s). The procurement process would include the public bidding of the project and award of a contract(s) to have the approved modifications constructed. At this time it is not known what the construction period would be but likely on the order of 12-15 months as a typical timeframe including the startup and testing of new equipment and systems.

6. Schedule

The Town will be proceeding with Option 2 that has the Facility operating as a transfer station during an evaluation phase. If the evaluation recommends proceeding in accordance with traditional design, bid and construction phases, the following time frames will be followed:

TASK	DURATION
1. Procure Transfer Station Operator	4 weeks*
2. Procure Waste Hauling Services Contract	4 weeks*
3. Development of Technical Design Report	10 weeks
4. Regulatory Review and Approval	4 weeks
5. Development of Plans & Specifications	16 weeks
6. Regulatory Review and Approval	4 weeks
7. Bid and Contract Award process	8 weeks
8. Construction of Improvements	52 weeks
9. Start-up and Testing	4 weeks
*Task 1 and Task 2 conducted concurrently	
TOTAL	**102 Weeks**

This schedule would have the Facility commencing operations as a transfer station and ceasing discharge upon execution of a contract with a hauling firm for the transfer operation and execution of a contract (unless Town operated) for operation of the Facility as a transfer station. A total of four (4) weeks is estimated for this. The start date for this CAP would be the date that the plan is accepted by the Department.

The Town would concurrently commence investigation of the private sector option through a Request For Proposal (RFP) process in accordance with General Municipal Law procedures. The appropriate time for execution of a contract (if deemed feasible) would be upon completion of the TDR which would identify existing conditions and needed improvements. The TDR would establish the baseline condition of the Facility as part of the contract with the private entity. If a public-private option is determined to be the best alternative for the Town, the above schedule may be revised accordingly.

7. SPDES Permit Modification

If the Town elects to pursue a SPDES Permit modification, this could this would be initiated at the completion of the Technical Design Report. It is reasonable to estimate that six (6) months will be required for the permit modification to be developed and processed by the DEC, this would be concurrent with the development of Plans and Specifications if Option 1 is being implemented. Total expected time from initiation of the TDR to the improvements being on line is approximately 2 years.

APPENDIX C – MINUTES OF OCTOBER 2, 2013 MEETINHG WITH EH SCAVENGER WASTE TRANSPORTERS

Working Draft

Environmental Engineers/ Consultants
LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458
www.LombardoAssociates.com
Tel: 617-964-2924
Fax: 617-332-5477
Pio@LombardoAssociates. com

Summary Minutes October 2, 2013 Meeting – Scavenger Waste Facility Management Issues with Scavenger Waste Haulers

Town Hall, 6:00 pm- ~ 9:00 pm
Attendees:

- Councilwoman Sylvia Overby
- East Hampton Natural Resources Director Kim Shaw
- Lucille & Gap Garypie, John K. Ott Cesspool
- Skip Norsic, Norsic & Son
- John Stafford, McMahon Plumbing
- Jimmy & Danielle Quackenbush, Quackenbush Cesspool Service
- Rodney Herrin, Schenck Cesspool Service
- Pio Lombardo, P.E., Lombardo Associates – Engineers for EH Scavenger Waste Management Plan

The Scavenger Waste Management (SWM) efforts are a significant component of the EH Comprehensive Wastewater Management Plan. The objectives of the SWM efforts are to develop an analysis of options and provide recommendations for:

- Interim (defined as for next 3 - 5 years – say through 2019 +/-) management
- Long Term Management

The options consist of the categories of:

1. **Close the Facility and have all scavenger waste brought to out of Town facilities, namely**
    a. Riverhead WWTP
    b. Bergen Point
    c. Clear Flo in Lynnhurst, NY
    d. Grease to Yellow Trading, 40 Zorn Blvd, Yaphank
2. **Operate Existing Facility as a Transfer Station**
    a. Current 10,000 gpd capacity limit
    b. Expanded capacity to 45,000 gpd or greater as needed capacity
3. **Operate an East Hampton SW treatment Facility**
    a. At current location with any discharge required to achieve high effluent quality standards
        i. Upgrade existing treatment facility
        ii. Replace existing treatment facility
    b. New location for long term option
    c. Treat at existing EH SWF and dispose of liquid at another location

Following is a summary of key background information and comments made during the meeting:

1. SWF flows consist of:
    a. Septage – from normal maintenance pumping of septic tanks, typically 4 % solids
    b. Wastewater – from holding tanks and/or malfunctioning septic systems
    c. Grease
2. Pumpers prefer to have an East Hampton SWF and recommend a capacity of up to 60,000 gpd
3. To be competitive with Riverhead and Bergen Point, EH SWF disposal fee should not exceed $0.135/gallon (i.e. $135/1,000 gallons)
4. Although a small number of pumpers have capacity/ability for large tankers to ship SW to out of own facilities, more pumpers will be forced to acquire large tankers if a local EH SWF with capacity expanded beyond the current limit of 10,00 gpd is not provided in 2014.
5. All commercial waste is classified as grease, which has a higher disposal fee- as specified by Town Finance. Many commercial customers do not have food service so should not be classified as grease.
6. 50% of commercial properties are estimated to have grease traps – 50% do not
7. Grease is brought to Yellow Trading, 40 Zorn Blvd, Yaphank, NY
8. EHSWF flows are transported offsite by ESI (Joe & Dave Parisi – 631-395-9888)

Haulers agreed to provide Lombardo Associates, Inc. with locations/areas where they observed "excessive" pumping occurs and is associated with septic systems that are malfunctioning or are effectively just holding tanks. Attached are maps of the entire Town. Please mark-up areas where excessive pumping occurs, in your opinion, and corrective actions to septic systems (either on-site or with a neighborhood system) are likely warranted and mail the marked up maps to Lombardo Associates, Inc. in the enclosed self-addressed envelope. Please be as specific as possible. Lombardo Associates will keep the information as confidential and will only use the information to identify general areas that need upgrade and/or would be candidates for a neighborhood sewer system.

We will schedule a follow-up meeting with haulers after receipt of your marked-up maps. At that time we will present our interim findings and analysis of interim and long-term SWF Management options.

Pio S. Lombardo, P.E.
cc: Copy to all attendees

APPENDIX D – TRANSFER STATION PERMIT APPLICATION

Working Draft

WORKING DRAFT

Task Report

Water Quality Monitoring Program

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

With team members:

FPM group

WOODS HOLE GROUP

December 11, 2013

WATER QUALITY MONITORING PROGRAM

This Water Quality Monitoring Program (WQMP) has been prepared for use by the Town of East Hampton to enhance its understanding and protection of its groundwater and surface water resources. This WQMP establishes a framework for developing a comprehensive record of water quality and provides a means for ongoing evaluation of groundwater and surface water quality within the Town.

Data Collection Issues

The New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and Suffolk County Department of Health Services (SCDHS) are regulatory agencies with an existing mandate to protect New York State and Suffolk County groundwater and surface water resources, thereby protecting the health of New York's residents and our environment. These agencies (and other entities) have existing programs to monitor groundwater and surface water quality. So why should the Town of East Hampton have its own water quality monitoring program?

- At present the data-gathering is piecemeal, with each agency collecting data for its own specific purposes. The data is not presently published in a timely manner, shared between agencies, or provided to the Town. As a result, the Town is not aware of water quality issues and cannot take meaningful steps to address them.

- Several agencies and other entities (including NYSDEC, SCDHS, USGS, SCWA, golf courses, etc.) collect groundwater and/or surface water data at different frequencies, test for different parameters, and sample at different locations. This disparity between monitoring programs complicates the integration of datasets and discourages comprehensive evaluation of the available data.

- Collection of water quality monitoring data can be a costly endeavor. As there are a number of ongoing water quality monitoring programs that generate publicly-available data, the Town can leverage its financial resources by utilizing data from existing ongoing programs and providing focused funding for its own data-gathering efforts with an emphasis on filling key data gaps that are of interest to the Town.

This WQMP focuses on gathering existing monitoring data in one place on an ongoing basis, supplemented by limited additional data-gathering, and analyzing the data with a focus on the needs of the Town of East Hampton.

SCDHS Coastal Water Sampling Stations

Regulatory Criteria Issues

The NYSDEC, NYSDOH, and other regulatory agencies have established existing regulatory standards and guidelines against which monitoring data are evaluated to determine if our resources are being impacted. These standards and guidelines include physical, chemical, and biological criteria, many of which were established decades ago. As the understanding of our environment has progressed and we have observed degradation of our water resources, it has become evident that some of the regulatory standards and guidelines may be inadequate to protect water quality.

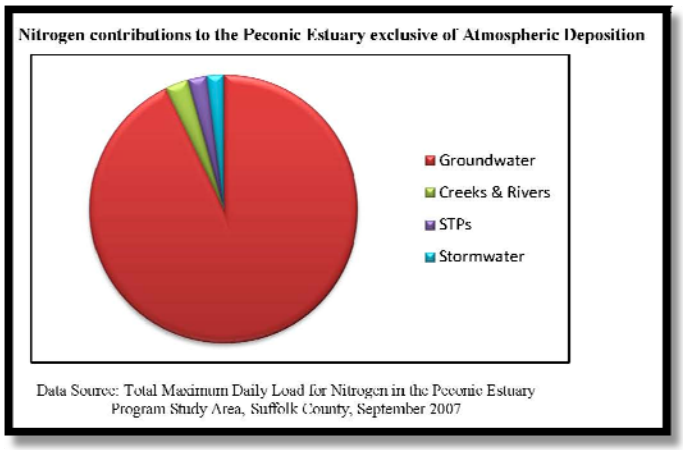
Impaired Water Bodies, Town of East Hampton, New York

Part / Category	Water Body Name	CLASS	POLLUTANT	SOURCE	YEAR
B	Fort Pond	B	D.O./Oxygen Demand		2008
4a	Acabonack Harbor	SA	Pathogens	Urban/Storm Runoff	2006
4a	Northwest Creek and tidal tribs	SA	Pathogens	Urban/Storm Runoff	2006
4a	Lake Montauk	SA	Pathogens	Urban/Storm Runoff	2006
4a	Georgica Pond	SA	Pathogens	Agriculture	2007

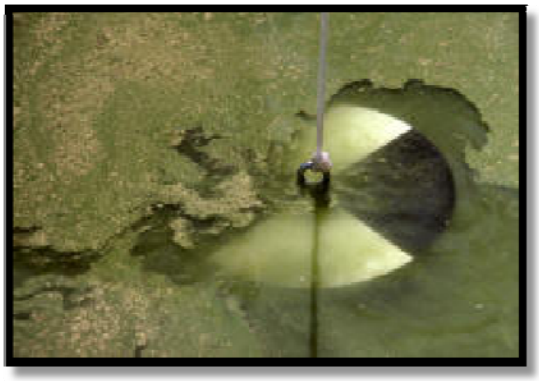
Definitions of the Part / Category codes are:

- Category 4a Waters - TMDL development is not necessary because a TMDL has already been established for the segment/pollutant.
- B Listed Waterbodies Not Meeting Dissolved Oxygen Standards, Pending Verification of Use Impairments/Pollutants/Sources

It is apparent that an effective monitoring program focused on the needs and issues of the Town of East Hampton may need to transcend typical established regulatory criteria and focus on those parameters that most clearly indicate water quality issues. For example, in recent years Dr. Chris Gobler with the Stony Brook University School of Marine and Atmospheric Sciences has undertaken studies on harmful algae populations, including brown and red tides that have decimated our shellfish industry. It seems that our existing water quality monitoring programs are lacking meaningful metrics of ecological quality in surface waters. Along the same lines, the NYSDEC has established a standard of 10 parts per million (ppm) for nitrate in groundwater that is intended for drinking water use. However, groundwater discharges containing nitrate in excess of 0.45 ppm appear to be the direct cause of surface water quality degradation. As groundwater is a major source of nitrogen input to the Peconic Estuary, which borders the entire north side of the Town, a focus on groundwater monitoring data for nitrogen is critical.



The WQMP should be focused on evaluating several key metrics to determine which metrics are the primary indicators of groundwater and surface water quality of importance to the Town. The selected metrics should provide reliable and accurate assessments of the ecological life of the Town's bays and ponds and should include not only chemical criteria, but also aesthetic criteria, such as water clarity measurements.

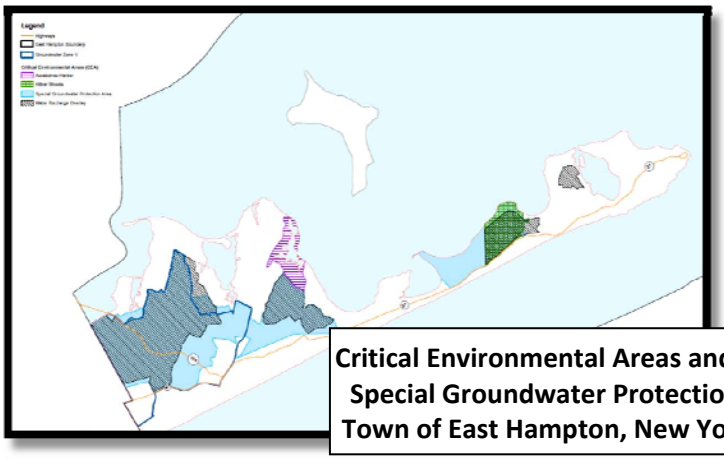


Secchi Disk Measurement of Surface Water Clarity

Integration of Groundwater and Surface Water Quality Data

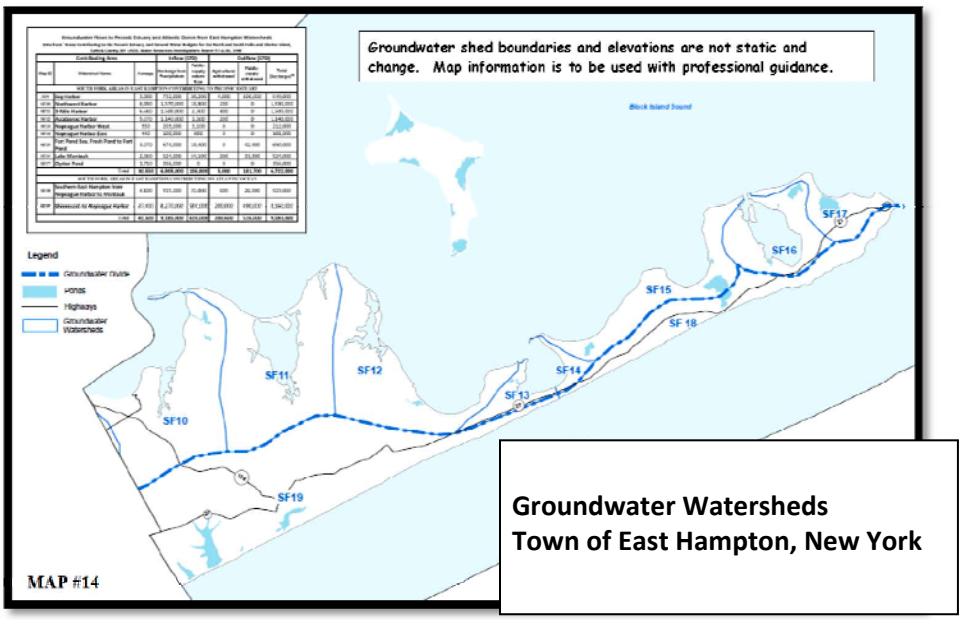
Groundwater quality is of major importance to the Town as changes to groundwater quality affect the Town's drinking water supply as well as surface water quality in the Town's bays, creeks, and ponds, into which groundwater eventually discharges. Groundwater is recharged through infiltration through the land surface of stormwater and other near-surface water sources, such as discharges from sanitary waste disposal systems. However, from the standpoint of groundwater recharge, not all land surfaces are equal.

Certain land areas, because of their proximity to a groundwater deep flow recharge zone or a surface water body discharge zone, are more sensitive to groundwater recharge quality than others. Hence, the Town's resources should be prioritized to more closely monitoring these areas, as well as to implement corrective actions when needed. The monitoring network in these sensitive areas should be adequate to accurately describe the effects of policy changes and/or new development in these areas and to confirm the effects of corrective actions that may be taken.



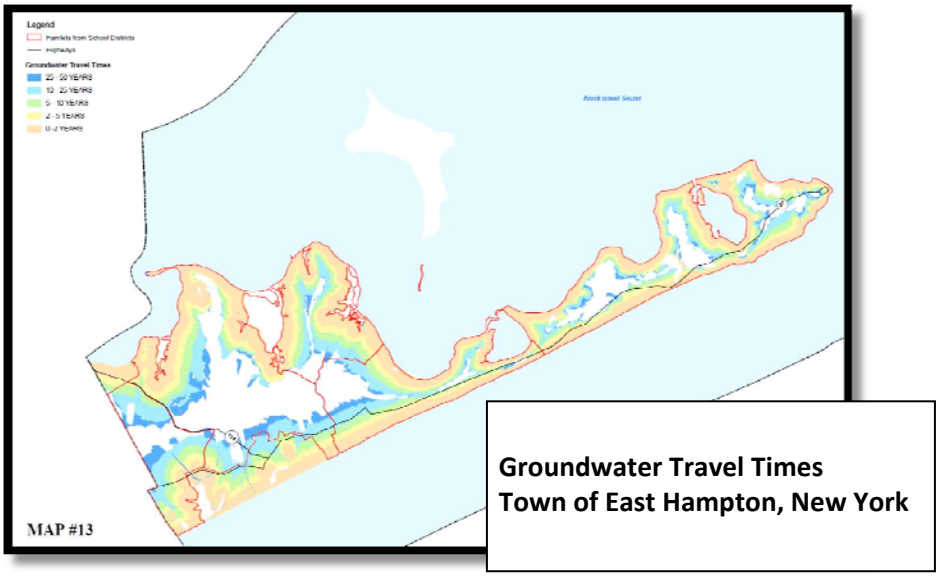
Critical Environmental Areas and Special Groundwater Protection Areas Town of East Hampton, New York

As groundwater quality and surface water quality are closely linked, the WQMP must include appropriate data collection in both surface waters and nearby groundwatersheds that discharge to the surface waters. These data must be integrated during the evaluation process to provide a holistic assessment of water quality with the objectives of identifying problem conditions and devising appropriate corrective measures.



Groundwater Watersheds
Town of East Hampton, New York

Timeliness of groundwater quality data is also of importance as the travel time of groundwater to the surface water into which it discharges is variable. The quality of groundwater that will discharge to a surface water body within two years is more critical than the quality of groundwater that will not discharge to a surface water body for 10 years or more, during which time contaminants may degrade or become diluted. Therefore, the WQMP must take into account groundwater travel times to associated surface water bodies.



Groundwater Travel Times
Town of East Hampton, New York

The WQMP will include measures that focus on:

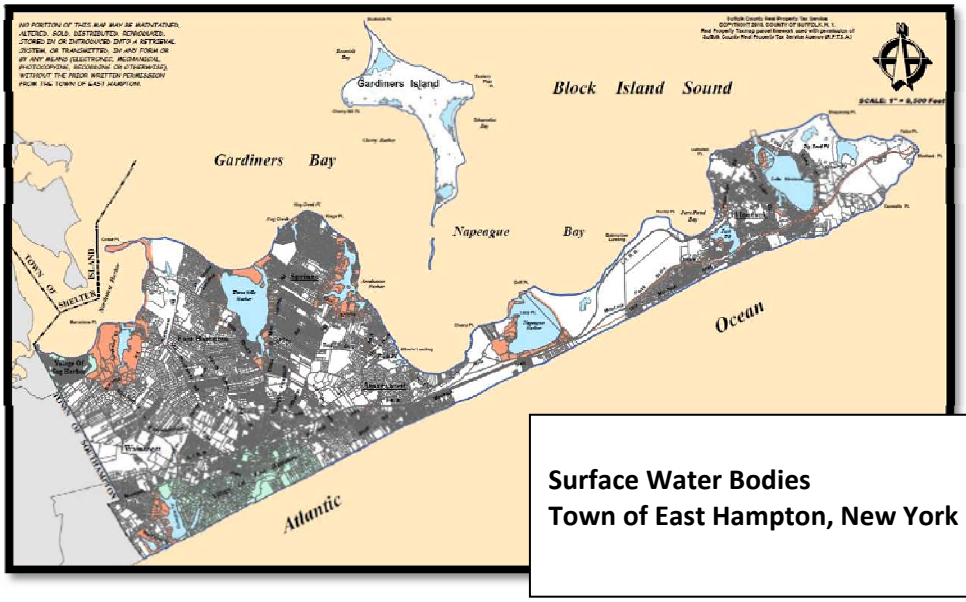
- **Deep flow recharge zones** (Zone IV as identified by the SCDHS) to evaluate if the existing monitoring networks are adequate to monitor groundwater. Expansion of the Deep Flow Recharge Zone IV will be evaluated in the vicinity of the Springs Special Groundwater Protection Area.

- **Special Groundwater Protection Areas** – The monitoring networks in the established Special Groundwater Protection Areas (SGPAs) will be evaluated to confirm that they are adequate to assess groundwater quality in sufficient detail.

- **Groundwater Contributing Areas to Bays and Ponds** – those groundwatershed areas that most significantly contribute to the surface water quality of enclosed water bodies (bays and ponds) will be identified based on a two-year time of travel as this period best represents the actual chemicals and concentrations that will be discharged to the surface water bodies. The WQMP should document the monitoring wells that exist in these areas, the nature of existing monitoring protocols for these wells, and an assessment of critical data gaps.

Assessment of Runoff Impacts to Surface Water Quality

Runoff from the land surface also contributes to surface water quality. Contaminants in runoff, particularly nutrients and bacteria, must be considered in any surface water quality monitoring approach. Because the porous soils that are generally present at the land surface in East Hampton, runoff that enters surface water bodies generally originates within approximately 1,000 feet of the shoreline or inlet to a direct discharge drainage network.



Surface Water Bodies
Town of East Hampton, New York

The WQMP will include the following:

- **Determination of Surface Water Runoff Contribution Areas** – the areas up to 1,000 feet from the shoreline of surface water bodies and drainage networks that discharge to surface water bodies should be mapped.

- **Runoff water quality testing** should be conducted by pilot testing a monitoring network at one or two of the identified impaired surface water bodies in East Hampton to determine to quantify nutrients and bacteriological loading in the runoff. Potential pilot testing locations include Montauk Lake and Accabonac Harbor.

- **Establish Total Maximum Daily Loads** - once the contributing areas for runoff to the surface bodies have been identified and runoff water quality determined, a long-term goal for the WQMP is to establish a scientific mass balance, or total maximum daily load (TMDL) for key nutrients and bacteria. This will help to focus corrective actions such that the most critical contaminants are addressed first.

As an example, a TMDL has been developed for pathogenic bacteria (fecal coliform) in Georgica Pond in the Town of Southampton, as documented in a report prepared for the USEPA and NYSDEC (Battelle, September 2007). Nearly all of the pathogen loads to this pond result from stormwater runoff (MS4) contributions and a pathogen removal rate of between 92 and 93% for stormwater runoff has been calculated as required to restore surface water quality. Establishing TMDLs for the Town's surface water bodies is critical to guide investment in stormwater treatment and other infrastructure necessary to improve surface water quality.

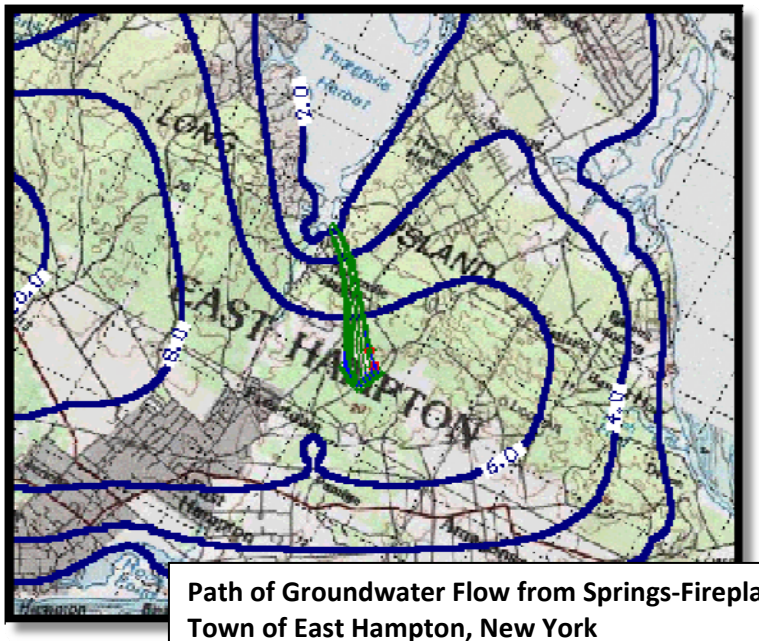
Georgica Pond TMDLs for Pathogenic Bacteria

Subwatershed	Residential / Urban (billion FC/yr)		Other (billion FC/yr)	Total (billion FC/yr)	TMDL (billion FC/yr)	% Removal Required
	MS4	Non-MS4				
Upper Georgica Pond	758,232	0	2,316	760,548	53,238	**93%**
Lower Georgica Pond	176,835	0	480	177,315	12,412	**93%**
Georgica Creek	1,308,926	0	4,128	1,313,054	105,044	**92%**

Areas of Special Concern

Certain facilities within the Town have a significant potential to affect groundwater and/or surface water quality. These areas of concern (AOCs) include the Scavenger Waste Treatment Plant (SWTP), landfills, facilities with State Pollutant Discharge Elimination System (SPDES) permits, sites with documented hazardous waste releases (Superfund sites), open spills of hazardous materials (such as petroleum spill sites), and similar facilities. There are ongoing monitoring programs for many of these facilities for which data can be obtained and evaluated relative to the Town's interests.

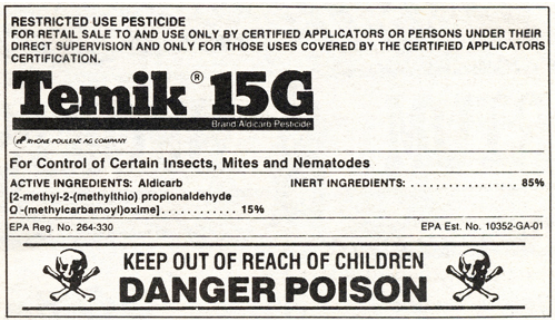
The WQMP should include an ongoing assessment of the AOCs based on available data. The annual report from the WQMP should include a discussion of the data available from each of these AOCs.



Path of Groundwater Flow from Springs-Fireplace Road Landfill AOC Town of East Hampton, New York

Emerging Water Quality Concerns

New water quality concerns develop over time as technology improves analytical laboratory capabilities and new toxicological studies demonstrate that chemicals we thought to be safe do indeed impact water quality. These emerging water quality concerns also encompass improvements in our understanding of the ecology of the Town's surface waters. Examples of such concerns include the recognition of the pesticide Temik as a significant groundwater contaminant in the 1970s and the identification of perchlorate (a manufactured chemical used as the main ingredient of rocket fuel, safety flares, matches and fireworks) in the late 1990s when new laboratory techniques lowered the detection limit in water from 400 to 4 micrograms/liter.



A very recent water quality concern is the use of pharmaceuticals and their resultant appearance in groundwater, with potential impacts on our water supply and surface water bodies. The WQMP should track emerging water quality concerns and assess these concerns with respect to the Town's interests in preserving its groundwater and surface water quality.

WQMP Data Management

The data to be managed under a WQMP is not only voluminous, but is also largely inaccessible to the Town and its residents unless it is managed in a user-friendly interface, such as a web-enabled Geographic Information System (GIS). Web-enabling would allow Town residents and others to access the data in a more timely manner than normally occurs with a typical hard-copy report and would also allow for direct feedback of questions. There may be some data that should be excluded from the publicly-accessible portion of the database for legal reasons – in these cases the Town Attorney should make a determination as to which data can be made accessible.

Example of GIS Image Showing Data Collection Areas

WQMP Annual Report

An integral part of the WQMP will be an annual report documenting the monitoring data gathered, its assessment, and recommendations. This report would be prepared for and provided to the Town Board and is anticipated to include the following components:

- A summary of available monitoring data, including locations and parameters monitored
- An assessment of groundwater and surface water quality based on the available data, including a comparison to historic data
- The results of WQMP-specific monitoring, pilot tests, and studies
- Recommendations for WQMP modifications, including estimated costs
- Recommendations for funding sources to support the WQMP

Phased Approach

The following phased approach to implementing a WQMP is recommended:

- Complete current scope of work, which is awaiting budget authorization.
- Conduct additional work focused on assessing water quality of private water supply wells in the Springs area downgradient of the SWTP and Springs-Fireplace Road Landfill.
- Future efforts will be defined based on the results of these tasks using the framework of the WQMP Report that will be updated during these tasks.

Contract Amendment No. 1 Report

SWF Hearing, SCDHS Data Mining and Lot by Lot Analysis and Site Screening Report

East Hampton Town Wide Wastewater Management Plan

Prepared by:

LOMBARDO ASSOCIATES, INC.
188 Church Street
Newton, Massachusetts 02458

With team members:

FPM group

WOODS HOLE GROUP

September 8, 2014

TABLE OF CONTENTS

1 INTRODUCTION AND EXECUTIVE SUMMARY 5
Contract Amendment No. 1 Scope of Work 5
2 LOT BY LOT ANALYSIS 7
2.1 Database Update 7
2.1.1 Town Provided Data 7
2.1.2 SC DHS File Data 12
2.2 Design Wastewater Flow Assignment Summary 14
2.3 Lot-by-Lot Analysis 16
2.3.1 Available Area Analysis 16
2.3.2 Required Area Analysis 16
2.4 Soils Based Needs Definitions 19
2.4.1 EPA Method for Assigning HLR Based on Soils Type 19
2.4.2 SCDHS Regulations for Sizing Leaching Pool Systems 21
2.4.3 ASTM D2487 Method for Soils Classification 22
3 NEEDS ANALYSIS UPDATE 24
3.1 Area Based Needs Determination 24
Results of Area Based Needs Determination 25
3.2 Nitrogen Loading Considerations 27
3.2.1 Updated TMDL Analysis - Embayments 27
3.2.2 Updated TMDL Analysis Nitrogen & Phosphorus- Ponds 30
3.2.3 Nitrogen Footprint Estimates 37
3.2.4 SCDHS & Recent Trustees Data 42
3.3 Summary of Wastewater Needs 44
3.4 Water Quality Management – Scientific & Legal Process 45
4 SITE SCREENING & FIELD OBSERVATIONS 48
4.1 Montauk Center Treatment and Disposal/Reuse Sites 48
4.2 Ditch Plains Treatment and Disposal Sites 50
4.3 The Docks Treatment and Disposal Sites 51
4.4 Lake Montauk Watershed 53
4.5 Village Business District 53
4.6 Three Mile Harbor 54
4.7 Accabonac Harbor 57
4.8 Northwest Harbor 58
4.9 Pond Watersheds 58
4.5.1 Georgica Pond 59
4.5.2 Hook Pond 60
4.5.3 Fort Pond 62
4.10 PRB Example 63
APPENDICES 67
APPENDIX A COMMERCIAL PROPERTY DATA 68
APPENDIX B TRANSIENT PROPERTY DATA 76
APPENDIX C AGGREGATED FLOWS FOR COMMERCIAL PROPERTIES WITH USE DATA 80
APPENDIX D LISTING OF ALL COMMERCIAL PROPERTIES IN EAST HAMPTON 84
APPENDIX E SUFFOLK COUNTY DHS WATER QUALITY DATA – LAKE MONTAUK, NAPEAGUE HARBOR, ACCABONAC HARBOR, 3 MILE HARBOR AND NORTHWEST HARBOR .99
E.1 Lake Montauk 103

E.2 Napeague Harbor 105
E-3 Accabonac Harbor 107
E-4 Three Mile Harbor 109
E-5 Northwest Harbor 111

List of Tables

Table 2-1 Commercial Properties with Wastewater Flow Design Criteria 8
Table 2-2 Commercial Properties & Wastewater Design Flows by Study Area 9
Table 2-3 SCDHS Design WW Flow by Transient Housing Size / Type 9
Table 2-4 Transient Housing Data 12
Table 2-5 SCDHS Blacksmith Data Summary By Year 13
Table 2-5a SCDHS Blacksmith Data Summary by Project Study Areas 14
Table 2-6 Required System Types by School District – without consideration of grandfathered use/flows 17
Table 2-7 Required System Types by School District – with consideration of grandfathered use/flows 18
Table 2-8 Aerial Loading Rate vs. Depth to Groundwater for Septic Tank Effluent 18
Table 2-9 Aerial Loading Rate vs. Depth to Groundwater for Treated Wastewater 19
Table 2-10 EPA Hydraulic Loading Rates Based on Soil Texture and Structure (EPA, 2002) 21
Table 2-11 US EPA Recommended HLR vs. Soil Texture Class for East Hampton Soils 22
Table 2-12 ASTM D2487 Soils Classification System Nomenclature 23
Table 3-1 Area Based Needs Analysis by Study Area – w/o Grandfathered Consideration 25
Table 3-2 Area Based Needs Analysis by Sub-Study Area – w/o Grandfathered Consideration 25
Table 3-3 Area Based Needs Analysis by Study Area – with Grandfathered Consideration 26
Table 3-4 Area Based Needs Analysis by Sub-Study Area – with Grandfathered Consideration 26
Table 3-5 Parameters Used for Baseline Nitrogen TMDL Analysis for East Hampton Watersheds 28
Table 3-5a Basic Study Area Improvements 29
Table 3-6 Baseline TMDL Analysis for East Hampton Embayment Watersheds – Target Load 1 g/m^2-yr 31
Table 3-7 Baseline TMDL Analysis for East Hampton Embayment Watersheds – Target Load 3 g/m^2-yr 32
Table 3-8 Embayment TMDL Analysis with Basic Sub-Study Area Improvements – Target Load 1 g/m^2-yr 33
Table 3-9 Embayment TMDL Analysis with Basic of Sub-Study Area Improvements – Target Load 3 g/m^2-yr 34
Table 3-10 East Hampton Ponds Baseline Nitrogen Loading Estimates - Target Loads 1 and 3 g/m^2-yr 35
Table 3-10 East Hampton Ponds Nitrogen Loading Estimates w/Sub-Study Area Improvements - Target Loads 1 and 3 g/m^2-yr 36
Table 3-11 East Hampton Ponds Wastewater Only Phosphorus Loading Estimates- No Attenuation37
Table 3-12 Property Nitrogen Footprint Estimates – Cornell Recommended Fertilizer Rate 39
Table 3-13 Property Nitrogen Footprint Estimates – Higher Fertilizer Rate 40
Table 3-14 Property Nitrogen Footprint Estimates – BEST PRACTICES 41
Table 3-15 Property Nitrogen Footprint Estimates – Scenarios Comparison 42
Table 3-16 NSSP Standards for Shellfish Harvesting Areas Affected by Point and Nonpoint Pollution Sources 46
Table 3-16 Summary of Wastewater Needs by Sub Study Area 47
Table 4-1 Lake Montauk Watershed Statistics 53
Table 4-2 Three Mile Harbor Watershed Statistics 55
Table 4-3 Accabonac Harbor Watershed Statistics 57
Table 4-4 Northwest Harbor Watershed Statistics 58

Table 4-5 Georgia Pond Watershed Statistics 59
Table 4-6 Hook Pond Watershed Statistics 60
Table 4-7 Fort Pond Watershed Statistics 62
Table E-1 SCDHS Monitoring Stations ion East Hampton 101
Table E-2 EPA Lake Trophic Status Classification based uon chlorophyll a 102
Table E-3 NYSDEC Lake Trophic Status Classification 102

List of Figures

Figure 2-1 East Hampton Commercial Developed Properties –East 10
Figure 2-1a East Hampton Commercial Developed Properties – West 11
Figure 3-1 Shellfish Closures 43
Figure 3-2 Water Quality Restoration – Scientific & Legal Process 46
Figure 4-1 Montauk Study Area – Needs and Solution Candidate Sites 49
Figure 4-2 Fire Station / Montauk Manor Treatment and Disposal Site 50
Figure 4-3 Fenimore Drive and Power Line Treatment and Disposal Sites 51
Figure 4-4 Flamingo Ave. Treatment and Disposal Site 52
Figure 4-5 Airport East Treatment and Disposal Site 52
Figure 4-6 Lake Montauk Watershed 53
Figure 4-7 Village Business District 54
Figure 4-8 Three Mile Harbor Watershed 55
Figure 4-9 Southern Three Mile Harbor Watershed 56
Figure 4-10 Accabonac Harbor Watershed 57
Figure 4-11 Northwest Harbor Watershed 58
Figure 4-12 Georgica Pond Watershed 60
Figure 4-13 Hook Pond Watershed 61
Figure 4-14 Fort Pond Watershed 63
Figure 4-15 Schematic of Nitrex™ PRB 64
Figure 4-16 Nitrex™ PRB Installed on Waquoit Bay, Cape Cod & Nitrogen Removal Data 65
Figure E-1 SCDHS Sampling Locations 100
Figure E-2 Lake Water Quality Visual Representation 102

1 INTRODUCTION AND EXECUTIVE SUMMARY

Lombardo Associates, Inc. (LAI) has been retained by the Town of East Hampton for additional engineering services associated with the ongoing Comprehensive Wastewater Management Plan (CWMP) project. This Summary Report presents the results of efforts associated with Contract Amendment No. 1.

CONTRACT AMENDMENT NO. 1 SCOPE OF WORK

The Scope of Work for Contract Amendment No.1 consists of the following tasks:

1. Scavenger Waste Facility (SWF) Town Board Meetings & Public Participation
2. Lot by Lot Analysis, with updated parcel use information from Town & SC DHS
3. Suffolk County DHS Wastewater System Data Mining
4. Site Screening Field Observations

with the results presented in Report Sections 2, 3 and 4, for Tasks 2 through 4, respectively. This Report's sections dovetail with the January 2014 CWMP Reports in the following manner:

Task 1 resulted in Town Board adoption at its May 15 public hearing of the ***January 9, 2014 Scavenger Waste Facility Evaluation Report*** to close the SWF**.** A public Town Board presentation on the SWF Report was made by LAI on February 18, 2014 and the PowerPoint presentation placed on the Town's project Website. At the May 15 public hearing:

- LAI made a brief summary presentation of the SWF Report,
- Public comments were made and responded to,
- Town Board adopted Resolution 2014-731 to:
    - close the SWF with a closure date by November 30, 2014
    - have a Closure Plan prepared

LAI provided review comments on draft Resolutions. Also, LAI reviewed and provided the Town Board comments regarding issues raised in letters to the Editor of the East Hampton Star.

Task 2 Lot by Lot Analysis (Chapter 2) provides a refinement of the January 8, 2014 Needs Analysis Report based upon:

- Updated property use data especially for commercial properties,
- Data extracted from files on wastewater system designs and site conditions, Task 3.
- Addition of space analysis to determine if each parcel has sufficient space to repair/replace its wastewater system. Parcels with insufficient space are designated to require an off-site solution

The Lot by Lot Analysis of Chapter 2 should be viewed as a supplement to the Needs Analysis Report. The data sections of Chapters 2 and 3 should be viewed as a supplement to the January 8, 2014 Community Profile Report.

Task 4 (Chapter 4) provides a refinement of the December 30, 2013 Scenarios Report and should be viewed as a supplement to that Scenarios Report.

In summary, the performance of the above tasks:

- ✓ Terminates an approximate $600,000 annual financial loss that the Town has been incurring at the SWF;
- ✓ Refines the critical CWMP data
- ✓ Performs the lot by lot analysis

and thereby will enable a fruitful public discussion of needs and solutions.

2 LOT BY LOT ANALYSIS

The lot by lot analysis consists of refining the area-wide needs analysis as described in the January 8, 2014 Needs Analysis Report. This was accomplished by;

- Updating the property parcel use information files for an improved definition of wastewater system design / permit requirements and site conditions. The additional data comes from:

  a. Town Fire Marshall files
  b. SCDHS data on transient housing
  c. Wastewater system and site testing data extracted from Town & Village permit applications

  The focus for the parcel use updating was on the commercial properties. Site data extraction form existing files was for areas where problems exist or are likely to exist, i.e. locations with high groundwater, poor soils, small lots, etc.

- Performing lot by lot analysis to determine whether lot has sufficient space and acceptable soils/groundwater elevations for a conventional or, if required, an advanced wastewater system.

- Further consideration of water quality requirements. However refined water quality impact analysis requires completion of water quality component activities and additional data collection to calibrate the water quality models.

2.1 DATABASE UPDATE

This section describes the process and results of obtaining and integrating the parcel information from Town and SC DHS Files. The January 8, 2014 Community Profile Report summarized the parcel data as follows:

- Assessment records have 24,851 parcels.
- The GIS database, which is used by the project, has 25,866 parcels
- The LAI combined database has a total of 20,058 developed parcels, with the following assigned status:

  ✓ 18,928 Residential developed parcels
  ✓ 789 Commercial developed parcels
  ✓ 341 other developed parcels

Based upon LAI's review of the files, the variance between the Assessment and GIS databases appears to be due to subdivisions of lots which does not materially affect the CWMP analysis.

2.1.1 TOWN PROVIDED DATA

The East Hampton Department of Natural Resources (EHDNR) provided LAI with the following parcel information:

1. Commercial property use information extracted from the Fire Marshall's files.
2. SCDHS data on transient housing in East Hampton

COMMERCIAL PROPERTY DATA FROM FIRE MARSHALL'S OFFICE

The Town provided available data on commercial property occupancy ratings. The data included the name of the business, a general description of the use and occupancy rating for:

- 143 Commercial Properties, listed on Appendix A
- 98 Temporary Housing Properties. Appendix B lists the transient housing property data.

Table 2-1 summarizes the number of use areas associated with commercial properties for which additional data was provided. The Fire Marshall's data had a total of 320 use areas which were associated with the 143 commercial properties for which additional data was provided. Appendix A presents a parcel by parcel listing of the Fire Marshall data as condensed by EHDNR. The Fire Marshall's data is maximum occupancy which is converted to wastewater design flow units using the conversion factors presented on Table 2-1.

Table 2-1 Commercial Properties with Wastewater Flow Design Criteria

Use Type	Description	SCDHS WW Design Code Flow / Unit (gpd)	Units	# of Occ./Unit	# of Use Areas
1	Dining room	30	Seats	1	128
2	Bar / Patio	15	Seats	1	66
3	Cafeteria / Catering Hall / Conference Room	7.5	Seats	1	54
4	Campground	15	Camper	1	1
5	Bath house / Comfort station	5	Occupant	1	6
6	ft^2 Based Use	1	ft^2	0.2	40
7	Theater	3	Seats	1	3
8	Church - Main Room	4	Occupant / Seat	1	5
9	Church - Meeting Room	5	Occupant	1	4
10	Day School / Day Camp	7.5	capita	1	13

The 320 use areas included portions of the same property, such as decks, patios, meeting rooms, etc., that had different uses for which different wastewater design flows apply. For properties with multiple uses, the wastewater design flow associated with the occupancy assigned to each use was summed into a total wastewater flow for that property. Using the occupancy numbers provided by the Town and the SCDHS design flow from Table 2-1, LAI calculated the total wastewater design flow for each property, which are listed in Appendix A.

Appendix B presents the temporary housing data Townwide and by Study area. Table 2-2 presents the number of commercial properties, their wastewater design flows and design flow basis totaled by

study area. Appendix C, which is an integration of the information in Appendices A and B, contains a listing of all commercial properties and their design flows and basis by study area.

Table 2-2 Commercial Properties & Wastewater Design Flows by Study Area

School District	Total # of Commercial Properties	Properties with Use-Based Data				Total Commercial WW Flow (gpd)
		#	% of Total	Commercial WW Flow (gpd)	% of Total Commercial WW Flow	
Amagansett	89	36	40.4%	116,327	53.1%	219,094
East Hampton	114	26	22.8%	58,274	47.8%	121,889
East Hampton Village	171	8	4.7%	14,125	11.2%	125,838
Montauk	260	122	46.9%	464,137	66.0%	703,208
Sag Harbor	20	0	0.0%	0	0.0%	25,354
Springs	44	15	34.1%	33,520	82.3%	40,741
Wainscott	103	15	14.6%	27,514	37.4%	73,620
Totals	**801**	**222**	**27.7%**	**713,896**	**54.5%**	**1,309,743**

Figures 2-1 and 2-1a present the locations of all commercial developed properties in East Hampton (colored white). Appendix D presents a listing of all commercial properties.

TRANSIENT HOUSING DATA

Transient housing data, as used by SCDHS, was provided to LAI by the Town. SCDHS inspects properties with transient housing for public health purposes. The transient housing data provided the number of units at each property. However information on size of the individual units was not included. SCDHS code assigns a wastewater design flow based on the size of the unit and if it has a kitchenette. Table 2-3 presents the SCDHS flow per unit for the range of transient housing types. LAI has assumed that 150-gpd/unit is an appropriate average value for this analysis.

Table 2-3 SCDHS Design WW Flow by Transient Housing Size / Type

Hotel / Motel Unit Type	Unit Area (ft^2)	Design WW Flow / Unit (gpd)
No Kitchenette	< 400	100
	> 400	150
With Kitchenette	< 600	150
	601 - 1,200	225
	>1,200	300

Table 2-4 presents a summary of the total number of properties, total number of transient housing units associated with those properties, and estimated SCDHS wastewater design flow. *The transient units data does not differentiate basic motel rooms with no kitchen facilities from units with kitchen facilities*.

Figure 2-1 East Hampton Commercial Developed Properties –East

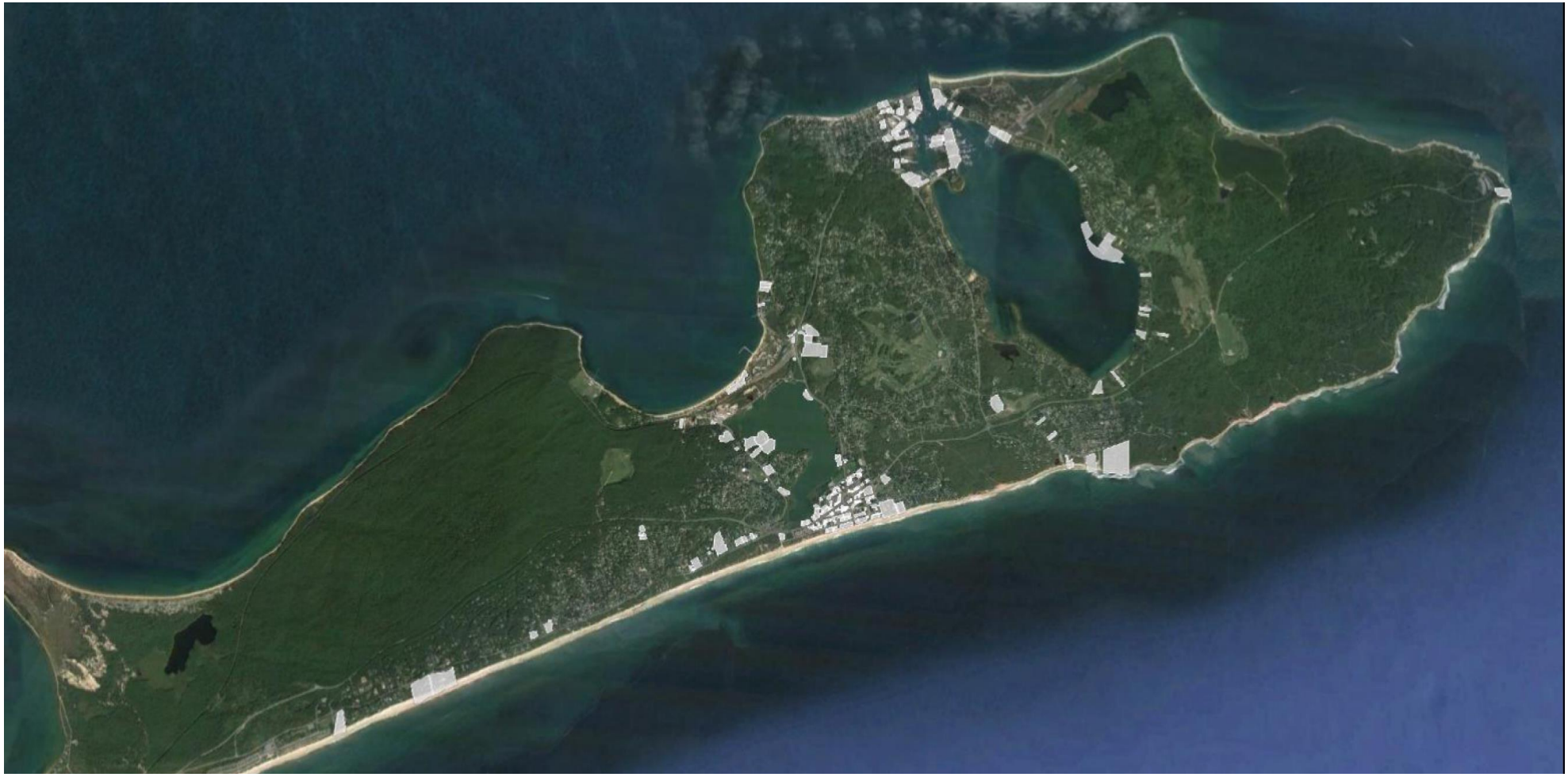


Figure 2-1a East Hampton Commercial Developed Properties – West

Table 2-4 Transient Housing Data

School District	# of Facilities	# of Units	Design WW Flow* (gpd)
Amagansett	14	498	62,250
East Hampton	4	97	12,125
East Hampton Village	8	113	14,125
Montauk	69	2,103	262,875
Springs	1	10	1,250
Wainscott	2	38	4,750
Totals	**98**	**2,859**	**357,375**
Design flow assuming design criteria of 125 gpd/unit			

2.1.2 SC DHS FILE DATA

BLACKSMITH

On April 23, 2014 LAI met with Walter Hilbert, Chief of the SCDHS Office of Wastewater Management, and reviewed the latest methods SCDHS is using to inventory onsite wastewater systems information. The SCDHS information is organized as follows:

a. Starting in 1974 SCDHS marked up tax maps with notes indicating which parcels had site testing and/or a wastewater system.

b. Starting in 1994, a computer program entitled blacksmith has been used to inventory properties with a SCDHS file. Blacksmith contains both the SCDHS project file code (in chronological order of permit applications) and tax map ID.

c. Project files older than 7 years are on microfiche. Projects with applications started after 2007 are only on paper in SCDHS office cabinets.

For reference, the current County Code for wastewater system design was adopted in 1981. As septic tanks were required starting in 1973, properties built prior to 1973 which do not have a blacksmith file are assumed to be cesspools.

SCDHS provided LAI with a spreadsheet that contains the SCDHS Blacksmith number and the parcel tax ID. Table 2-5 presents a summary of properties that have SCDHS Blacksmith data, by year. Table 2-5a presents the number of properties that have Blacksmith data within each of the project sub-study areas.

LAI has merged this information into the project Master Database so that parcels are tagged for which properties SCDHS files exist and whether they are on microfiche or paper. LAI has requested the East Hampton septic system microfiche files and is awaiting that information from SCDHS. As an alternate approach, LAI has worked with the Town to extract the desired site and septic system information from Town and Village of East Hampton files.

Table 2-5 SCDHS Blacksmith Data Summary By Year

Year	# of Properties with Blacksmith Data		
	Comm.	Resid.	Total
1993	1	0	1
1994	6	172	189
1995	4	205	221
1996	5	210	232
1997	10	226	254
1998	3	253	279
1999	6	310	341
2000	9	293	334
2001	15	172	206
2002	11	224	268
2003	9	144	174
2004	10	199	258
2005	12	173	214
2006	7	157	203
2007	7	132	176
2008	10	128	167
2009	9	98	121
2010	3	116	139
2011	11	129	172
2012	2	107	163
2013	8	148	246
2014*	5	51	81
Total	**163**	**3,647**	**4,439**

As of April 23, 2014

DETERMINATION OF PARCEL DESIGN WASTEWATER FLOW

Some of the transient housing properties have other use areas for which wastewater design flows need to be assigned. Consequently, LAI aggregated all use areas and transient housing unit flows associated with each parcel and assigned one wastewater design flow for each property. A total of 222 commercial properties were assigned a use-based wastewater flow from this data. Appendix A lists each of these properties and their design flow based on the occupancy / transient housing data.

Table 2-5a SCDHS Blacksmith Data Summary by Project Study Areas

Final Sub Areas	Parcels with Blacksmith Data	% of S.A. Total
1. Montauk Center	24	21.1%
2. The Docks	9	14.1%
3. Ditch Plains	29	10.5%
4. Camp Hero	1	3.6%
5. South 3-Mile	12	19.7%
6. Village Business	41	12.6%
7. Georgica Pond Watershed	362	27.1%
8. Hook Pond Watershed	307	13.4%
9. Fort Pond Watershed	22	7.6%
10. Individual Onsite	441	11.2%
Total	**1,248**	**6.2%**

Project Study Area	Parcels with Blacksmith Data	% of S.A. Total
Amagansett	540	23.9%
East Hampton	1,243	21.9%
East Hampton Village	388	20.4%
Montauk	603	15.2%
Sag Harbor	131	15.3%
Springs	669	15.4%
Wainscott	303	28.7%
Total	**3,877**	**19.3%**

2.2 DESIGN WASTEWATER FLOW ASSIGNMENT SUMMARY

LAI developed design wastewater flows for properties with the new data as follows.

Residential Property:

For residential properties with no building area, LAI assigned a value of 300 gpd per residence. Where building area is available, the following SCDHS code flows were assigned:

- 150 gpd for buildings <600-ft^2
- 225 gpd for buildings >600-ft^2 and <1,200-ft^2
- 300 gpd for buildings >1,200-ft^2

Water use data is not used for residential properties, due to the influence of landscape irrigation. Multiple residential properties are not tagged in any format in the data LAI received. Most of these properties are tagged as residential, however some are tagged as commercial. In addition, the presence of multiple, very large single family residence in the Town presents a challenge when differentiating between a single family home and a condominium complex. After reviewing the data and a number of individual cases, LAI developed the following criteria to identify properties with multiple residential units and to assign a wastewater design flow:

- The property is tagged as Commercial AND the Assessor's data reports a number of bedrooms > 0

- The property is tagged as Residential, AND either the Assessor's Living Area is >12,000-ft^2 OR the GIS Building Footprint is >15,000-ft^2

  Many of these properties do not have an accurate count on the number of bedrooms or the total living area in the Assessor's database received by LAI. LAI compared the GIS building footprint to the Assessor's Living area and used the value with the greater area for the purpose of assigning a wastewater flow to these properties. LAI assigned a wastewater flow by dividing the area used by 1,200 and multiplying by 300-gpd/unit.

  Newer subdivisions that aren't updated in the Assessor's and GIS databases are not included in this analysis since there is no GIS building footprint or Assessor's living area to use. The only way to identify these properties is if they have a SPDES permit. For properties tagged as Residential that have a SPDES permit and water use data, the water use data was used to assign a Final Wastewater Design Flow.

Commercial Properties

For commercial properties, wastewater design flows were assigned according to the following criteria:

a. Property use data, as available as described herein
b. 90% of the summer water use based on water use data, if available
c. Building area, if available

For commercial properties with updated use information, wastewater flows were assigned based upon property use information using SC DHS code criteria. Occupancy and/or water use data supersedes the building area calculation for commercial properties with both data points. For commercial properties that have both summer water use and occupancy based flow estimated, the greater of the two flows was used as the final design wastewater flow.

For the purpose of assigning a final commercial property wastewater design flow, LAI selected the maximum of:

- Commercial flow based on use data
- Peak summer water use (90% assumed to generate wastewater)
- Commercial flow based on building area when occupancy / use data does not exist

2.3 LOT-BY-LOT ANALYSIS

The lot-by-lot analysis examined the ability of each property to repair the existing septic system based upon:

1. **Space availability (Available Area)** with and without consideration of setback variances

In addition to updating the previous January 8, 2014 Needs Analysis consideration of:

1. Nitrogen & Phosphorus – TMDL considerations
2. Bacterial public health
3. Impermeable/Hydric Soils
4. Malfunctioning systems considerations
5. Setback requirements
6. Private water supply considerations
7. Public water supply considerations
8. Town & County Code & State Law considerations
9. Cost Considerations
10. Economic sustainability issues

2.3.1 AVAILABLE AREA ANALYSIS

The available area on a parcel is defined as the area on a parcel that is not used by a building and is not within a setback buffer area from a building or property line. Base data used for this analysis includes:

- Parcel Area
- Parcel Boundaries
- Building footprint

LAI generated data includes:

- 10-ft buffer from parcel boundaries
- 10-ft buffer from building footprints
- Calculated area remaining on property after buildings and buffer areas are subtracted from total parcel area
- Calculated area required for a treatment system, as outlined in Section 2.3.2.
- Depth to groundwater
- Design wastewater flow, as outlined in Section 2.2

2.3.2 REQUIRED AREA ANALYSIS

The required area for an onsite system is a function of:

- Design wastewater flow rate
- Whether a property is grandfathered such that only a standard septic tank – leaching pool is required. Grandfathered flows are flows that existed as of January 1, 1981.
- Type of system required

- ✓ <1,000-gpd requires only a standard septic tank – leaching pool (ST-LP) system
- ✓ If the Population Density Equivalent < Density Load, SC DHS only requires a ST-LP system
- ✓ If the Population Density Equivalent > Density Load, SCDHS requires a treatment system as follows:
    - For flows < 15,000-gpd, a Modified Subsurface Sewage Disposal System (MSSDS) is required
    - For flows >15,000-gpd, a Wastewater Treatment Facility (WWTF) is required.
    - Table 2-6 presents the estimated number of required treatment system types based on current property use by school district – exclusive of consideration of grandfathered properties

Table 2-6 Required System Types by School District – without consideration of grandfathered use/flows

School District	Type of System Required Based on Current Use (No Consideration of Grandfathered Properties)		
	Standard	MSSDS	WWTF
Amagansett	2,843	75	3
East Hampton	7,239	108	2
Montauk	5,250	222	9
Sag Harbor	968	31	0
Springs	5,489	35	0
Wainscott	1,383	43	1
Total	**23,172**	**514**	**15**

Table 2-7 presents the Table 2-6 information with consideration of grandfathered properties by making the assumption that any parcel that was developed prior to 1981 has a grandfathered flow equal to its current flow.

- Depth to groundwater limits the maximum depth of the leaching pools, as a minimum separation between the bottom of the leaching pools and groundwater is required. Tables 2-8 and 2-9 present the areal loading rate in gpd/ft^2 as a function of depth to groundwater for disposal systems serving septic tank effluent and treated wastewater (i.e. MSSDS or WWTF) respectively. Areal loading rate applies to the leaching pool system only, and includes the 50% reserve area requirement for disposal of septic tank effluent and the 100% reserve area requirement for disposal of treated wastewater.

- Depth to groundwater does not affect the footprint of the treatment system. The area requirement as a function of flow for the treatment system is based upon 3-gpd/ft^2, which includes the 100% reserve area requirement for a MSSDS or WWTF. For a conventional ST-LP system, the following assumptions were used to determine the required area for a septic tank:

    - ✓ 10-ft diameter, 7-foot deep septic tank

- ✓ 2-day residence time (total septic tank volume = 2 X Design Flow)
- ✓ Using the above, the number of 10-ft diameter septic tanks was calculated, and the total footprint was assumed to be 100-ft^2 / ST.

Table 2-7 Required System Types by School District – with consideration of grandfathered use/flows

School District	Type of System Required Based on Current Use (with Consideration of Grandfathered Properties)		
	Standard	MSSDS	WWTF
Amagansett	2,920	1	0
East Hampton	7,344	4	1
Montauk	5,466	12	3
Sag Harbor	999	0	0
Springs	5,522	2	0
Wainscott	1,425	2	0
Total	23,676	21	4

Table 2-8 Aerial Loading Rate vs. Depth to Groundwater for Septic Tank Effluent

Min. Surface Elev. (ft)	L.P. Effective Depth (ft)	L.P Depth Below Grade (ft)	Min. DGW (ft)	Sidewall Area/L.P (ft^2)	# of L.P	Total Sidewall Area (ft^2)	Footprint (ft^2)	Max. Design Flow (gpd)	Areal Loading Rate (gpd/ft^2)
28.0	22.0	23.0	26.0	553	1	560	800	840	1.05
27.0	21.0	22.0	25.0	528	1	530	800	795	0.99
26.0	20.0	21.0	24.0	503	1	510	800	765	0.96
25.0	19.0	20.0	23.0	478	1	480	800	720	0.90
24.0	18.0	19.0	22.0	452	1	460	800	690	0.86
23.0	17.0	18.0	21.0	427	1	430	800	645	0.81
22.0	16.0	17.0	20.0	402	1	410	800	615	0.77
21.0	15.0	16.0	19.0	377	1	380	800	570	0.71
20.0	14.0	15.0	18.0	352	1	360	800	540	0.68
19.0	13.0	14.0	17.0	327	1	330	800	495	0.62
18.0	12.0	13.0	16.0	302	1	310	800	465	0.58
17.0	11.0	12.0	15.0	276	1	280	800	420	0.53
16.0	10.0	11.0	14.0	251	1	260	800	390	0.49
15.0	9.0	10.0	13.0	226	1	230	800	345	0.43
14.0	8.0	9.0	12.0	201	1	210	800	315	0.39
13.0	7.0	8.0	11.0	176	2	360	1,600	540	0.34
12.0	6.0	7.0	10.0	151	2	310	1,600	465	0.29
11.0	5.0	6.0	9.0	126	2	260	1,600	390	0.24
10.0	4.0	5.0	8.0	101	2	210	1,600	315	0.20
9.0	3.0	4.0	7.0	75	3	230	2,400	345	0.14
8.0	2.0	3.0	6.0	50	4	210	3,200	315	0.10

The total required area for a wastewater system is the sum of the required treatment area and the required leaching pool area, including applicable reserve areas. LAI used the following process to determine the required area for each parcel:

1. Calculate Adjusted Gross Area (area of parcel minus any wetlands or water bodies on the property)

2. Calculate Population Density Equivalent (PDE)
    a. If parcel is located in Groundwater Protection Zone V or if there is no public water supply, PDE = Adjusted Gross Area (acres) X 300 gpd.
    b. If parcel has public water and is not in Groundwater Protection Zone V, PDE = Adjusted Gross Area X 600 gpd.
3. Compare Final Wastewater Flow to PDE to determine the type of system:
    a. If PDE > Final Wastewater Flow, use conventional ST-LP system
    b. If PDE < Final Wastewater Flow, use either MSSDS or WWTF depending on flow as described above

Use Final Wastewater Flow and the appropriate Areal Loading Rate to determine the required treatment system and leaching pool area.

Table 2-9 Aerial Loading Rate vs. Depth to Groundwater for Treated Wastewater

Min. Surface Elev. (ft)	L.P. Effective Depth (ft)	L.P Depth Below Grade (ft)	Min. DGW (ft)	Sidewall Area/L.P (ft^2)	# of L.P	Total Sidewall Area (ft^2)	Foot print (ft^2)	Max. Design Flow (gpd)	Areal Loading Rate (gpd/ft^2)
28.0	22.0	23.0	26.0	691	3	2,080	2,400	10,400	4.33
27.0	21.0	22.0	25.0	660	4	2,640	3,200	13,200	4.13
26.0	20.0	21.0	24.0	628	4	2,520	3,200	12,600	3.94
25.0	19.0	20.0	23.0	597	4	2,390	3,200	11,950	3.73
24.0	18.0	19.0	22.0	565	4	2,270	3,200	11,350	3.55
23.0	17.0	18.0	21.0	534	4	2,140	3,200	10,700	3.34
22.0	16.0	17.0	20.0	503	4	2,020	3,200	10,100	3.16
21.0	15.0	16.0	19.0	471	5	2,360	4,000	11,800	2.95
20.0	14.0	15.0	18.0	440	5	2,200	4,000	11,000	2.75
19.0	13.0	14.0	17.0	408	5	2,050	4,000	10,250	2.56
18.0	12.0	13.0	16.0	377	6	2,270	4,800	11,350	2.36
17.0	11.0	12.0	15.0	346	6	2,080	4,800	10,400	2.17
16.0	10.0	11.0	14.0	314	7	2,200	5,600	11,000	1.96
15.0	9.0	10.0	13.0	283	8	2,270	6,400	11,350	1.77
14.0	8.0	9.0	12.0	251	8	2,020	6,400	10,100	1.58
13.0	7.0	8.0	11.0	220	10	2,200	8,000	11,000	1.38
12.0	6.0	7.0	10.0	188	11	2,080	8,800	10,400	1.18
11.0	5.0	6.0	9.0	157	13	2,050	10,400	10,250	0.99
10.0	4.0	5.0	8.0	126	16	2,020	12,800	10,100	0.79
9.0	3.0	4.0	7.0	94	22	2,080	17,600	10,400	0.59
8.0	2.0	3.0	6.0	63	32	2,020	25,600	10,100	0.39
7.0	1.0	2.0	5.0	31	64	2,020	51,200	10,100	0.20

2.4 SOILS BASED NEEDS DEFINITIONS

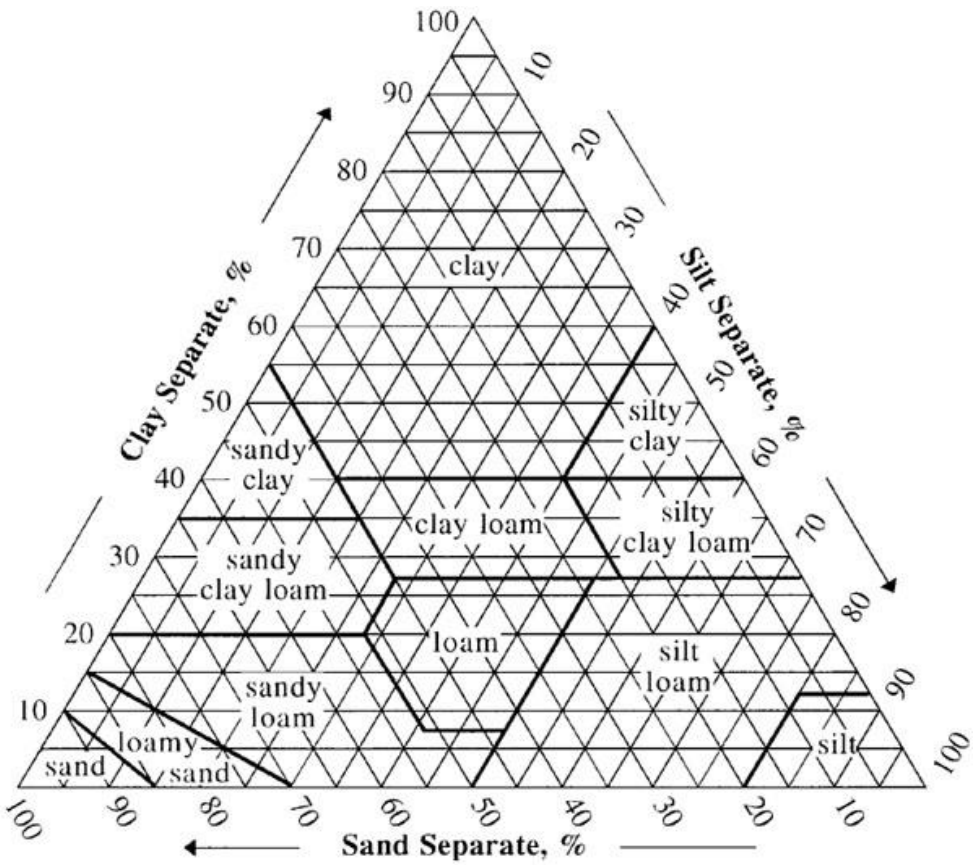
Industry practice is to determine the hydraulic loading rate (HLR) to be used for sizing a property's disposal system by soils testing. Soil testing identifies the most restrictive soil layer in the area of the disposal system to a depth of at least five (5) feet below the bottom of the drainfield/leaching pool. The applicable HLR is then assigned based on the limiting soil type and the type of effluent to be disposed of using guidelines developed by US EPA and numerous States, as described in the following subsections.

2.4.1 EPA METHOD FOR ASSIGNING HLR BASED ON SOILS TYPE

The following discussion of soil texture and structure is taken from EPA's 2002 Onsite Systems Design Manual, to which Lombardo Associates, Inc. was a contributing author. The 2002 US EPA recommendations of HLR based upon soil texture and structure is presented on Table 2-10.

"Texture. Soil texture is defined as the percentage by weight of separates (sand, silt, and clay) that make up the physical composition of a given sample. It is one indicator of a soil's ability to transmit water. The textural triangle (below) is used to identify soil textures based on percent- age of the various separates of sand, clay and silt.

The texture of soils is typically identified in the field through hand texturing. The evaluator's skill and experience play an important role in the accuracy of field texturing. Several field guides, typically in the form of flow charts, are available to assist the evaluator in learning this skill and to assist with identifying the texture of soils that occur at or near texture boundaries, (ASTM, 1997). Sieve analysis data can assist in understanding texture.



Structure. Structure is more important than texture for determining water movement in soils. Soil structure is the aggregation of soil particles into larger units called peds. The more common types of structure are granular, angular blocky, subangular blocky, and platy. Structureless soils include single-grain soils (e.g., sand) and massive soils (e.g., hardpan). The grade, size, shape, and orientation of soil peds influence water movement in the soil profile. This is especially true in fine-textured soils. Smaller peds create more inter-pedal fractures, which provide more flow paths for percolating water. Grade, which defines the distinctness of peds, is important for establishing a soil loading rate for wastewater dispersal.

A soil with a “strong” grade of structure has clearly defined fractures or voids between the peds for the transmittance of water. The interpedal fractures and voids in a soil with a “weak” grade are less distinct and offer more resistance to water flow. Soils with a strong grade can accept higher hydraulic loadings than soils with a weak grade. Platy and massive soils restrict the vertical movement of water.”

Table 2-10 EPA Hydraulic Loading Rates Based on Soil Texture and Structure (EPA, 2002)

Texture	Structure		Hydraulic loading (gal/ft^2-day)		Organic loading (lb BOD/1000ft^2-day)	
	Shape	Grade	BOD=150	BOD=30	BOD=150	BOD=30
Coarse sand, sand, loamy coarse sand, loamy sand	Single grain	Structureless	0.8	1.6	1.00	0.40
Fine sand, very fine sand, loamy fine sand, loamy very fine sand	Single grain	Structureless	0.4	1.0	0.50	0.25
Coarse sandy loam, sandy loam	Massive	Structureless	0.2	0.6	0.25	0.15
	Platy	Weak	0.2	0.5	0.25	0.13
		Moderate, strong				
	Prismatic, blocky, granular	Weak	0.4	0.7	0.50	0.18
		Moderate, strong	0.6	1.0	0.75	0.25
Fine sandy loam, very fine sandy loam	Massive	Structureless	0.2	0.5	0.25	0.13
	Platy	Weak, mod., strong				
	Prismatic, blocky, granular	Weak	0.2	0.6	0.25	0.15
		Moderate, strong	0.4	0.8	0.50	0.20
Loam	Massive	Structureless	0.2	0.5	0.25	0.13
	Platy	Weak, mod., strong				
	Prismatic, blocky, granular	Weak	0.4	0.6	0.50	0.15
		Moderate, strong	0.6	0.8	0.75	0.20
Silt loam	Massive	Structureless		0.2	0.00	0.05
	Platy	Weak, mod., strong				
	Prismatic, blocky, granular	Weak	0.4	0.6	0.50	0.15
		Moderate, strong	0.6	0.8	0.75	0.20
Sandy clay loam, clay loam, silty clay loam	Massive	Structureless				
	Platy	Weak, mod., strong				
	Prismatic, blocky, granular	Weak	0.2	0.3	0.25	0.08
		Moderate, strong	0.4	0.6	0.50	0.15
Sandy clay, clay, silty clay	Massive	Structureless				
	Platy	Weak, mod., strong				
	Prismatic, blocky, granular	Weak				
		Moderate, strong	0.2	0.3	0.25	0.08

2.4.2 SCDHS REGULATIONS FOR SIZING LEACHING POOL SYSTEMS

SCDHS regulations do not have a soil-based HLR. SCDHS requires the following HLRs based solely on the type of effluent to be disposed of:

- Septic Tank Effluent: 1.5-gpd/ft^2
- Treated Effluent: 5-gpd/ft^2

- Treated Effluent with Positive Filtration: 10-gpd/ft^2

SCDHS requires the following soil types to be removed if present, and replaced with sand and gravel:

- Meadow mat
- Bog
- Silts
- Clays
- Other impervious material extending below the groundwater table

Table 2-11 presents the general classifications for soils types that are common in East Hampton, and the applicable HLR based on the EPA guidelines.

Table 2-11 US EPA Recommended HLR vs. Soil Texture Class for East Hampton Soils

Texture	HLR STE (gpd/ft^2)	HLR w/ Treatment (gpd/ft^2)
Loamy Sand	0.8	1.6
Loamy Fine Sand	0.4	1
Fine Sandy Loam	0.2	0.5
Silt Loam	0.4	0.6
Silt	0.4	0.6

The highest loading rate listed in Table 2-11 for septic tank effluent (STE) is 0.8-gpd/ft^2. The next highest HLR is 0.4-gpd/ft^2. The HLR used as the basis for system sizing in accordance with SCDHS regulations is significantly higher than EPA guidelines. Whether this difference, which results in smaller systems in East Hampton than the EPA guidelines, is significant for the longevity and treatment performance of septic systems is unknown. The silt loam and silt soils would be required to be removed and replaced to comply with SCDHS regulations.

2.4.3 ASTM D2487 METHOD FOR SOILS CLASSIFICATION

ASTM D2487 presents the Unified Soils Classification System (USCS). This nomenclature is more commonly used on soil profile data reported as part of the permit applications that are on file with the Town and SCDHS. Table 2-12 presents the nomenclature and examples of soils classifications in accordance with ASTM D2487.

Table 2-12 ASTM D2487 Soils Classification System Nomenclature

1st Letter	Definition
G	gravel
S	sand
M	silt
C	clay
O	organic

2nd Letter	Definition
P	poorly graded (uniform particle sizes)
W	well-graded (diversified particle sizes)
H	high plasticity
L	low plasticity

Symbol*	Group Name*
SW	Well-Graded Sand
SP	Poorly Graded Sand
SM	Silty Sand
SC	Clayey Sand
CL	Lean Clay
ML	Silt
OL	Organic Clay
OL	Organic Silt
CH	Fat Clay
MH	Elastic Silt
OH	Organic Clay
OH	Organic Silt
PT	Peat

Symbol and Group Name taken from ASTM D2487 Table 1

3 NEEDS ANALYSIS UPDATE

This Section presents an update of the Needs Analysis as described in the January 8, 2014 Needs Analysis Report. In particular the Needs category of space availability has been added and the nitrogen and phosphorus impact analysis updated.

3.1 AREA BASED NEEDS DETERMINATION

The area based needs determination was made by comparing the required area to the available area. Since LAI does not have hardscapes and other property features that may limit the amount of calculated available area that can be used for primary or reserve treatment and disposal areas, this analysis is a screening of sites that clearly do not have sufficient space.

The criteria LAI used for determining if a property has sufficient available area is the ratio of available area (AA) to required area (RA). The available area for each parcel was only generated for the 10-ft property line and building setback scenario. LAI simulated the required area for the 75-ft building and property line setback scenario and the 150-ft property line / 200-ft building setback scenario using the following method:

1. For conventional systems, no change was made in the available area.
2. For the 75-ft building and property line MSSDS setbacks, the required area was modified to include the additional setback area by assuming the actual required area is a square, then adding 65-ft to each side of the square to account for the difference between 10-ft setbacks and 75-ft setbacks.
3. For the 150-ft property line / 200-ft building WWTF setback scenario, the method used in #2 above was used adding 140-ft and 190-ft to two sides of the required treatment area to account for the difference between the 10-ft setbacks and the WWTF setbacks.

The criteria for determining if a property has sufficient AA is:

- AA:RA < 1.5, property has insufficient AA to site a compliant system
- AA:RA > 1.5, property has sufficient AA to site a compliant system

Using the above-described required areas and the available area previously determined for each parcel, LAI identified the following categories of properties:

- Properties with insufficient AA using 10-ft property and building setbacks. These properties require an offsite solution.
- Properties with wastewater design flows between 1,000 – 15,000 gpd where the Population Density Equivalent > Density Load, resulting in only a conventional system being required by Code. These properties may require a SPDES permit, which could trigger a requirement for a treatment system.
- Properties with a wastewater design flow </= 15,000-gpd, where:
    a. MSSDS is required, AA:RA < 1.5. Offsite solution required
    b. MSSDS is required, AA:RA > 1.5. Sufficient space for onsite system
- Properties with a wastewater design flow >15,000-gpd, where
    a. Population Density Equivalent > Density Load, resulting in only a conventional system being required by Code.
    b. WWTF is required, AA:RA < 1.5. Offsite solution required

c. WWTF is required, AA:RA > 1.5. Sufficient space for onsite system

RESULTS OF AREA BASED NEEDS DETERMINATION

Tables 3-1 and 3-2 present the results of the area based needs analysis for each school district using the categories of systems listed above.

Table 3-1 Area Based Needs Analysis by Study Area – w/o Grandfathered Consideration

School District	Category of Wastewater Needs by School District						
	Insufficient AA, 10-ft Setbacks	1,000-15,000 gpd, Conv. System	<15,000-gpd, MSSDS, Insufficient AA	<15,000-gpd, MSSDS, Sufficient AA	>15,000-gpd, Conv. System	>15,000-gpd, WWTF, Insufficient AA	>15,000-gpd, WWTF, Sufficient AA
Amagansett	355	6	55	20	1	2	1
East Hampton	206	13	75	33	0	1	1
East Hampton Village	139	5	144	17	0	0	0
Montauk	609	15	199	23	0	8	1
Sag Harbor	79	2	27	3	0	0	0
Springs	86	3	31	4	0	0	0
Wainscott	25	5	30	13	0	1	0
Total	**1,499**	**49**	**561**	**113**	**1**	**12**	**3**

Table 3-2 Area Based Needs Analysis by Sub-Study Area – w/o Grandfathered Consideration

Final Sub Area		Category of Wastewater Needs by Final Study Areas						
		Insufficient AA, 10-ft Setbacks	1,000-15,000 gpd, Conv. System	<15,000-gpd, MSSDS, Insufficient AA	<15,000-gpd, MSSDS, Sufficient AA	>15,000-gpd, Conv. System	>15,000-gpd, WWTF, Insufficient AA	>15,000-gpd, WWTF, Sufficient AA
1	Montauk Center	48	0	82	1	0	0	0
2	The Docks	8	1	35	3	0	2	0
3	Ditch Plains	77	0	2	0	0	0	0
4	Camp Hero	0	0	0	0	0	0	0
5	South 3-Mile	4	0	6	0	0	0	0
6	Village Business	102	0	106	8	0	0	0
7	Georgica Pond Watershed	91	6	34	23	0	2	0
8	Hook Pond Watershed	166	4	158	15	0	0	1
9	Fort Pond Watershed	47	5	59	2	0	1	0
10	Onsite	1,082	28	166	69	1	7	2
	Total	**1,625**	**44**	**648**	**121**	**1**	**12**	**3**

Table 3-3 Area Based Needs Analysis by Study Area – with Grandfathered Consideration

School District	Category of Wastewater Needs by School District						
	Insufficient AA, 10-ft Setbacks	1,000-15,000 gpd, Conv. System	<15,000-gpd, MSSDS, Insufficient AA	<15,000-gpd, MSSDS, Sufficient AA	>15,000-gpd, Conv. System	>15,000-gpd, WWTF, Insufficient AA	>15,000-gpd, WWTF, Sufficient AA
Amagansett	355	51	0	1	4	0	0
East Hampton	206	62	1	3	1	0	1
East Hampton Village	139	63	1	2	0	0	0
Montauk	609	143	9	3	6	3	0
Sag Harbor	79	16	0	0	0	0	0
Springs	86	13	2	0	0	0	0
Wainscott	25	24	0	2	1	0	0
Total	**1,499**	**372**	**13**	**11**	**12**	**3**	**1**

Table 3-4 Area Based Needs Analysis by Sub-Study Area – with Grandfathered Consideration

Final Sub Area		Category of Wastewater Needs by Final Study Areas						
		Insufficient AA, 10-ft Setbacks	1,000-15,000 gpd, Conv. System	<15,000-gpd, MSSDS, Insufficient AA	<15,000-gpd, MSSDS, Sufficient AA	>15,000-gpd, Conv. System	>15,000-gpd, WWTF, Insufficient AA	>15,000-gpd, WWTF, Sufficient AA
1	Montauk Center	48	37	2	1	0	0	0
2	The Docks	8	32	3	0	1	1	0
3	Ditch Plains	77	0	0	0	0	0	0
4	Camp Hero	0	0	0	0	0	0	0
5	South 3-Mile	4	3	1	0	0	0	0
6	Village Business	102	31	0	0	0	0	0
7	Georgica Pond Watershed	91	34	0	2	2	0	0
8	Hook Pond Watershed	166	57	1	1	0	0	1
9	Fort Pond Watershed	47	35	1	0	1	0	0
10	Onsite	1,082	190	5	7	8	2	0
	Total	**1,625**	**419**	**13**	**11**	**12**	**3**	**1**

3.2 NITROGEN LOADING CONSIDERATIONS

3.2.1 UPDATED TMDL ANALYSIS - EMBAYMENTS

Presented below are updated preliminary watershed nitrogen loadings based upon the parameters described on Table 3-5 with the Basic Study Area Improvements listed on Table 3-5a. The baseline existing conditions are presented on Tables 3-6 and 3-7, which includes estimates of average annual steady state groundwater TN concentrations and estimates of TN removal requirements to be within the maximum loading benchmarks of:

- 1 g/m^2-yr (table 3-5) - high water quality – may be necessary to restore eelgrass
- 3 g/m^2-yr (Table 3-6) – water quality likely to start to deteriorate

The appropriateness of these benchmarks for water bodies is significantly affected by flushing – so they should only be used as ***preliminary guidelines.***

The benchmarks for maximum nitrogen loadings to maintain good water quality were defined as maintenance of healthy eelgrass are referenced from the April 2014 Report prepared by the Woods Hole Group for The Nature Conservancy ***Southern New England and New York Seagrass Research Towards Restoration – Phase II,*** which states:

"Hauxwell et al. (2001) reported the onset of Z. marina decline at about 3 g TN m^2 y^{-1} with total disappearance at about 6 g TN m^2 y-1. This range is lower than, but is consistent with, several other studies that, together, have suggested an overall range of 3 to 10 g TN m-2 y-1 where rapid widespread decline and disappearance of Z. marina occurs (Brawley 2002, Latimer and Rego 2010.

Hauxwell, J., J. Cebrian, C. Furlong and I. Valiela. 2001. Macroalgal canopies contribute to eelgrass (Zostera marina) decline in temperate estuarine ecosystems. Ecology 82:1007-1022.
Latimer, J.S. and S.A. Rego. 2010. Empirical relationship between eelgrass extent and predicted watershed-derived nitrogen loading for shallow New England estuaries. Est. Coast. & Shelf Sci 90:231-240.

Brawley, J.W. 2002. Dynamic modeling of nutrient inputs and ecosystem responses in the Waquoit Bay estuarine system. Ph.D. Thesis. University of Maryland, College Park, MD."

Consequently an initial reference benchmark of 3 g/m^2-yr is used as the maximum loading to maintain good water quality. The range of 1- 3 g/m^2-yr is proposed as loadings that may cause adverse water quality conditions. It is noted that the Peconic Estuary TMDL used 0.45 mg/l as the maximum Total Nitrogen concentration to achieve required water quality conditions. Due to the significant complexities to compute embayment TN concentrations, which is beyond the scope of the CWMP project at this time, comparisons to this metric are not being made.

However the estimates of groundwater nitrogen concentrations are consistent with the limited measured values that LAI has reviewed as well as groundwater nitrogen concentrations measured by Suffolk County. Due the uncertainty associated with agriculture loadings and its significant impact on estimates, the Tables estimate groundwater TN concentrations and TN removal requirements with and without consideration of agriculture loadings.

Table 3-5 Parameters Used for Baseline Nitrogen TMDL Analysis for East Hampton Watersheds

Wastewater Assumptions	
Wastewater Flow	Full Design Flow
Wastewater Nitrogen Concentration (mg/L)	32.5
Nitrogen Load to drainfield from 3-BR Home Based on 300-gpd Design Flow (lb/yr)	29.7
Calculated Typical Occupancy Based on 11-lb/yr/person (person/house)	2.7
Nitrogen Attenuation in Drainfield (%)	25%
Nitrogen Load to Groundwater from 3-BR Home (lb/yr)	22.3

Stormwater Assumptions	
% of total area impervious	15%
Annual Rainfall (in/yr)	45
Stormwater nitrogen concentration (mg/L)	1.2

Agriculture Assumptions	
% of Agriculture Land that is fertilized	50%
Nitrogen application rate (lb/1,000-ft^2/yr)	3.0
% Uptake / Attenuated in Soils	80%

Landscape Fertilization Assumptions	
% of developed lots that is landscaped	33%
% of landscaped areas that are fertilized	50%
Nitrogen application rate (lb/1,000-ft^2/yr)	1.1
% Uptake / Attenuated in Soils	80%

Atmospheric Deposition Assumptions	
Water body area not included	
Impervious area not included	
Nitrogen deposition rate (kg/acre/yr)	4.05
% Uptake / Attenuated in Soils	80%

(1) Please note that wastewater nitrogen concentration used is only associated with design flow of 300 gpd / EDU. Actual flow is typically 150 – 180 gpd associated with wastewater TN of 60 – 65 mg/l.

Table 3-5a Basic Study Area Improvements

Study Sub-Area	# of Dev. Prop.	Description of Basic Improvements			Flow as % of Total	
					Top 10	Top 20
1. Montauk Center	114	Alternative small diameter collection system		Treatment & disposal locally or at Montauk Manor-Fire Dept. site, with prospective golf course	39%	63%
2. The Docks	64				61%	80%
3. Ditch Plains	276					
4. Camp Hero	28	Wastewater System Improvements				
					Top 5	Top 10
5. South 3-Mile	61	Alternative small diameter collection system		Treatment & disposal locally with irrigation reuse integrated	39%	45%
					Top 10	Top 20
6. Village Business	325				30%	44%
7. Georgica Pond Watershed	1,335	Baseline In-Pond & Watershed Studies	PRB demonstration Projects		21%	29%
8. Hook Pond Watershed	1,960					
9. Fort Pond Watershed	250					
10. Individual Onsite	3,928	Repair / replace malfunctioning systems				
Totals	8,341					

It is unwise to rely solely upon the nitrogen loading estimates to characterize the severity of nitrogen loadings without calibrating the estimates with actual water quality data and using an error range. While LAI is of the opinion that the loading parameters are appropriate, calibration with water quality data is necessary.

However if one assumes the estimates are reasonably accurate, noting the time delays with groundwater reaching a surface water body needs to be factored at some point, the following preliminary assessments are provided:

<u>Using benchmark of 1 g/m^2-yr – high water quality– may be necessary to restore eelgrass</u>

Current Conditions **n**itrogen loading reductions required

- 3 Mile Harbor (56%), Accabonac Harbor (53%), Napeague Harbor West (50%), Fort Pond Bay (54%) and Lake Montauk (53%)

With Basic Study Area Improvements nitrogen loadings reductions required

- 3 Mile Harbor (50%), Accabonac Harbor (44%), Napeague Harbor West (39%), Fort Pond Bay (26%).

.

With the Montauk Center and Ditch Plains Study sub-area proposed improvements, in addition to the expected elimination of the South Lake Montauk beach closing, the need for further nitrogen reduction in Lake Montauk to achieve <1 g/m^2-y is eliminated.

Using benchmark of 3 g/m^2-yr – water quality likely to start to deteriorate

Current Conditions - No nitrogen removal required

With Study Area Improvements - No nitrogen removal required

TMDL Analysis Summary

In summary the analysis suggests:

- ✓ Nitrogen loadings, in addition to those associated with study area basic wastewater improvements, need to be significantly reduced to achieve the nitrogen loading benchmark of 1 g/m^2-year

Comparison with Water Quality Data

The Gobler water quality data indicates that 3 Mile Harbor is highly nitrogen enriched due to the high levels of harmful algae.

The very limited water quality data collected by Gobler and in the Lake Montauk Watershed Management Plan do not show harmful algae or excessive phytoplankton levels as measured by chlorophyll a that would correlate with the high nitrogen loadings suggested by this analysis for Accabonac Harbor and Lake Montauk. Consequently additional data collection and modeling studies should be performed to refine the assessment.

3.2.2 UPDATED TMDL ANALYSIS NITROGEN & PHOSPHORUS- PONDS

Nitrogen loading projections have been made for Georgica, Hook and Fort Ponds and are presented on Table 3-10. The degree to which nitrogen is the controlling nutrient vs. phosphorus, either individually or in combination is unknown as no TMDL studies have been performed on these Ponds.

Phosphorus loading projections based upon wastewater ONLY and assuming no attenuation in soils for Georgica, Hook and Fort Ponds are presented on Table 3-11. Please note that phosphorus attenuation is biogeochemically complex and highly variable as well as reversible. Consequently Pond water quality and contributing watershed groundwater studies are necessary to determine with reasonable certainty the levels of phosphorus removal that is necessary.

As can be seen in Tables 3-10 and 3-11 and visually in the aerial photographs in Section 4, agriculture is a significant % of the nitrogen loadings in the Georgica and Hook Pond watersheds. NYSDEC uses the guideline that Lake phosphorus levels need to be < 0.020 mg/L to be avoid eutrophication / excessive algae growth.

Table 3-6 Baseline TMDL Analysis for East Hampton Embayment Watersheds – Target Load 1 g/m^2-yr

Watershed Name	Area (acres)	Rainfall Infiltration (CFD)	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day)	GW N Conc (mg/L)
Northwest Harbor	2,312	505,813	37.2	11.6	0.0	8.9	TBD	0.0	Unknown	57.7	1.83
3-Mile Harbor	4,882	1,068,192	229.8	24.5	0.6	19.0	TBD	0.0	Unknown	274.0	4.11
Accabonac Harbor	1,995	436,419	74.6	10.0	0.9	8.0	TBD	9.6	Unknown	103.1	3.78
W. Napeague Harbor	705	154,247	7.6	3.5	0.0	3.0	TBD	20.2	Unknown	34.4	3.57
E. Napeague Harbor	917	200,702	2.25	4.6	0.0	3.9	TBD	8.3	Unknown	19.1	1.52
Fort Pond Bay	2,505	548,018	107.3	12.6	0.0	9.7	TBD	2.9	Unknown	132.5	3.87
Lake Montauk	2,558	559,723	106.2	12.9	0.4	10.4	TBD	3.8	Unknown	133.8	3.83
Oyster Pond	1,254	274,361	1.9	6.3	0.0	5.4	TBD	10.4	Unknown	24.0	1.40
3-Mile Harbor South	928	203,053	39.21	4.7	0.0	3.7	TBD	3.8	Unknown	51.4	4.05

Watershed Name	Area (acres)	Total Discharges (CFD)	Atten. WW N Load (g/m^2/yr)	Storm water N Load (g/m^2/yr)	Agriculture N Load (g/m^2/yr)	Fertilizer (g/m^2/yr)	Water fowl (g/m^2/yr)	Atm. Deposition Wet + Dry (g/m^2/yr)	Benthic (g/m^2/yr)	Total to GW (g/m^2/yr)	TMDL Load (g/m^2/yr)	TMDL Removal Req'd (g/m^2/yr)	TMDL Removal Req'd (%)
Northwest Harbor	2,312	505,813	0.7	0.2	0.0	0.16	TBD	0.000	Unknown	1.02	1.00	0.02	2%
3-Mile Harbor	4,882	1,068,192	1.9	0.2	0.0	0.16	TBD	0.000	Unknown	2.30	1.00	1.30	56%
Accabonac Harbor	1,995	436,419	1.5	0.2	0.0	0.163	TBD	0.197	Unknown	2.11	1.00	1.11	53%
Napeague Harbor West	705	154,247	0.4	0.2	0.0	0.176	TBD	1.175	Unknown	2.00	1.00	1.00	50%
Napeague Harbor East	917	200,702	0.1	0.2	0.0	0.175	TBD	0.369	Unknown	0.85	1.00	n/a	n/a
Fort Pond Bay	2,505	548,018	1.8	0.2	0.0	0.159	TBD	0.048	Unknown	2.16	1.00	1.16	54%
Lake Montauk	2,558	559,723	1.7	0.2	0.0	0.166	TBD	0.061	Unknown	2.14	1.00	1.14	53%
Oyster Pond	1,254	274,361	0.1	0.2	0.0	0.177	TBD	0.339	Unknown	0.78	1.00	n/a	n/a
3-Mile Harbor South	928	203,053	1.7	0.2	0.0	0.161	TBD	0.170	Unknown	2.26	1.00	1.26	56%

Table 3-7 Baseline TMDL Analysis for East Hampton Embayment Watersheds – Target Load 3 g/m^2-yr

Watershed Name	Area (acres)	Rainfall Infiltration (CFD)	Controllable: WW N Load (lb/day)	Controllable: Storm water N Load (lb/day)	Controllable: Agriculture N Load (lb/day)	Controllable: Fertilizer (lb/day)	Controllable: Water fowl (lb/day)	*Not Controllable*: Atm. Deposition (lb/day)	*Not Controllable*: Benthic (lb/day)	Total N Load to GW (lb/day)	GW N Conc (mg/L)
Northwest Harbor	2,312	505,813	37.2	11.6	0.0	8.9	TBD	0.0	Unknown	57.7	1.83
3-Mile Harbor	4,882	1,068,192	229.8	24.5	0.6	19.0	TBD	0.0	Unknown	274.0	4.11
Accabonac Harbor	1,995	436,419	74.6	10.0	0.9	8.0	TBD	9.6	Unknown	103.1	3.78
W. Napeague Harbor	705	154,247	7.6	3.5	0.0	3.0	TBD	20.2	Unknown	34.4	3.57
E. Napeague Harbor	917	200,702	2.25	4.6	0.0	3.9	TBD	8.3	Unknown	19.1	1.52
Fort Pond Bay	2,505	548,018	107.3	12.6	0.0	9.7	TBD	2.9	Unknown	132.5	3.87
Lake Montauk	2,558	559,723	106.2	12.9	0.4	10.4	TBD	3.8	Unknown	133.8	3.83
Oyster Pond	1,254	274,361	1.9	6.3	0.0	5.4	TBD	10.4	Unknown	24.0	1.40
3-Mile Harbor South	928	203,053	39.21	4.7	0.0	3.7	TBD	3.8	Unknown	51.4	4.05

Watershed Name	Area (acres)	Total Discharges (CFD)	Atten. WW N Load (g/m^2/yr)	Storm water N Load (g/m^2/yr)	Agriculture N Load (g/m^2/yr)	Fertilizer (g/m^2/yr)	Water fowl (g/m^2/yr)	Atm. Deposition Wet + Dry (g/m^2/yr)	Benthic (g/m^2/yr)	Total to GW (g/m^2/yr)	TMDL Load (g/m^2/yr)	TMDL Removal Req'd (g/m^2/yr)	TMDL Removal Req'd (%)
Northwest Harbor	2,312	505,813	0.7	0.2	0.0	0.16	TBD	0.000	Unknown	1.02	3.00	n/a	n/a
3-Mile Harbor	4,882	1,068,192	1.9	0.2	0.0	0.16	TBD	0.000	Unknown	2.30	3.00	n/a	n/a
Accabonac Harbor	1,995	436,419	1.5	0.2	0.0	0.163	TBD	0.197	Unknown	2.11	3.00	n/a	n/a
Napeague Harbor West	705	154,247	0.4	0.2	0.0	0.176	TBD	1.175	Unknown	2.00	3.00	n/a	n/a
Napeague Harbor East	917	200,702	0.1	0.2	0.0	0.175	TBD	0.369	Unknown	0.85	3.00	n/a	n/a
Fort Pond Bay	2,505	548,018	1.8	0.2	0.0	0.159	TBD	0.048	Unknown	2.16	3.00	n/a	n/a
Lake Montauk	2,558	559,723	1.7	0.2	0.0	0.166	TBD	0.061	Unknown	2.14	3.00	n/a	n/a
Oyster Pond	1,254	274,361	0.1	0.2	0.0	0.177	TBD	0.339	Unknown	0.78	3.00	n/a	n/a
3-Mile Harbor South	928	203,053	1.7	0.2	0.0	0.161	TBD	0.170	Unknown	2.26	3.00	n/a	n/a

Table 3-8 Embayment TMDL Analysis with Basic Sub-Study Area Improvements – Target Load 1 g/m^2-yr

			Controllable					Not Controllable				Study Area Improvements	
Watershed Name	Area (acres)	Rainfall Infiltration (CFD)	WW N Load (lb/day)	Storm water N Load (lb/day)	Agriculture N Load (lb/day)	Fertilizer (lb/day)	Water fowl (lb/day)	Atm. Deposition (lb/day)	Benthic (lb/day)	Total N Load to GW (lb/day)	GW N Conc (mg/L)	N Load Reduced to GW (lb/day)	GW N Conc. Reduced (mg/L)
Northwest Harbor	2,467	539,766	33.3	12.4	0.0	8.9	TBD	0.0	Unknown	54.6	1.62	3.2	0.21
3-Mile Harbor	4,882	1,068,192	192.5	24.5	0.6	19.0	TBD	0.0	Unknown	236.6	3.55	37.4	0.56
Accabonac Harbor	1,995	436,419	57.6	10.0	0.9	8.0	TBD	10.2	Unknown	86.7	3.18	16.4	0.60
W. Napeague Harbor	705	154,247	1.4	3.5	0.0	3.0	TBD	20.2	Unknown	28.3	2.93	6.2	0.64
E. Napeague Harbor	917	200,702	0.24	4.6	0.0	3.9	TBD	8.3	Unknown	17.0	1.36	2.0	0.16
Fort Pond Bay	2,505	548,018	57.1	12.6	0.0	9.7	TBD	2.9	Unknown	82.4	2.41	50.1	1.47
Lake Montauk	2,558	559,723	30.6	12.9	0.4	10.4	TBD	3.8	Unknown	58.1	1.66	75.6	2.16
Oyster Pond	1,254	274,361	0.4	6.3	0.0	5.4	TBD	10.4	Unknown	22.6	1.32	1.5	0.09
South 3-Mile Harbor	928	203,053	30.63	4.7	0.0	3.7	TBD	3.8	Unknown	42.8	3.38	8.6	0.68

Watershed Name	Area (acres)	Total Discharges (CFD)	Atten. WW N Load (g/m^2/yr)	Storm water N Load (g/m^2/yr)	Agriculture N Load (g/m^2/yr)	Fertilizer (g/m^2/yr)	Water fowl (g/m^2/yr)	Atm. Deposition Wet + Dry (g/m^2/yr)	Benthic (g/m^2/yr)	Total to GW (g/m^2/yr)	TMDL Load (g/m^2/yr)	TMDL Removal Req'd (g/m^2/yr)	TMDL Removal Req'd (%)
Northwest Harbor	2,467	539,766	0.6	0.2	0.0	0.15	TBD	0.000	Unknown	0.90	1.00	n/a	n/a
3-Mile Harbor	4,882	1,068,192	1.6	0.2	0.0	0.16	TBD	0.000	Unknown	1.98	1.00	0.98	50%
Accabonac Harbor	1,995	436,419	1.2	0.2	0.0	0.163	TBD	0.210	Unknown	1.78	1.00	0.78	44%
Napeague Harbor West	705	154,247	0.1	0.2	0.0	0.176	TBD	1.175	Unknown	1.64	1.00	0.64	39%
Napeague Harbor East	917	200,702	0.0	0.2	0.0	0.175	TBD	0.369	Unknown	0.76	1.00	n/a	n/a
Fort Pond Bay, Fresh Pond to Fort Pond	2,505	548,018	0.9	0.2	0.0	0.159	TBD	0.048	Unknown	1.35	1.00	0.35	26%
Lake Montauk	2,558	559,723	0.5	0.2	0.0	0.166	TBD	0.061	Unknown	0.93	1.00	n/a	n/a
Oyster Pond	1,254	274,361	0.0	0.2	0.0	0.177	TBD	0.339	Unknown	0.74	1.00	n/a	n/a
South 3-Mile Harbor	928	203,053	1.4	0.2	0.0	0.161	TBD	0.170	Unknown	1.89	1.00	0.89	47%

Table 3-9 Embayment TMDL Analysis with Basic of Sub-Study Area Improvements – Target Load 3 g/m^2-yr

			Controllable					Not Controllable				Study Area Improvements	
Watershed Name	Area (acres)	Rainfall Infiltration (CFD)	WW N Load (lb/day)	Storm water N Load (lb/day)	Agriculture N Load (lb/day)	Fertilizer (lb/day)	Water fowl (lb/day)	Atm. Deposition (lb/day)	Benthic (lb/day)	Total N Load to GW (lb/day)	GW N Conc (mg/L)	N Load Reduced to GW (lb/day)	GW N Conc. Reduced (mg/L)
Northwest Harbor	2,467	539,766	33.3	12.4	0.0	8.9	TBD	0.0	Unknown	54.6	1.62	3.2	0.21
3-Mile Harbor	4,882	1,068,192	192.5	24.5	0.6	19.0	TBD	0.0	Unknown	236.6	3.55	37.4	0.56
Accabonac Harbor	1,995	436,419	57.6	10.0	0.9	8.0	TBD	10.2	Unknown	86.7	3.18	16.4	0.60
W. Napeague Harbor	705	154,247	1.4	3.5	0.0	3.0	TBD	20.2	Unknown	28.3	2.93	6.2	0.64
E. Napeague Harbor	917	200,702	0.24	4.6	0.0	3.9	TBD	8.3	Unknown	17.0	1.36	2.0	0.16
Fort Pond Bay	2,505	548,018	57.1	12.6	0.0	9.7	TBD	2.9	Unknown	82.4	2.41	50.1	1.47
Lake Montauk	2,558	559,723	30.6	12.9	0.4	10.4	TBD	3.8	Unknown	58.1	1.66	75.6	2.16
Oyster Pond	1,254	274,361	0.4	6.3	0.0	5.4	TBD	10.4	Unknown	22.6	1.32	1.5	0.09
South 3-Mile Harbor	928	203,053	30.63	4.7	0.0	3.7	TBD	3.8	Unknown	42.8	3.38	8.6	0.68

Watershed Name	Area (acres)	Total Discharges (CFD)	Atten. WW N Load (g/m^2/yr)	Storm water N Load (g/m^2/yr)	Agriculture N Load (g/m^2/yr)	Fertilizer (g/m^2/yr)	Water fowl (g/m^2/yr)	Atm. Deposition Wet + Dry (g/m^2/yr)	Benthic (g/m^2/yr)	Total to GW (g/m^2/yr)	TMDL Load (g/m^2/yr)	TMDL Removal Req'd (g/m^2/yr)	TMDL Removal Req'd (%)
Northwest Harbor	2,467	539,766	0.6	0.2	0.0	0.15	TBD	0.000	Unknown	0.90	3.00	n/a	n/a
3-Mile Harbor	4,882	1,068,192	1.6	0.2	0.0	0.16	TBD	0.000	Unknown	1.98	3.00	n/a	n/a
Accabonac Harbor	1,995	436,419	1.2	0.2	0.0	0.163	TBD	0.210	Unknown	1.78	3.00	n/a	n/a
W. Napeague Harbor	705	154,247	0.1	0.2	0.0	0.176	TBD	1.175	Unknown	1.64	3.00	n/a	n/a
E. Napeague Harbor	917	200,702	0.0	0.2	0.0	0.175	TBD	0.369	Unknown	0.76	3.00	n/a	n/a
Fort Pond Bay	2,505	548,018	0.9	0.2	0.0	0.159	TBD	0.048	Unknown	1.35	3.00	n/a	n/a
Lake Montauk	2,558	559,723	0.5	0.2	0.0	0.166	TBD	0.061	Unknown	0.93	3.00	n/a	n/a
Oyster Pond	1,254	274,361	0.0	0.2	0.0	0.177	TBD	0.339	Unknown	0.74	3.00	n/a	n/a
South 3-Mile Harbor	928	203,053	1.4	0.2	0.0	0.161	TBD	0.170	Unknown	1.89	3.00	n/a	n/a

Table 3-10 East Hampton Ponds Baseline Nitrogen Loading Estimates - Target Loads 1 and 3 g/m^2-yr

			Controllable					*Not Controllable*			
Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**WW N Load (lb/day)**	**Storm water N Load (lb/day)**	**Agriculture N Load (lb/day)**	**Fertilizer (lb/day)**	**Water fowl (lb/day)**	**Atm. Deposition (lb/day)**	**Benthic (lb/day)**	**Total N Load to GW (lb/day)**	**GW N Conc (mg/L)**
Georgica Pond	3,956	865,527	116.9	19.9	6	14.07	TBD	16.4	Unknown	173	3.20
Hook Pond	2,065	451,852	176.6	10.4	7	8.5	TBD	8.6	Unknown	211	7.47
Fort Pond	291	63,761	38.9	1.5	0.0	0.8	TBD	1.2	Unknown	42.4	10.65

Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**Atten. WW N Load (g/m^2/yr)**	**Storm water N Load (g/m^2/yr)**	**Agriculture N Load (g/m^2/yr)**	**Fertilizer (g/m^2/yr)**	**Water fowl (g/m^2/yr)**	**Atm. Deposition Wet + Dry (g/m^2/yr)**	**Benthic (g/m^2/yr)**	**Total to GW (g/m^2/yr)**	**TMDL Load (g/m^2/yr)**	**TMDL Removal Req'd (g/m^2/yr)**	**TMDL Removal Req'd (%)**
Georgica Pond	3,956	865,527	1.2	0.2	0.1	0.146	TBD	0.170	Unknown	1.79	1.00	0.79	44%
Hook Pond	2,065	451,852	3.5	0.2	0.1	0.17	TBD	0.170	Unknown	4.17	1.00	3.17	76%
Fort Pond	291	63,761	5.5	0.2	0.0	0.11	TBD	0.170	Unknown	5.95	1.00	4.95	83%

			Controllable					*Not Controllable*			
Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**WW N Load (lb/day)**	**Storm water N Load (lb/day)**	**Agriculture N Load (lb/day)**	**Fertilizer (lb/day)**	**Water fowl (lb/day)**	**Atm. Deposition (lb/day)**	**Benthic (lb/day)**	**Total N Load to GW (lb/day)**	**GW N Conc (mg/L)**
Georgica Pond	3,956	865,527	116.9	19.9	5.9	14.07	TBD	16.4	Unknown	173	3.20
Hook Pond	2,065	451,852	176.6	10.4	6.5	8.5	TBD	8.6	Unknown	211	7.47
Fort Pond	291	63,761	38.9	1.5	0.0	0.8	TBD	1.2	Unknown	42.4	10.65

Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**Atten. WW N Load (g/m^2/yr)**	**Storm water N Load (g/m^2/yr)**	**Agriculture N Load (g/m^2/yr)**	**Fertilizer (g/m^2/yr)**	**Water fowl (g/m^2/yr)**	**Atm. Deposition Wet + Dry (g/m^2/yr)**	**Benthic (g/m^2/yr)**	**Total to GW (g/m^2/yr)**	**TMDL Load (g/m^2/yr)**	**TMDL Removal Req'd (g/m^2/yr)**	**TMDL Removal Req'd (%)**
Georgica Pond	3,956	865,527	1.2	0.2	0.061	0.146	TBD	0.170	Unknown	1.79	3.00	n/a	n/a
Hook Pond	2,065	451,852	3.5	0.2	0.129	0.168	TBD	0.170	Unknown	4.17	3.00	1.17	28%
Fort Pond	291	63,761	5.5	0.2	0.000	0.112	TBD	0.170	Unknown	5.95	3.00	2.95	50%

Table 3-10 East Hampton Ponds Nitrogen Loading Estimates w/Sub-Study Area Improvements - Target Loads 1 and 3 g/m^2-yr

			Controllable					*Not Controllable*			
Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**WW N Load (lb/day)**	**Storm water N Load (lb/day)**	**Agriculture N Load (lb/day)**	**Fertilizer (lb/day)**	**Water fowl (lb/day)**	**Atm. Deposition (lb/day)**	**Benthic (lb/day)**	**Total N Load to GW (lb/day)**	**GW N Conc (mg/L)**
Georgica Pond	3,956	865,527	116.9	19.9	6	14.07	TBD	16.4	Unknown	173	3.20
Hook Pond	2,065	451,852	147.2	10.4	7	8.5	TBD	8.6	Unknown	181	6.42
Fort Pond	291	63,761	28.4	1.5	0.0	0.8	TBD	1.2	Unknown	31.9	8.01

Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**Atten. WW N Load (g/m^2/yr)**	**Storm water N Load (g/m^2/yr)**	**Agriculture N Load (g/m^2/yr)**	**Fertilizer (g/m^2/yr)**	**Water fowl (g/m^2/yr)**	**Atm. Deposition Wet + Dry (g/m^2/yr)**	**Benthic (g/m^2/yr)**	**Total to GW (g/m^2/yr)**	**TMDL Load (g/m^2/yr)**	**TMDL Removal Req'd (g/m^2/yr)**	**TMDL Removal Req'd (%)**
Georgica Pond	3,956	865,527	1.2	0.2	0.1	0.146	TBD	0.170	Unknown	1.79	1.00	0.79	44%
Hook Pond	2,065	451,852	2.9	0.2	0.1	0.17	TBD	0.170	Unknown	3.59	1.00	2.59	72%
Fort Pond	291	63,761	4.0	0.2	0.0	0.11	TBD	0.170	Unknown	4.47	1.00	3.47	78%

			Controllable					*Not Controllable*			
Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**WW N Load (lb/day)**	**Storm water N Load (lb/day)**	**Agriculture N Load (lb/day)**	**Fertilizer (lb/day)**	**Water fowl (lb/day)**	**Atm. Deposition (lb/day)**	**Benthic (lb/day)**	**Total N Load to GW (lb/day)**	**GW N Conc (mg/L)**
Georgica Pond	3,956	865,527	116.9	19.9	5.9	14.07	TBD	16.4	Unknown	173	3.20
Hook Pond	2,065	451,852	147.2	10.4	6.5	8.5	TBD	8.6	Unknown	181	6.42
Fort Pond	291	63,761	28.4	1.5	0.0	0.8	TBD	1.2	Unknown	31.9	8.01

Watershed Name	**Area (acres)**	**Rainfall Infiltration (CFD)**	**Atten. WW N Load (g/m^2/yr)**	**Storm water N Load (g/m^2/yr)**	**Agriculture N Load (g/m^2/yr)**	**Fertilizer (g/m^2/yr)**	**Water fowl (g/m^2/yr)**	**Atm. Deposition Wet + Dry (g/m^2/yr)**	**Benthic (g/m^2/yr)**	**Total to GW (g/m^2/yr)**	**TMDL Load (g/m^2/yr)**	**TMDL Removal Req'd (g/m^2/yr)**	**TMDL Removal Req'd (%)**
Georgica Pond	3,956	865,527	1.2	0.2	0.061	0.146	TBD	0.170	Unknown	1.79	3.00	n/a	n/a
Hook Pond	2,065	451,852	2.9	0.2	0.129	0.168	TBD	0.170	Unknown	3.59	3.00	0.59	16%
Fort Pond	291	63,761	4.0	0.2	0.000	0.112	TBD	0.170	Unknown	4.47	3.00	1.47	33%

Table 3-11 East Hampton Ponds Wastewater Only Phosphorus Loading Estimates- No Attenuation

Watershed Name	Area (acres)	Total Discharges (CFD)	WW P Load (lb/day)	Total P Load to GW (lb/day)	GW P Conc (mg/L)
Georgica Pond	3,956	865,527	12.0	12.0	0.22
Fort Pond	2,065	451,852	18.1	18.1	0.64
Hook Pond	291	63,761	4.0	4.0	1.00

Watershed Name	Area (acres)	Total Discharges (CFD)	WW P Load ($g/m^2/yr$)	Total to GW ($g/m^2/yr$)
Georgica Pond	3,956	865,527	0.1	0.12
Fort Pond	2,065	451,852	0.4	0.36
Hook Pond	291	63,761	0.6	0.56

3.2.3 NITROGEN FOOTPRINT ESTIMATES

Table 3-12 presents a nitrogen footprint impact analysis based upon wastewater and lawn fertilization considerations only, using parameters that in LAI's opinion are appropriate for East Hampton and minimum fertilizer requirements. Table 3-12 uses the Cornell Cooperative Extension of Suffolk County Best Management Practice recommendation for Long Island lawns of 2-3 pounds of nitrogen per 1,000 square feet/year.

Table 3-13 assumes a higher rate of fertilizer applications that may be practiced. As can be seen at high nitrogen fertilization rates and larger lots (i.e. > 1 acre) lawn fertilizers discharge more nitrogen to groundwater than wastewater. As a preliminary guideline, discharges to groundwater greater than 0.45 +/- mg/l require dilution and/or flushing to maintain good water quality in receiving marine waters. As density of development in watersheds increases and/or more areas are fertilized, higher levels of nitrogen removal than achieved with conventional septic systems is necessary to maintain good water quality. Please note that Tables 3-12 through 3-15 are annual averages.

Furthermore, New York State law Dishwasher Detergent and Nutrient Runoff Law (Chapter 205 of the laws of 2010) prohibits:

- Use of fertilizers that contain phosphorus on lawns except when a new lawn is being established or a soil test has indicated a need for additional phosphorus;
- Prohibit the application of lawn fertilizer on impervious surfaces and require pick up of fertilizer applied or spilled onto impervious surfaces.

- Prohibit the application of lawn fertilizer within 20 feet of any surface water except: where there is a vegetative buffer of at least 10 feet; or where the fertilizer is applied by a device with a spreader guard, deflector shield or drop spreader at least three feet from surface water

- Prohibit the application of lawn fertilizer containing nitrogen, phosphorus, or potassium between December 1st and April 1st

- Require retailers to display phosphorus containing fertilizers separately from non-phosphorus fertilizers and to post an educational sign where the phosphorus fertilizers are displayed.

Table 3-12 Property Nitrogen Footprint Estimates – Cornell Recommended Fertilizer Rate

Average Annual Edge of Property Nitrogen Concentration Based upon Wastewater & Landscape Contributions						
I. Basic Data for Analysis						
1. Nitrogen Loading Per House - Prior to Drainfield			**2. Conventional Septic System N Discharge to Groundwater**			
Annual Nitrogen Discharge to Drainfield (lbs/person/year)	11		% N Removal Prior to Groundwater Discharge - Conventional Septic System			25%
Number People / House	3.00					
Treatment System N Removal	0%		Annual Nitrogen Discharge to Groundwater per House - Conventional Septic System (lbs/house/year)			24.75
Annual Nitrogen Discharge to Drainfield per House (lbs/house/year)	33.0					
Suffolk County Groundwater Rainfall Recharge (in/yr)	22					
Average Wastewater Flow per Person (gpd)	60		Concentration to Groundwater (mg/l)			45
Wastewater Flow per House (gpd)	180					
Wastewater N Concentration to Drainfield (mg/l)	60					
3. Nitrogen Contribution to GW from Lawn Fertilization						
N application Rate (lbs/1,000 sf - year)	2.50		Lawns -% of lot size < 1 acre			17%
			Lawns -% of lot size >1 acre			40%
Groundwater discharge rate (lbs/1,000 sf-day)	0.0017		Leaching rate			25%
4. Rainfall Dilution By Lot Size	**Lot Size (acres)**					
	0.25	0.50	0.75	1.00	5.00	10.00
Rainfall Recharge (gpd/lot)	409	818	1,227	1,637	8,183	16,366
5. Nitrogen Discharge to Groundwater						
Mass						
Wastewater Conventional Septic (lbs-day)	0.068	0.068	0.068	0.068	0.068	0.068
Lawn (lbs-N/day)	0.003	0.006	0.010	0.013	0.149	0.298
Total (lbs-day)	0.071	0.074	0.077	0.080	0.217	0.366
% of Totals						
Wastewater as % of Total	96%	91%	88%	84%	31%	19%
Lawn as % of Total	4%	9%	12%	16%	69%	81%
Concentration of Discharge Water						
Wastewater contribution (mg/l)	13.80	8.14	5.78	4.48	0.97	0.49
Lawn contribution (mg/l)	0.65	0.76	0.81	0.84	2.14	2.16
Total contribution to Groundwater (mg/l)	14.45	8.91	6.59	5.31	3.11	2.65

Table 3-13 Property Nitrogen Footprint Estimates – Higher Fertilizer Rate

Average Annual Edge of Property Nitrogen Concentration Based upon Wastewater & Landscape Contributions

I. Basic Data for Analysis

1. Nitrogen Loading Per House - Prior to Drainfield	
Annual Nitrogen Discharge to Drainfield (lbs/person/year)	11
Number People / House	3.00
Treatment System N Removal	0%
Annual Nitrogen Discharge to Drainfield per House (lbs/house/year)	33.0
Suffolk County Groundwater Rainfall Recharge (in/yr)	22
Average Wastewater Flow per Person (gpd)	60
Wastewater Flow per House (gpd)	180
Wastewater N Concentration to Drainfield (mg/l)	60

2. Conventional Septic System N Discharge to Groundwater	
% N Removal Prior to Groundwater Discharge - Conventional Septic System	25%
Annual Nitrogen Discharge to Groundwater per House - Conventional Septic System (lbs/house/year)	24.75
Concentration to Groundwater (mg/l)	45

3. Nitrogen Contribution to GW from Lawn Fertilization			
N application Rate (lbs/1,000 sf - year)	4.00	Lawns -% of lot size < 1 acre	17%
		Lawns -% of lot size >1 acre	40%
Groundwater discharge rate (lbs/1,000 sf-day)	0.0027	Leaching rate	25%

4. Rainfall Dilution By Lot Size	Lot Size (acres)					
	0.25	0.50	0.75	1.00	5.00	10.00
Rainfall Recharge (gpd/lot)	409	818	1,227	1,637	8,183	16,366
5. Nitrogen Discharge to Groundwater						
Mass						
Wastewater Conventional Septic (lbs-day)	0.068	0.068	0.068	0.068	0.068	0.068
Lawn (lbs-N/day)	0.005	0.010	0.015	0.020	0.239	0.477
Total (lbs-day)	0.073	0.078	0.083	0.088	0.306	0.545
% of Totals						
Wastewater as % of Total	93%	87%	82%	77%	22%	12%
Lawn as % of Total	7%	13%	18%	23%	78%	88%
Concentration of Discharge Water						
Wastewater contribution (mg/l)	13.80	8.14	5.78	4.48	0.97	0.49
Lawn contribution (mg/l)	1.03	1.22	1.30	1.34	3.42	3.46
Total contribution to Groundwater (mg/l)	14.83	9.36	7.07	5.81	4.39	3.95

Table 3-14 Property Nitrogen Footprint Estimates – BEST PRACTICES

Average Annual Edge of Property Nitrogen Concentration Based upon Wastewater & Landscape Contributions						
I. Basic Data for Analysis						
1. Nitrogen Loading Per House - Prior to Drainfield			**2. Conventional Septic System N Discharge to Groundwater**			
Annual Nitrogen Discharge to Drainfield (lbs/person/year)	11		% N Removal Prior to Groundwater Discharge - Conventional Septic System			10%
Number People / House	3.00					
Treatment System N Removal	94%		Annual Nitrogen Discharge to Groundwater per House - Conventional Septic System (lbs/house/year)			1.78
Annual Nitrogen Discharge to Drainfield per House (lbs/house/year)	2.0					
Suffolk County Groundwater Rainfall Recharge (in/yr)	22					
Average Wastewater Flow per Person (gpd)	60		Concentration to Groundwater (mg/l)			3
Wastewater Flow per House (gpd)	180					
Wastewater N Concentration to Drainfield (mg/l)	4					
3. Nitrogen Contribution to GW from Lawn Fertilization						
N application Rate (lbs/1,000 sf - year)	1.00		Lawns -% of lot size < 1 acre			17%
			Lawns -% of lot size >1 acre			40%
Groundwater discharge rate (lbs/1,000 sf-day)	0.0007		Leaching rate			25%
4. Rainfall Dilution By Lot Size	**Lot Size (acres)**					
	0.25	0.50	0.75	1.00	5.00	10.00
Rainfall Recharge (gpd/lot)	409	818	1,227	1,637	8,183	16,366
5. Nitrogen Discharge to Groundwater						
Mass						
Wastewater Conventional Septic (lbs-day)	0.005	0.005	0.005	0.005	0.005	0.005
Lawn (lbs-N/day)	0.001	0.003	0.004	0.005	0.060	0.119
Total (lbs-day)	0.006	0.007	0.009	0.010	0.065	0.124
% of Totals						
Wastewater as % of Total	79%	66%	56%	49%	8%	4%
Lawn as % of Total	21%	34%	44%	51%	92%	96%
Concentration of Discharge Water						
Wastewater contribution (mg/l)	0.99	0.59	0.42	0.32	0.07	0.04
Lawn contribution (mg/l)	0.26	0.30	0.32	0.33	0.86	0.86
Total contribution to Groundwater (mg/l)	1.25	0.89	0.74	0.66	0.93	0.90

Table 3-15 Property Nitrogen Footprint Estimates – Scenarios Comparison

Groundwater Recharge N Concentration (mg/l) With Various Scenarios							
Wastewater System	Fertilizer Apply Rate	Lot Size (acres)					
		0.25	0.50	0.75	1.0	5.0	10.0
Conventional Septic	High	14.8	9.4	7.1	5.8	4.4	4.0
	CCESC	14.4	8.9	6.6	5.3	3.1	2.7
	Low	14.1	8.4	6.1	4.8	1.8	1.4
Advanced	Low	1.3	0.9	0.7	0.7	0.9	0.9

3.2.4 SCDHS & RECENT TRUSTEES DATA

Gobler (March 2014) performed a study for the East Hampton Trustees in 2013 to assess the temporal and spatial dynamics in East Hampton marine waters of:

- Coliform bacteria;
- Paralytic shellfish poisoning (PSP)-causing dinoflagellate *Alexandrium*;
- Diarrhetic shellfish poisoning (DSP)- causing dinoflagellate *Dinophysis;*
- Ichthyotoxic dinoflagellate, *Cochlodinium,* whose blooms are toxic to fish, shellfish and other aquatic organisms

as well as assessing the dynamics of toxic cyanobacteria and cyanotoxins in East Hampton's major freshwater/brackish bodies.

Gobler's Study Executive Summary is presented below:

"This study was undertaken from March through November of 2013 for the East Hampton Town Trustees to assess water qualify, harmful algae, and pathogenic bacteria in their marine and freshwater bodies. Total coliform bacteria were quantified as indicators of pathogenic bacteria and to assess current shellfish bed closures in Trustee waters. Total coliform bacteria levels were highest during the warmest months of the study, were higher closer to shore compared to deeper waters, and were higher in poorly flushed regions compared to more open waters. The levels of total coliform were generally consistent with and supportive of NYSDEC shellfish bed closures with some minor exceptions that require further investigation. E. coli levels were low in all regions and were undetectable in some regions during spring and fall. For nearly all marine sites sampled, general water quality was excellent. Dissolved oxygen and chlorophyll a were at levels supportive of fisheries and levels of harmful algae were low and, in some cases, undetectable. The significant exception to this trend was Three Mile Harbor. This system had the highest levels of all harmful algae studied, *Alexandrium, Cochlodinium*, and *Dinophysis*. Densities of *Alexandrium* and *Cochlodinium* in Three Mile Harbor peaked at 2,000 cells/Land 8,000 cells/mL, respectively, levels that have previously been shown to cause shellfish toxicity and fish mortality, respectively. Georgica, Hook, and Fresh Pond were sampled to assess blue green algae and potentially toxic cyanobacteria and levels were found to be low throughout the 2013 sampling season. These sites did, however, attain levels of algal biomass that were in the range deemed eutrophic by USEPA during late summer. Furthermore, Georgica Pond was found to have low· levels of dissolved oxygen during late summer and fall and on occasion reached levels not supportive of fish survival and propagation according to NYSDEC standards."

Georgica Pond algae testing by Gobler in 2014 was used by the East Hampton Trustees as the basis for Pond closure of shellfishing or fishing and advised those who use the Pond to take precautions when doing so.

Shellfishing Issues

Figure 3-1 presents Gobler's comparison of NYS DEC's actions on shellfish closures with his measured values for coliforms and comparison to shellfish standards.

Figure 3-1 Shellfish Closures

Site #	Site Name	Measured Values	DEC Status	
1	Napeague	Over: May-Oct	Open	Should be Seasonally Closed
2	Napeague - Lazy Point	Over: Jul-Sep	Open	Should be Seasonally Closed
3	Fresh Pond – Outlet	Over	Uncertified	Closed and Confirmed
4	Fresh Pond	Over	Uncertified	Closed and Confirmed
5	Accabonac - Louse Point	Over: May-Sep	Seasonally Uncertified: May 1 – Nov 30	Closed and Confirmed
6	Accabonac - Landing Lane	Over: Apr-Oct	Seasonally Uncertified: May 1 – Nov 30	Closed and Confirmed
7	Accabonac - Gerard Drive	Over: May-Sep	Open	Should be Seasonally Closed
8	Hog Creek – Clearwater	Over: May-Oct	Seasonally Uncertified: May 1 – Nov 30	Closed and Confirmed
9	Hog Creek - Isle of Wight	Over: Apr-Oct	Seasonally Uncertified: May 1 – Nov 30	Closed and Confirmed
10	Three Mile Harbor - Gann Road	Over: May-Oct	Seasonally Uncertified: May 15 – Oct 15	Closed and Confirmed
11	Three Mile Harbor - Head of the Harbor	Under: Nov-Apr	Uncertified	Could be Seasonally Open
12	Three Mile Harbor - Hand's Creek	Over: May-Nov	Seasonally Uncertified: May 1 – Nov 30	Closed and Confirmed
13	Northwest Creek	Under: Apr-May	Uncertified	Could be Seasonally Open
16	Georgica Cove	Over	Uncertified	Closed and Confirmed

Bathing Standards

The 2012 US EPA bathing bacterial standards presented below are based on a statistically sufficient number of samples (generally not less than 5 samples equally spaced over a 30-day period), the geometric mean of the indicated bacterial densities should not exceed one or the other of the following:

Freshwater	E. coli 126 per 100 ml; or Enterococci 35 per 100 ml
Marine Water	Enterococci 35 per 100 ml

As enterococci were not measured, no assessment on bathing water quality can be stated for marine waters. Average E. coli values were <79 for all sites sampled except for Fresh Pond which had a value of 3,172 cells/100 ml. This igh value may be indicator of waterfowl contamination.

Conclusions

Following are conclusions deduced by this report from the Gobler data.

1. **Three Mile Harbor**

As stated in the 2014 Gobler Report, southern Three Mile Harbor had levels of harmful algae that could be toxic. Consequently Three Mile Harbor has been designated by this study as a nitrogen impaired water body. Further studies are needed to quantify the required levels of nitrogen reductions and associated contributing properties however, at a minimum the southern portion of Three Mile Harbor is a designated Needs Area requiring a neighborhood solution. The area has three marinas and a trailer park with an inferior wastewater system and has a constrained outlet to the larger Three Mile harbor which would inhibit flushing.

2. **Georgica and Hook Ponds**

Both Ponds had algal levels indicative of eutrophic conditions. It is understood that nitrogen and phosphorus need to be reduced for Georgica Pond. No determinations have been made for Hook Pond, however it is noted that the East Hampton Business Area is within the Hook Pond watershed. US EPA Report and data collected in 1971, stated:

"Extremely low concentrations of phosphate and nitrogen will support plant growth. In fresh waters phosphate levels as low as 0.01 - 0.04 mg/l (0.003 - 0.012 mg/l as P) have supported extensive growths of both suspended and attached algae. The critical nitrate concentration has been reported to be 0.3 mg/l as N. The surveys indicate that Georgica Pond is rich in nitrogen and phosphorous and could support prolific algae growth. The supersaturated oxygen levels observed during both surveys indicate that extensive growth is already underway. Phosphate levels are at least 20 times the reported limiting levels. Although nitrate levels do not generally exceed 0.3 mg/l a great reservoir of nitrogen is present as ammonia and organic material. During the period between the surveys phosphorous and nitrogen levels increased by 37 and 260 percent, respectively. Should the Pond remain confined, these levels would increase even further."

The SCDHS surface water quality data collected for Lake Montauk, Napeague Harbor, Accabonac Harbor, 3 Mile Harbor and Northwest Harbor are presented in Appendix E. As can be deduced from comparing the Gobler data to the SCDHS data, multiple locations within a water body need to be sampled to assess the overall water body's health and to identify any "hot-spots". As stated in "Waters Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries (Regional Criteria Guidance), EPA 903-R-03-002, April 2003.":

"The reduced flushing of more confined open-water habitats often leads to elevated chlorophyll a concentrations, given that phytoplankton populations are exposed to nutrient-enriched conditions for longer periods. Nutrient loadings that would not otherwise lead to increased chlorophyll a concentrations in well-flushed tidal open-water habitats generate bloom conditions in these smaller systems."

3.3 SUMMARY OF WASTEWATER NEEDS

The various Needs Categories are:

1. Nitrogen & Phosphorus – TMDL considerations

2. Bacterial public health
3. Impermeable/Hydric Soils
4. Malfunctioning systems considerations
5. Setback requirements
6. Private water supply considerations
7. Public water supply considerations
8. Town & County Code & State Law considerations
9. Cost Considerations
10. Economic sustainability issues
11. Space availability

Table 3-16 presents a summary of the needs for the project sub-study areas.

3.4 WATER QUALITY MANAGEMENT – SCIENTIFIC & LEGAL PROCESS

The process by which water bodies that are not meeting water quality standards are addressed is presented below as presented in ***Shellfish Pathogen TMDLs for 27 303(d)-listed Waters, September 2007, NYSDEC.***

"Section 303(d) of the Clean Water Act (CWA) as amended by the Water Quality Act of 1987, Public Law 100-4, and the United States Environmental Protection Agency's (USEPA/EPA) Water Quality Planning and Management Regulations (40 CFR, Part 130) requires each state to identify those waters within its boundaries not meeting water quality standards for any given pollutant applicable to the water's designated uses.

Total Maximum Daily Loads (TMDLs) are required to be developed for all pollutants violating or causing violation of applicable water quality standards for each impaired water body. A TMDL determines the maximum amount of pollutant that a water body is capable of assimilating while continuing to meet the existing water quality standards. Such loads are established for all the point and nonpoint sources of pollution that cause the impairment at levels necessary to meet the applicable standards with consideration given to seasonal variations and margin of safety. Therefore, TMDLs provide the framework that allows states to establish and implement pollution control and management plans with the ultimate goal indicated in Section 101(a)(2) of the CWA: "water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable" .

For shellfishing areas, water quality standards are the National Shellfish Sanitation Program's (NSSP) standards for open shellfish areas. The NSSP is the federal/state cooperative program recognized by the U.S. Food and Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption. As stated in ***Shellfish Pathogen TMDLs for 27 303(d)-listed Waters, September 2007, NYSDEC.***

"Closed shellfish areas can be categorized as **administrative closures** or **water quality closures**. Administrative closures are permanently off limits to shellfishing and include areas surrounding actual or potential sources of pathogens (e.g., sewage treatment plant outfalls, marinas, or high density mooring locations). Water quality closures include areas that have failed to meet the National Shellfish Sanitation Program's (NSSP) standards for open shellfish areas. The NSSP is the federal/state cooperative program recognized by the U.S. Food and

Drug Administration (FDA) and the Interstate Shellfish Sanitation Conference (ISSC) for the sanitary control of shellfish produced and sold for human consumption." Table 3-16 presnets the latest NSSP standards. Figure 3-2 presents the scientific and legal process for water quality restoration.

Table 3-16 NSSP Standards for Shellfish Harvesting Areas Affected by Point and Nonpoint Pollution Sources

Indicators	NSSP Standards* *Note: values are based on a 3-tube, decimal dilution test.	
Total coliform	The median of samples shall not exceed 70 MPN/100ml	Not more than 10% of the samples may exceed 330 MPN/100ml
Fecal coliform	The median of samples shall not exceed 14 MPN/100ml	Not more than 10% of the samples shall exceed 49 MPN/100ml

Figure 3-2 Water Quality Restoration – Scientific & Legal Process

- **Water Use/Body – Water Quality Standards**
- **Water Quality Impairment Designation**
- **Total Maximum Daily Loads (TMDL) Determination**
  - ✓ **Budget is established of max. amounts of constituents that can be discharged & still maintain standards. Amount of pollutants that must be removed quantified**
- **Municipality Required to Develop & Implement Plan to Achieve TMDL Requirements**

Table 3-16 Summary of Wastewater Needs by Sub Study Area

Study Sub-Area	# of Dev. Prop.	WW Design Flow (gpd)	1. Nitrogen and Phosphorus TMDL considerations	2. Bacterial public health	3. Impermeable/Hydric Soils[1]	4. Malfunctioning systems considerations	5. Setback requirements	6. Private water supply considerations	7. Public water supply considerations	8. Town & County Code & State Law considerations			9. Cost Considerations	10. Economic sustainability issues	11. Space availability	# With WW Needs	% With WW Needs
										Comm. w/Cess	SPDES	>1,000-gpd					
1. Montauk Center	114	124,745	*See Watershed Studies*	7	0	0	4	25	0	66	4	49			49	90	78.9%
2. The Docks	64	186,720		40	21	0	37	1	0	34	8	11			11	58	90.6%
3. Ditch Plains	276	77,275		50	237	0	0	8	0	0	0	77			77	214	77.5%
4. Camp Hero	28	8,237		0	5	28	0	0	0	0	0	0			0	28	100.0%
5. South 3-Mile	61	25,012		38	31	0	46	2	0	6	1	4			4	59	96.7%
6. Village Business	325	157,209		14	2	0	0	42	0	126	8	110			110	207	63.7%
7. Georgica Pond Watershed	1,335	574,892		36	31	0	50	141	0	78	1	114			114	267	20.0%
8. Hook Pond Watershed[2]	1,960	711,707		85	33	0	18	56	0	36	4	72			72	218	11.1%
9. Fort Pond Watershed[3]	250	149,790		49	39	0	90	17	0	33	1	33			33	134	53.6%
10. Individual Onsite[4]	3,051	1,797,160		960	801	0	564	789	111	201	19	997			997	3,051	100.0%
Totals	**7,464**	**3,812,746**	**1,279**	**1,200**	**28**		**809**	**1,081**	**111**	**580**	**46**	**1,467**			**1,467**	**4,326**	**58.0%**

4 SITE SCREENING & FIELD OBSERVATIONS

The CWMP initial identification of properties that were estimated in need of neighborhood wastewater treatment, disposal and / or reuse systems was presented in December 17, 2013 Scenarios Development Report.

That identification has been supplemented as follows:

- ✓ Subareas were refined and estimated flows updated;
- ✓ Potential sites were further evaluated based upon site soils and groundwater data for the property or nearby properties.
- ✓ Field review of prospective sites was then performed to ground truth perspectives and identify any previously unforeseen issues.
- ✓ Meetings were held with a limited number of owners of properties considered of great potential interest for the use as treatment, disposal and/or reuse sites.

Areas that are recommended for new or improved neighborhood wastewater systems are:

1. Montauk Center
2. The Docks
3. Ditch Plains
4. Camp Hero
5. Southern Three Mile Harbor
6. Village Business District

Although the following watersheds need further scientific studies to determine the precise levels of needed wastewater and nutrient reduction efforts, immediate corrective actions are recommended herein which should be performed concurrently with scientific studies:

7. Georgica Pond watershed
8. Hook Pond
9. Fort Pond

The Needs category of:

10. individual properties

is expected to be addressed by individual on-site wastewater system upgrades.

This section presents the candidate sites that are under consideration for treatment and disposal/reuse. The Neighborhood and Needs areas and candidate sites for treatment, disposal/reuse for the Montauk Study area are presented on Figure 4-1.

4.1 MONTAUK CENTER TREATMENT AND DISPOSAL/REUSE SITES

Potential sites that were considered include:

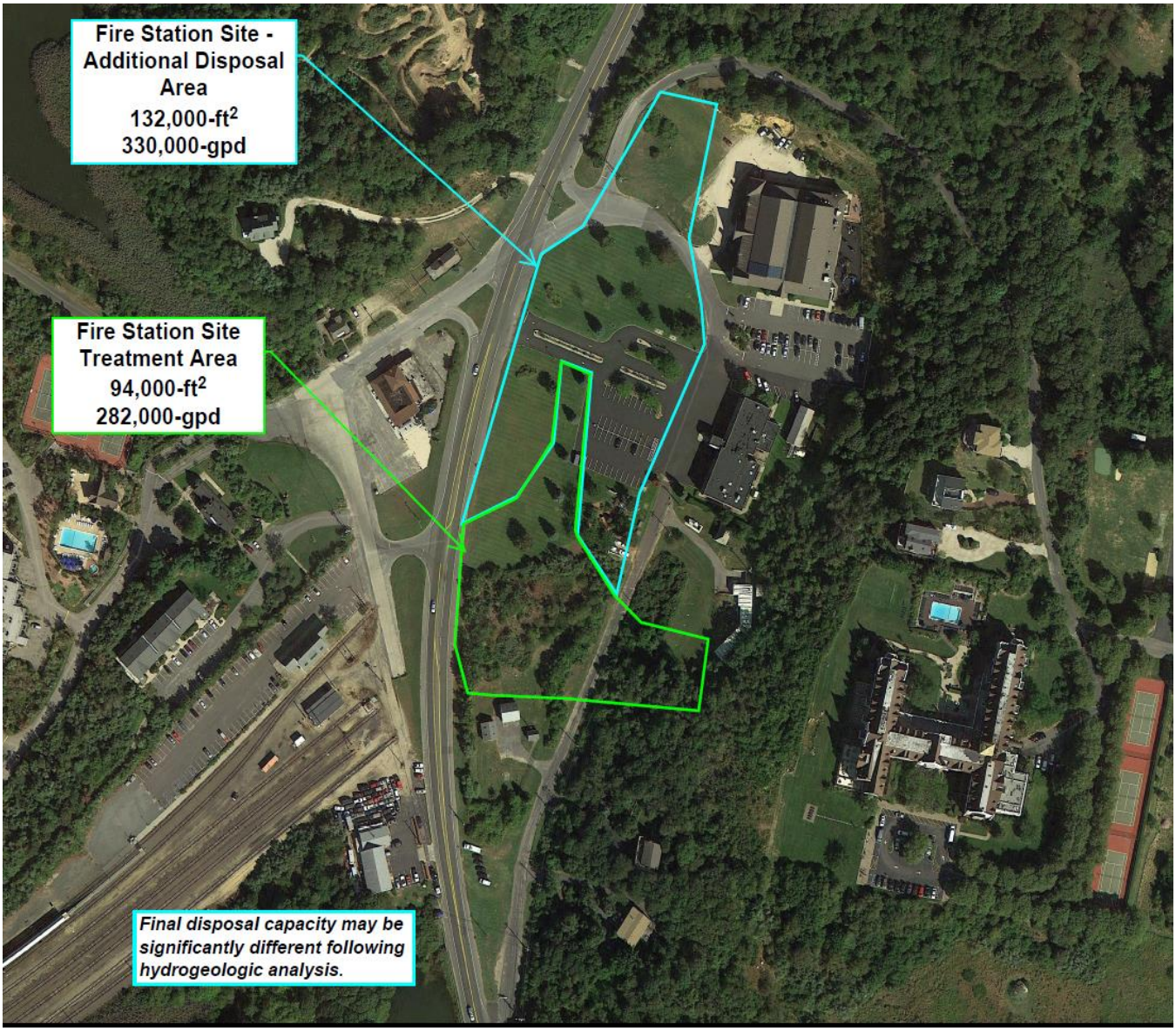
- Beach Parking Lot Site
- Ballfield Site
- Town Owned Beach Site
- Montauk Manor Treatment Plant Site / Fire Station

Figure 4-1 Montauk Study Area – Needs and Solution Candidate Sites

The beach and ballfield sites are located in areas that are not feasible for siting a large treatment system and are in SLOSH zones, however could likely be used for some effluent disposal or reuse by subsurface irrigation. The Fire Station / Montauk Manor site was initially discounted due to the presence of a SCWA well on the adjacent Edgemere Street property. However based upon recent discussions with SCWA, this well is proposed to be abandoned and the site could be available from SCWA.

The Fire Station / Montauk Manor site has sufficient capacity to treat up to 282,000-gpd of flow and to dispose of up to 330,000-gpd in areas not included in the treatment area. In addition, this site is located near a golf course which is an excellent candidate for seasonal water reuse and disposal. It appears that the nearby golf course irrigation water demand would need all the treated wastewater from Montauk Center, Docks and possibly Ditch Plains. Figure 4-2 presents the Fire Station / Montauk Manor site.

Figure 4-2 Fire Station / Montauk Manor Treatment and Disposal Site



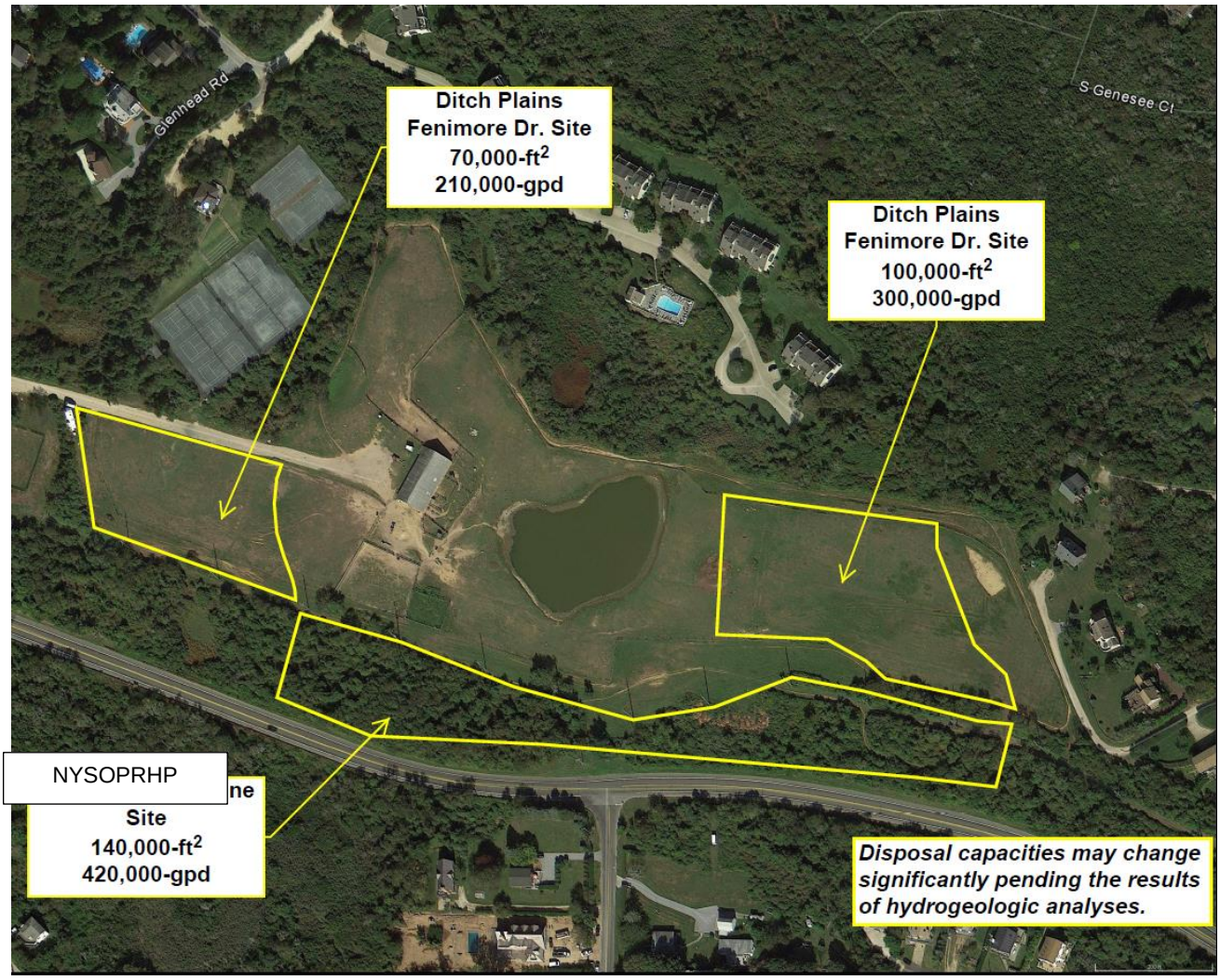
4.2 DITCH PLAINS TREATMENT AND DISPOSAL SITES

A potential treatment and disposal site is on property northwest of the Ditch Plains development, immediately across Highway 27. This is a privately owned lot that the Town owns development rights to, located off of West Lake Drive on South Fenimore Drive. There is a small pond on the property, and wetlands mapping shows some minor wetland areas nearby. There is an area east of the pond that has sufficient area outside setback requirements to site a treatment facility. This area is identified as having hydric soils, therefore site testing would be required. The area west of the building does not have sufficient area for a large WWTF, however it could be used for a reserve area and/or additional disposal / reuse area if needed. This site has a combined treatment capacity of up to 510,000-gpd. The disposal capacity was not estimated due to the need for soils testing. The State-owned Montauk Downs golf course is a nearby alternative for disposal / reuse.

An additional site is adjacent to the Barn Site and is owned by the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). This site has up to 420,000-gpd of treatment

capacity, however wetland delineations would be required to ensure avoidance of wetland areas. Figure 4-3 presents the Fenimore and NYSOPRHP sites. Alternately Ditch Plains could use the Montauk Manor/Fire Dept. site along with Montauk Center possible Docks.

Figure 4-3 Fenimore Drive and Power Line Treatment and Disposal Sites



4.3 THE DOCKS TREATMENT AND DISPOSAL SITES

The Docks are located in a densely developed area that is surrounded by areas with wetlands, hydric soils and highly variable terrain. The two sites under consideration for treatment and/or disposal are:

- Densely wooded Flamingo Ave site on Town-owned land
- Portion of County-owned property East of the Airport

The Flamingo Ave site is located in the corner of Flamingo Ave and Culliden Place. The portion identified as a candidate site is densely wooded and there are wetlands nearby. The soils survey shows hydric soils over a portion of the property, however there are no DEC wetlands on or within 50-ft of the site. The site has approximately 540,000-gpd of treatment capacity. Site testing would be needed to determine disposal capacity. The Montauk Downs golf course is close enough to be considered as a disposal / reuse site as well as use of the Montauk Manor / Fire Dept. sites.

The Airport East site is a local high point and is partially cleared. The portion of interest on the County-owned property is relatively flat compared to the surrounding land, and it is outside wetlands, floodplains and SLOSH areas that cover most of the surrounding area. The treatment capacity of this site is ~300,000-gpd. Soil data is not available. Therefore soils testing and hydrogeologic studies would be needed to determine disposal capacity for this site. The Flamingo Ave and Airport East sites are presented on Figures 4-4 and 4-5, respectively.

Figure 4-4 Flamingo Ave. Treatment and Disposal Site

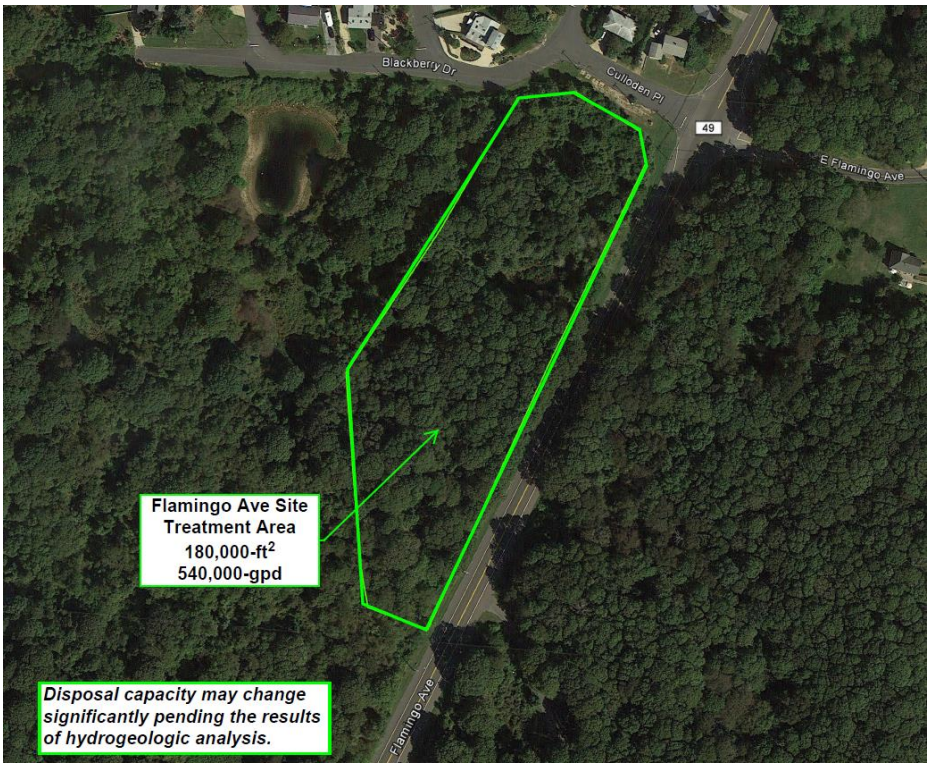


Figure 4-5 Airport East Treatment and Disposal Site

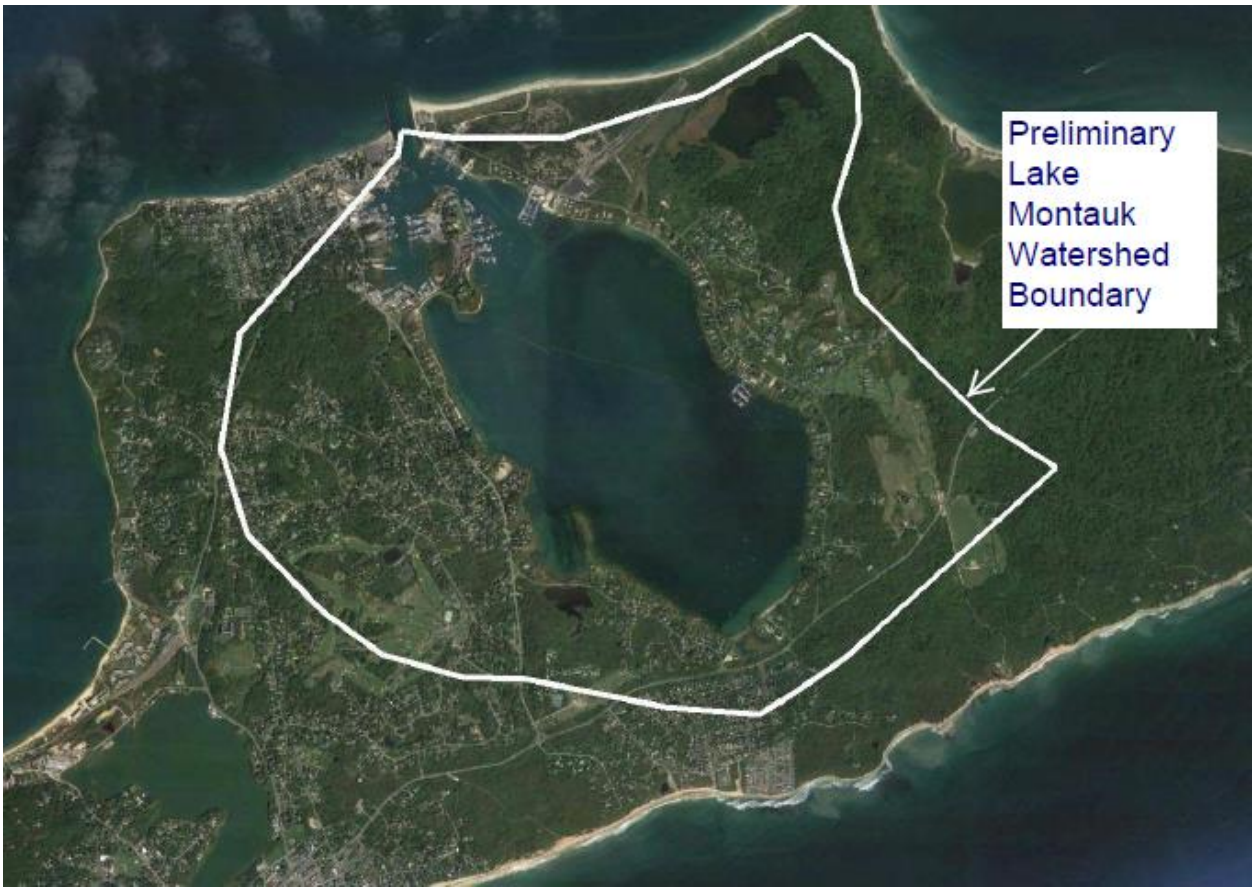
4.4 LAKE MONTAUK WATERSHED

The estimated watershed for the Lake Montauk is presented on Figure 4-6 with Watershed statistics presented on Table 4-1.

Table 4-1 Lake Montauk Watershed Statistics

Lake Montauk									
No. of Properties & %			Total Area (acres) & % of				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
1,121	520	1,641	1,076	1,482	1,218	3,776	530,929	4,186,731	12.68%
68%	32%		28%	39%	32%				

Figure 4-6 Lake Montauk Watershed

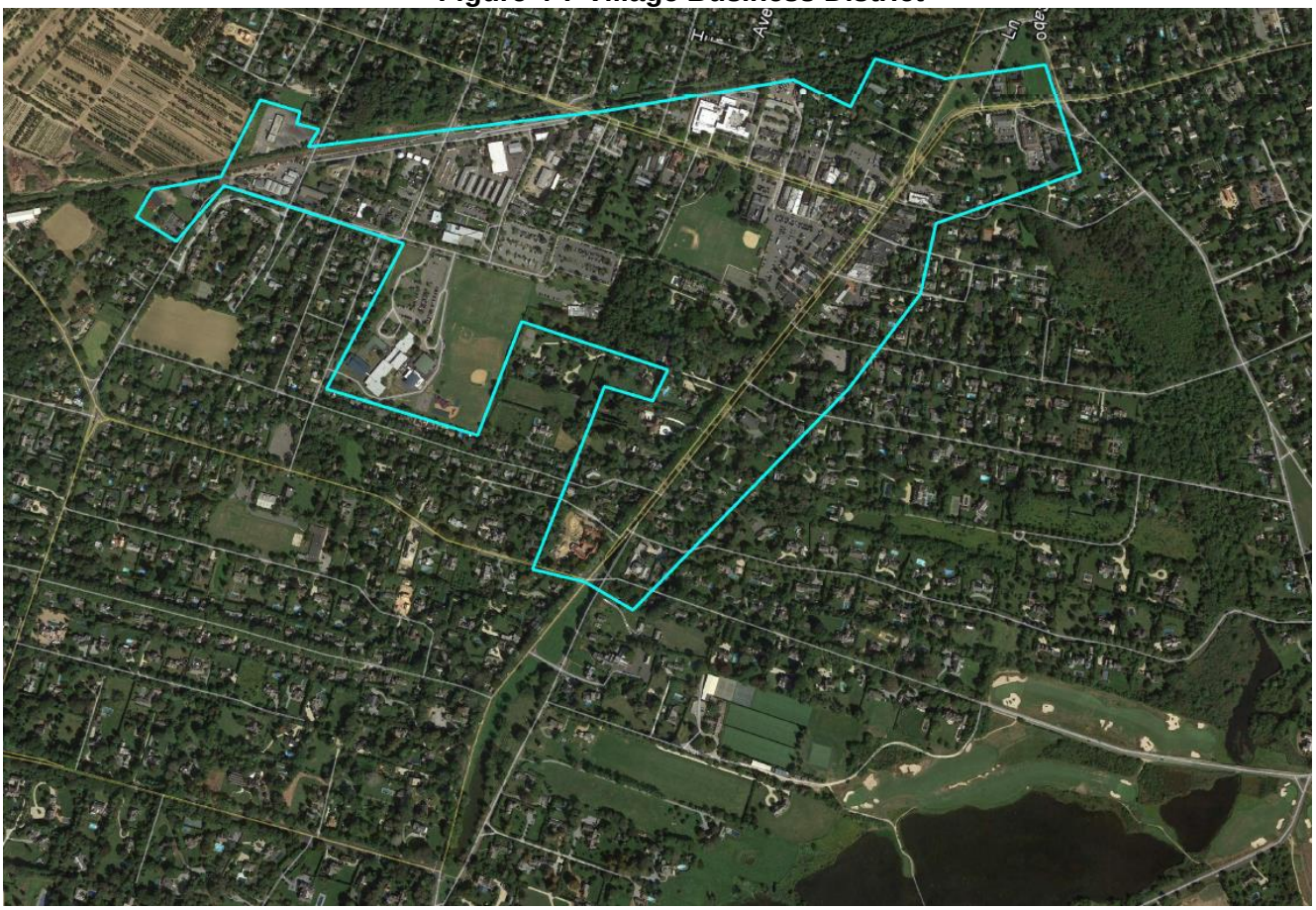


4.5 VILLAGE BUSINESS DISTRICT

The Village Business District is a small area within the Village where commercial properties are concentrated. This area is within the Hook Pond watershed, and is included in areas under consideration for a neighborhood collection, treatment and disposal system.

Figure 4-7 presents the Village Business District. There appear to be numerous potential sites for water reuse, including two school ballfields within the Study Area and a golf course to the south on Hook Pond. In addition, there are nurseries adjacent to the area immediately to the northwest. Locating a treatment site that complies with the 200-ft setback to buildings may be challenging for this needs area or may require setback variances. With setback variances, the numerous parking lots could be used for treatment and disposal.

Figure 4-7 Village Business District



4.6 THREE MILE HARBOR

The entire Three Mile Harbor and the southern area in particular are demonstrating signs of excessive nitrogen loadings. The nitrogen loading analysis has identified it as a likely problem area. The southern area has recently experienced harmful algae concentrations that can be toxic (see section 3.2.3) based upon data collected by Gobler.

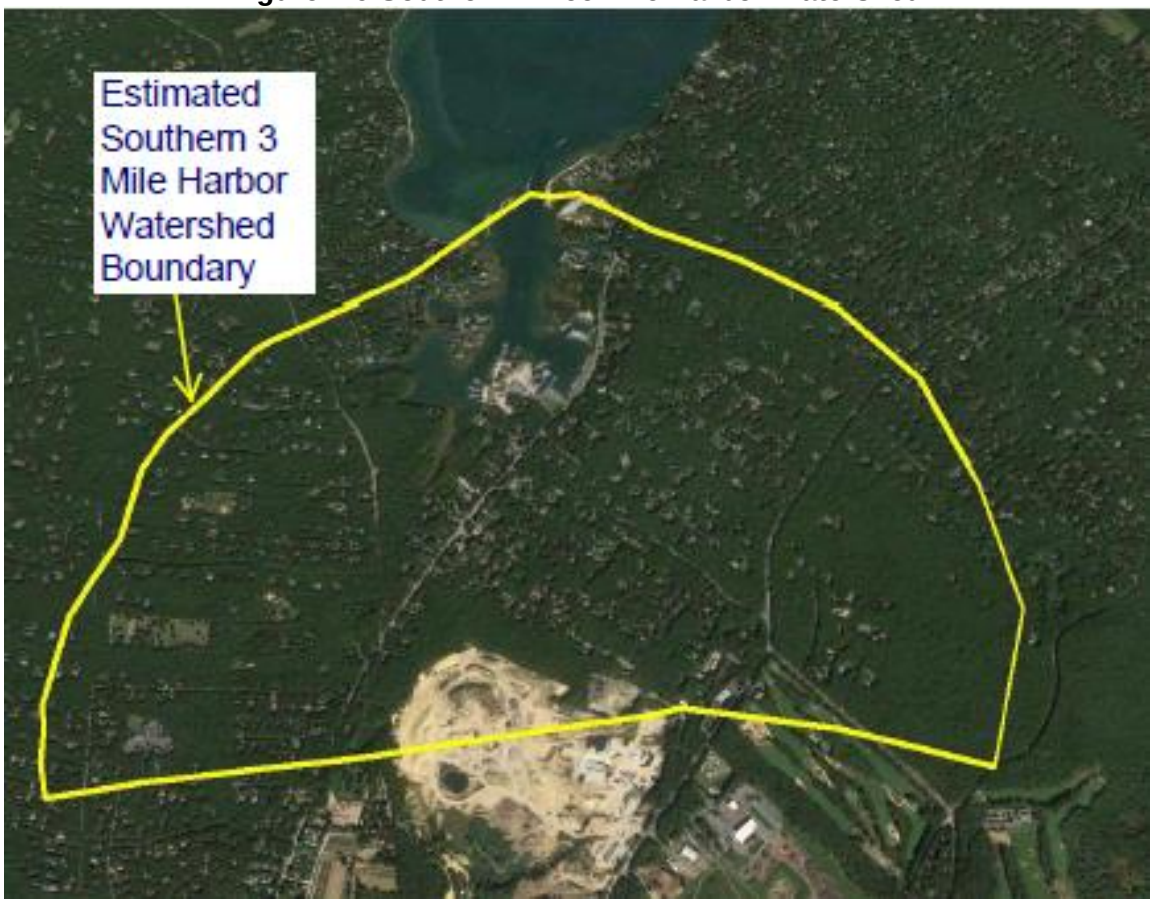
The estimated watershed for the entire watershed and southern Three Mile Harbor is presented on Figure 4-8 and 4-9 respectively, and the watershed statistics are presented on Table 4-2. Due to the harmful algae in the southern area of the Harbor, it is recommended that remediation efforts begin in that area.

Figure 4-8 Three Mile Harbor Watershed

Table 4-2 Three Mile Harbor Watershed Statistics

3 Mile Harbor									
No. of Properties & % of Total			Total Area (acres) & % of Total				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
3,725	1,130	4,855	4,387	1,580	1,041	7,008	1,130,780	9,764,288	11.58%
77%	23%		63%	23%	15%				

Figure 4-9 Southern Three Mile Harbor Watershed



The following corrective actions are recommended to address the eutrophic conditions in southern 3 Mile Harbor. The blend of the options that achieves the desired water quality at the lowest cost needs to be determined.

- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen removal in the following areas:

    a. Three Mile Harbor Road - where it is estimated the PRB could remove significant proportion of nitrogen being discharged from properties in the eastern portion of the Harbor's watershed
    b. Springs Bank Road where it is estimated the PRB could removal significant proportion of nitrogen being discharged from properties in the western portion of the Harbor's watershed.

- Demonstration projects on the use of oyster/shellfish aquaculture as a nitrogen removal tool
- Individual on-site nitrogen removal systems and sewering with nitrogen removal for neighborhood/areawide systems may be needed to supplement the other options
- Require the use of organic fertilizers in the watershed
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality

As the PRB areas are within the two (2) year travel time to the Harbor, the positive impact of the use of the PRB on the Harbor's water quality could be noticed fairly quickly.

For the larger 3 Mile Harbor watershed, it is recommended that:

- ✓ PRB demonstration projects and shellfish cultivation be pursued first due to their low cost and the immediate improvements that can be achieved

- ✓ Groundwater and surface water sampling and modeling studies be performed to determine the best locations for the PRB and the degree to which additional efforts will be needed to reduce nitrogen loadings

- ✓ Identification and prioritization of areas that should be sewered with nitrogen removal

4.7 ACCABONAC HARBOR

The estimated watershed for Accabonac Harbor is presented on Figure 4-10 with Watershed statistics presented on Table 4-3.

Table 4-3 Accabonac Harbor Watershed Statistics

Accabonac Harbor									
No. of Properties & % of Total			Total Area (acres) & % of Total				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
1,261	363	1,624	1,190	1,118	299	2,606	367,139	3,775,817	9.72%
78%	22%		46%	43%	11%				

Figure 4-10 Accabonac Harbor Watershed

4.8 NORTHWEST HARBOR

The estimated watershed for Northwest Harbor is presented on Figure 4-11 with Watershed statistics presented on Table 4-4.

Figure 4-11 Northwest Harbor Watershed

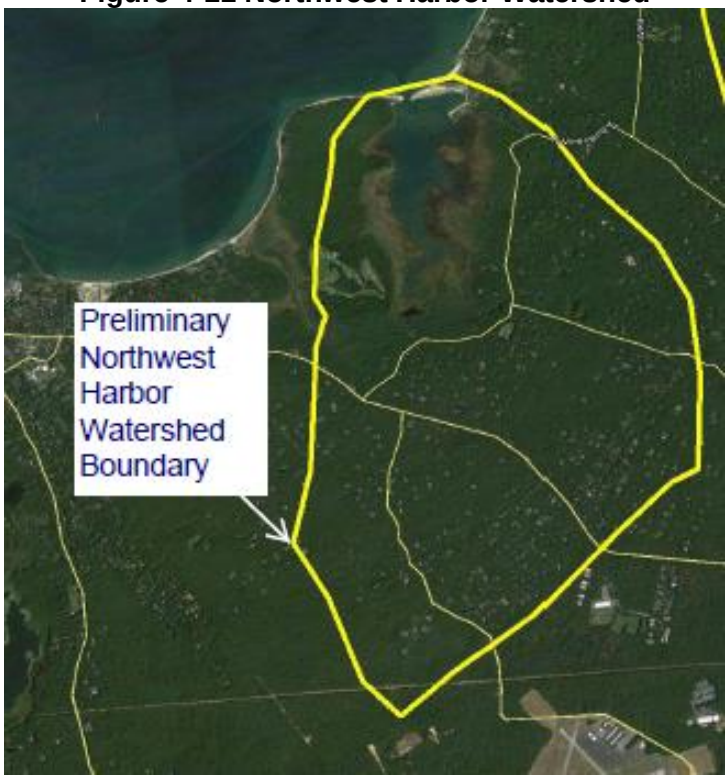


Table 4-4 Northwest Harbor Watershed Statistics

Northwest Harbor									
No. of Properties & % of Total			Total Area (acres) & % of Total				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
605	226	831	1,172	1,305	155	2,633	184,235	4,054,393	4.54%
73%	27%		45%	50%	6%				

4.9 POND WATERSHEDS

Georgica Pond, Hook Pond and Fort Pond have been identified as having water quality degradation due to excessive nutrients. As no watershed studies have been performed on these Ponds to serve as a basis for corrective actions, only generalizations can be made at this time. The groundwater watersheds for Georgica, Hook and Fort Ponds are presented on Figures 4-12, 4-13 and 4-14 respectively.

4.5.1 GEORGICA POND

Georgica Pond watershed statistics are presented on Table 4-5.

Table 4-5 Georgia Pond Watershed Statistics

Georgia Pond & Watershed											
Area	No. of Properties			Total Area (acres)				Pond Shoreline Length (ft.)	Design Wastewater Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
	Dev.	Undev.	Total	Dev.	Undev.	Water	Total				
Town	1,111	312	1,423	1,813	1,187	294	3,293	14,216			
Village	224	78	302	511	141	10	663	30,700			
Total	**1,335**	**390**	**1,725**	**2,324**	**1,328**	**304**	**3,956**	**44,916**	574,892	5,977,015	9.62%
	77%	23%		59%	34%	8%					

The following corrective actions are recommended to address the eutrophic conditions in Georgica Pond:

- Require the use of organic fertilizers in the watershed
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality
- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen and phosphorus removal in the following areas:

    a. Stone Road & Goose Creek Lane - where it is estimated the PRB could remove significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed
    b. Georgica Road and Georgica Close Road where it is estimated the PRB could removal significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed. It is noted that In this area The Nature Conservancy owns lands that may be appropriate for the PRB application.

    As these areas are within the two (2) year travel time to the Pond, the positive impact of the use of the PRB on the Pond's water quality could be noticed fairly quickly.

- Installation of shoreline buffers with native vegetation and infiltration systems to minimize direct runoff into the Pond.
- Septic system upgrades with nutrient removal as best as practical. ***It is noted that the use of the PRB may obviate the need for septic nutrient removal and consequently be very cost-effective.***

Additionally ongoing scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond
- Quantitatively refine nutrient removal requirements

Figure 4-12 Georgica Pond Watershed

4.5.2 HOOK POND

Hook Pond watershed statistics are presented on Table 4-6.

Table 4-6 Hook Pond Watershed Statistics

Hook Pond Watershed										
Area	No. of Properties & %			Total Area (acres) & % of				Design Wastewater Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
	Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
Town	1,114	252	1,366	901	218	84	1,203			
Village	1,171	109	1,280	953	213		1,166			
Total	**2,285**	**361**	**2,646**	**1,854**	**431**	**84**	**2,369**	868,916	3,739,140	23.24%
	86%	14%		78%	18%	4%				

The following corrective actions are recommended to address the eutrophic conditions in Hook Pond:

- Require the use of organic fertilizers in the watershed
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality

Figure 4-13 Hook Pond Watershed

- Demonstration project of the use of the Nitrex™ Permeable Reactive Barrier (PRB) for nitrogen and phosphorus removal in the following areas:

    a. Maidstone Lane where it is estimated that the PRB could removal significant proportion of nitrogen and phosphorus being discharged from Town properties in the western portion of the Pond's watershed.

    b. Village owned properties to the west of Egypt Lane that would treat flows from central portion of the watershed

As these areas are within the two (2) year travel time to the Pond, the positive impact of the use of the PRBs on the Pond's water quality could be noticed fairly quickly.

- Village Business Area Wastewater System will remove significant quantities of nitrogen and phosphorus from the Pond's watershed, as the area drains to Hook Pond
- Maidstone Golf Course maintenance need to ensure grass clippings do not enter Pond and fertilizer are properly being applied
- Septic system upgrades with nutrient removal as best as practical. ***It is noted that the use of the PRB should reduce the need for septic nutrient removal***

Additionally, concurrent scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond
- Quantitatively refine nutrient removal requirements

4.5.3 FORT POND

Fort Pond watershed statistics are presented on Table 4-7.

Table 4-7 Fort Pond Watershed Statistics

Fort Pond Watershed									
No. of Properties & % of Total			Total Area (acres) & % of Total				Design Waste water Flow (gpd)	Ground water from rain (gpd)	Waste water as % of Groundwater Flow from rain
Dev.	Undev.	Total	Dev.	Undev.	Water	Total			
288	92	380	330	46	180	556	191,330	614,768	31.12%
76%	24%		59%	8%	32%				

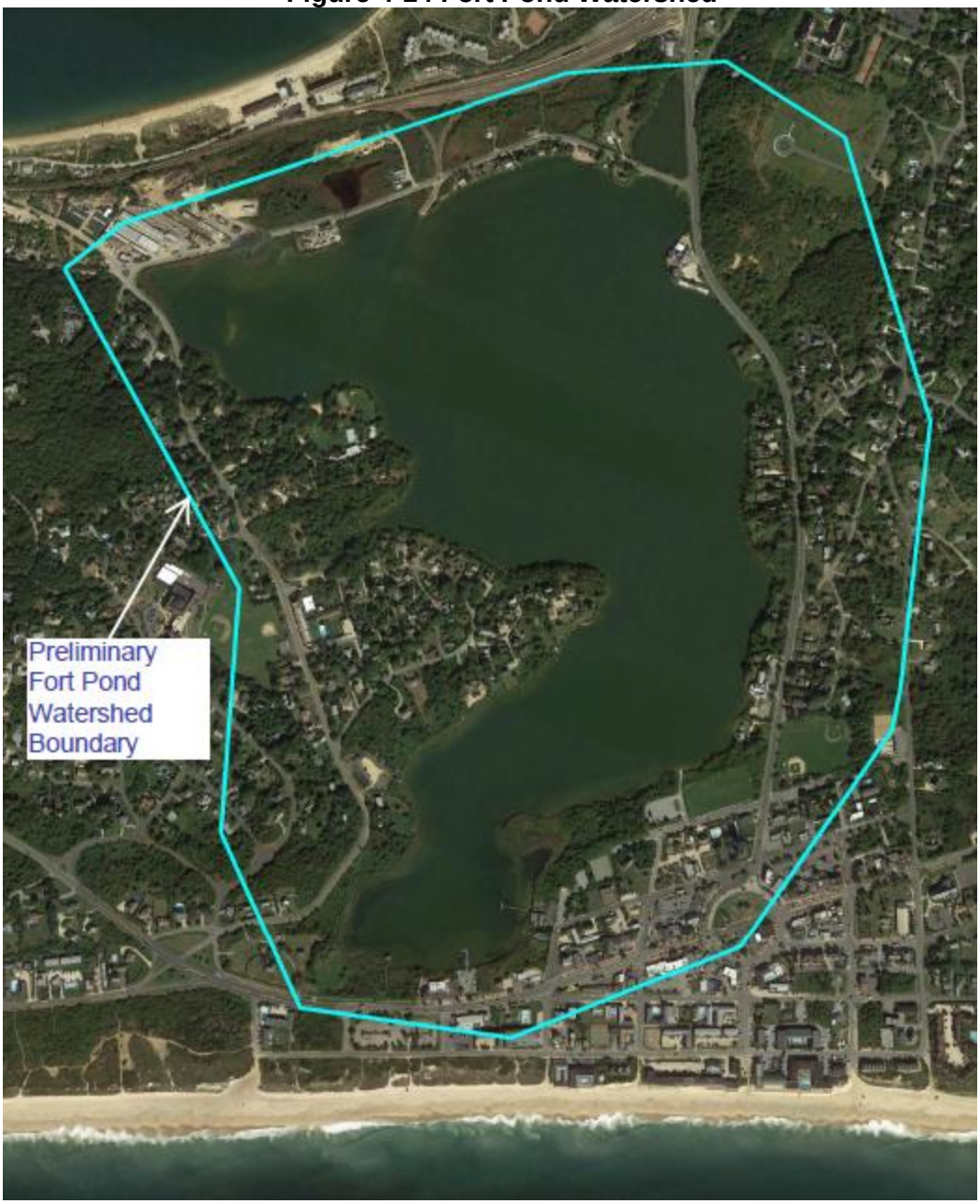
The following corrective actions are recommended to address the eutrophic conditions in Fort Pond:

- Require the use of organic fertilizers in the watershed, especially at ballfields
- Enforce NYS law regarding fertilizer applications near water bodies
- Groundwater modeling and sampling to determine groundwater flow patterns and existing groundwater quality
- Septic system upgrades with nutrient removal especially for commercial properties, such as Surf Lodge, which is on the Pond's shoreline. Montauk school wastewater system may be discharging to Fort Pond and could be a large nutrient source. Sewerage system with discharge outside of watershed may be necessary.
- Montauk Center Wastewater System will remove significant quantities of nitrogen and phosphorus from the Pond's watershed

Additionally ongoing scientific studies are needed to;

- Establish baseline conditions of Pond algae and nutrients, groundwater quality and influence of Pond muds
- Perform a nutrient budget for the Pond
- Quantitatively refine nutrient removal requirements

Figure 4-14 Fort Pond Watershed



4.10 PRB EXAMPLE

Figure 4-15 presents a schematic of the proposed Permeable Reactive Barrier. The term barrier refers to removal of the contaminant as the PRB does not prevent groundwater flow through it. On the contrary groundwater flows preferentially through the PRB.

Figure 4-16 illustrates the dramatic positive impact of a PRB that has been operational on Cape Cod for 9 years.

Figure 4-15 Schematic of Nitrex™ PRB

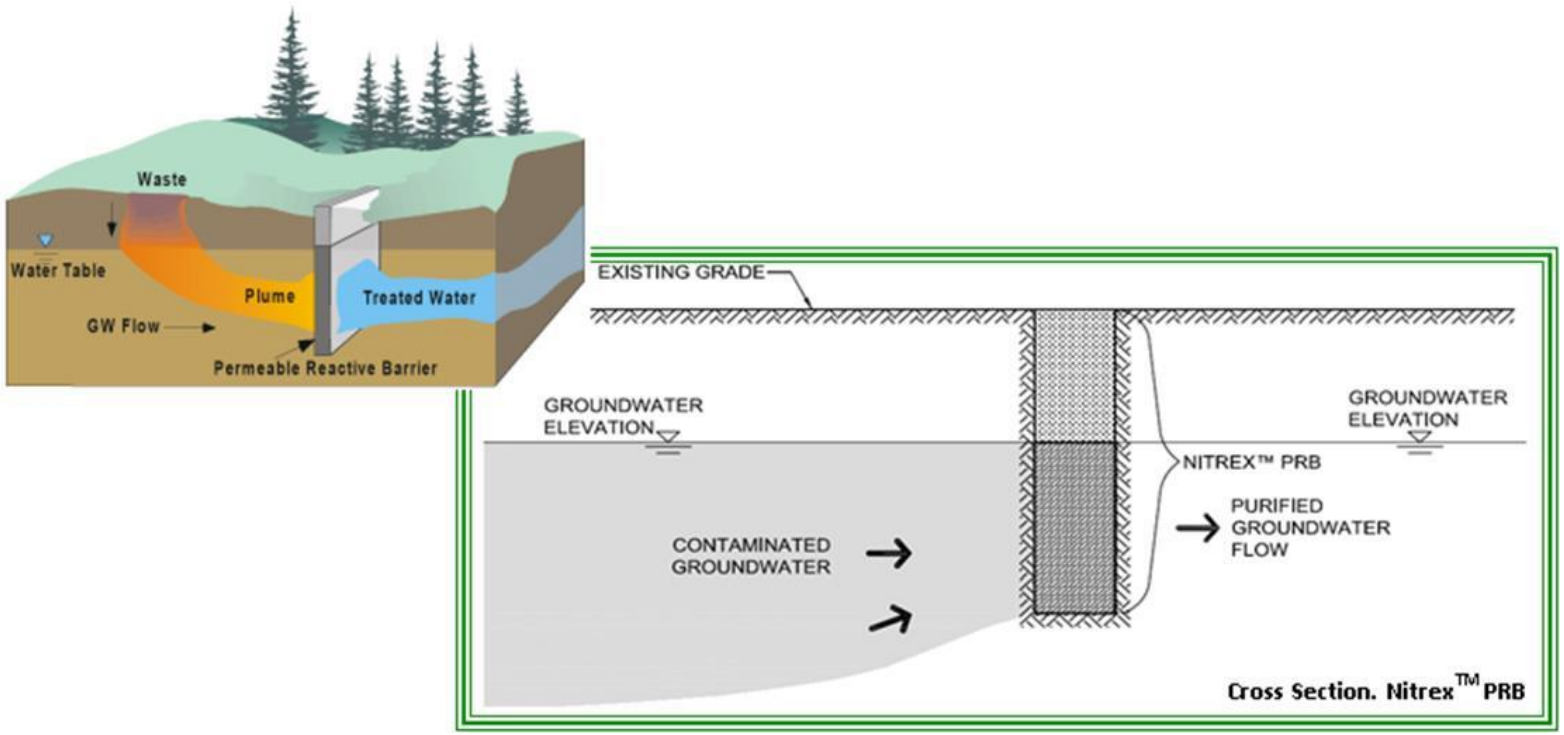
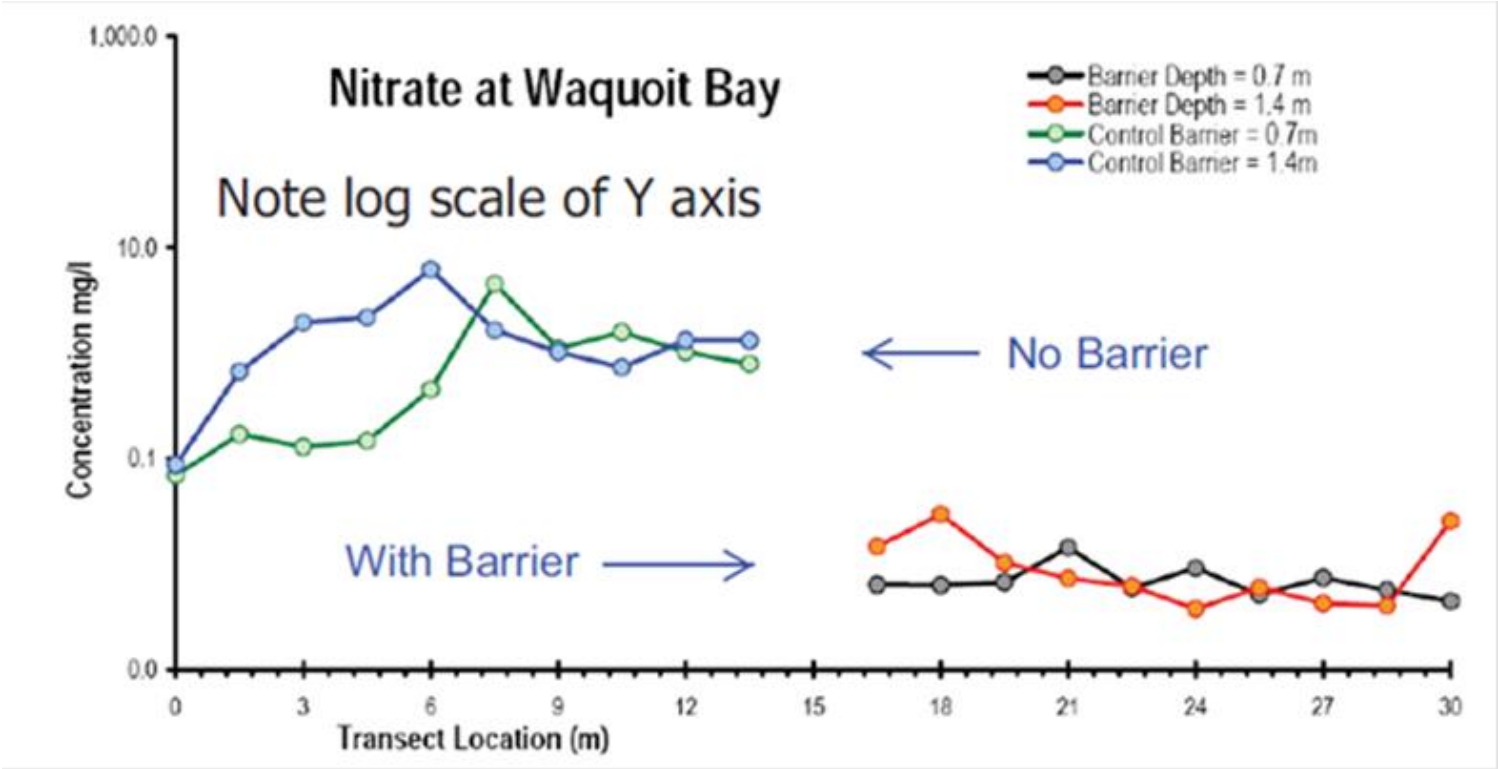


Figure 4-16 Nitrex™ PRB Installed on Waquoit Bay, Cape Cod & Nitrogen Removal Data


Nitrate at Waquoit Bay
Note log scale of Y axis
Barrier Depth = 0.7 m
Barrier Depth = 1.4 m
Control Barrier = 0.7m
Control Barrier = 1.4m
No Barrier
With Barrier
Concentration mg/l
1,000.0
10.0
0.1
0.0
0
3
6
9
12
15
18
21
24
27
30
Transect Location (m)

APPENDICES

Appendix	Description
A	Commercial Property Data
B	Transient Housing Data
C	Aggregate Flows for Commercial Properties
D	Listing of All Commercial Properties in East Hampton
E	SCDHS Water Quality Data – Lake Montauk, Napeague Harbor, Accabonac Harbor, 3 Mile Harbor And Northwest Harbor

APPENDIX A COMMERCIAL PROPERTY DATA

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300005000400016000	548 W LAKE DR	SAIL INN	Winter(1booth 4-Pool table)	2	Bar / Patio	35	15.0	525
0300005000400016000	548 W LAKE DR	SAIL INN	Summer (w/4 booths of 4)	2	Bar / Patio	42	15.0	630
0300005000500002001	433 W LAKE DR	KENNY'S TIPPERARY INN	Patio	2	Bar / Patio	55	15.0	825
0300005000500002001	433 W LAKE DR	KENNY'S TIPPERARY INN	Lower Dining Room	1	Dining room	48	30.0	1,440
0300005000500002001	433 W LAKE DR	MANUCCI'S	SMALL DINING ROOM	1	Dining room	29	30.0	870
0300005000500002001	433 W LAKE DR	MANUCCI'S	DECK	2	Bar / Patio	28	15.0	420
0300005000500002001	433 W LAKE DR	MANUCCI'S	LOWER DINING ROOM	1	Dining room	42	30.0	1,260
0300005000500002001	433 W LAKE DR	MANUCCI'S	BAR AREA	2	Bar / Patio	45	15.0	675
0300006000100008000	500 W LAKE DR	GOSMAN'S RESTAURANT	N. Dining Room	1	Dining room	124	30.0	3,720
0300006000100008000	500 W LAKE DR	GOSMAN'S RESTAURANT	Upper Dining Room	1	Dining room	114	30.0	3,420
0300006000100008000	500 W LAKE DR	GOSMAN'S RESTAURANT	Bar	2	Bar / Patio	47	15.0	705
0300006000100008000	500 W LAKE DR	GOSMAN'S RESTAURANT	Lower Dining Room	1	Dining room	156	30.0	4,680
0300006000100029000	482 W LAKE DR	DOCK RESTAURANT	Dining Room	1	Dining room	52	30.0	1,560
0300006000100030001	484 W LAKE DR	GOSMAN'S CLAM BAR	1st Floor	1	Dining room	78	30.0	2,340
0300006000100030001	484 W LAKE DR	GOSMAN'S CLAM BAR	2nd Floor	1	Dining room	109	30.0	3,270
0300006000200003001	541 E LAKE DR	INLET SEAFOOD	Dining Room/Bar	1	Dining room	96	30.0	2,880
0300006000200003001	541 E LAKE DR	INLET SEAFOOD	Exterior Deck off Dining Room	2	Bar / Patio	44	15.0	660
0300006000200003001	541 E LAKE DR	INLET SEAFOOD	Exterior Deck off Bar	2	Bar / Patio	31	15.0	465
0300006000200015001	467 E LAKE DR	FISHBAR	DINING ROOM	1	Dining room	16	30.0	480
0300006000200016000	435 E LAKE DR	RICK'S CRABBY COWBOY	Dining Room	1	Dining room	91	30.0	2,730
0300006000200016000	435 E LAKE DR	RICK'S CRABBY COWBOY	Deck	2	Bar / Patio	95	15.0	1,425
0300006000300006000	478 W LAKE DR	BEN & JERRY'S	Ice Cream Parlor	3	Cafeteria / Catering Hall / Conference Room	22	7.5	165
0300006000300006000	478 W LAKE DR	BEN & JERRY'S	Coffee Shop	3	Cafeteria / Catering Hall / Conference Room	14	7.5	105
0300006000300007000	474 W LAKE DR	SWALLOW EAST	Patio	2	Bar / Patio	58	15.0	870
0300006000300007000	474 W LAKE DR	SWALLOW EAST	Dining Room	1	Dining room	54	30.0	1,620
0300006000300008000	470 W LAKE DR	CLAM & CHOWDER HOUSE @ SALIVARS DOCK	Dining Room	1	Dining room	53	30.0	1,590
0300006000300008000	470 W LAKE DR	CLAM & CHOWDER HOUSE @ SALIVARS DOCK	UPPER DECK	3	Cafeteria / Catering Hall / Conference Room	44	7.5	330
0300006000300008000	470 W LAKE DR	CLAM & CHOWDER HOUSE @ SALIVARS DOCK	LOWER DECK	2	Bar / Patio	45	15.0	675
0300006000300008000	470 W LAKE DR	CLAM & CHOWDER HOUSE @ SALIVARS DOCK	BAR	2	Bar / Patio	65	15.0	975
0300006000300008000	470 W LAKE DR	CLAM & CHOWDER HOUSE @ SALIVARS DOCK	DINING ROOM & COUNTER	1	Dining room	48	30.0	1,440
0300006000300009000	466 W LAKE DR	DAVE'S GRILL	Dining Room	1	Dining room	47	30.0	1,410
0300006000300009000	466 W LAKE DR	DAVE'S GRILL	Deck	2	Bar / Patio	27	15.0	405
0300006000300014000	448 W LAKE DR	SAMMY'S	Dining Room	1	Dining room	71	30.0	2,130
0300006000300016000	440 W LAKE DR	CROSS EYED CLAM	BAR AREA	2	Bar / Patio	32	15.0	480
0300006000300016000	440 W LAKE DR	CROSS EYED CLAM	Dining Room	1	Dining room	36	30.0	1,080
0300006000300016000	440 W LAKE DR	LUCKY J'S	DINING	1	Dining room	22	30.0	660
0300006000300026000	408 W LAKE DR	LIAR'S SALOON	Bar	2	Bar / Patio	21	15.0	315
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	BREEZES CAFE - INSIDE	1	Dining room	56	30.0	1,680
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	FISHER ROOM	3	Cafeteria / Catering Hall / Conference Room	39	7.5	293

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	COHI ROOM	1	Dining room	21	30.0	630
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	Conference room	3	Cafeteria / Catering Hall / Conference Room	15	7.5	113
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	BARUCH ROOM	1	Dining room	45	30.0	1,350
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	Lighthouse Bar	2	Bar / Patio	21	15.0	315
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	Look Out Room	3	Cafeteria / Catering Hall / Conference Room	16	7.5	120
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	EMPLOYEE DINING ROOM	1	Dining room	18	30.0	540
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	ANCHOR ROOM	3	Cafeteria / Catering Hall / Conference Room	21	7.5	158
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	NORTH FORTY/MORGAN ROOM	3	Cafeteria / Catering Hall / Conference Room	20	7.5	150
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	PILOT HOUSE	2	Bar / Patio	21	15.0	315
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	WATER SIDE BALLROOM	3	Cafeteria / Catering Hall / Conference Room	148	7.5	1,110
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	TURTLE ROOM	3	Cafeteria / Catering Hall / Conference Room	91	7.5	683
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	BREEZES CAFE - DECK	1	Dining room	75	30.0	2,250
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	Main	3	Cafeteria / Catering Hall / Conference Room	189	7.5	1,418
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	COHI BAR	2	Bar / Patio	31	15.0	465
0300006000400009000	32 STAR ISLAND RD	MONTAUK YACHT CLUB	LIGHTHOUSE GRILL	1	Dining room	73	30.0	2,190
0300006000400017000	58 STAR ISLAND RD	MONTAUK YACHT CLUB	Club Room	1	Dining room	56	30.0	1,680
0300012000100005000	352 W LAKE DR	WEST LAKE FISH HOUSE	RESTAURANT	1	Dining room	48	30.0	1,440
0300012000100005000	352 W LAKE DR	WEST LAKE FISH HOUSE	Patio	2	Bar / Patio	29	15.0	435
0300013000300026001	211 E LAKE DR	MONTAUK LAKE CLUB	Conference Room	3	Cafeteria / Catering Hall / Conference Room	24	7.5	180
0300013000300026001	211 E LAKE DR	MONTAUK LAKE CLUB	Enclosed Patio	2	Bar / Patio	18	15.0	270
0300013000300026001	211 E LAKE DR	MONTAUK LAKE CLUB	Lounge	3	Cafeteria / Catering Hall / Conference Room	22	7.5	165
0300013000300026001	211 E LAKE DR	MONTAUK LAKE CLUB	Bar	2	Bar / Patio	22	15.0	330
0300013000300026001	211 E LAKE DR	MONTAUK LAKE CLUB	Dining Room	1	Dining room	53	30.0	1,590
0300015000100007000	MIDLAND RD	MONTAUK POINT STATE PARK RESTAURANT	Dining Room	1	Dining room	39	30.0	1,170
0300015000100009000	2000 MONTAUK HWY	MONTAUK LIGHTHOUSE	Cellar	6	ft2 Based Use	26	1.0	26
0300015000100009000	2000 MONTAUK HWY	MONTAUK LIGHTHOUSE	1st Floor	5	Bath house / Comfort station	88	5.0	440
0300015000100009000	2000 MONTAUK HWY	MONTAUK LIGHTHOUSE	Tower	6	ft2 Based Use	15	1.0	15
0300016000200015000	240 EDGEMERE ST	TOWN OF EAST HAMPTON	Dining Room	1	Dining room	60	30.0	1,800
0300016000200015000	240 EDGEMERE ST	TOWN OF EAST HAMPTON	DAY ROOM	6	ft2 Based Use	42	1.0	42
0300016000200015000	240 EDGEMERE ST	TOWN OF EAST HAMPTON	Gym	6	ft2 Based Use	388	1.0	388
0300016000200015000	240 EDGEMERE ST	TOWN OF EAST HAMPTON	Fit Center	6	ft2 Based Use	18	1.0	18
0300016000200015000	240 EDGEMERE ST	TOWN OF EAST HAMPTON	CAFETERIA	3	Cafeteria / Catering Hall / Conference Room	63	7.5	473
0300016000200024004	12 FLAMINGO AVE	MONTAUK FIRE DISTRICT	Member's Rooom	3	Cafeteria / Catering Hall / Conference Room	59	7.5	443
0300016000200024004	12 FLAMINGO AVE	MONTAUK FIRE DISTRICT	Main Room	3	Cafeteria / Catering Hall / Conference Room	139	7.5	1,043
0300016000200024004	12 FLAMINGO AVE	MONTAUK FIRE DISTRICT	Conference Room	3	Cafeteria / Catering Hall / Conference Room	46	7.5	345
0300016000200038000	240 FORT POND RD	WASH OUT RESTAURANT & LOUNGE	Dining Rooom	1	Dining room	187	30.0	5,610
0300017000100006000	88 FIRESTONE RD	MONTAUKET	Lobby	6	ft2 Based Use	23	1.0	23
0300017000100006000	88 FIRESTONE RD	MONTAUKET	Dining Room	1	Dining room	92	30.0	2,760
0300019000900005000	42 S FAIRVIEW AVE	MONTAUK DOWNS STATE PARK	Dining Room	1	Dining room	180	30.0	5,400
0300019000900005000	42 S FAIRVIEW AVE	MONTAUK DOWNS STATE PARK	Dining Room	1	Dining room	73	30.0	2,190
0300027000200002001	16 NAVY RD	NAVY BEACH	Bar	2	Bar / Patio	29	15.0	435

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300027000200002001	16 NAVY RD	NAVY BEACH	Dining Room	1	Dining room	81	30.0	2,430
0300027000300014000	183 S EDGEMERE ST	SURF LODGE, LLC	BEACH AREA	5	Bath house / Comfort station	200	5.0	1,000
0300027000300014000	183 S EDGEMERE ST	SURF LODGE, LLC	DECK	2	Bar / Patio	112	15.0	1,680
0300027000300014000	183 S EDGEMERE ST	SURF LODGE, LLC	DINING ROOM	1	Dining room	134	30.0	4,020
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	Bar	2	Bar / Patio	28	15.0	420
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	Dining Room	1	Dining room	72	30.0	2,160
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	SANDBOX	1	Dining room	227	30.0	6,810
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	BLEACHERS	1	Dining room	154	30.0	4,620
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	ELECTRIC EEL ROOM	1	Dining room	48	30.0	1,440
0300027000400027000	161 SECOND HOUSE RD	RUSCHMEYER'S RESTAURANT	BREAKFAST NOOK	1	Dining room	21	30.0	630
0300027000400030000	134 SECOND HOUSE RD	PATHFINDER COUNTRY DAY CAMP	Main Room	3	Cafeteria / Catering Hall / Conference Room	72	7.5	540
0300027000400031000	128 SECOND HOUSE RD	EAST HAMPTON TOWN	MAIN ROOM	3	Cafeteria / Catering Hall / Conference Room	44	7.5	330
0300027020100001000	236 EDGEMERE ST	TRE' BELLA	Dining Room	1	Dining room	40	30.0	1,200
0300032000100008002	91 S FULTON ST	TOWN OF EAST HAMPTON	Main room	3	Cafeteria / Catering Hall / Conference Room	25	7.5	188
0300032000300013005	4 OLD WEST LAKE DR	SALT BEACH	Lower Dining Room	1	Dining room	38	30.0	1,140
0300032000300013005	4 OLD WEST LAKE DR	SALT BEACH	UPPER DINING ROOM	1	Dining room	75	30.0	2,250
0300032000600018000	100 DEFOREST ROAD	MONTAUK SHORES CONDOMINIUMS	Second Floor	3	Cafeteria / Catering Hall / Conference Room	50	7.5	375
0300032000600018000	100 DEFOREST ROAD	MONTAUK SHORES CONDOMINIUMS	Rec Hall	3	Cafeteria / Catering Hall / Conference Room	101	7.5	758
0300037000200001000	103 FLAGGY HOLE RD	CAMP BLUE BAY	CAMP BLDG	4	Campground	195	15.0	2,925
0300037000200001000	103 FLAGGY HOLE RD	CAMP BLUE BAY	Room	3	Cafeteria / Catering Hall / Conference Room	49	7.5	368
0300038000400002000	28 MAIDSTONE PARK RD	MICHAEL'S MAIDSTONE BAR AND RESTAURANT	Dining Room	1	Dining room	76	30.0	2,280
0300048000300043000	659 MONTAUK HWY	PUFF N PUTT	Video Room	6	ft2 Based Use	17	1.0	17
0300048000300048000	11 S EMERY ST	HARVEST ON FORT POND	Dining Room	1	Dining room	99	30.0	2,970
0300048000500037001	90 SECOND HOUSE RD	BACKYARD RESTAURANT	Pool Side	5	Bath house / Comfort station	42	5.0	210
0300048000500037001	90 SECOND HOUSE RD	BACKYARD RESTAURANT	North Patio	2	Bar / Patio	26	15.0	390
0300048000500037001	90 SECOND HOUSE RD	BACKYARD RESTAURANT	Main Dining Room	1	Dining room	53	30.0	1,590
0300048000500037001	90 SECOND HOUSE RD	SOLE EAST	MOVIE ROOM	7	Theater	54	3.0	162
0300049000100008000	63 S EUCLID AVE	TRAIL'S END	Dining Room	1	Dining room	56	30.0	1,680
0300049000100022000	99 THE PLAZA	O'MURPHY'S PUB	Dining Room	1	Dining room	67	30.0	2,010
0300049000100028000	779 MONTAUK HWY	M.T.K. CAFE	Front Dining Room	1	Dining room	26	30.0	780
0300049000100028000	779 MONTAUK HWY	M.T.K. CAFE	Rear Dining Room	1	Dining room	19	30.0	570
0300049000100028000	779 MONTAUK HWY	M.T.K. CAFE	Counter Area	3	Cafeteria / Catering Hall / Conference Room	16	7.5	120
0300049000100029000	781 MONTAUK HWY	SAUSAGES	Dining Room	1	Dining room	28	30.0	840
0300049000200013000	850 MONTAUK HWY	MONTAUK COMMUNITY CHURCH	Dining room	8	Church - Main Room	85	4.0	340
0300049000200013000	850 MONTAUK HWY	ST. THERESE'S CHURCH	Church	8	Church - Main Room	638	4.0	2,552
0300049000300001002	15 S EDGEMERE ST	THE MOVIE	Theater	7	Theater	212	3.0	636
0300049000300014000	41 S EUCLID AVE	THE COAST	WEST DINING	1	Dining room	42	30.0	1,260
0300049000300014000	41 S EUCLID AVE	THE COAST	EAST DINING	1	Dining room	61	30.0	1,830
0300049000300027001	695 MONTAUK HWY	THE POINT	BAR/GRILL	2	Bar / Patio	156	15.0	2,340
0300049000300027001	695 MONTAUK HWY	THE POINT	Restaurant	1	Dining room	73	30.0	2,190

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300049000300027001	695 MONTAUK HWY	THE POINT	Dining Room	1	Dining room	110	30.0	3,300
0300049000300032000	721 MONTAUK HWY	JOHN'S PANCAKE HOUSE	Dining Room	1	Dining room	49	30.0	1,470
0300049000400001000	67 S ESSEX ST	ST. THERESE'S SCHOOL	1st Floor	10	Day School / Day Camp	196	7.5	1,470
0300049000400001000	67 S ESSEX ST	ST. THERESE'S SCHOOL	Basement	10	Day School / Day Camp	530	7.5	3,975
0300049000400003000	782 MONTAUK HWY	668 THE GIG SHACK	Front Patio	2	Bar / Patio	20	15.0	300
0300049000400003000	782 MONTAUK HWY	668 THE GIG SHACK	Interior Dining Room	1	Dining room	32	30.0	960
0300049000400003000	782 MONTAUK HWY	668 THE GIG SHACK	Side Patio	2	Bar / Patio	17	15.0	255
0300049000400005000	774 MONTAUK HWY	SHAGWONG TAVERN	East Bar	2	Bar / Patio	40	15.0	600
0300049000400005000	774 MONTAUK HWY	SHAGWONG TAVERN	West Dining Room	1	Dining room	72	30.0	2,160
0300049000400025002	752 MONTAUK HWY	LABRISA	Dining room	1	Dining room	80	30.0	2,400
0300049000400026000	41 THE PLAZA	MUNCH BOX	Dining Room	1	Dining room	35	30.0	1,050
0300049000400030000	732 MONTAUK HWY	BLISS	MAIN AREA	3	Cafeteria / Catering Hall / Conference Room	16	7.5	120
0300049000400034000	716 MONTAUK HWY	WOK N ROLL	Dining Room	1	Dining room	44	30.0	1,320
0300049000400035000	710 MONTAUK HWY	CIRCLE RESTAURANT	W. Dining Room	1	Dining room	37	30.0	1,110
0300049000400035000	710 MONTAUK HWY	CIRCLE RESTAURANT	E. Dining Room	1	Dining room	46	30.0	1,380
0300049000400041000	47 S ELMWOOD AVE	BIRD ON THE ROOF	Patio	2	Bar / Patio	26	15.0	390
0300049000400041000	47 S ELMWOOD AVE	BIRD ON THE ROOF	Front Deck	2	Bar / Patio	10	15.0	150
0300049000400047000	83 S ELMWOOD AVE	LOVE A YOGA SPACE	EXERCISE STUDIO	6	ft2 Based Use	16	1.0	16
0300049000600016000	155 S EMERSON AVE	DOUBLE K MANAGEMENT	Church	8	Church - Main Room	48	4.0	192
0300050000100001000	677 MONTAUK HWY	JOHN'S DRIVE-IN	Dining Room	1	Dining room	58	30.0	1,740
0300050000100003000	692 MONTAUK HWY	MEMORY MOTEL	Bar (Including Stage)	2	Bar / Patio	121	15.0	1,815
0300050000100005000	15 S EMBASSY ST	PIZZA VILLAGE	Dining Room	1	Dining room	49	30.0	1,470
0300050000100010000	6 ELMWOOD	CONCERNED CITIZENS OF MONTAUK/OFFICE	Yoga Studio	6	ft2 Based Use	13	1.0	13
0300050000100010000	6 S ELMWOOD AVE	EAST HAMPTON PHYSICAL THERAPY	STUDIO	6	ft2 Based Use	13	1.0	13
0300050000100011000	4 S ELMWOOD AVE	ZUM SCHNEIDER MONTAUK	SMALL DINING ROOM	1	Dining room	12	30.0	360
0300050000100011000	4 S ELMWOOD AVE	ZUM SCHNEIDER MONTAUK	Bar Area	2	Bar / Patio	35	15.0	525
0300050000100011000	4 S ELMWOOD AVE	ZUM SCHNEIDER MONTAUK	LARGE DINING ROOM	1	Dining room	52	30.0	1,560
0300050000200003000	44 S ELMWOOD AVE	BUSY BODIES EXERCISE STUDIO	Studio	6	ft2 Based Use	41	1.0	41
0300050000200021000	148 S EMERSON AVE	SLOPPY TUNA	RICK'S ROOF DECK - INSIDE	2	Bar / Patio	153	15.0	2,295
0300050000200021000	148 S EMERSON AVE	SLOPPY TUNA	RICK'S ROOF DECK - OUTSIDE	2	Bar / Patio	111	15.0	1,665
0300050000200021000	148 S EMERSON AVE	SLOPPY TUNA	TUNA CAN	3	Cafeteria / Catering Hall / Conference Room	266	7.5	1,995
0300050000200021000	148 S EMERSON AVE	SLOPPY TUNA	BEACH BAR	5	Bath house / Comfort station	303	5.0	1,515
0300050000200026001	108 S EMERSON AVE	OCEAN BEACH RESORT	Pool area	5	Bath house / Comfort station	69	5.0	345
0300052000100001001	55 S EDGEMERE ST	EAST BY NORTHEAST	Restaurant	1	Dining room	215	30.0	6,450
0300057000600027001	39 GANN RD	BAY KITCHEN & BAR	WATER SIDE DECK	2	Bar / Patio	50	15.0	750
0300057000600027001	39 GANN RD	BAY KITCHEN & BAR	DINING ROOM/BAR	1	Dining room	66	30.0	1,980
0300057000600027001	39 GANN RD	BAY KITCHEN & BAR	SOUTH DECK	2	Bar / Patio	38	15.0	570
0300058000200011001	19 FORT POND BLVD	WOLFIE'S TAVERN	Dining Room	1	Dining room	63	30.0	1,890
0300062000200018002	179 FORT POND BLVD	SPRINGS FIRE DISTRICT	Meeting Hall	3	Cafeteria / Catering Hall / Conference Room	196	7.5	1,470
0300062000200018002	179 FORT POND BLVD	SPRINGS FIRE DISTRICT	Members Lounge	3	Cafeteria / Catering Hall / Conference Room	143	7.5	1,073

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300062000300023000	841 FIREPLACE RD	SPRINGS PIZZA	Dining Room	1	Dining room	28	30.0	840
0300063000500006000	802 FIREPLACE RD	SPRINGS COMMUNITY PRESBYTERIAN CHURCH	Community Room	3	Cafeteria / Catering Hall / Conference Room	84	7.5	630
0300071000200007000	685 OLD MONTAUK HWY	SURFSIDE INN	Bar Area	2	Bar / Patio	46	15.0	690
0300071000200007000	685 OLD MONTAUK HWY	SURFSIDE INN	Dining Room	1	Dining room	60	30.0	1,800
0300075000100028005	313 THREE MI HBR HOG CRK HWY	HARBOR BISTRO	Deck	2	Bar / Patio	75	15.0	1,125
0300075000100028005	313 THREE MI HBR HOG CRK HWY	HARBOR BISTRO	Dining Room	1	Dining room	58	30.0	1,740
0300075000100028005	313 THREE MI HBR HOG CRK HWY	HARBOR BISTRO	Bar	2	Bar / Patio	27	15.0	405
0300075000100029000	295 THREE MI HBR HOG CRK HWY	EAST HAMPTON POINT	2nd Floor Dining Room	1	Dining room	60	30.0	1,800
0300075000100029000	295 THREE MI HBR HOG CRK HWY	EAST HAMPTON POINT	Fitness Room	6	ft2 Based Use	37	1.0	37
0300075000100029000	295 THREE MI HBR HOG CRK HWY	EAST HAMPTON POINT	2nd Floor Deck	2	Bar / Patio	28	15.0	420
0300075000100029000	295 THREE MI HBR HOG CRK HWY	EAST HAMPTON POINT	Brick Patio/Exterior Deck	2	Bar / Patio	212	15.0	3,180
0300075000100029000	295 THREE MI HBR HOG CRK HWY	EAST HAMPTON POINT	Main Dining Room	1	Dining room	137	30.0	4,110
0300080000100003000	780 FIREPLACE RD	ASHWAGH HALL	Hall	3	Cafeteria / Catering Hall / Conference Room	97	7.5	728
0300080000300014000	48 SCHOOL ST	SPRINGS UFSD	GYM	6	ft2 Based Use	349	1.0	349
0300080000300026000	60 OLD STONE HWY	EAST HAMPTON TOWN	MEETING HALL	3	Cafeteria / Catering Hall / Conference Room	103	7.5	773
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Cafe Monte	1	Dining room	36	30.0	1,080
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Sr. Francis Drake B	3	Cafeteria / Catering Hall / Conference Room	25	7.5	188
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Sr. Francis Drake C	3	Cafeteria / Catering Hall / Conference Room	25	7.5	188
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Conference Room	3	Cafeteria / Catering Hall / Conference Room	50	7.5	375
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Floor Exercise Room	6	ft2 Based Use	50	1.0	50
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Sr. Francis Drake A	3	Cafeteria / Catering Hall / Conference Room	25	7.5	188
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	BAR	2	Bar / Patio	36	15.0	540
0300087000300028001	290 OLD MONTAUK HWY	GURNEY'S	Skipper's Dining Room	1	Dining room	185	30.0	5,550
0300103000600023000	465 OLD STONE HWY	ST. PETER'S CHAPEL	Main room	8	Church - Main Room	56	4.0	224
0300103000600023000	465 OLD STONE HWY	ST. PETER'S CHAPEL	Meeting room	9	Church - Meeting Room	29	5.0	145
0300108000200005000	64 CRASSEN BLVD	NAPEAGUE MOBILE HOME PARK	South Room	3	Cafeteria / Catering Hall / Conference Room	20	7.5	150
0300108000200005000	64 CRASSEN BLVD	NAPEAGUE MOBILE HOME PARK	North Room	2	Bar / Patio	16	15.0	240
0300109000100021000	110 NAPEAGUE MEADOW RD	ART BARGE	1st Floor	6	ft2 Based Use	62	1.0	62
0300109000100021000	110 NAPEAGUE MEADOW RD	ART BARGE	2nd Floor	6	ft2 Based Use	63	1.0	63
0300109000200012001	2095 MONTAUK HWY	SHARE HOUSE RESTAURANT	BAR/FRONT DINING ROOM	1	Dining room	54	30.0	1,620
0300109000200012001	2095 MONTAUK HWY	SHARE HOUSE RESTAURANT	REAR DINING ROOM	1	Dining room	41	30.0	1,230
0300110000100010000	2167 MONTAUK HWY	CYRIL'S FISH HOUSE	Enclosed Patio	2	Bar / Patio	16	15.0	240
0300110000100010000	2167 MONTAUK HWY	CYRIL'S FISH HOUSE	Patio	2	Bar / Patio	20	15.0	300
0300110000100010000	2167 MONTAUK HWY	CYRIL'S FISH HOUSE	Dining Room	1	Dining room	26	30.0	780
0300110000100013000	2178 MONTAUK HWY	DRIFTWOOD	East Bldg	6	ft2 Based Use	50	1.0	50
0300111000100001015	ROUTE 114	SAG HARBOR GOLF CLUB	Dining Room	1	Dining room	36	30.0	1,080
0300119000500008004	281 SPRINGS FIREPLACE RD	LEON BEAUTY SALON	Dining Area	1	Dining room	0	30.0	0
0300119000500008004	281 SPRINGS FIREPLACE RD	MONTOYA COMMUNICATIONS	Dining Area	1	Dining room	0	30.0	0
0300119000500008004	281 SPRINGS FIREPLACE RD	PEPPERONI'S PIZZA	Dining Area	1	Dining room	19	30.0	570
0300119000500008004	281 SPRINGS FIREPLACE RD	RIGHT COAST PRODUCTION	Dining Area	1	Dining room	0	30.0	0

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300119000500008004	281 SPRINGS FIREPLACE RD	SPRINKLES	Dining Area	1	Dining room	0	30.0	0
0300119000500008004	281 SPRINGS FIREPLACE RD	YELLOW BIRD COMPLEX	Dining Area	1	Dining room	0	30.0	0
0300120000200004002	367 THREE MILE HARBOR RD	HARBOR GRILL	SOUTH DINING ROOM	1	Dining room	42	30.0	1,260
0300120000200004002	367 THREE MILE HARBOR RD	HARBOR GRILL	BAR AREA	2	Bar / Patio	28	15.0	420
0300120000200004002	367 THREE MILE HARBOR RD	HARBOR GRILL	NORTH DINING ROOM	1	Dining room	26	30.0	780
0300127000300016000	82 BENDIGO RD	DEVON YACHT CLUB	Dining Room	1	Dining room	131	30.0	3,930
0300127000300016000	82 BENDIGO RD	DEVON YACHT CLUB	Brick Patio/Exterior Deck	2	Bar / Patio	212	15.0	3,180
0300130000200001000	1980 MONTAUK HWY	LOBSTER ROLL	Enclosed Patio	2	Bar / Patio	72	15.0	1,080
0300130000200001000	1980 MONTAUK HWY	LOBSTER ROLL	Rear Deck	2	Bar / Patio	27	15.0	405
0300130000200001000	1980 MONTAUK HWY	LOBSTER ROLL	Inside	1	Dining room	62	30.0	1,860
0300139000300019012	BARBOUR ST	WHALEBONE VILLAGE APTS.	Community Room	3	Cafeteria / Catering Hall / Conference Room	44	7.5	330
0300149000300002002	281 ABRAHAMS PATH	EAST HAMPTON GOLF	Lounge	3	Cafeteria / Catering Hall / Conference Room	57	7.5	428
0300149000300002002	281 ABRAHAMS PATH	EAST HAMPTON GOLF	Dining Room	1	Dining room	69	30.0	2,070
0300149000300002002	281 ABRAHAMS PATH	EAST HAMPTON GOLF	Men's Lounge	3	Cafeteria / Catering Hall / Conference Room	55	7.5	413
0300150000300008001	730 OLD STONE HWY	SOUTH FORK COUNTRY CLUB	Club House	1	Dining room	125	30.0	3,750
0300150000500028004	521 MONTAUK HWY	VILLA BAR & GRILL	DINING ROOM	1	Dining room	116	30.0	3,480
0300156000100004002	500 ROUTE 114	EAST END CHURCH OF CHRIST	Nave	7	Theater	133	3.0	399
0300156000100009002	20 GOODFRIEND DR	ROSS SCHOOL	BASEMENT	6	ft2 Based Use	93	1.0	93
0300156000100009002	20 GOODFRIEND DR	ROSS SCHOOL	TENNIS PAVILLION	6	ft2 Based Use	100	1.0	100
0300161000300027000	37 THREE MILE HARBOR RD	MARTIAL ARTS CENTER	Cellar	6	ft2 Based Use	15	1.0	15
0300161000300027000	37 THREE MILE HARBOR RD	MARTIAL ARTS CENTER	1ST FLOOR GYM	6	ft2 Based Use	36	1.0	36
0300161000400009000	44 THREE MILE HARBOR RD	SIENNA RESTAURANT	Front Exterior Patio	2	Bar / Patio	38	15.0	570
0300161000400009000	44 THREE MILE HARBOR RD	SL EAST	CLUB	2	Bar / Patio	218	15.0	3,270
0300161000400009000	44 THREE MILE HARBOR RD	SL EAST	Rear Patio	2	Bar / Patio	81	15.0	1,215
0300162000200006001	219 ACCABONAC RD	WINDMILL VILLAGE II	Community Center	3	Cafeteria / Catering Hall / Conference Room	20	7.5	150
0300162000500001000	128 SPRINGS FIREPLACE RD	TOWN OF EAST HAMPTON	Rec Room	3	Cafeteria / Catering Hall / Conference Room	43	7.5	323
0300162000500001000	128 SPRINGS FIREPLACE RD	TOWN OF EAST HAMPTON	Dining Room	1	Dining room	84	30.0	2,520
0300162000500021001	207 ACCABONAC RD	WINDMILL VILLAGE I	Club Room	1	Dining room	20	30.0	600
0300162000500025000	60 SPINNER LN	CALVARY BAPTIST CHURCH	Basement	6	ft2 Based Use	83	1.0	83
0300163000700020000	136 N MAIN ST	NICK & TONI'S	SW Dining Room	1	Dining room	40	30.0	1,200
0300163000700020000	136 N MAIN ST	NICK & TONI'S	NE Dining Room	1	Dining room	47	30.0	1,410
0300163000700023001	130 N MAIN ST	HUDSON CITY SAVINGS BANK	Large Dining Room	1	Dining room	60	30.0	1,800
0300163000700023001	130 N MAIN ST	HUDSON CITY SAVINGS BANK	Middle Dining Room	1	Dining room	44	30.0	1,320
0300166000300009000	385 ABRAHAMS PATH	SPORTIME MULTI-SPORT ARENA	Temporary Spectator Area	6	ft2 Based Use	245	1.0	245
0300166000300009000	385 ABRAHAMS PATH	SPORTIME MULTI-SPORT ARENA	Player Area	5	Bath house / Comfort station	328	5.0	1,640
0300170000200001000	15 MONTAUK HWY	AMERICAN LEGION POST 419	Bar	2	Bar / Patio	36	15.0	540
0300170000200001000	15 MONTAUK HWY	AMERICAN LEGION POST 419	Members Lounge	3	Cafeteria / Catering Hall / Conference Room	50	7.5	375
0300170000200001000	15 MONTAUK HWY	AMERICAN LEGION POST 419	Meeting Room	3	Cafeteria / Catering Hall / Conference Room	208	7.5	1,560
0300170000400018000	40 MONTAUK HWY	ZAKURA JAPANESE RESTAURANT INC	EAST DINING ROOM	1	Dining room	62	30.0	1,860
0300170000400018000	40 MONTAUK HWY	ZAKURA JAPANESE RESTAURANT INC	WEST DINING ROOM	1	Dining room	37	30.0	1,110

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300170000400022001	74 MONTAUK HWY	ART OF EATING	Dining Room	1	Dining room	68	30.0	2,040
0300171000100011000	161 MONTAUK HWY	STEPHEN TALKHOUSE	BACK DECK	2	Bar / Patio	62	15.0	930
0300171000100011000	161 MONTAUK HWY	STEPHEN TALKHOUSE	Bar	2	Bar / Patio	112	15.0	1,680
0300171000100011000	161 MONTAUK HWY	STEPHEN TALKHOUSE	Side Patio	2	Bar / Patio	25	15.0	375
0300171000100014000	177 MAIN ST	INDIAN WELLS TAVERN	DINING ROOM	1	Dining room	94	30.0	2,820
0300171000100015000	195 MAIN ST	D'CANELA RESTAURANT	DINING ROOM	1	Dining room	50	30.0	1,500
0300171000200004000	231 MAIN ST	SOTTO SOPRA	DINING ROOM	1	Dining room	70	30.0	2,100
0300171000200005000	237 MAIN ST	FELICE'S RESTAURANT	Dining Room	1	Dining room	52	30.0	1,560
0300171000200006000	249 MAIN ST	BODY TECH	1st floor	6	ft2 Based Use	52	1.0	52
0300171000200006000	249 MAIN ST	BODY TECH	Cellar	6	ft2 Based Use	46	1.0	46
0300171000300012000	286 MAIN ST	ST. PETER'S CHURCH	Basement	9	Church - Meeting Room	89	5.0	445
0300171000400002000	350 MAIN ST	AMAGANSETT PRESBYTERIAN CHURCH	Church	8	Church - Main Room	224	4.0	896
0300171000500002000	17 MEETING HOUSE LN	AMAGANSETT PRESBYTERIAN CHURCH	1st floor/ Scoville Hall	9	Church - Meeting Room	140	5.0	700
0300171000500002000	17 MEETING HOUSE LN	AMAGANSETT PRESBYTERIAN CHURCH	Basement/ Scoville Hall	9	Church - Meeting Room	137	5.0	685
0300172000200009004	488 MONTAUK HWY	ST. MICHAEL'S SENIOR HOUSING	COMMUNITY CENTER	3	Cafeteria / Catering Hall / Conference Room	168	7.5	1,260
0300172000200009004	488 MONTAUK HWY	ST. MICHAEL'S SENIOR HOUSING	COMMUNITY CENTER	3	Cafeteria / Catering Hall / Conference Room	78	7.5	585
0300172000200009004	488 MONTAUK HWY	ST. MICHAEL'S SENIOR HOUSING	COMMUNITY CENTER	3	Cafeteria / Catering Hall / Conference Room	235	7.5	1,763
0300172001200001000	4 AMAGANSETT SQUARE DR	MEETING HOUSE RESTAURANT	Restaurant	1	Dining room	66	30.0	1,980
0300180000100008005	WAINSCOTT NORTHWEST RD	MAIDSTONE GUN CLUB	Rec Hall	3	Cafeteria / Catering Hall / Conference Room	178	7.5	1,335
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	PRE SCHOOL - HAMPTON KIDS	10	Day School / Day Camp	32	7.5	240
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	TODDLERS- HAMPTON KIDS	10	Day School / Day Camp	30	7.5	225
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	School	10	Day School / Day Camp	118	7.5	885
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	REC HALL - HAMPTON KIDS	3	Cafeteria / Catering Hall / Conference Room	118	7.5	885
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	ART ROOM - HAMPTON KIDS	3	Cafeteria / Catering Hall / Conference Room	24	7.5	180
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	PRE-K ROOM - HAMPTON KIDS	10	Day School / Day Camp	22	7.5	165
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	MOMMY-N-ME ROOM - HAMPTON KIDS	6	ft2 Based Use	25	1.0	25
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	JAM ROOM - HAMPTON KIDS	6	ft2 Based Use	48	1.0	48
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	LOUNGE - HAMPTON KIDS	3	Cafeteria / Catering Hall / Conference Room	62	7.5	465
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	MAIN BLDG - LOUNGE	2	Bar / Patio	37	15.0	555
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	PRE K - HAMPTON KIDS	10	Day School / Day Camp	17	7.5	128
0300181000100005001	175 DANIELS HOLE RD	EAST HAMPTON INDOOR TENNIS	COMPUTER LAB	6	ft2 Based Use	28	1.0	28
0300181000400001002	26 GOODFRIEND DR	ASER CORP	EXERCISE ROOM	6	ft2 Based Use	12	1.0	12
0300183000400001000	178 BUCKSKILL RD	BUCKSKILL RACQUET CLUB	Club Room	1	Dining room	57	30.0	1,710
0300184000100007001	191 BUCKSKILL RD	HAMPTON COUNTRY DAY CAMP	WELCOME CENTER	10	Day School / Day Camp	148	7.5	1,110
0300184000100007001	191 BUCKSKILL RD	HAMPTON COUNTRY DAY CAMP	THEATER	10	Day School / Day Camp	104	7.5	780
0300184000100007001	191 BUCKSKILL RD	HAMPTON COUNTRY DAY CAMP	ACTIVITY ROOM	10	Day School / Day Camp	500	7.5	3,750
0300184000100007001	191 BUCKSKILL RD	HAMPTON COUNTRY DAY CAMP	Club Room	10	Day School / Day Camp	49	7.5	368
0300184000100007001	191 BUCKSKILL RD	HAMPTON COUNTRY DAY CAMP	DINING ROOM	10	Day School / Day Camp	218	7.5	1,635
0300187000300002000	106 N MAIN ST	CURIOSITY	Winter Months (w/1 booth of 4-	6	ft2 Based Use	0	1.0	0
0300187000300002000	106 N MAIN ST	JAMAICA SPECIALTIES	Winter Months (w/1 booth of 4-	6	ft2 Based Use	0	1.0	0

DSBL	LOCATION	BUSINESS	ROOM_NAME	Use Code	Use Name	MAX_OCC UPANCY	WW Flow/ Occupant (gpd)	WW Flow (gpd)
0300187000300002000	106 N MAIN ST	MITAD DEL MUNDO EXPRESS	Winter Months (w/1 booth of 4-	6	ft2 Based Use	0	1.0	0
0300187000300003000	104 N MAIN ST	SERAFINA	Dining Room	1	Dining room	40	30.0	1,200
0300187000300003000	104 N MAIN ST	SERAFINA	PATIO	2	Bar / Patio	45	15.0	675
0300187000300003000	104 N MAIN ST	SERAFINA	Counter Area	3	Cafeteria / Catering Hall / Conference Room	8	7.5	60
0300188000100004000	159 PANTIGO RD	EAST HAMPTON TOWN	PARSONS BARN	6	ft2 Based Use	92	1.0	92
0300188000100004000	159 PANTIGO RD	EAST HAMPTON TOWN	Court Room	6	ft2 Based Use	98	1.0	98
0300188000100004000	159 PANTIGO RD	EAST HAMPTON TOWN	D/C BARN	6	ft2 Based Use	112	1.0	112
0300188000100010000	203 PANTIGO RD	THE GRILL ON PANTIGO	DINING ROOM	1	Dining room	123	30.0	3,690
0300188000100010000	203 PANTIGO RD	THE GRILL ON PANTIGO	EXTERIOR PATIO	2	Bar / Patio	50	15.0	750
0300188000100012000	221 PANTIGO RD	SMOKIN' WOLF	E. Dining Room	1	Dining room	42	30.0	1,260
0300188000100012000	221 PANTIGO RD	SMOKIN' WOLF	W. Dining Room	1	Dining room	42	30.0	1,260
0300188000100018000	277 PANTIGO RD	BOSTWICK'S CHOWDER HOUSE	DINING ROOM	1	Dining room	29	30.0	870
0300188000200005000	250 PANTIGO RD	CRYSTAL ROOM/CRICKET CATERERS	Rear Dining Room	1	Dining room	100	30.0	3,000
0300188000200005000	250 PANTIGO RD	CRYSTAL ROOM/CRICKET CATERERS	Front Dining Room	1	Dining room	48	30.0	1,440
0300189000100001000	341 PANTIGO RD	BERNARD KIEMBOCK	Small Dining Room off Bar	1	Dining room	15	30.0	450
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	West Dining Room	1	Dining room	16	30.0	480
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Courtyard	1	Dining room	19	30.0	570
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Bar	2	Bar / Patio	29	15.0	435
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Main Dining Room	1	Dining room	54	30.0	1,620
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Small Patio	2	Bar / Patio	28	15.0	420
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Large Patio	2	Bar / Patio	76	15.0	1,140
0300189000100001000	341 PANTIGO RD	SPRING CLOSE RESTAURANT	Small Dining Room off Bar	1	Dining room	15	30.0	450
0300191000200001000	INDUSTRIAL RD	PHOENIX HOUSE AT EAST HAMPTON	Dining Room	1	Dining room	57	30.0	1,710
0300192000300005002	7 INDUSTRIAL RD	THE COUNTRY SCHOOL	Rec Room	10	Day School / Day Camp	98	7.5	735
0300192000300043001	75 INDUSTRIAL RD	LTV	Studio 2	6	ft2 Based Use	37	1.0	37
0300192000300043001	75 INDUSTRIAL RD	LTV	STUDIO 3	6	ft2 Based Use	320	1.0	320
0300193000200007012	3 POTTERS LA	GEORGICA ESTATES	Meeting Room	3	Cafeteria / Catering Hall / Conference Room	31	7.5	233
0300197000100038000	378 MONTAUK HWY	SALT AT THE STAR ROOM (ENTERTAINMENT	Star Room - Exterior Patio	2	Bar / Patio	141	15.0	2,115
0300197000100038000	378 MONTAUK HWY	SALT AT THE STAR ROOM (ENTERTAINMENT	Star Room	3	Cafeteria / Catering Hall / Conference Room	191	7.5	1,433
0300197000100038000	378 MONTAUK HWY	SALT AT THE STAR ROOM (ENTERTAINMENT	VIP Area	3	Cafeteria / Catering Hall / Conference Room	22	7.5	165
0300197000100038000	378 MONTAUK HWY	SALT AT THE STAR ROOM (ENTERTAINMENT	Dining Room - Second Floor	1	Dining room	77	30.0	2,310
0300197000100044001	364 MONTAUK HWY	LA CAPINNINA PIZZERIA	Dining Room	1	Dining room	26	30.0	780
0300197000200010001	354 MONTAUK HWY	LIFT HAMPTON	Studio	6	ft2 Based Use	30	1.0	30
0300197000200011001	352 MONTAUK HWY	BARRY'S BOOTCAMP	STUDIO 1	6	ft2 Based Use	46	1.0	46
0300197000200011001	352 MONTAUK HWY	BARRY'S BOOTCAMP	STUDIO 2	6	ft2 Based Use	11	1.0	11
0300197000200011001	352 MONTAUK HWY	PHOENIX CHINESE RESTAURANT, INC.	Dining Room	1	Dining room	79	30.0	2,370
0300197000700019000	108 WAINSCOTT STONE HWY	GEORGICA RESTAURANT	EAST DECK	2	Bar / Patio	22	15.0	330
0300197000700019000	108 WAINSCOTT STONE HWY	GEORGICA RESTAURANT	MAIN DINING	1	Dining room	119	30.0	3,570
0300197000700019000	108 WAINSCOTT STONE HWY	GEORGICA RESTAURANT	MIDDLE DINING AREA	1	Dining room	18	30.0	540
0300197000700019000	108 WAINSCOTT STONE HWY	GEORGICA RESTAURANT	North Patio	2	Bar / Patio	33	15.0	495

APPENDIX B TRANSIENT PROPERTY DATA

Table B-1 presents a listing of transient housing by property name in alphabetical order and Table B-2 does so by Hamlet. Table B-3 presents the transient housing listings that could not be matched to a parcel.

Table B- 1 East Hampton Transient Property Data as of June 2014 - Alphabetical Order					
Number	FACILITY	LOCATION	HAMLET	UNITS/SITES	Design Flow (gpd)
1	166 Montauk Highway Re	166 Montauk Hwy.	East Hampton, NY 1	14	1,750
2	1770 House	143 Main St.	East Hampton, NY 1	10	1,250
3	3 Mile Harbor Cottages	375 Three Mile Harbor R	East Hampton, NY 1	10	1,250
4	380 Inn The Hamptons	380 Montauk Hwy.	Wainscott, NY 1197	18	2,250
5	A Wave Inn	32 Elmwood Ave.	Montauk, NY 11954	29	3,625
6	Albatross West	20 South Elmwood Ave.	Montauk, NY 11954	20	2,500
7	Ann Breyers Cottages	560 West Lake Dr.	Montauk, NY 11954	10	1,250
8	Atlantic Terrace	21 Surfside Pl.	Montauk, NY 11954	98	12,250
9	Avalon Lake Front Motel	136 Second House Rd.	Montauk, NY 11954	6	750
10	Bassett House	128 Montauk Hwy.	East Hampton, NY 1	12	1,500
11	Beach Plum Motel	797 Old Montauk Hwy.	Montauk, NY 11954	28	3,500
12	Beachcomber Resort	Old Montauk Hwy.	Montauk, NY 11954	88	11,000
13	Blue Haven Motel	533 West Lake Dr.	Montauk, NY 11954	27	3,375
14	Born Free II	119 South Emerson St.	Montauk, NY 11954	8	1,000
15	Born Free II At Montauk	115 South Emerson St.	Montauk, NY 11954	16	2,000
16	Breakers Motel	Old Montauk Hwy.	Montauk, NY 11954	24	3,000
17	Briney Breezes Motel	693 Old Montauk Hwy.	Montauk, NY 11954	43	5,375
18	Burcliff	397 Old Montauk Hwy.	Montauk, NY 11954	7	875
19	C/O The Maidstone Hotel	207 Main St.	East Hampton, NY 1	19	2,375
20	Crow's Nest Inn	Old West Lake Dr.	Montauk, NY 11954	15	1,875
21	Culloden House	540 West Lake Dr.	Montauk, NY 11954	16	2,000
22	Daunt's Albatross Inn	44 South Elmwood Ave.	Montauk, NY 11954	18	2,250
23	Devon Yacht Club	300 Abrahams Landing R	Amagansett, NY 119	11	1,375
24	Devon's Fancy	238 Fresh Pond Rd.	Amagansett, NY 119	9	1,125
25	Driftwood	2178 Montauk Hwy.	Amagansett, NY 119	57	7,125
26	Dutch Motel	488 Montauk Hwy.	East Hampton, NY 1	21	2,625
27	East Deck Motel	Ditch Plains Rd.	Montauk, NY 11954	28	3,500
28	East Hampton House	226 Pantigo Rd.	East Hampton, NY 1	52	6,500
29	East Hampton Point	295 Three Mile Harbor R	East Hampton, NY 1	16	2,000
30	Forever Bungalows	765 Route 114	Sag Harbor, NY 1196	8	1,000
31	Fort Pond Lodge	56 Second House Rd	Montauk, NY 11954	12	1,500
32	Gansett Green Manor	273 Montauk Hwy.	Amagansett, NY 119	14	1,750
33	Gosman's Restaurant Hou	507 & 511 West Lake Dr.	Montauk, NY 11954	10	1,250
34	Gurney's Inn Resort & Spa	290 Old Montauk Hwy.	Montauk, NY 11954	137	17,125
35	Harborside Motel	371 West Lake Dr.	Montauk, NY 11954	27	3,375
36	Hedges Inn	74 James La.	East Hampton, NY 1	12	1,500
37	Hermitage at Napeague	2166 Montauk Hwy.	Amagansett, NY 119	56	7,000
38	Hither House	10 Lincoln Rd.	Montauk, NY 11954	14	1,750
39	Huntting Inn	94 Main St.	East Hampton, NY 1	31	3,875
40	Kenny's Tipperary Inn	432 West Lake Dr.	Montauk, NY 11954	36	4,500
41	Lenhart Cottages	421 Old Montauk Hwy.	Montauk, NY 11954	12	1,500
42	Lido Motel	5 South Emery St.	Montauk, NY 11954	20	2,500
43	Maidstone Club	Old Beach La.	East Hampton, NY 1	10	1,250
44	Malibu Motel	88 South Elmwood Ave.	Montauk, NY 11954	37	4,625
45	Memory Motel	692 Montauk Hwy.	Montauk, NY 11954	14	1,750
46	Mill House Inn	31 North Main St.	East Hampton, NY 1	10	1,250
47	Mon-Den Cottages	Second House Rd.	Montauk, NY 11954	8	1,000
48	Montauk Lake Club and M	211 East Lake Drive	Montauk, NY 11954	16	2,000
49	Montauk Manor	236 Edgemere St.	Montauk, NY 11954	140	17,500
50	Montauk Soundview	6 Soundview Dr.	Montauk, NY 11954	30	3,750

51	Montauk Yacht Club Reso	32 Star Island Rd.	Montauk, NY 11954	115	14,375
52	Montauket Hotel	88 Firestone Rd.	Montauk, NY 11954	22	2,750
53	Neptune Motel	South Euclid Ave.	Montauk, NY 11954	12	1,500
54	Ocean Beach Resort	108 South Emerson Ave	Montauk, NY 11954	80	10,000
55	Ocean Colony Beach & Te	2004 Montauk Hwy.	Amagansett, NY 119	69	8,625
56	Ocean Dunes Apartments	379 Bluff Rd.	Amagansett, NY 119	63	7,875
57	Ocean End Apartments	80 South Emerson Ave.	Montauk, NY 11954	11	1,375
58	Ocean Resort Inn	95 South Emerson Ave.	Montauk, NY 11954	17	2,125
59	Ocean Surf Motel	84 South Emerson Ave.	Montauk, NY 11954	29	3,625
60	Ocean Vista	2136 Montauk Hwy.	Amagansett, NY 119	48	6,000
61	Oceanside Beach Resort	626 Montauk Hwy.	Montauk, NY 11954	30	3,750
62	Outrigger Cottages	East Lake Dr.	Montauk, NY 11954	10	1,250
63	Panoramic View	272 Old Montauk Hwy.	Montauk, NY 11954	45	5,625
64	Pharao Beach	3 South Lake Dr.	Montauk, NY 11954	8	1,000
65	Rendezvous	379 West Lake Dr.	Montauk, NY 11954	17	2,125
66	Rod & Reel Motel	2 Wells Ave.	Montauk, NY 11954	19	2,375
67	Royal Atlantic Beach Resc	126 South Emerson Ave	Montauk, NY 11954	98	12,250
68	Royal Atlantic East	South Emerson St.	Montauk, NY 11954	12	1,500
69	Royal Atlantic North	South Emerson Ave.	Montauk, NY 11954	39	4,875
70	Ruschmeyers	161 Second House Rd.	Montauk, NY 11954	26	3,250
71	Sail Inn	548 West Lake Dr.	Montauk, NY 11954	10	1,250
72	Sands Motel	South Emery St.	Montauk, NY 11954	34	4,250
73	Sands Motel East	South Emery St.	Montauk, NY 11954	8	1,000
74	Sea Breeze Inn	30 Atlantic Ave.	Amagansett, NY 119	6	750
75	Sea Crest on the Ocean	2166 Montauk Hwy.	Amagansett, NY 119	74	9,250
76	Sea Spray Cottages	Ocean Ave.	East Hampton, NY 1	9	1,125
77	Seascape Motel	793 Old Montauk Hwy.	Montauk, NY 11954	10	1,250
78	Sepp's Surf Sound Cottag	Ditch Plains Rd.	Montauk, NY 11954	9	1,125
79	Snug Harbor Motel & Mar	3 Star Island Rd.	Montauk, NY 11954	30	3,750
80	Sole East Beach Hotel	107 South Emerson Ave	Montauk, NY 11954	25	3,125
81	Sole East Resort	90 Second House Rd.	Montauk, NY 11954	70	8,750
82	Soundviewer Culloden	17 Soundview Dr.	Montauk, NY 11954	14	1,750
83	Stone Lion Inn	51 Edgemere Rd.	Montauk, NY 11954	8	1,000
84	Sun N' Sound	22 Soundview Dr.	Montauk, NY 11954	35	4,375
85	Surf Club at Montauk	South Essex St.	Montauk, NY 11954	92	11,500
86	Surfside Inn	685 Old Montauk Hwy.	Montauk, NY 11954	16	2,000
87	The Cozy Cottages	395 Montauk Hwy.	Wainscott, NY 1197	20	2,500
88	The Inn at Windmill Lane	23 Windmill La.	Amagansett, NY 119	10	1,250
89	The Montauk Beach Hous	55 South Elmwood Ave.	Montauk, NY 11954	33	4,125
90	The Surf Lodge	183 Edgemere St.	Montauk, NY 11954	34	4,250
91	Tiny Underwood's Motel	30 West Lake Dr.	Montauk, NY 11954	18	2,250
92	Uihlein's West Lake Dr. M	10 Wells Ave.	Montauk, NY 11954	6	750
93	Wavecrest II	South Elmwood Ave.	Montauk, NY 11954	8	1,000
94	Wavecrest Resort	170 Old Montauk Hwy.	Montauk, NY 11954	64	8,000
95	West Lake Inn, LLC	411 West Lake Dr.	Montauk, NY 11954	16	2,000
96	White Sands Motel	28 Shore Rd.	Amagansett, NY 119	21	2,625
97	Windward Shores	Montauk Hwy.	Amagansett, NY 119	45	5,625
98	Zorba's Inn	479 West Lake Dr.	Montauk, NY 11954	8	1,000
			Total	2,887	360,875

Design Flow assuming design criteria of 125 gpd / unit

Table B-2 East Hampton Transient Property Data as of June 2014 - Alphabetical Order by Hamlet					
Number	FACILITY NAME	LOCATION	HAMLET	UNITS/SITES	Design Flow (gpd)
1	Devon Yacht Club	300 Abrahams Landing Rd.	Amagansett, NY 1	11	1,375
2	Devon's Fancy	238 Fresh Pond Rd.	Amagansett, NY 1	9	1,125
3	Driftwood	2178 Montauk Hwy.	Amagansett, NY 1	57	7,125
4	Gansett Green Manor	273 Montauk Hwy.	Amagansett, NY 1	14	1,750
5	Hermitage at Napeague	2166 Montauk Hwy.	Amagansett, NY 1	56	7,000
6	Ocean Colony Beach & Tennis Clul	2004 Montauk Hwy.	Amagansett, NY 1	69	8,625
7	Ocean Dunes Apartments	379 Bluff Rd.	Amagansett, NY 1	63	7,875
8	Ocean Vista	2136 Montauk Hwy.	Amagansett, NY 1	48	6,000
9	Sea Breeze Inn	30 Atlantic Ave.	Amagansett, NY 1	6	750
10	Sea Crest on the Ocean	2166 Montauk Hwy.	Amagansett, NY 1	74	9,250
11	The Inn at Windmill Lane	23 Windmill La.	Amagansett, NY 1	10	1,250
12	White Sands Motel	28 Shore Rd.	Amagansett, NY 1	21	2,625
13	Windward Shores	Montauk Hwy.	Amagansett, NY 1	45	5,625
14	166 Montauk Highway Recreation	166 Montauk Hwy.	East Hampton, NY	14	1,750
15	1770 House	143 Main St.	East Hampton, NY	10	1,250
16	3 Mile Harbor Cottages	375 Three Mile Harbor Rd.	East Hampton, NY	10	1,250
17	Bassett House	128 Montauk Hwy.	East Hampton, NY	12	1,500
18	C/O The Maidstone Hotel	207 Main St.	East Hampton, NY	19	2,375
19	Dutch Motel	488 Montauk Hwy.	East Hampton, NY	21	2,625
20	East Hampton House	226 Pantigo Rd.	East Hampton, NY	52	6,500
21	East Hampton Point	295 Three Mile Harbor Rd.	East Hampton, NY	16	2,000
22	Hedges Inn	74 James La.	East Hampton, NY	12	1,500
23	Huntting Inn	94 Main St.	East Hampton, NY	31	3,875
24	Maidstone Club	Old Beach La.	East Hampton, NY	10	1,250
25	Mill House Inn	31 North Main St.	East Hampton, NY	10	1,250
26	Sea Spray Cottages	Ocean Ave.	East Hampton, NY	9	1,125
27	A Wave Inn	32 Elmwood Ave.	Montauk, NY 1195	29	3,625
28	Albatross West	20 South Elmwood Ave.	Montauk, NY 1195	20	2,500
29	Ann Breyers Cottages	560 West Lake Dr.	Montauk, NY 1195	10	1,250
30	Atlantic Terrace	21 Surfside Pl.	Montauk, NY 1195	98	12,250
31	Avalon Lake Front Motel	136 Second House Rd.	Montauk, NY 1195	6	750
32	Beach Plum Motel	797 Old Montauk Hwy.	Montauk, NY 1195	28	3,500
33	Beachcomber Resort	Old Montauk Hwy.	Montauk, NY 1195	88	11,000
34	Blue Haven Motel	533 West Lake Dr.	Montauk, NY 1195	27	3,375
35	Born Free II	119 South Emerson St.	Montauk, NY 1195	8	1,000
36	Born Free II At Montauk	115 South Emerson St.	Montauk, NY 1195	16	2,000
37	Breakers Motel	Old Montauk Hwy.	Montauk, NY 1195	24	3,000
38	Briney Breezes Motel	693 Old Montauk Hwy.	Montauk, NY 1195	43	5,375
39	Burcliff	397 Old Montauk Hwy.	Montauk, NY 1195	7	875
40	Crow's Nest Inn	Old West Lake Dr.	Montauk, NY 1195	15	1,875
41	Culloden House	540 West Lake Dr.	Montauk, NY 1195	16	2,000
42	Daunt's Albatross Inn	44 South Elmwood Ave.	Montauk, NY 1195	18	2,250
43	East Deck Motel	Ditch Plains Rd.	Montauk, NY 1195	28	3,500
44	Fort Pond Lodge	56 Second House Rd	Montauk, NY 1195	12	1,500
45	Gosman's Restaurant Housing	507 & 511 West Lake Dr.	Montauk, NY 1195	10	1,250
46	Gurney's Inn Resort & Spa	290 Old Montauk Hwy.	Montauk, NY 1195	137	17,125
47	Harborside Motel	371 West Lake Dr.	Montauk, NY 1195	27	3,375
48	Hither House	10 Lincoln Rd.	Montauk, NY 1195	14	1,750
49	Kenny's Tipperary Inn	432 West Lake Dr.	Montauk, NY 1195	36	4,500
50	Lenhart Cottages	421 Old Montauk Hwy.	Montauk, NY 1195	12	1,500

51	Lido Motel	5 South Emery St.	Montauk, NY 1195	20	2,500
52	Malibu Motel	88 South Elmwood Ave.	Montauk, NY 1195	37	4,625
53	Memory Motel	692 Montauk Hwy.	Montauk, NY 1195	14	1,750
54	Mon-Den Cottages	Second House Rd.	Montauk, NY 1195	8	1,000
55	Montauk Lake Club and Marina	211 East Lake Drive	Montauk, NY 1195	16	2,000
56	Montauk Manor	236 Edgemere St.	Montauk, NY 1195	140	17,500
57	Montauk Soundview	6 Soundview Dr.	Montauk, NY 1195	30	3,750
58	Montauk Yacht Club Resort & Mari	32 Star Island Rd.	Montauk, NY 1195	115	14,375
59	Montauket Hotel	88 Firestone Rd.	Montauk, NY 1195	22	2,750
60	Neptune Motel	South Euclid Ave.	Montauk, NY 1195	12	1,500
61	Ocean Beach Resort	108 South Emerson Ave.	Montauk, NY 1195	80	10,000
62	Ocean End Apartments	80 South Emerson Ave.	Montauk, NY 1195	11	1,375
63	Ocean Resort Inn	95 South Emerson Ave.	Montauk, NY 1195	17	2,125
64	Ocean Surf Motel	84 South Emerson Ave.	Montauk, NY 1195	29	3,625
65	Oceanside Beach Resort	626 Montauk Hwy.	Montauk, NY 1195	30	3,750
66	Outrigger Cottages	East Lake Dr.	Montauk, NY 1195	10	1,250
67	Panoramic View	272 Old Montauk Hwy.	Montauk, NY 1195	45	5,625
68	Pharao Beach	3 South Lake Dr.	Montauk, NY 1195	8	1,000
69	Rendezvous	379 West Lake Dr.	Montauk, NY 1195	17	2,125
70	Rod & Reel Motel	2 Wells Ave.	Montauk, NY 1195	19	2,375
71	Royal Atlantic Beach Resort	126 South Emerson Ave.	Montauk, NY 1195	98	12,250
72	Royal Atlantic East	South Emerson St.	Montauk, NY 1195	12	1,500
73	Royal Atlantic North	South Emerson Ave.	Montauk, NY 1195	39	4,875
74	Ruschmeyers	161 Second House Rd.	Montauk, NY 1195	26	3,250
75	Sail Inn	548 West Lake Dr.	Montauk, NY 1195	10	1,250
76	Sands Motel	South Emery St.	Montauk, NY 1195	34	4,250
77	Sands Motel East	South Emery St.	Montauk, NY 1195	8	1,000
78	Seascape Motel	793 Old Montauk Hwy.	Montauk, NY 1195	10	1,250
79	Sepp's Surf Sound Cottages	Ditch Plains Rd.	Montauk, NY 1195	9	1,125
80	Snug Harbor Motel & Marina	3 Star Island Rd.	Montauk, NY 1195	30	3,750
81	Sole East Beach Hotel	107 South Emerson Ave.	Montauk, NY 1195	25	3,125
82	Sole East Resort	90 Second House Rd.	Montauk, NY 1195	70	8,750
83	Soundviewer Culloden	17 Soundview Dr.	Montauk, NY 1195	14	1,750
84	Stone Lion Inn	51 Edgemere Rd.	Montauk, NY 1195	8	1,000
85	Sun N' Sound	22 Soundview Dr.	Montauk, NY 1195	35	4,375
86	Surf Club at Montauk	South Essex St.	Montauk, NY 1195	92	11,500
87	Surfside Inn	685 Old Montauk Hwy.	Montauk, NY 1195	16	2,000
88	The Montauk Beach House	55 South Elmwood Ave.	Montauk, NY 1195	33	4,125
89	The Surf Lodge	183 Edgemere St.	Montauk, NY 1195	34	4,250
90	Tiny Underwood's Motel	30 West Lake Dr.	Montauk, NY 1195	18	2,250
91	Uihlein's West Lake Dr. Motel	10 Wells Ave.	Montauk, NY 1195	6	750
92	Wavecrest II	South Elmwood Ave.	Montauk, NY 1195	8	1,000
93	Wavecrest Resort	170 Old Montauk Hwy.	Montauk, NY 1195	64	8,000
94	West Lake Inn, LLC	411 West Lake Dr.	Montauk, NY 1195	16	2,000
95	Zorba's Inn	479 West Lake Dr.	Montauk, NY 1195	8	1,000
96	Forever Bungalows	765 Route 114	Sag Harbor, NY 11	8	1,000
97	380 Inn The Hamptons	380 Montauk Hwy.	Wainscott, NY 119	18	2,250
98	The Cozy Cottages	395 Montauk Hwy.	Wainscott, NY 119	20	2,500
			Total	2,887	360,875

Design Flow assuming design criteria of 125 gpd / unit

APPENDIX C AGGREGATED FLOWS FOR COMMERCIAL PROPERTIES WITH USE DATA

DSBL	Business	Address	Use Based Aggregated Design Flow (gpd)
0300005000400016000	SAIL INN	548 W LAKE DR	2,405
0300006000300016000	CROSS EYED CLAM	440 W LAKE DR	2,220
0300127000300016000	DEVON YACHT CLUB	82 BENDIGO RD	8,485
0300049000600016000	DOUBLE K MANAGEMENT	155 S EMERSON AVE	192
0300006000200016000	RICK'S CRABBY COWBOY	435 E LAKE DR	4,155
0300049000400003000	668 THE GIG SHACK	782 MONTAUK HWY	1,515
0300171000500002000	AMAGANSETT PRESBYTERIAN CHURCH	17 MEETING HOUSE LN	1,385
0300171000400002000	AMAGANSETT PRESBYTERIAN CHURCH	350 MAIN ST	896
0300170000200001000	AMERICAN LEGION POST 419	15 MONTAUK HWY	2,475
0300109000100021000	ART BARGE	110 NAPEAGUE MEADOW RD	125
0300170000400022001	ART OF EATING	74 MONTAUK HWY	2,040
0300181000400001002	ASER CORP	26 GOODFRIEND DR	12
0300080000100003000	ASHWAGH HALL	780 FIREPLACE RD	728
0300048000500037001	BACKYARD RESTAURANT	90 SECOND HOUSE RD	11,102
0300197000200011001	BARRY'S BOOTCAMP	352 MONTAUK HWY	2,427
0300057000600027001	BAY KITCHEN & BAR	39 GANN RD	3,300
0300006000300006000	BEN & JERRY'S	478 W LAKE DR	270
0300189000100001000	BERNARD KIEMBOCK	341 PANTIGO RD	5,565
0300049000400041000	BIRD ON THE ROOF	47 S ELMWOOD AVE	540
0300049000400030000	BLISS	732 MONTAUK HWY	120
0300171000200006000	BODY TECH	249 MAIN ST	98
0300188000100018000	BOSTWICK'S CHOWDER HOUSE	277 PANTIGO RD	870
0300183000400001000	BUCKSKILL RACQUET CLUB	178 BUCKSKILL RD	1,710
0300050000200003000	BUSY BODIES EXERCISE STUDIO	44 S ELMWOOD AVE	2,291
0300162000500025000	CALVARY BAPTIST CHURCH	60 SPINNER LN	83
0300037000200001000	CAMP BLUE BAY	103 FLAGGY HOLE RD	3,293
0300049000400035000	CIRCLE RESTAURANT	710 MONTAUK HWY	2,490
0300006000300008000	CLAM & CHOWDER HOUSE @ SALIVARS	470 W LAKE DR	5,010
0300050000100010000	CONCERNED CITIZENS OF MONTAUK/C	6 ELMWOOD	26
0300188000200005000	CRYSTAL ROOM/CRICKET CATERERS	250 PANTIGO RD	4,440
0300187000300002000	CURIOSITY	106 N MAIN ST	0
0300110000100010000	CYRIL'S FISH HOUSE	2167 MONTAUK HWY	1,320
0300006000300009000	DAVE'S GRILL	466 W LAKE DR	1,815
0300171000100015000	D'CANELA RESTAURANT	195 MAIN ST	1,500
0300006000100029000	DOCK RESTAURANT	482 W LAKE DR	1,560
0300110000100013000	DRIFTWOOD	2178 MONTAUK HWY	7,175
0300052000100001001	EAST BY NORTHEAST	55 S EDGEMERE ST	6,450
0300156000100004002	EAST END CHURCH OF CHRIST	500 ROUTE 114	399
0300149000300002002	EAST HAMPTON GOLF	281 ABRAHAMS PATH	2,910
0300181000100005001	EAST HAMPTON INDOOR TENNIS	175 DANIELS HOLE RD	3,829
0300075000100029000	EAST HAMPTON POINT	295 THREE MI HBR HOG CRK HWY	9,547
0300188000100004000	EAST HAMPTON TOWN	159 PANTIGO RD	302
0300027000400031000	EAST HAMPTON TOWN	128 SECOND HOUSE RD	330

DSBL	Business	Address	Use Based Aggregated Design Flow (gpd)
0300080000300026000	EAST HAMPTON TOWN	60 OLD STONE HWY	773
0300171000200005000	FELICE'S RESTAURANT	237 MAIN ST	1,560
0300006000200015001	FISHBAR	467 E LAKE DR	480
0300193000200007012	GEORGICA ESTATES	3 POTTERS LA	233
0300197000700019000	GEORGICA RESTAURANT	108 WAINSCOTT STONE HWY	4,935
0300006000100030001	GOSMAN'S CLAM BAR	484 W LAKE DR	5,610
0300006000100008000	GOSMAN'S RESTAURANT	500 W LAKE DR	12,525
0300087000300028001	GURNEY'S	290 OLD MONTAUK HWY	25,283
0300184000100007001	HAMPTON COUNTRY DAY CAMP	191 BUCKSKILL RD	7,643
0300075000100028005	HARBOR BISTRO	313 THREE MI HBR HOG CRK HWY	3,270
0300120000200004002	HARBOR GRILL	367 THREE MILE HARBOR RD	2,460
0300048000300048000	HARVEST ON FORT POND	11 S EMERY ST	2,970
0300163000700023001	HUDSON CITY SAVINGS BANK	130 N MAIN ST	3,120
0300171000100014000	INDIAN WELLS TAVERN	177 MAIN ST	2,820
0300006000200003001	INLET SEAFOOD	541 E LAKE DR	4,005
0300050000100001000	JOHN'S DRIVE-IN	677 MONTAUK HWY	1,740
0300049000300032000	JOHN'S PANCAKE HOUSE	721 MONTAUK HWY	1,470
0300005000500002001	KENNY'S TIPPERARY INN	433 W LAKE DR	9,990
0300197000100044001	LA CAPINNINA PIZZERIA	364 MONTAUK HWY	780
0300049000400025002	LABRISA	752 MONTAUK HWY	2,400
0300119000500008004	LEON BEAUTY SALON	281 SPRINGS FIREPLACE RD	570
0300006000300026000	LIAR'S SALOON	408 W LAKE DR	315
0300197000200010001	LIFT HAMPTON	354 MONTAUK HWY	30
0300130000200001000	LOBSTER ROLL	1980 MONTAUK HWY	3,345
0300049000400047000	LOVE A YOGA SPACE	83 S ELMWOOD AVE	16
0300192000300043001	LTV	75 INDUSTRIAL RD	357
0300049000100028000	M.T.K. CAFE	779 MONTAUK HWY	1,470
0300180000100008005	MAIDSTONE GUN CLUB	WAINSCOTT NORTHWEST RD	1,335
0300161000300027000	MARTIAL ARTS CENTER	37 THREE MILE HARBOR RD	51
0300172001200001000	MEETING HOUSE RESTAURANT	4 AMAGANSETT SQUARE DR	1,980
0300050000100003000	MEMORY MOTEL	692 MONTAUK HWY	3,565
0300038000400002000	MICHAEL'S MAIDSTONE BAR AND REST	28 MAIDSTONE PARK RD	2,280
0300049000200013000	MONTAUK COMMUNITY CHURCH	850 MONTAUK HWY	2,892
0300019000900005000	MONTAUK DOWNS STATE PARK	42 S FAIRVIEW AVE	7,590
0300016000200024004	MONTAUK FIRE DISTRICT	12 FLAMINGO AVE	1,830
0300013000300026001	MONTAUK LAKE CLUB	211 E LAKE DR	4,535
0300015000100009000	MONTAUK LIGHTHOUSE	2000 MONTAUK HWY	481
0300015000100007000	MONTAUK POINT STATE PARK RESTAU	MIDLAND RD	1,170
0300032000600018000	MONTAUK SHORES CONDOMINIUMS	100 DEFOREST ROAD	1,133
0300006000400009000	MONTAUK YACHT CLUB	32 STAR ISLAND RD	28,153
0300006000400017000	MONTAUK YACHT CLUB	58 STAR ISLAND RD	1,680
0300017000100006000	MONTAUKET	88 FIRESTONE RD	5,533
0300049000400026000	MUNCH BOX	41 THE PLAZA	1,050
0300108000200005000	NAPEAGUE MOBILE HOME PARK	64 CRASSEN BLVD	390

DSBL	Business	Address	Use Based Aggregated Design Flow (gpd)
0300027000200002001	NAVY BEACH	16 NAVY RD	2,865
0300163000700020000	NICK & TONI'S	136 N MAIN ST	2,610
0300050000200026001	OCEAN BEACH RESORT	108 S EMERSON AVE	10,345
0300049000100022000	O'MURPHY'S PUB	99 THE PLAZA	2,010
0300027000400030000	PATHFINDER COUNTRY DAY CAMP	134 SECOND HOUSE RD	540
0300191000200001000	PHOENIX HOUSE AT EAST HAMPTON	INDUSTRIAL RD	1,710
0300050000100005000	PIZZA VILLAGE	15 S EMBASSY ST	1,470
0300048000300043000	PUFF N PUTT	659 MONTAUK HWY	17
0300156000100009002	ROSS SCHOOL	20 GOODFRIEND DR	193
0300027000400027000	RUSCHMEYER'S RESTAURANT	161 SECOND HOUSE RD	19,330
0300111000100001015	SAG HARBOR GOLF CLUB	ROUTE 114	1,080
0300197000100038000	SALT AT THE STAR ROOM (ENTERTAINI	378 MONTAUK HWY	6,023
0300032000300013005	SALT BEACH	4 OLD WEST LAKE DR	3,390
0300006000300014000	SAMMY'S	448 W LAKE DR	2,130
0300049000100029000	SAUSAGES	781 MONTAUK HWY	840
0300187000300003000	SERAFINA	104 N MAIN ST	1,935
0300049000400005000	SHAGWONG TAVERN	774 MONTAUK HWY	2,760
0300109000200012001	SHARE HOUSE RESTAURANT	2095 MONTAUK HWY	2,850
0300161000400009000	SIENNA RESTAURANT	44 THREE MILE HARBOR RD	5,055
0300050000200021000	SLOPPY TUNA	148 S EMERSON AVE	7,470
0300188000100012000	SMOKIN' WOLF	221 PANTIGO RD	2,520
0300171000200004000	SOTTO SOPRA	231 MAIN ST	2,100
0300150000300008001	SOUTH FORK COUNTRY CLUB	730 OLD STONE HWY	3,750
0300166000300009000	SPORTIME MULTI-SPORT ARENA	385 ABRAHAMS PATH	1,885
0300063000500006000	SPRINGS COMMUNITY PRESBYTERIAN (	802 FIREPLACE RD	630
0300062000200018002	SPRINGS FIRE DISTRICT	179 FORT POND BLVD	2,543
0300062000300023000	SPRINGS PIZZA	841 FIREPLACE RD	840
0300080000300014000	SPRINGS UFSD	48 SCHOOL ST	349
0300172000200009004	ST. MICHAEL'S SENIOR HOUSING	488 MONTAUK HWY	3,608
0300103000600023000	ST. PETER'S CHAPEL	465 OLD STONE HWY	369
0300171000300012000	ST. PETER'S CHURCH	286 MAIN ST	445
0300049000400001000	ST. THERESE'S SCHOOL	67 S ESSEX ST	5,445
0300171000100011000	STEPHEN TALKHOUSE	161 MONTAUK HWY	2,985
0300027000300014000	SURF LODGE, LLC	183 S EDGEMERE ST	10,950
0300071000200007000	SURFSIDE INN	685 OLD MONTAUK HWY	4,490
0300006000300007000	SWALLOW EAST	474 W LAKE DR	2,490
0300049000300014000	THE COAST	41 S EUCLID AVE	3,090
0300192000300005002	THE COUNTRY SCHOOL	7 INDUSTRIAL RD	735
0300188000100010000	THE GRILL ON PANTIGO	203 PANTIGO RD	4,440
0300049000300001002	THE MOVIE	15 S EDGEMERE ST	636
0300049000300027001	THE POINT	695 MONTAUK HWY	7,830
0300016000200015000	TOWN OF EAST HAMPTON	240 EDGEMERE ST	2,721
0300162000500001000	TOWN OF EAST HAMPTON	128 SPRINGS FIREPLACE RD	2,843
0300032000100008002	TOWN OF EAST HAMPTON	91 S FULTON ST	188
0300049000100008000	TRAIL'S END	63 S EUCLID AVE	1,680

DSBL	Business	Address	Use Based Aggregated Design Flow (gpd)
0300027020100001000	TRE' BELLA	236 EDGEMERE ST	18,700
0300150000500028004	VILLA BAR & GRILL	521 MONTAUK HWY	3,480
0300016000200038000	WASH OUT RESTAURANT & LOUNGE	240 FORT POND RD	5,610
0300012000100005000	WEST LAKE FISH HOUSE	352 W LAKE DR	1,875
0300139000300019012	WHALEBONE VILLAGE APTS.	BARBOUR ST	330
0300162000500021001	WINDMILL VILLAGE I	207 ACCABONAC RD	600
0300162000200006001	WINDMILL VILLAGE II	219 ACCABONAC RD	150
0300049000400034000	WOK N ROLL	716 MONTAUK HWY	1,320
0300058000200011001	WOLFIE'S TAVERN	19 FORT POND BLVD	1,890
0300170000400018000	ZAKURA JAPANESE RESTAURANT INC	40 MONTAUK HWY	2,970
0300050000100011000	ZUM SCHNEIDER MONTAUK	4 S ELMWOOD AVE	2,445
0300007000200005000	166 Montauk Highway Recreation	166 Montauk Hwy.	1,750
0300120000100005000	3 Mile Harbor Cottages	375 Three Mile Harbor Rd.	1,250
0300197000100024001	380 Inn The Hamptons	380 Montauk Hwy.	2,250
0300050000200002001	A Wave Inn	32 Elmwood Ave.	3,625
0300050000100007001	Albatross West	20 South Elmwood Ave.	2,500
0300005000400014000	Ann Breyers Cottages	560 West Lake Dr.	1,250
0300049000500019000	Atlantic Terrace	21 Surfside Pl.	12,250
0300027000400029000	Avalon Lake Front Motel	136 Second House Rd.	750
0301007000200015000	Bassett House	128 Montauk Hwy.	1,500
0300047000100009000	Beach Plum Motel	779 Old Montauk Hwy.	3,500
0300048000800022001	Beachcomber Resort	727 Old Montauk Hwy.	11,000
0300006000100017000	Blue Haven Motel	533 West Lake Dr.	3,375
0300050000200004000	Born Free I	119 South Emerson St.	1,000
0300050000200007001	Born Free II At Montauk	115 South Emerson St.	2,000
0300047000100010001	Breakers Motel	Old Montauk Hwy.	3,000
0300071000200010000	Briney Breezes Motel	693 Old Montauk Hwy.	5,375
0300067000400036005	Burcliffe By The Sea	397 Old Montauk Hwy.	875
0300176000400002000	Crow's Nest Inn	Old West Lake Dr.	1,875
0300005000400003000	Culloden House	540 West Lake Dr.	2,000
0300127000100008000	Devon's Fancy	238 Fresh Pond Rd.	1,125
0300188000200004000	East Hampton House	226 Pantigo Rd.	6,500
0300122000500018000	East Hampton Point	295 Three Mile Harbor Rd.	2,000
0300133000200001000	Forever Bungalows	765 Route 114	1,000
0300048000200041000	Fort Pond Lodge	56 Second House Rd	1,500
0300171000200011001	Gansett Green Manor	273 Montauk Hwy.	1,750
0300006000100012000	Gosman's Restaurant Housing	507 & 511 West Lake Dr.	1,250
0301008000900012000	Hedges Inn	74 James La.	1,500
0300110000100012000	Hermitage at Napeague	2166 Montauk Hwy.	16,250
0300045000200002000	Hither House	10 Lincoln Rd.	1,750
0301003000800001000	Huntting Inn	94 Main St.	3,875
0300067000400024000	Lenhart Cottages	421 Old Montauk Hwy.	1,500
0300048000300047000	Lido Motel	5 South Emery St.	2,500
0300049000600013001	Malibu Motel	88 South Elmwood Ave.	4,625
0300048000200003000	Mon-Den Cottages	124 Second House Rd.	1,000

APPENDIX D LISTING OF ALL COMMERCIAL PROPERTIES IN EAST HAMPTON

#	DSBL	School District	Name	Address
1	0300005000100012000	Amagansett	SUN N SOUND OWNERS INC	125 BARNES HOLE RD
2	0300005000100015001	Amagansett	RESORT SOUND VIEW PROPERTY, LTD.	98 SHORE DR E
3	0300005000400002000	Amagansett	HARRINGTON PROPERTY ASSSOCIATES	64 CRASSEN BLVD
4	0300005000400003000	Amagansett	HARRINGTON PROPERTY ASSOCIATES	110 NAPEAGUE MEADOW RD
5	0300005000400014000	Amagansett	JETLEX LLC	2101 MONTAUK HWY
6	0300005000400015000	Amagansett	KARIN PADDEN	2095 MONTAUK HWY
7	0300005000400016000	Amagansett	GEORGE M GALLAWAY	2167 MONTAUK HWY
8	0300005000500002001	Amagansett	KENNYS TIPPERARY INN INC	2166 MONTAUK HWY
9	0300005000500007000	Amagansett	FOUR OAKS MOTEL & COTTAGES LLC	2178 MONTAUK HWY
10	0300006000100008000	Amagansett	GOSMANS REST & BAR INC	2145 MONTAUK HWY
11	0300006000100012000	Amagansett	ROBERT E GOSMAN	2136 MONTAUK HWY
12	0300006000100015000	Amagansett	HARRINGTON PROPERTIES ASSOC	2148 MONTAUK HWY
13	0300006000100017000	Amagansett	BLUE SPARTAN LLC	238 FRESH POND RD
14	0300006000100018000	Amagansett	THE JON R. FORSBERG GRANTOR TRUST	82 BENDIGO RD
15	0300006000100020000	Amagansett	10 WELLES AVENUE, LLC	2025 MONTAUK HWY
16	0300006000100021000	Amagansett	HARRINGTON PROPERTY	1980 MONTAUK HWY
17	0300006000100022000	Amagansett	JOHN GOSMAN	2004 MONTAUK HWY
18	0300006000100025000	Amagansett	CHIMPOUKCHIS FAMILY LLC	2062 MONTAUK HWY
19	0300006000100029000	Amagansett	DOCMTK LLC	1882 MONTAUK HWY
20	0300006000100030001	Amagansett	BOB GOSMAN CO INC	28 SHORE RD
21	0300006000200003001	Amagansett	INLET SEAFOOD PROPERTY LLC	281 ABRAHAMS PATH
22	0300006000200005000	Amagansett	C & W LAND CO. LLC	730 OLD STONE HWY
23	0300006000200009000	Amagansett	DAVID KENNY	439 MAIN ST
24	0300006000200015001	Amagansett	SENNEFELDER PROP INC	511 MONTAUK HWY
25	0300006000200016000	Amagansett	R & J EAST LAKE PROPERTIES LLC	517 MONTAUK HWY
26	0300006000300004000	Amagansett	CHRIS-NIC PROPERTIES, INC	521 MONTAUK HWY
27	0300006000300006000	Amagansett	MONTAUK EAST L P	385 ABRAHAMS PATH
28	0300006000300007000	Amagansett	78 VENTURES LTD	23 WINDMILL LN
29	0300006000300008000	Amagansett	GRACELAND III LLC	15 MONTAUK HWY
30	0300006000300009000	Amagansett	FRANCARL RLTY CORP	618 MONTAUK HWY
31	0300006000300013000	Amagansett	14 WELLES AVENUE LLC	8 CROSS HWY
32	0300006000300014000	Amagansett	FLAMINGO DOCK LLC	8 MONTAUK HWY
33	0300006000300015000	Amagansett	HENRY UIHLEIN JR	12 PRIVATE RD
34	0300006000300016000	Amagansett	SEA OTTER REALTY , LP	26 MONTAUK HWY
35	0300006000300017000	Amagansett	MONTAUK MARINE BASIN INC	40 MONTAUK HWY
36	0300006000300020002	Amagansett	MONTAUK MARINE BASIN INC	56 MONTAUK HWY
37	0300006000300026000	Amagansett	OFFSHORE SPORTS MARINA INC	64 MONTAUK HWY
38	0300006000400003000	Amagansett	SAM GERSHOWITZ	74 MONTAUK HWY
39	0300006000400006000	Amagansett	SAM GERSHOWITZ	151 MAIN ST
40	0300006000400009000	Amagansett	MYC RESORT LLC	161 MONTAUK HWY
41	0300006000400016001	Amagansett	MYC RESORT LLC	167 MONTAUK HWY
42	0300006000400017000	Amagansett	MYC RESORT LLC	171 MAIN ST
43	0300007000200005000	Amagansett	BRIGUET FAMILY LLC	177 MAIN ST
44	0300011000500018001	Amagansett	MYC RESORT LLC	195 MAIN ST
45	0300011000500019000	Amagansett	MADELINE UNDERWOOD	199 MAIN ST
46	0300011000500023000	Amagansett	JEFFREY A. ZACCARIA	203 MAIN ST
47	0300011000500024000	Amagansett	WEST LAKE INN, LLC	207 MAIN ST
48	0300012000100001000	Amagansett	LANDS END MARINA INC	225 MAIN ST
49	0300012000100004000	Amagansett	REICHERT PROPERTIES INC	231 MAIN ST
50	0300012000100005000	Amagansett	EAST END MARINA INC	237 MAIN ST
51	0300012000100008006	Amagansett	LORETTA M DEROSE	249 MAIN ST
52	0300012000100008009	Amagansett	SNUG HARBOR LLC	255 MAIN ST
53	0300013000300014000	Amagansett	KENNETH J WILSON	22 MAIN ST
54	0300013000300026001	Amagansett	STAR DEVELOPMENT REALTY HOLDING CORP	273 MAIN ST
55	0300015000100007000	Amagansett	NEW YORK STATE	303 MAIN ST
56	0300015000100009000	Amagansett	MONTAUK HISTORICAL SOCIETY	208 MAIN ST
57	0300016000200015000	Amagansett	TOWN OF EAST HAMPTON	216 MAIN ST
58	0300016000200024004	Amagansett	MONTAUK FIRE DISTRICT	230 MAIN ST
59	0300016000200025000	Amagansett	NICHOLAS BUSTAMANTE, LLC	286 MAIN ST

#	DSBL	School District	Name	Address
60	0300016000200038000	Amagansett	BLD DINING CORP.	350 MAIN ST
61	0300017000100004000	Amagansett	DOMENIC CRACCO	17 MEETING HOUSE LN
62	0300017000100005000	Amagansett	BONZO'S BUNGALOWS INC	488 MONTAUK HWY
63	0300017000100006000	Amagansett	MONTAUKET HOTEL	538 MONTAUK HWY
64	0300017000100013000	Amagansett	FLEMING ROAD, LLC	542 MONTAUK HWY
65	0300019000900005000	Amagansett	NEW YORK STATE	518 MONTAUK HWY
66	0300020000200013002	Amagansett	ELSE C BRIDGEFORD	541 MONTAUK HWY
67	0300020000200020000	Amagansett	ANN DUFFY	551 MONTAUK HWY
68	0300020000200022000	Amagansett	OUTRIGGER OWNERS INC	30 ATLANTIC AVE
69	0300020000300008000	Amagansett	DENNIS O'REILLY	104 MONTAUK HWY
70	0300022000100012004	Amagansett	GARY APREA	100 MONTAUK HWY
71	0300027000200002001	Amagansett	PORT ROYAL OWNERS CORP	140 MAIN ST
72	0300027000200019000	Amagansett	FDL DENTAL LAB INC	136 MAIN ST
73	0300027000300014000	Amagansett	MONTAUK PROPERTIES LLC	130 MAIN ST
74	0300027000400005000	Amagansett	PETER JOYCE	11 INDIAN WELLS HWY
75	0300027000400008017	Amagansett	102 INDUSTRIAL PROPERTIES, LLC	4 AMAGANSETT SQUARE DR
76	0300027000400018000	Amagansett	NORTH SHORE ROAD, LLC	146 MONTAUK HWY
77	0300027000400027000	Amagansett	EAST END RESTAURANT HOLDINGS LLC	154 MONTAUK HWY
78	0300027000400029000	Amagansett	AVALON LK FRONT RESORT INC	160 MONTAUK HWY
79	0300027000400030000	Amagansett	DOUBLE-AL HOLDING CORP	14 AMAGANSETT SQUARE DR
80	0300027000400031000	Amagansett	TOWN OF EAST HAMPTON	12 AMAGANSETT SQUARE DR
81	0300027020100001000	Amagansett	UNIT OWNERS	10 AMAGANSETT SQUARE DR
82	0300032000100008002	Amagansett	TOWN OF EAST HAMPTON	6 AMAGANSETT SQUARE DR
83	0300032000300013005	Amagansett	DOG BEACH LLC	36 BUNKER HILL RD
84	0300032000300014000	Amagansett	CVM ENTERPRISES LLC	30 BUNKER HILL RD
85	0300032000500004000	Amagansett	SEA CLOSE AT MONTAUK CORP	12 BUNKER HILL RD
86	0300032000500011000	Amagansett	NAN BUSH	575 MONTAUK HWY
87	0300032000500012000	Amagansett	NAN BUSH	83 CENTRAL AVE
88	0300032000600014000	Amagansett	MONTAUK AGENCY INC	151 INDIAN WELLS HWY
89	0300032000600018000	Amagansett	UNIT OWNERS	379 BLUFF RD
90	0300032000700039000	East Hampton	REBECCA BRUCE	ROUTE 114
91	0300032000700040000	East Hampton	REBECCA BRUCE	291 SPRINGS FIREPLACE RD
92	0300037000200001000	East Hampton	NASSAU COUNCIL OF GIRL SCOUTS	281 SPRINGS FIREPLACE RD
93	0300038000400002000	East Hampton	D & R FAMILY REALTY GROUP, LLC	324 THREE MILE HARBOR RD
94	0300038000700015000	East Hampton	GEORGE NICHOLAS	295 THREE MILE HARBOR RD
95	0300045000200001001	East Hampton	CARLA C CRAFT	72 HARBOR VIEW AVE
96	0300045000200002000	East Hampton	MYRICA INC	765 ROUTE 114
97	0300045000200004000	East Hampton	MYRICA INC	BARBOUR ST
98	0300047000100006001	East Hampton	MARIE METZGER	259 SPRINGS FIREPLACE RD
99	0300047000100007000	East Hampton	SEASCAPE PROPERTIES	223 SPRINGS FIREPLACE RD
100	0300047000100009000	East Hampton	BEACH PLUM OWNERS CORP	211 SPRINGS FIREPLACE RD
101	0300047000100010001	East Hampton	BREAKERS MOTEL INC	209 SPRINGS FIREPLACE RD
102	0300047000200010001	East Hampton	EAST COAST MANAGEMENT LTD	199 SPRINGS FIREPLACE RD
103	0300047000300002000	East Hampton	RMS MARKET, LLC	195 SPRINGS FIREPLACE RD
104	0300047000300003000	East Hampton	EICHNER HOLDINGS,LLC	185 SPRINGS FIREPLACE RD
105	0300047000300006000	East Hampton	VILLAGE DUNES APT CORP	191 SPRINGS FIREPLACE RD
106	0300048000100003000	East Hampton	12-4 EQUITIES LLC	204 SPRINGS FIREPLACE RD
107	0300048000200003000	East Hampton	RICHARD T GILMARTIN	208 SPRINGS FIREPLACE RD
108	0300048000200041000	East Hampton	FORT POND LODGE INC	182 SPRINGS FIREPLACE RD
109	0300048000300041000	East Hampton	REMI-HOLDING LTD	8 WASHINGTON AVE
110	0300048000300042000	East Hampton	MONTAUK SERVICE CENTER INC	2 WASHINGTON AVE
111	0300048000300043000	East Hampton	PETER CUCCI	163 SPRINGS FIREPLACE RD
112	0300048000300045000	East Hampton	ARTHUR TRIFARI	161 SPRINGS FIREPLACE RD
113	0300048000300046000	East Hampton	EMPIRE IMPORT- EXPORT OF USA INC	159 SPRINGS FIREPLACE RD
114	0300048000300047000	East Hampton	THE LIDO BEACH RESORT, LLC	141 SPRINGS FIREPLACE RD
115	0300048000300048000	East Hampton	FORT POND PARTNERS LLC	139 SPRINGS FIREPLACE RD
116	0300048000400018000	East Hampton	JOHN T DONAHUE	92 THREE MILE HARBOR RD
117	0300048000500037001	East Hampton	SOLE EAST, LLC	37 THREE MILE HARBOR RD
118	0300048000800022001	East Hampton	BEACHCOMBER LTD	33 THREE MILE HARBOR RD
119	0300049000100003000	East Hampton	RALPH MAYER	31 THREE MILE HARBOR RD

#	DSBL	School District	Name	Address
120	0300049000100004000	East Hampton	RALPH MAYER	46 THREE MILE HARBOR RD
121	0300049000100005000	East Hampton	GERARD CUTILLO	44 THREE MILE HARBOR RD
122	0300049000100006000	East Hampton	58 SOUTH ERIE AVENUE LLC	219 ACCABONAC RD
123	0300049000100007000	East Hampton	LANDSEAST LLC	128 SPRINGS FIREPLACE RD
124	0300049000100008000	East Hampton	ERNEST ROTTACH	207 ACCABONAC RD
125	0300049000100009000	East Hampton	TRAILS END ASSOC	181 ACCABONAC RD
126	0300049000100011000	East Hampton	NEPTUNE MOTEL OF MONTAUK NY LTD	60 SPINNER LN
127	0300049000100013004	East Hampton	PETER JOYCE	28 SPINNER LN
128	0300049000100022000	East Hampton	JUSCOLYN REALTY LLC	13 THREE MILE HARBOR RD
129	0300049000100024000	East Hampton	JEANETTE B RATTINER	23 THREE MILE HARBOR RD
130	0300049000100025000	East Hampton	RICHARD WHITE JR	136 N MAIN ST
131	0300049000100026000	East Hampton	WITLEY REAL ESTATE INC	130 N MAIN ST
132	0300049000100027000	East Hampton	RICHARD F WHITE JR	120 N MAIN ST
133	0300049000100028000	East Hampton	KSDD CORP.	148 N MAIN ST
134	0300049000100029000	East Hampton	LISA R PERCY	79 SPRING CLOSE HWY
135	0300049000100030000	East Hampton	MONTAUK CLOTHING COMPANY INC	457 MONTAUK HWY
136	0300049000100031000	East Hampton	STUART FOLEY	476 MONTAUK HWY
137	0300049000100034000	East Hampton	JENNIE MARTELL	490 MONTAUK HWY
138	0300049000100035000	East Hampton	JENNIE MARTELL	492 MONTAUK HWY
139	0300049000200013000	East Hampton	MONTAUK COMM CHURCH	500 MONTAUK HWY
140	0300049000300001002	East Hampton	JOHN RUTKOWSKI	320 ABRAHAMS PATH
141	0300049000300003000	East Hampton	VAM HOLDINGS, LLC	150 TOWN LN
142	0300049000300005001	East Hampton	JAMES C. GRIMES	515 MONTAUK HWY
143	0300049000300008000	East Hampton	FORT POND PARTNERS LLC	178 BUCKSKILL RD
144	0300049000300013000	East Hampton	JAMES C GRIMES	191 BUCKSKILL RD
145	0300049000300014000	East Hampton	41 SOUTH EUCLID, LLC	1 LEARNED HANDS CT
146	0300049000300017000	East Hampton	ROBERT ECKER	2 LEARNED HANDS CT
147	0300049000300019000	East Hampton	BRIDGEHAMPTON NATIONAL BANK	3 LEARNED HANDS CT
148	0300049000300022000	East Hampton	EUGENIA DESMOND	4 LEARNED HANDS CT
149	0300049000300025000	East Hampton	THE LIDO BEACH RESORT, LLC	172 BUCKSKILL RD
150	0300049000300027001	East Hampton	BMRLJ INC	8 HARDSCRABBLE CT
151	0300049000300028000	East Hampton	THE MER SERVICE CORP	10 HARDSCRABBLE CT
152	0300049000300029000	East Hampton	THE MER SERVICE CORP	9 HARDSCRABBLE CT
153	0300049000300030000	East Hampton	THE MER SERVICE CORP	7 HARDSCRABBLE CT
154	0300049000300031000	East Hampton	WALTER A NELSON , JR. TRUSTEE	5 HARDSCRABBLE CT
155	0300049000300032000	East Hampton	JOHN DROBECKER	45 ROUTE 114
156	0300049000300034002	East Hampton	PFUND INDUSTRIES LLC	53 ROUTE 114
157	0300049000300035000	East Hampton	J P MORGAN CHASE BANK, NATIONAL ASSOCIATION	51 ROUTE 114
158	0300049000300039001	East Hampton	CHRISTIAN E PEDERSEN	48 ROUTE 114
159	0300049000400001000	East Hampton	RC CHURCH OF MOST HOLY TRINITY	104 N MAIN ST
160	0300049000400002000	East Hampton	JOHN W KRONUCH	100 N MAIN ST
161	0300049000400003000	East Hampton	782 REALTY, LLC	159 PANTIGO RD
162	0300049000400004000	East Hampton	HERBERT REALTY LLC	100 PANTIGO PL
163	0300049000400005000	East Hampton	JAMES HEWITT	200 PANTIGO PL
164	0300049000400006000	East Hampton	FRANK N TUMA	199 PANTIGO RD
165	0300049000400007000	East Hampton	MONTAUK PLAZA EAST LLC	203 PANTIGO RD
166	0300049000400008000	East Hampton	JEANINE MIEDZWIECKI	219 PANTIGO RD
167	0300049000400010000	East Hampton	HERBERT REALTY LLC	221 PANTIGO RD
168	0300049000400012001	East Hampton	NATURALLY GOOD FOODS AND CAFE INC	221 PANTIGO RD
169	0300049000400014003	East Hampton	ICARUS CORPORATION	231 PANTIGO RD
170	0300049000400016001	East Hampton	ICARUS CORP	241 PANTIGO RD
171	0300049000400019000	East Hampton	BLUE SEA OF MONTAUK 2, LLC	251 PANTIGO RD
172	0300049000400020000	East Hampton	S. ETNA AVE, LLC	257 PANTIGO RD
173	0300049000400021000	East Hampton	BLUE SEA OF MONTAUK, LLC	277 PANTIGO RD
174	0300049000400022000	East Hampton	SOUTH ETNA REALTY LLC	283 PANTIGO RD
175	0300049000400023000	East Hampton	63 THE PLAZA LLC	226 PANTIGO RD
176	0300049000400024000	East Hampton	MONTAUK BEACH HOUSE, LLC.	250 PANTIGO RD
177	0300049000400025002	East Hampton	FRANCES ANAGNOS REDDINGTON	300 PANTIGO PL
178	0300049000400025003	East Hampton	FIRST NATL BANK OF E HAMPTON	300 PANTIGO PL
179	0300049000400026000	East Hampton	DENNIS SISCO	300 PANTIGO PL

#	DSBL	School District	Name	Address
180	0300049000400027000	East Hampton	JOHN KEESHAN	300 PANTIGO PL
181	0300049000400028000	East Hampton	JOSEPH K DUFFY	300 PANTIGO PL
182	0300049000400029000	East Hampton	ALAN STEIL	300 PANTIGO PL
183	0300049000400030000	East Hampton	MONTAUK VILLAGE PROPERTIES LLC.	300 PANTIGO PL
184	0300049000400031000	East Hampton	RONALD PAON	300 PANTIGO PL
185	0300049000400034000	East Hampton	MONTAUK MINI MALL REALTY CORP	300 PANTIGO PL
186	0300049000400035000	East Hampton	696 INC.	300 PANTIGO PL
187	0300049000400037000	East Hampton	MONTAUK MINI MALL REALTY CORP	300 PANTIGO PL
188	0300049000400039000	East Hampton	LAWRENCE FRANZONE	300 PANTIGO PL
189	0300049000400040000	East Hampton	JOAN LYCKE	300 PANTIGO PL
190	0300049000400041000	East Hampton	HELMAR CIRILLO	300 PANTIGO PL
191	0300049000400047000	East Hampton	ICARUS CORP	300 PANTIGO PL
192	0300049000500019000	East Hampton	MINNA COLAKIS TRUSTEE	300 PANTIGO PL
193	0300049000600007000	East Hampton	MONTAUK CLOTHING CO, INC	341 PANTIGO RD
194	0300049000600013001	East Hampton	MYC RESORT LLC	351 MONTAUK HWY
195	0300049000600016000	East Hampton	ROYAL ATLANTIC CORP	400 MONTAUK HWY
196	0300049000600019001	East Hampton	ROYAL ATLANTIC NORTH CORP	49 SKIMHAMPTON RD
197	0300049000600020001	East Hampton	QUEENSBEACH LLC	458 MONTAUK HWY
198	0300049000600020002	East Hampton	OCEAN REALTY HOLDING CORP	470 MONTAUK HWY
199	0300049000600020003	East Hampton	STAR DEVELOPMENT REALTY HOLDING	288 MONTAUK HWY
200	0300049000600020004	East Hampton	DES REALTY CORPORATION	3 POTTERS LA
201	0300049000600020005	East Hampton	STAR DEVELOPMENT REALTY HOLDING	178 MONTAUK HWY
202	0300049000600020006	East Hampton	OCEAN REALTY HOLDING CORP	22 MONTAUK HWY
203	0300049000600020007	East Hampton	STAR DEVELOPMENT REALTY HOLDING	26 MONTAUK HWY
204	0300049000600020008	East Hampton	DES REALTY CORPORATION	106 NEWTOWN LN
205	0300049000600020009	East Hampton	STAR DEVELOPMENT REALTY HOLDING	94 NEWTOWN LA
206	0300049000600020010	East Hampton	DES REALTY CORP	58 GINGERBREAD LN
207	0300049000600020011	East Hampton	STAR DEVELOPMENT REALTY HOLDING	50 GINGERBREAD LN
208	0300049000600020012	East Hampton	STAR DEVELOPMENT REALTY HOLDING	11 FRESNO PL
209	0300049000600020013	East Hampton	UNIT OWNERS	31 RACE LN
210	0300049000600021000	East Hampton	SURF CLUB AT MONTAUK CORP	12 GINGERBREAD LA
211	0300049000600026000	East Hampton	CITM LLC	8 GINGERBREAD LA
212	0300049010700001000	East Hampton	ROBERT M GROSSER	26 RACE LA
213	0300049020100001000	East Hampton	WILLIAM B HEAD	21 RAILROAD AVE
214	0300049020100002000	East Hampton	WILLIAM J MCLOUGHLIN	36 RACE LN
215	0300049020100003000	East Hampton	PAUL H ABELEW	GINGERBREAD LA
216	0300049020100004000	East Hampton	RICONDA REVOCABLE TRUST DATED SEPTEMBER 30, 2009	15 RAILROAD AVE
217	0300049020100005000	East Hampton	SIDNEY D WEXLER	11 RAILROAD AVE
218	0300049020100006000	East Hampton	CARL FERRARO	9 RAILROAD AVE
219	0300049020100007000	East Hampton	THERESA IACOVANO	7 RAILROAD AVE
220	0300049020100008000	East Hampton	GARY CANNIZZARO	11 LUMBER LA
221	0300050000100001000	East Hampton	BIG JOHNNY LLC	105 NEWTOWN LA
222	0300050000100002000	East Hampton	CRAIG WINGATE	99 NEWTOWN LA
223	0300050000100003000	East Hampton	MONTAUK PPH CORP.	93 NEWTOWN LA
224	0300050000100004000	East Hampton	696 INC	87 NEWTOWN LA
225	0300050000100005000	East Hampton	VASTI ENT INC	7 MUCHMORE LA
226	0300050000100007001	East Hampton	DAUNT FAMILY LIMITED PARTNERSHIP	5 TOILSOME LN
227	0300050000100009001	East Hampton	TLM MANAGEMENT CORP	15 TOILSOME LA
228	0300050000100010000	East Hampton	KENNETH F JACOB	18 ROUTE 114
229	0300050000100011000	East Hampton	ZUM SCHNEIDER MTK LLC	135 MAIN ST
230	0300050000100013000	East Hampton	SANDS MOTEL INC	34 GINGERBREAD LA
231	0300050000100014000	East Hampton	SANDS MOTEL INC	32 GINGERBREAD LA
232	0300050000100015000	East Hampton	JUL-ABE REALTY LTD	30 GINGERBREAD LA
233	0300050000100020000	East Hampton	OCEAN RESORT INN LP	28 GINGERBREAD LA
234	0300050000100023002	East Hampton	GLENN METZGER	26 GINGERBREAD LA
235	0300050000100023003	East Hampton	KEVIN S. MURPHY REVOCABLE TRUST	24 GINGERBREAD LA
236	0300050000100023004	East Hampton	WINTER BROS. REAL ESTATE LLC	44 GINGERBREAD LA
237	0300050000100023005	East Hampton	HOUSES ON THE OCEAN CORP	42 GINGERBREAD LA
238	0300050000100025001	East Hampton	ROY S TUCCILLO	40 GINGERBREAD LA
239	0300050000100027001	East Hampton	ANKIT & AVANI ENTERPRISES,INC.	38 GINGERBREAD LA

#	DSBL	School District	Name	Address
240	0300050000100028000	East Hampton	OCEAN END APARTMENTS LTD	36 GINGERBREAD LA
241	0300050000200002001	East Hampton	MONTAUK REALTY ASSOCIATES, LLC	56 NEWTOWN LA
242	0300050000200003000	East Hampton	DAUNT FAMILY LIMITED PARTNERSHIP	54 NEWTOWN LA
243	0300050000200004000	East Hampton	BORN FREE II AT MONTAUK OWNERS INC	52 NEWTOWN LN
244	0300050000200007001	East Hampton	BORN FREE II	50 NEWTOWN LA
245	0300050000200008000	East Hampton	SOLE EAST, LLC	48 NEWTOWN LA
246	0300050000200016000	East Hampton	ROYAL ATLANTIC COOPERATIVE CORP	46 NEWTOWN LN
247	0300050000200021000	East Hampton	148 SOUTH EMERSON PARTNERS, LLC	40 NEWTOWN LA
248	0300050000200024001	East Hampton	ROYAL ATLANTIC CORP	36 NEWTOWN LN
249	0300050000200026001	East Hampton	OCEAN BEACH RESORT LTD	34 NEWTOWN LA
250	0300052000100001001	East Hampton	SOCRATES HIOTAKIS	32 NEWTOWN LA
251	0300052000100001002	East Hampton	THE STONE LION INN LLC	30 NEWTOWN LA
252	0300052000100005000	East Hampton	MY-MO APTS OF MONTAUK LTD	28 NEWTOWN LA
253	0300057000200010000	East Hampton	MAIDSTONE WJM CORP	16 NEWTOWN LN
254	0300057000600027001	East Hampton	HARBOR MARINA OF E H	14 NEWTOWN LN
255	0300058000200001000	East Hampton	KENY, LLC	6 NEWTOWN LA
256	0300058000200003004	East Hampton	EDWARD I HERBST	3 N MAIN ST
257	0300058000200003005	East Hampton	ONE WASHINGTON AVENUE LLC	2 NEWTOWN LA
258	0300058000200005000	East Hampton	512 THREE MILE HARBOR LLC	2 PANTIGO RD
259	0300058000200007000	East Hampton	MARTIN PETTERSEN	67 NEWTOWN LA
260	0300058000200011001	East Hampton	WAINSCOTT PROPERTIES INC	51 NEWTOWN LN
261	0300058000300002001	East Hampton	ZAS, LLC	47 NEWTOWN LN
262	0300058000300006000	East Hampton	MARTIN PETTERSEN	84 PARK PL
263	0300058000300010001	East Hampton	ROBERT E KALBACHER	41 NEWTOWN LA
264	0300058000300016000	East Hampton	RICHARD KALBACHER	37 NEWTOWN LA
265	0300062000200018002	East Hampton	SPRINGS FIRE DISTRICT	33 NEWTOWN LN
266	0300062000300009000	East Hampton	EVELYN S BATES	29 NEWTOWN LA
267	0300062000300014001	East Hampton	KING, KING AND TIKKANEN	27 NEWTOWN LA
268	0300062000300016000	East Hampton	BONAC PLAZA LLC	21 NEWTOWN LA
269	0300062000300021000	East Hampton	A LOUIS TENGZELIUS	19 NEWTOWN LA
270	0300062000300023000	East Hampton	A LOUIS TENGZELIUS	17 NEWTOWN LA
271	0300062000300026000	East Hampton	RANDY REICHART	13 NEWTOWN LN
272	0300062000300027000	East Hampton	TALMAGE HOLDINGS LLC	11 NEWTOWN LA
273	0300063000500006000	East Hampton	SPRINGS PRESBYTERIAN SO	7 NEWTOWN LA
274	0300067000400024000	East Hampton	LENHART COTTAGES CORP	1 MAIN ST
275	0300067000400036005	East Hampton	ANCIENT MARINER COTTAGES INC	19 MAIN ST
276	0300071000200007000	East Hampton	70TH STREET TRADING CORP	21 MAIN ST
277	0300071000200010000	East Hampton	HARTMAN'S BRINEY BREEZES REALTY	23 MAIN ST
278	0300071000200014000	East Hampton	KRAE VAN SICKLE	27 MAIN ST
279	0300075000100028005	East Hampton	MAIDSTONE HARBOR MARINA INC	31 MAIN ST
280	0300075000100029000	East Hampton	BJD ENTERPRISES LTD	35 MAIN ST
281	0300077000500001001	East Hampton	KATHERINA KAPPEL	39 MAIN ST
282	0300080000100003000	East Hampton	SPRINGS VILL IMP SOCIETY	41 MAIN ST
283	0300080000100014000	East Hampton	BARBARA J LA MONDA	NEWTOWN LN
284	0300080000100015000	East Hampton	LEONARD WEYERBACHER	2 MAIN ST
285	0300080000200001000	East Hampton	M C JAN INC	10 MAIN ST
286	0300080000300014000	East Hampton	SPRINGS SCHOOL DIST	14 MAIN ST
287	0300080000300023000	East Hampton	GLENN BENNETT	22 THE CIRCLE
288	0300080000300026000	East Hampton	SCHOOL DISTRICT 4	20 MAIN ST
289	0300087000300002001	East Hampton	93 OLD MONTAUK OWNERS INC	36 MAIN ST
290	0300087000300027000	East Hampton	WAVECREST APARTMENT CORP	51 THE CIRCLE
291	0300087000300028001	East Hampton	GURNEYS INN RESORT & SPA LTD	MAIN ST
292	0300093000100008000	East Hampton	HARBOR LANDS LLC	20 PARK PL
293	0300103000600023000	East Hampton	ST LUKES EPISCOPAL CHURCH	87 MAIN ST
294	0300103001000003000	East Hampton	KMB REALTY, LLC	85 MAIN ST
295	0300107000100036001	East Hampton	ROBERT J LAGARENNE	83 MAIN ST
296	0300108000200005000	East Hampton	NAPEAGUE CAMPING CLUB INC	79 MAIN ST
297	0300109000100021000	East Hampton	MUSEUM OF MODERN ART	30 PARK PL
298	0300109000200003000	East Hampton	SURF BARN	75 MAIN ST
299	0300109000200012001	East Hampton	S T R LLC	69 MAIN ST

#	DSBL	School District	Name	Address
300	0300110000100010000	East Hampton	MICHAEL DIOGUARDI	32 PARK PL
301	0300110000100012000	East Hampton	SEA CREST AT AMAGANSETT CORP	67 MAIN ST
302	0300110000100013000	East Hampton	DRIFTWOOD APT CORP	63 MAIN ST
303	0300110000200015001	East Hampton	HITHER HILLS RACQUET CLUB INC	MAIN ST
304	0300110000200022000	East Hampton	SUN HAVEN MOTEL CORP	55 MAIN ST
305	0300110000200023000	East Hampton	HERMITAGE AT NAPEAGUE LTD	53 MAIN ST
306	0300111000100001015	East Hampton	NYS OFFICE OF PARKS RECREATION	51 MAIN ST
307	0300119000500006000	East Hampton	THEODORE FREUND III	66 MAIN ST
308	0300119000500008004	East Hampton	185 SPRINGS FIREPLACE ROAD INC	60 THE CIRCLE
309	0300120000100001000	East Hampton	DONALD A VANDERVEER	56 THE CIRLCE
310	0300120000100002000	East Hampton	THREE MILE HARBOR MARINA LLC.	78 MAIN ST
311	0300120000100003000	East Hampton	THREE MILE HARBOR MARINA LLC.	86 MAIN ST
312	0300120000100005000	East Hampton	3 MH, LLC	94 MAIN ST
313	0300120000100011000	East Hampton	GEOFFREY M BRIGGS	46 MAIN ST
314	0300120000200004002	East Hampton	3 MH, LLC	48 MAIN ST
315	0300120000200005000	East Hampton	DONALD BROWN ROBERTSON	50 MAIN ST
316	0300120000200015000	East Hampton	DAMARK'S MARKET DELI LTD	52 MAIN ST
317	0300122000100004000	East Hampton	324 THREE MILE HARBOR LLC	69 THE CIRCLE
318	0300122000500018000	East Hampton	LUZ GONZALEZ	54 MAIN ST
319	0300123000600012000	East Hampton	HOLUB ENTERPRISES, INC	65 THE CIRCLE
320	0300127000100008000	East Hampton	GEORGE BALASSES	61 THE CIRCLE
321	0300127000300016000	East Hampton	DEVON YACHT CLUB INC.	57 MAIN ST
322	0300130000100011000	East Hampton	RICHARD G EHRLICH INC	MAIN ST
323	0300130000200001000	East Hampton	LOBSTER ROLL INC	53 NEWTOWN LA
324	0300130000200007004	East Hampton	OCEAN COLONY & TENNIS CLUB LTD	55 NEWTOWN LA
325	0300130000200012000	East Hampton	WHITEWATER APT CORP	106 PARK PL
326	0300131000200004001	East Hampton	WHITE SANDS APARTMENTS HOLDING CORP	104 PARK PL
327	0300131000800008000	East Hampton	WHITE SANDS MOTEL HOLDING CORP	100 PARK PL
328	0300133000200001000	East Hampton	FOREVER REAL ESTATE PROPERTY LLC	102 PARK PL
329	0300139000300019012	East Hampton	WHALEBONE HOUSING DEV FUND CO	110 PARK PL
330	0300143000100008000	East Hampton	JMJM HOLDING COMPANY INC	79 N MAIN ST
331	0300143000100010000	East Hampton	BISTRIAN GRAVEL CORP	69 N MAIN ST
332	0300145000400004002	East Hampton	211 SPRINGS FIREPLACE ROAD INC	74 N MAIN ST
333	0300145000400004003	East Hampton	211 SPRINGS FIREPLACE ROAD INC	80 N MAIN ST
334	0300147000300040001	East Hampton	SMILING JOE'S INC	68 NEWTOWN LA
335	0300147000300043001	East Hampton	EUGENE F SIMONS	66 NEWTOWN LA
336	0300147000300051000	East Hampton	DRIFTWOOD ON THE OCEAN INC	9 BARNS LA
337	0300147000300056001	East Hampton	TOILSOME PROPERTIES INC	20 BARNS LA
338	0300147000400001000	East Hampton	AUGUST LOCKWOOD	12 BARNS LA
339	0300147000400002003	East Hampton	C & T ENTERPRISES OF NEW YORK LLC	9 MAIN ST
340	0300147000600002000	East Hampton	182 SPRINGS FIREPLACE, LLC.	11 N MAIN ST
341	0300147000700013000	East Hampton	THOMAS M CICCARIELLO	31 N MAIN ST
342	0300147000700018000	East Hampton	SPRINGS ROAD LLC	43 PANTIGO RD
343	0300147000700019000	East Hampton	163 SPRINS FIREPLACE ROAD,LLC	41 PANTIGO RD
344	0300147000700020000	East Hampton	161 SPRINGS FIREPLACE ROAD, LLC	109 PANTIGO RD
345	0300147000700021000	East Hampton	STEVEN WESNOFSKE	79 NEWTOWN LA
346	0300147000700025000	East Hampton	ROBERTA A BRAUER	22 PANTIGO RD
347	0300147000700026001	East Hampton	FIREPLACE PARTNERS, LLC	34 PANTIGO RD
348	0300149000300002002	East Hampton	B & C GOLF CLUB INC	38 PANTIGO RD
349	0300150000300008001	East Hampton	SOUTH FORK COUNTRY CLUB INC	12 GAY RD
350	0300150000300016001	East Hampton	AMAGANSETT FIRE DISTRICT	18 GAY RD
351	0300150000500026000	East Hampton	PRINNIE REAL ESTATE CORP	166 MONTAUK HWY
352	0300150000500027000	East Hampton	PRINNIE REAL ESTATE CORP	128 MONTAUK HWY
353	0300150000500028004	East Hampton	VILLA PRINCE RISTORANTE CORP	100 MONTAUK HWY
354	0300156000100004002	East Hampton	EAST END CHURCH OF CHRIST INC	103 MONTAUK HWY
355	0300156000100008004	East Hampton	PLANK INDUSTRIAL, LLC.	85 MONTAUK HWY
356	0300156000100008005	East Hampton	PLANK INDUSTRIAL, LLC.	143 MAIN ST
357	0300156000100008006	East Hampton	PLANK INDUSTRIAL, LLC.	153 MAIN ST
358	0300156000100008007	East Hampton	PLANK INDUSTRIAL, LLC.	159 MAIN ST
359	0300156000100009002	East Hampton	ROSS INSTITUTE	4 MONTAUK HWY

#	DSBL	School District	Name	Address
360	0300161000200015000	East Hampton	E H NEIGHBORHOOD HOUSE ASSOC INC	207 MAIN ST
361	0300161000300027000	East Hampton	THE MARTIAL ARTS CENTER, LLC.	74 JAMES LA
362	0300161000300028000	East Hampton	KENT F GAUGLER	50 MONTAUK HWY
363	0300161000300029000	East Hampton	KENT F GAUGLER	74 MONTAUK HWY
364	0300161000400001000	East Hampton	SID CULLUM INC	65 MONTAUK HWY
365	0300161000400009000	East Hampton	CILVAN REALTY LLC	71 MONTAUK HWY
366	0300162000200006001	East Hampton	WINDMILL VILLAGE, LLC	75 MONTAUK HWY
367	0300162000500001000	East Hampton	TOWN OF EAST HAMPTON	47 MONTAUK HWY
368	0300162000500021001	East Hampton	WINDMILL HOUSING DEVELOPMENT	4 GEORGICA RD
369	0300162000500022000	East Hampton	TOWN OF EAST HAMPTON	W DUNE LN
370	0300162000500025000	East Hampton	CALVARY BAPTIST CHURCH	81 APAQUOGUE RD
371	0300162000500027003	East Hampton	TIMOTHY F HEALY	92 OCEAN AVE
372	0300163000200015000	East Hampton	DAVID R BROWNE	127 APAQUOGUE RD
373	0300163000200017003	Montauk	GSG THREE MILE, LLC	22 SOUNDVIEW DR
374	0300163000700020000	Montauk	NOSA, LLC	6 SOUNDVIEW DR
375	0300163000700023001	Montauk	MARY JANES REAL ESTATE INC	17 SOUNDVIEW DR
376	0300163000700024000	Montauk	FRANK CAFISO	540 W LAKE DR
377	0300163000700028001	Montauk	S & A PETROLEUM GROUP, INC.	560 W LAKE DR
378	0300165000500014003	Montauk	79 SPRING CLOSE HIGHWAY, LLC	552 W LAKE DR
379	0300166000300009000	Montauk	TOWN OF EAST HAMPTON	548 W LAKE DR
380	0300166000400020000	Montauk	457 REALTY CORP	433 W LAKE DR
381	0300166000600001000	Montauk	JESSE H JACKSON JR	57 KIRK AVE
382	0300166000600002000	Montauk	HAMPTONS LAND CORP	500 W LAKE DR
383	0300166000600003000	Montauk	HAMPTONS LAND CORP.	507 W LAKE DR
384	0300166000600005000	Montauk	SPIELBERG PROPERTIES LLC	521 W LAKE DR
385	0300167000200016003	Montauk	ISLAND TENNIS LP	533 W LAKE DR
386	0300167000300001000	Montauk	ISLAND TENNIS, LP	18 WELLES AVE
387	0300168000700030000	Montauk	23 WINDMILL LANE LLC	10 WELLES AVE
388	0300169000300001000	Montauk	HAMPTON OAKS LLC	6 WELLES AVE
389	0300170000200001000	Montauk	EAST HAMPTON AMERICAN LEGION	2 WELLES AVE
390	0300170000300019000	Montauk	ELBERT T EDWARDS	479 W LAKE DR
391	0300170000300020000	Montauk	CROSS HIGHWAY LP	482 W LAKE DR
392	0300170000400001000	Montauk	8 MONTAUK HIGHWAY INC	484 W LAKE DR
393	0300170000400015000	Montauk	WHITMORE INVESTMENT LTD PTNRSHP	541 E LAKE DR
394	0300170000400017000	Montauk	VESTMENT LTD PA RT THE WHITMORE IN	521 E LAKE DR
395	0300170000400018000	Montauk	ISAAC CHOW	507 E LAKE DR
396	0300170000400020001	Montauk	AMAGANSTT SERVICE STATION, LLC	467 E LAKE DR
397	0300170000400021001	Montauk	64 MONTAUK HIGHWAY, LLC	435 E LAKE DR
398	0300170000400022001	Montauk	CLAM HOLE INC	541 W LAKE DR
399	0300171000100010000	Montauk	JANE KIEMBOCK	478 W LAKE DR
400	0300171000100011000	Montauk	FIVE DWARFS INC	474 W LAKE DR
401	0300171000100012000	Montauk	SALJOE LACARRUBBA LLC	470 W LAKE DR
402	0300171000100013000	Montauk	JOSEPH LACARRUBBA	466 W LAKE DR
403	0300171000100014000	Montauk	UDELL M. CULLUM	452 W LAKE DR
404	0300171000100015000	Montauk	PLATANAKI LLC	448 W LAKE DR
405	0300171000100016000	Montauk	DEVON VENTURES LLC	444 W LAKE DR
406	0300171000100017000	Montauk	AMAGANSETT ASSOCIATES	440 W LAKE DR
407	0300171000100018000	Montauk	AMAGANSETT ASSOCIATES	434 W LAKE DR
408	0300171000100026001	Montauk	PATRICK BISTRIAN JR	426 W LAKE DR
409	0300171000200004000	Montauk	231 MAIN STREET LLC	408 W LAKE DR
410	0300171000200005000	Montauk	237 MAIN STREET, LLC	59 STAR ISLAND RD
411	0300171000200006000	Montauk	PETER RANA JR	53 STAR ISLAND RD
412	0300171000200007000	Montauk	WHITE GOOSE I, LLC	32 STAR ISLAND RD
413	0300171000200009002	Montauk	HERBERT E FIELD	48 STAR ISLAND RD
414	0300171000200011001	Montauk	ALLIANCE MARKETING CORP.	58 STAR ISLAND RD
415	0300171000200016000	Montauk	WHITE GOOSE II, LLC	323 E LAKE DR
416	0300171000300001000	Montauk	BALASSES HOUSE ANTIQUES LTD	379 W LAKE DR
417	0300171000300003000	Montauk	216 MAIN, LLC	387 W LAKE DR
418	0300171000300004001	Montauk	WHITE GOOSE III, LLC	407 W LAKE DR
419	0300171000300012000	Montauk	ROMAN CATHOLIC CHURCH	411 W LAKE DR

#	DSBL	School District	Name	Address
420	0300171000400002000	Montauk	AMAGANSETT PRESBYTERIAN SOCIETY	386 W LAKE DR
421	0300171000500002000	Montauk	AMAGANSETT PRESBYTERIAN SOCIETY	364 W LAKE DR
422	0300172000200009004	Montauk	ST. MICHAEL'S WINDMILL HOUSING DEVELOPMENT FUND	352 W LAKE DR
423	0300172000200013000	Montauk	LIBORIA ESPOSITO	15 STAR ISLAND RD
424	0300172000200015000	Montauk	R & N AMAGANSETT REALTY, LLC	3 STAR ISLAND RD
425	0300172000200022002	Montauk	HAROLD F MCMAHON JR	131 E LAKE DR
426	0300172000200033002	Montauk	BENEDICT DE PIETRO	211 E LAKE DR
427	0300172000200034001	Montauk	PUTNAM AMAGANSETT FARMS HOLDINGS LLC.	MIDLAND RD
428	0300172000300041000	Montauk	FARIEL HOLDING CORP	2000 MONTAUK HWY
429	0300172000500004000	Montauk	MAIRE JAANUS REVOCABLE TRUST DATED 02/04/10	240 EDGEMERE ST
430	0300172000500005000	Montauk	ROBERT S STORCH (CO-TRUSTEE)	12 FLAMINGO AVE
431	0300172000600002000	Montauk	HOWARD T HOGAN JR	11 FLAMINGO AVE
432	0300172000600003000	Montauk	136 MAIN STREET AMAGANSETT LLC	240 FORT POND RD
433	0300172000600004000	Montauk	CUMBERLAND EAT LLC	74 FIRESTONE RD
434	0300172000600006001	Montauk	AMAGANSETT APPLIED ARTS INC	80 FIRESTONE RD
435	0300172001200001000	Montauk	4 AMAGANSETT DRIVE, LLC	88 FIRESTONE RD
436	0300172001200002000	Montauk	146 MONTAUK HIGHWAY, LLC	88 TUTHILL RD
437	0300172001200003000	Montauk	154 MONTAUK HIGHWAY, LLC	42 S FAIRVIEW AVE
438	0300172001200004000	Montauk	160 MONTAUK HIGHWAY, LLC	31 E LAKE DR
439	0300172001200005000	Montauk	14 AMAGANSETT DRIVE, LLC	71 E LAKE DR
440	0300172001200006000	Montauk	12 AMAGANSETT DRIVE, LLC	81 E LAKE DR
441	0300172001200007000	Montauk	AMAGANSETT DRIVE, LLC	52 E LAKE DR
442	0300172001200009000	Montauk	6 AMAGANSETT DRIVE, LLC	170 OLD MONTAUK HWY
443	0300173000100002001	Montauk	BUNKER BAY REAL ESTATE HOLDINGS	16 NAVY RD
444	0300173000100003001	Montauk	PRINCIPI PROPERTIES, LLC	213 EDGEMERE ST
445	0300173000100006000	Montauk	MIKE DISUNNO & SON, INC.	183 S EDGEMERE ST
446	0300173000100007000	Montauk	JAMES E DI SUNNO	90 SECOND HOUSE RD
447	0300176000400002000	Montauk	CROW'S NEST LLC	10 SECOND HOUSE RD
448	0300180000100008005	Montauk	TOWN OF EAST HAMPTON	54 N SHORE RD
449	0300181000100005001	Montauk	EAST HAMPTON INDOOR TENNIS CLUB	161 SECOND HOUSE RD
450	0300181000200004000	Montauk	TOWN OF EAST HAMPTON	136 SECOND HOUSE RD
451	0300181000400001001	Montauk	HAPPY WIFE LLC.	134 SECOND HOUSE RD
452	0300181000400001002	Montauk	RSIL26 LLC.	128 SECOND HOUSE RD
453	0300181000400001003	Montauk	CZEEEEETE LLC	FENWICK PL
454	0300181000400001005	Montauk	GOODFRIEND SELF-STORAGE CORP	91 S FULTON ST
455	0300181000400001006	Montauk	STORAGE CORP GOODFRIEND SELF	4 OLD WEST LAKE DR
456	0300181000400004000	Montauk	ROSS SCHOOL	3 S LAKE DR
457	0300181000400007000	Montauk	KARDEN I,LLC	15 DITCH PLAINS RD
458	0300181000400011000	Montauk	DSTMCD LLC	39 DITCH PLAINS RD
459	0300181000400012000	Montauk	EAST HAMPTON SPORTS INC	43 DITCH PLAINS RD
460	0300181000400017000	Montauk	JONATHAN TURETSKY DR	40 DEFOREST RD
461	0300181000600001000	Montauk	PLANK INDUSTRIAL, LLC.	DEFOREST RD
462	0300181000600002000	Montauk	LYNN V MATZEN TRUST AGREEMENT	10 DEFOREST RD
463	0300181010100001000	Montauk	JONATHAN TURETSKY	12 DEFOREST RD
464	0300181010100002000	Montauk	JONATHAN TURETSKY	2 LINCOLN RD
465	0300181010100003000	Montauk	JONATHAN TURETSKY	10 LINCOLN RD
466	0300181010100004000	Montauk	JONATHAN TURETSKY	84 ADAMS DR
467	0300181010100005000	Montauk	JONATHAN TURETSKY	799 OLD MONTAUK HWY
468	0300181010100006000	Montauk	JONATHAN TURETSKY	793 OLD MONTAUK HWY
469	0300181020100001000	Montauk	HAMPTON HANGARS	779 OLD MONTAUK HWY
470	0300181020100002000	Montauk	HAMPTON HANGARS	769 OLD MONTAUK HWY
471	0300181020100003000	Montauk	HAMPTON HANGARS	626 MONTAUK HWY
472	0300181020100004000	Montauk	HAMPTON HANGARS	654 MONTAUK HWY
473	0300181020100005000	Montauk	HAMPTON HANGARS	662 MONTAUK HWY
474	0300181020100006000	Montauk	HAMPTON HANGARS	61 S EMERSON AVE
475	0300181020100007000	Montauk	HAMPTON HANGARS	147 SECOND HOUSE RD
476	0300181020100009000	Montauk	HAMPTON HANGARS	124 SECOND HOUSE RD
477	0300181020100010000	Montauk	HAMPTON HANGARS	56 SECOND HOUSE RD
478	0300181020100011000	Montauk	HAMPTON HANGARS	649 MONTAUK HWY
479	0300181020100012000	Montauk	HAMPTON HANGARS	653 MONTAUK HWY

#	DSBL	School District	Name	Address
480	0300181020100013000	Montauk	HAMPTON HANGARS	659 MONTAUK HWY
481	0300181020100014000	Montauk	HAMPTON HANGARS	669 MONTAUK HWY
482	0300181020100015000	Montauk	HAMPTON HANGARS	675 MONTAUK HWY
483	0300181020100016000	Montauk	HAMPTON HANGARS	5 S EMERY ST
484	0300181020100017000	Montauk	HAMPTON HANGARS	11 S EMERY ST
485	0300181020100018000	Montauk	HAMPTON HANGARS	81 SECOND HOUSE RD
486	0300181020100019000	Montauk	HAMPTON HANGARS	90 SECOND HOUSE RD
487	0300181020100020000	Montauk	HAMPTON HANGARS	727 OLD MONTAUK HWY
488	0300181020100021000	Montauk	HAMPTON HANGARS	76 S EDISON ST
489	0300181020100022000	Montauk	HAMPTON HANGARS	66 S ERIE AVE
490	0300181020100023000	Montauk	HAMPTON HANGARS	62 S ERIE AVE
491	0300181020100024000	Montauk	HAMPTON HANGARS	58 S ERIE AVE
492	0300181020100025000	Montauk	SOLUSIPSE LLC	54 S ERIE AVE
493	0300181020100026000	Montauk	HAMPTON HANGARS	63 S EUCLID AVE
494	0300181020100027000	Montauk	HAMPTON HANGARS	69 S EUCLID AVE
495	0300181020200001000	Montauk	SECURITY AVIATION	83 S EUCLID AVE
496	0300181020200002000	Montauk	RICHARD SMITH III	89 S EUCLID AVE
497	0300181020200003000	Montauk	LOCKVEST INC	99 THE PLAZA
498	0300181020200004000	Montauk	HARVEY AUERBACK	95 THE PLAZA
499	0300181020200005000	Montauk	SAINT EXUPERY LLC.	85 THE PLAZA
500	0300181020200006000	Montauk	JACQUIN FINK	771 MONTAUK HWY
501	0300183000400001000	Montauk	178 BUCKSKILL ROAD LLC	775 MONTAUK HWY
502	0300184000100007001	Montauk	RACQUET CLUB OF EASTHAMPTON INC	779 MONTAUK HWY
503	0300184000100008007	Montauk	GREGORY GORDON	781 MONTAUK HWY
504	0300184000100008010	Montauk	TRI-R REALTY LLC	787 MONTAUK HWY
505	0300184000100008011	Montauk	LEARNED HANDS COURT LLC	795 MONTAUK HWY
506	0300184000100008012	Montauk	MICHAEL DELFINO	809 MONTAUK HWY
507	0300184000300011000	Montauk	GREEN HOLLOW TENNIS CLUB INC	813 MONTAUK HWY
508	0300185000100031010	Montauk	B & S LLC	850 MONTAUK HWY
509	0300185000100031011	Montauk	SOVRAN ACQUISITION LIMITED PARTNERSHIP	15 S EDGEMERE ST
510	0300185000100031012	Montauk	SOVRAN ACQUISITION LIMITED PARTNERSHIP	34 S ERIE AVE
511	0300185000100031013	Montauk	SOVRAN ACQUISITION LIMITED PARTNERSHIP	30 S ERIE AVE
512	0300185000100031014	Montauk	SAT PROPERTIES , LLC	4 S ERIE AVE
513	0300185000200035002	Montauk	THE HUMMEL LIMITED LIABILITY CO	37 S EUCLID AVE
514	0300185000200035003	Montauk	ROBERT LINKER	41 S EUCLID AVE
515	0300185000200035004	Montauk	THOMAS A PEREZ	47 S EUCLID AVE
516	0300185000200039000	Montauk	COMPLEX 114, LLC	1 THE PLAZA
517	0300187000300003000	Montauk	GIUSEPPE F SPATOLA	22 S EUCLID AVE
518	0300187000300004000	Montauk	ROBICH INC	2 S EUCLID AVE
519	0300188000100004000	Montauk	TOWN OF EAST HAMPTON	695 MONTAUK HWY
520	0300188000100008001	Montauk	CHARLES HAUSMAN	697 MONTAUK HWY
521	0300188000100008003	Montauk	THE EAST HAMPTON HEALTH CARE FND	699 MONTAUK HWY
522	0300188000100009000	Montauk	199 PANTIGO ASSOCIATES	701 MONTAUK HWY
523	0300188000100010000	Montauk	KRP ASSOCIATES, LLC	717 MONTAUK HWY
524	0300188000100011000	Montauk	GREGORY W. ZWIRKO	721 MONTAUK HWY
525	0300188000100012000	Montauk	STANLEY SINGER	729 MONTAUK HWY
526	0300188000100013000	Montauk	STANLEY SINGER	731 MONTAUK HWY
527	0300188000100014000	Montauk	PANTIGO PROFESSIONAL CENTER LLC	21 S EUCLID AVE
528	0300188000100015000	Montauk	MYLES MAHONEY	67 S ESSEX ST
529	0300188000100016001	Montauk	FRANCIS FLEETWOOD	786 MONTAUK HWY
530	0300188000100017002	Montauk	STILLWATER PROPERTIES LLC	782 MONTAUK HWY
531	0300188000100018000	Montauk	277 PANTIGO RD, LLC	778 MONTAUK HWY
532	0300188000100026000	Montauk	282 PANTIGO ROAD, LLC	774 MONTAUK HWY
533	0300188000200004000	Montauk	E HAMPTON HOUSE OWNERS LTD	770 MONTAUK HWY
534	0300188000200005000	Montauk	ALBERT TRAGES	764 MONTAUK HWY
535	0300188000300101000	Montauk	ANDREW SABIN	5 S ETNA AVE
536	0300188000300102000	Montauk	ANDREW SABIN	15 S ETNA AVE
537	0300188000300103000	Montauk	TOWN OF EAST HAMPTON	38 S ETNA AVE
538	0300188000300104000	Montauk	TOWN OF EAST HAMPTON	34 S ETNA AVE
539	0300188000300105000	Montauk	TOWN OF EAST HAMPTON	28 S ETNA AVE

#	DSBL	School District	Name	Address
540	0300188000300106000	Montauk	TOWN OF EAST HAMPTON	12 S ETNA AVE
541	0300188000300107000	Montauk	TOWN OF EAST HAMPTON	10 S ETNA AVE
542	0300188000300108000	Montauk	TOWN OF EAST HAMPTON	8 S ETNA AVE
543	0300188000300109000	Montauk	DKBP REAL ESTATE LLC	6 S ETNA AVE
544	0300188000300110000	Montauk	ANDREW SABIN	63 THE PLAZA
545	0300188000300111000	Montauk	TOWN OF EAST HAMPTON	55 S ELMWOOD AVE
546	0300188000300112000	Montauk	DIRICH LLC	752 MONTAUK HWY
547	0300188000300114000	Montauk	SIEGEL FAMILY PROPERTIES LLC	746 MONTAUK HWY
548	0300188000300115000	Montauk	ANDREW SABIN	41 THE PLAZA
549	0300188000300116000	Montauk	SIEGEL FAMILY PROPERTIES LLC	37 THE PLAZA
550	0300188000300117000	Montauk	WILLIAM J FOWKES JR	33 THE PLAZA
551	0300189000100001000	Montauk	SPRING CLOSE LLC	29 THE PLAZA
552	0300189000100002000	Montauk	FIRST NATIONAL BANK EAST HAMPTON	732 MONTAUK HWY
553	0300189000100005000	Montauk	GABRIELE D BROUILLAUD	728 MONTAUK HWY
554	0300189000100006003	Montauk	HAMPTONS LAND CORP.	716 MONTAUK HWY
555	0300189000100007000	Montauk	BNB VENTURES III, LLC	710 MONTAUK HWY
556	0300189000100008000	Montauk	HARVEY L BENNETT	39 S ELMWOOD AVE
557	0300189000300003000	Montauk	288 PANTIGO LLC	43 S ELMWOOD AVE
558	0300190000200008001	Montauk	AMAGANSETT BEACH ASSOCIATION INC	45 S ELMWOOD AVE
559	0300190000200016002	Montauk	AMAGANSETT DUNES APTS CORP	47 S ELMWOOD AVE
560	0300191000200001000	Montauk	TOWN OF EAST HAMPTON	83 S ELMWOOD AVE
561	0300192000100021012	Montauk	JANE HARRINGON	21 SURFSIDE AVE
562	0300192000200017000	Montauk	WAINSCOTT EAST LLC	76 S ELMWOOD AVE
563	0300192000200018000	Montauk	L & M WINSLOW REALTY HOLDINGS LLC.	88 S ELMWOOD AVE
564	0300192000200020000	Montauk	JEAN R SINENBERG	155 S EMERSON AVE
565	0300192000200021000	Montauk	330 MONTAUK HIGHWAY LLC	131 S EMERSON AVE
566	0300192000200022000	Montauk	BROWN FAMILY PROPERTIES II, LLC	160 S EMERSON AVE
567	0300192000300005002	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
568	0300192000300007002	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
569	0300192000300007003	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
570	0300192000300039000	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
571	0300192000300042001	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
572	0300192000300043001	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
573	0300192000300051000	Montauk	TOWN OF EAST HAMPTON	160 S EMERSON AVE
574	0300193000200007012	Montauk	GEORGICA EST PROP OWNERS ASSOC	160 S EMERSON AVE
575	0300193000300013001	Montauk	EAST HAMPTON TENNIS CLUB INC	160 S EMERSON AVE
576	0300194000200026000	Montauk	THE VET GROUP, LLC	160 S EMERSON AVE
577	0300194000200030000	Montauk	MOORHEAD, C. JAY TRUST	160 S EMERSON AVE
578	0300197000100023005	Montauk	WAINSCOTT PROFESSIONAL CENTRE LL	S EMERSON AVE
579	0300197000100023006	Montauk	WAINSCOTT PROFESSIONAL CENTRE LL	20 SURFSIDE AVE
580	0300197000100023007	Montauk	WAINSCOTT PROFESSIONAL CENTRE LL	21 OCEANVIEW TER
581	0300197000100024001	Montauk	LANCE NILL	55 S EUCLID AVE
582	0300197000100038000	Montauk	ISHA KAUSHIK	167 S EMERSON AVE
583	0300197000100041001	Montauk	NINA L BATALLER	167 S EMERSON AVE
584	0300197000100041002	Montauk	372 MONTAUK HIGHWAY, LLC	167 S EMERSON AVE
585	0300197000100042000	Montauk	SATORI HOLDING COMPANY,LLC	167 S EMERSON AVE
586	0300197000100043003	Montauk	WAINSCOTT RETAIL LLC, A NEW YORK LLC	167 S EMERSON AVE
587	0300197000100044001	Montauk	FRAMIJO REALTY CORP	167 S EMERSON AVE
588	0300197000100044003	Montauk	360 MONTAUK HWY, LLC	167 S EMERSON AVE
589	0300197000100045000	Montauk	BELMOR PROPERTIES LLC	167 S EMERSON AVE
590	0300197000100047005	Montauk	ZACKALEY LLC	677 MONTAUK HWY
591	0300197000200008000	Montauk	BRADLEY W THOMPSON	679 MONTAUK HWY
592	0300197000200009002	Montauk	IVY REALTY LLC	692 MONTAUK HWY
593	0300197000200010001	Montauk	YOUNG & WAINSCOTT ASSOCIATES II	696 MONTAUK HWY
594	0300197000200010003	Montauk	MIDHAMPTONS EQUITIES INC	15 S EMBASSY ST
595	0300197000200011001	Montauk	WAINSCOTT VILLAGE ASSOCIATES	20 S ELMWOOD AVE
596	0300197000200013001	Montauk	ROBERT E OTTO	12 S ELMWOOD AVE
597	0300197000200014000	Montauk	JOJOBEN LLC	6 S ELMWOOD AVE
598	0300197000200015001	Montauk	HESS CORPORATION	4 S ELMWOOD AVE
599	0300197000200015002	Montauk	HESS CORPORATION	S ELMWOOD AVE

#	DSBL	School District	Name	Address
600	0300197000200016000	Montauk	HOME SWEET HOME MOVING & STORAGE	71 S EMERSON AVE
601	0300197000200017000	Montauk	BRUCE H. BROMBERG, LLC	79 S EMERSON AVE
602	0300197000200018000	Montauk	B & J LAND HALDING LLC	95 S EMERSON AVE
603	0300197000300001000	Montauk	WAINSCOTT WOMBLES, LLC.	90 S EMERSON AVE
604	0300197000300002000	Montauk	ROBERT E IMMACOLATO	92 S EMERSON AVE
605	0300197000300005011	Montauk	405 MONTAUK HIGHWAY LLC	94 S EMERSON AVE
606	0300197000300007001	Montauk	COZY COTTAGES LLC	S EMERSON AVE
607	0300197000700019000	Montauk	MONTAUK WAINSCOTT STONE LLC	88 S EMERSON AVE
608	0301001000700001000	Montauk	SQUIRES LLC	84 S EMERSON AVE
609	0301001000700004002	Montauk	RUMTREE LTD	80 S EMERSON AVE
610	0301002000100004000	Montauk	RAUSCHER PROPERTIES, LLC	32 S ELMWOOD AVE
611	0301002000100005000	Montauk	BISTRIAN LAND CORP.	44 S ELMWOOD AVE
612	0301002000100015003	Montauk	FRESNO PLACE, LLC	119 S EMERSON AVE
613	0301002000100018000	Montauk	LAUNDRY COMPANY LLC	115 S EMERSON AVE
614	0301002000100019002	Montauk	KENNETH WESSBERG	107 S EMERSON AVE
615	0301002000100019003	Montauk	BRIDGEHAMPTON NATIONAL BANK	130 S EMERSON AVE
616	0301002000100022000	Montauk	ROBERT A CASPER	148 S EMERSON AVE
617	0301002000100023000	Montauk	RIVERHEAD BUILDING SUPPLY CORP	126 S EMERSON AVE
618	0301002000100024000	Montauk	G&T DAIRIES INC	108 S EMERSON AVE
619	0301002000100025000	Montauk	UNIT OWNERS	55 S EDGEMERE ST
620	0301002000200001000	Montauk	STEPHEN HANDS PATH ASSOC INC	51 S EDGEMERE ST
621	0301002000200002000	Montauk	JOHN E GEEHRENG	44 S EDGEMERE ST
622	0301002000200003000	Montauk	# 9 RAIROAD AVENUE ASSOCIATES, LLC	421 OLD MONTAUK HWY
623	0301002000200004000	Montauk	SAVERIO NACLERIO	397 OLD MONTAUK HWY
624	0301002000200006000	Montauk	LUMBER LANE ASSOCIATES LLC	685 OLD MONTAUK HWY
625	0301002000200017000	Montauk	JOHN & BARBARA PR0PERTIES LLC	693 OLD MONTAUK HWY
626	0301002000200019001	Montauk	BB EQUITIES LLC.	713 OLD MONTAUK HWY
627	0301002000200029000	Montauk	RALPH L DAYTON	272 OLD MONTAUK HWY
628	0301002000200030000	Montauk	FLORENCE DONNER	170 OLD MONTAUK HWY
629	0301002000200032000	Montauk	EUGENE J LANDOLFI	290 OLD MONTAUK HWY
630	0301002000300001000	Sag Harbor	KRUPINSKI, BERNARD J IRREVOCABLE TRUST DATED 12/2012	1 BAY ST
631	0301002000300003000	Sag Harbor	PARSOME LLC	53 BAY ST
632	0301002000300008002	Sag Harbor	CSJS DAYTON, LLC	10 DIVISION ST
633	0301002000700009005	Sag Harbor	THOMAS J OSBORNE	22 DIVISION ST
634	0301002010100001000	Sag Harbor	VIVIEN J SMITH	26 DIVISION ST
635	0301002010100002000	Sag Harbor	SUSAN VAUGHAN	2 BAY ST
636	0301002010100003000	Sag Harbor	SUSAN VAUGHAN	3 BAY ST
637	0301002010100004000	Sag Harbor	DAVID E ASTORR	4 BAY ST
638	0301002010100005000	Sag Harbor	GINGERBREAD LANE LLC	6 BAY ST
639	0301002010100006000	Sag Harbor	JOHN CARAGMAGNA	12 BAY ST
640	0301002010200001000	Sag Harbor	VAN DYKE & HAND REAL ESTATE HOLDINGS, LLC	28 RECTOR ST
641	0301002010200002000	Sag Harbor	VAN DYKE & HAND REAL ESTATE HOLDINGS, LLC	79 DIVISION ST
642	0301002010200003000	Sag Harbor	VAN DYKE & HAND REAL ESTATE HOLDINGS LLC	89 DIVISION ST
643	0301002010200004000	Sag Harbor	VANDYKE & HAND REAL ESTATE HOLDINGS LLC	60 BAY ST
644	0301002010200005000	Sag Harbor	VAN DYKE & HAND REAL ESTATE HOLDINGS LLC	91 HAMPTON ST
645	0301003000100001000	Sag Harbor	JAILDAGIAN, BRUCE A. REVOCABLE LIVING TRUST	6 SHAW RD
646	0301003000100002000	Sag Harbor	54 NEWTOWN LANE LLC	5 ELIZABETH ST
647	0301003000100003000	Sag Harbor	ROBERT MAHMOUZIAN	112 HAMPTON ST
648	0301003000100004000	Sag Harbor	50 NEWTOWN LANE LLC	144 HAMPTON ST
649	0301003000100005000	Sag Harbor	48 NEWTOWN LANE LLC	152 HAMPTON ST
650	0301003000100006000	Springs	46 NEWTOWN LANE, LLC	103 FLAGGY HOLE RD
651	0301003000200001000	Springs	WILLIAM H DUGGAN JR	28 MAIDSTONE PARK RD
652	0301003000200002000	Springs	SAMNROSE REALTY LLC	16 MUDFORD AVE
653	0301003000200004002	Springs	30-34 NEWTOWN LANE LLC	22 BRUCE LA
654	0301003000200004003	Springs	32 NEWTOWN LANE LLC	39 GANN RD
655	0301003000200005000	Springs	30-34 NEWTOWN LANE LLC	514 THREE MI HBR HOG CRK HWY
656	0301003000200006002	Springs	Z & S REALTY LLC	9 WASHINGTON AVE
657	0301003000200007000	Springs	16 NEWTOWN LANE, LLC	5 WASHINGTON AVE
658	0301003000200008001	Springs	NORSTAR BANK	512 THREE MI HBR HOG CRK HWY
659	0301003000200009000	Springs	GEORGE STAVROPOULOS	11 FORT POND BLVD

#	DSBL	School District	Name	Address
660	0301003000200010000	Springs	3 NORTH MAIN LLC	19 FORT POND BLVD
661	0301003000200011000	Springs	RED LAD LLC	11 WASHINGTON AVE
662	0301003000300003000	Springs	PANTIGO LANE ASSOCIATES	12 WASHINGTON AVE
663	0301003000400001000	Springs	67 NEWTOWN LANE LIMITED PARTNERSHIP	33 FORT POND BLVD
664	0301003000400005000	Springs	51 NEWTOWN LANE, LLC	41 FORT POND BLVD
665	0301003000400006000	Springs	BB EQUITIES LLC	179 FORT POND BLVD
666	0301003000400007001	Springs	RUMTREE LTD	195 FORT POND BLVD
667	0301003000400007002	Springs	DALT INC	10 ST FRANCIS PL
668	0301003000400008000	Springs	CHERIO CORPORATION	201 FORT POND BLVD
669	0301003000400009000	Springs	NEWTOWN POOH, LLC	839 FIREPLACE RD
670	0301003000400010000	Springs	GRACE PROPERTIES LTD	841 FIREPLACE RD
671	0301003000400012000	Springs	L.W.L. LLC	847 FIREPLACE RD
672	0301003000400013000	Springs	21 NEWTOWN LANE LLC	851 FIREPLACE RD
673	0301003000400014000	Springs	LOUIS F IALACCI	802 FIREPLACE RD
674	0301003000400015000	Springs	FOUR STARS REALTY CO., LLC	313 THREE MI HBR HOG CRK HWY
675	0301003000400016000	Springs	ET 1 MAIN STREET, LLC	295 THREE MI HBR HOG CRK HWY
676	0301003000400017000	Springs	CULLUM MARY LOUISE LIVING TRUST	229 THREE MI HBR HOG CRK HWY
677	0301003000400018000	Springs	7 NEWTOWN LANE LLC	780 FIREPLACE RD
678	0301003000400019000	Springs	ET 1 MAIN STREET, LLC	716 FIREPLACE RD
679	0301003000400020000	Springs	SUMI FAMILY TRUST DATED AUGUST 11 2005	714 FIREPLACE RD
680	0301003000400021000	Springs	TRUNZO FAMILY LIMITED PARTNERSHI	29 OLD STONE HWY
681	0301003000400022000	Springs	23 MAIN STREET, LLC	48 SCHOOL ST
682	0301003000400023000	Springs	1000 PARK CORP	38 SCHOOL ST
683	0301003000400024000	Springs	SQUIRES FAMILY LTD PARTNERSHIP	60 OLD STONE HWY
684	0301003000400025000	Springs	BROOKE PROPERTIES THE HAMPTONS LLC	35 THREE MI HBR HOG CRK HWY
685	0301003000400026000	Springs	EAST HAMPTON SQUARE ASSOCIATES LLC	465 OLD STONE HWY
686	0301003000400034000	Springs	EAST HAMPTON SQUARE ASSOCIATES	10 BOAT YARD RD
687	0301003000400035000	Springs	UNIT OWNERS	6 BOAT YARD RD
688	0301003000500001001	Springs	CANDY REALTY INC	2 BOAT YARD RD
689	0301003000500002000	Springs	PARISH MEWS LP	375 THREE MILE HARBOR RD
690	0301003000500003000	Springs	EAST HAMPTON 14 MAIN STREET, LLC	9 BOAT YARD RD
691	0301003000500013001	Springs	NATHAN LANE	367 THREE MILE HARBOR RD
692	0301003000500016000	Springs	SMITHIE LLC	359 THREE MILE HARBOR RD
693	0301003000500020003	Springs	FROG CO LLC	331 THREE MILE HARBOR RD
694	0301003000500026000	Wainscott	KRUPINSKI, BERNARD J IRREVOCABLE TRUST DATED 12/2012	500 ROUTE 114
695	0301003000500029000	Wainscott	UNIT OWNERS	6 PLANK RD
696	0301003000600011000	Wainscott	TRUNZO FAMILY LIMITED PARTNERSHI	8 PLANK RD
697	0301003000600014000	Wainscott	L & A REALTY ASSOCIATES, LLC	10 PLANK RD
698	0301003000600015000	Wainscott	85 MAIN ST., LLC	12 PLANK RD
699	0301003000600016000	Wainscott	DAVID FINK	20 GOODFRIEND DR
700	0301003000600018000	Wainscott	FLATCH REALTY, LLC	WAINSCOTT NORTHWEST RD
701	0301003000600019000	Wainscott	SALOMALEA, LLC	175 DANIELS HOLE RD
702	0301003000600020000	Wainscott	DAVID FINK	214 DANIELS HOLE RD
703	0301003000600021001	Wainscott	69 MAIN STREET LLC	24 GOODFRIEND DR
704	0301003000600021002	Wainscott	CARLO M GROSSMAN	26 GOODFRIEND DR
705	0301003000600022000	Wainscott	MILL HILL RLTY CORP	28 GOODFRIEND DR
706	0301003000600023000	Wainscott	EAST HAMPTON LLC	19 GOODFRIEND DR
707	0301003000600024003	Wainscott	OLD BARN DEVELOPMENT CORP CONDOMINIUM	17 GOODFRIEND DR
708	0301003000600025003	Wainscott	55 MAIN STREET LLC	18 GOODFRIEND DR
709	0301003000600026001	Wainscott	DAVID FINK	15 GOODFRIEND DR
710	0301003000600027001	Wainscott	51 MAIN STREET L L C	7 GOODFRIEND DR
711	0301003000700001000	Wainscott	JP MORGAN CHASE BANK, NATIONAL ASSOC	5 GOODFRIEND DR
712	0301003000700002000	Wainscott	D & B REALTY POOH LLC	GOODFRIEND DR
713	0301003000700003000	Wainscott	GEORGICA REALTY CORP	14 PLANK RD
714	0301003000700024000	Wainscott	78 MAIN STREET LLC	16 PLANK RD
715	0301003000700025000	Wainscott	EAST HAMPTON VILLAGE	6 GOODFRIEND DR
716	0301003000800001000	Wainscott	PALM MANAGEMENT CORP	6 GOODFRIEND DR
717	0301003010100001000	Wainscott	ELIE TAHARI 46 MAIN STREET, LLC	10 GOODFRIEND DR
718	0301003010100002000	Wainscott	ELIE TAHARI 48 MAIN STREET,LLC	12 GOODFRIEND DR
719	0301003010100003000	Wainscott	DEVORA AVIKZER	14 GOODFRIEND DR

#	DSBL	School District	Name	Address
720	0301003010100004000	Wainscott	VILLAGE MAIN STREET CORP	16 GOODFRIEND DR
721	0301003010100005000	Wainscott	ET 53 MAIN STREET LLC	200 DANIELS HOLE RD
722	0301003010100006000	Wainscott	ET 54 MAIN STREET, LLC	200 DANIELS HOLE RD
723	0301003010100007000	Wainscott	SAG HARBOR POOH LLC	200 DANIELS HOLE RD
724	0301003010100008000	Wainscott	SAG HARBOR POOH, LLC	200 DANIELS HOLE RD
725	0301003010200001000	Wainscott	BROOKS PROPERITIES	200 DANIELS HOLE RD
726	0301003010200002000	Wainscott	BROOKS PROPERTY EAST HAMPTON, LLC	200 DANIELS HOLE RD
727	0301003020100001000	Wainscott	NEWTOWN LANE VENTURES LLC	200 DANIELS HOLE RD
728	0301003020100002000	Wainscott	NEWTOWN LANE VENTURES LLC	200 DANIELS HOLE RD
729	0301003020100003000	Wainscott	PARK PLCE POOH, LLC	200 DANIELS HOLE RD
730	0301003020100004000	Wainscott	BARBARA L FIERRO	200 DANIELS HOLE RD
731	0301003020100005000	Wainscott	BB EQUITIES LLC.	200 DANIELS HOLE RD
732	0301003020100006000	Wainscott	BB EQUITIES LLC.	200 DANIELS HOLE RD
733	0301003020200001000	Wainscott	JAMES W ZABORSKI	200 DANIELS HOLE RD
734	0301004000100009000	Wainscott	HILLSTONE RESTAURANT GROUP, LLC	200 DANIELS HOLE RD
735	0301004000100019001	Wainscott	EAST HAMPTON NORTH MAIN LLC	200 DANIELS HOLE RD
736	0301004000100034000	Wainscott	BB EQUITIES LLC	200 DANIELS HOLE RD
737	0301004000100036000	Wainscott	PALEGIC HOLDINGS, LLC	200 DANIELS HOLE RD
738	0301004000200004001	Wainscott	NEWTOWN ASSOCIATES L L C	200 DANIELS HOLE RD
739	0301004000200004002	Wainscott	66 NEWTOWN CORP	200 DANIELS HOLE RD
740	0301004000200008000	Wainscott	KURT W ROELOFFS	200 DANIELS HOLE RD
741	0301004000200014000	Wainscott	RONALD LEVIN	200 DANIELS HOLE RD
742	0301004000200017000	Wainscott	JEAN CLAUDE BAKER	200 DANIELS HOLE RD
743	0301004000200020001	Wainscott	STAYTHECOURSE, LLC	200 DANIELS HOLE RD
744	0301004000200021000	Wainscott	LOUIS T EDWARDS	200 DANIELS HOLE RD
745	0301004000200028006	Wainscott	CYGNUS PROPERTIES LLC	200 DANIELS HOLE RD
746	0301004000300006003	Wainscott	EAST END HOOK CORP	200 DANIELS HOLE RD
747	0301004000300006004	Wainscott	41 PANTIAGO LLC	190 DANIELS HOLE RD
748	0301004000400022001	Wainscott	PANTIGO ROAD LLC	190 DANIELS HOLE RD
749	0301004000500001000	Wainscott	HALEWOOD DEVELOPMENT CORP	190 DANIELS HOLE RD
750	0301004000600003000	Wainscott	MICHELLE TOTTEN	190 DANIELS HOLE RD
751	0301004000600004002	Wainscott	KABROOK LLC	190 DANIELS HOLE RD
752	0301004000600011002	Wainscott	HOOK MILL ASSOCIATES LLC	190 DANIELS HOLE RD
753	0301004000600012001	Wainscott	UNITED STATES POSTAL SERVICE	INDUSTRIAL RD
754	0301004000600014000	Wainscott	JAMES P. AMADEN III	17 COWHILL LA
755	0301007000200005000	Wainscott	166 MONTAUK HWY RECREATION CORP	26 OLD MONTAUK HWY
756	0301007000200015000	Wainscott	MICHAEL BASSETT	5 HEDGES LA
757	0301007000200022000	Wainscott	F F & G REALTY CORP	332 MONTAUK HWY
758	0301007000600014003	Wainscott	DEMAR HOLDINGS LLC	330 MONTAUK HWY
759	0301007000600016000	Wainscott	G BERKLEY BENNETT JR	328 MONTAUK HWY
760	0301008000300019000	Wainscott	143 MAIN REALTY LLC.	7 INDUSTRIAL RD
761	0301008000300022000	Wainscott	EAST HAMPTON STAR INC	39 INDUSTRIAL RD
762	0301008000300029001	Wainscott	EAST HAMPTON LIBRARY	41 INDUSTRIAL RD
763	0301008000600010000	Wainscott	POWER TEST REALTY CO	54 INDUSTRIAL RD
764	0301008000700030004	Wainscott	LEXINGTON'S LOUNGE, LLC	72 INDUSTRIAL RD
765	0301008000900012000	Wainscott	HEDGES INN LLC	75 INDUSTRIAL RD
766	0301008001000002005	Wainscott	APPLE BANK FOR SAVINGS	56 INDUSTRIAL RD
767	0301008001000002007	Wainscott	74 MONTAUK HIGHWAY INC	386 MONTAUK HWY
768	0301008001000010000	Wainscott	HARDSCRABBLE COMMONS LLC	384 MONTAUK HWY
769	0301008001000011000	Wainscott	C P ASSOCIATES INC	382 MONTAUK HWY
770	0301008001000012000	Wainscott	CHARLES R. LIMONIUS	380 MONTAUK HWY
771	0301008001000025006	Wainscott	MERIDIAN GROUP, LTD	378 MONTAUK HWY
772	0301008001300002001	Wainscott	TCBC, LLC	374 MONTAUK HWY
773	0301009000400027000	Wainscott	CHARLES G PHILLIPS	372 MONTAUK HWY
774	0301012000700013000	Wainscott	POTATO FIELD LLC	370 MONTAUK HWY
775	0301013001300020003	Wainscott	BAYBERRY CLOSE CORP	368 MONTAUK HWY
776	0301015000200007003	Wainscott	MCNIFF, EVELYN W. REVOCABLE TRUST DATED 9/14/2006	364 MONTAUK HWY
777	0302001000100003000	Wainscott	PATRICK E MALLOY III	360 MONTAUK HWY
778	0302002000100006000	Wainscott	WHALERS POINT PROPERTIES, LLC	81 MONTAUK HWY
779	0302002000200002000	Wainscott	SAG HARBOR POOH, LLC	83 WAINSCOTT NORTHWEST RD

#	DSBL	School District	Name	Address
780	0302002000200006000	Wainscott	GARDNER COWLES III	84 WAINSCOTT NORTHWEST RD
781	0302002000200007000	Wainscott	ROMANY KRAMORIS	358 MONTAUK HWY
782	0302002000200018001	Wainscott	SAG HARBOR POOH LLC	354 MONTAUK HWY
783	0302002000200019000	Wainscott	KKT SAG HARBOR CORPORATION	356 MONTAUK HWY
784	0302002000200021000	Wainscott	BAY PARTNERS, LLC	352 MONTAUK HWY
785	0302002000200022000	Wainscott	BAY PARTNERS LLC	350 MONTAUK HWY
786	0302002000200023000	Wainscott	GREGORY GORDON	348 MONTAUK HWY
787	0302002000200024000	Wainscott	MARITIME PROPERTIES, LLC	346 MONTAUK HWY
788	0302002000200033000	Wainscott	GARAGE REALTY CO LLC	MONTAUK HWY
789	0302002000200034001	Wainscott	NICHOLAS D'ARIENZO	342 MONTAUK HWY
790	0302002000300011000	Wainscott	SAG HARBOR INDUSTRIES INC	340 MONTAUK HWY
791	0302002000700029000	Wainscott	W DEERING YARDLEY JR	338 MONTAUK HWY
792	0302003000200009000	Wainscott	6 SHAW ROAD,LLC	411 MONTAUK HWY
793	0302005000100028000	Wainscott	MAX PARTNERS LP	407 MONTAUK HWY
794	0302005000300001000	Wainscott	PAUL H BABCOCK	405 MONTAUK HWY
795	0302006000800013000	Wainscott	PETROLEUM VENTURES, LLC	395 MONTAUK HWY
796	0302006000800014000	Wainscott	CAMPDEN HILL PROPERTY CO LTD	108 WAINSCOTT STONE HWY

APPENDIX E SUFFOLK COUNTY DHS WATER QUALITY DATA – LAKE MONTAUK, NAPEAGUE HARBOR, ACCABONAC HARBOR, 3 MILE HARBOR AND NORTHWEST HARBOR

Pasted below are figures of surface water quality data collected by SCDHS at the monitoring stations as illustrated on Figure E-1 and described on Table E-1.

The water quality parameters of:

Chlorophyll a (algae)
Total Nitrogen
Total Phosphorus
Seechi Disc (water clarity)

are graphed for the period of record and presented below for the 5 East Hampton's Peconic Estuary embayments sampled by SCDHS. The 1st three constituents are the constituents for which the US EPA developed numerical standards for the State of Florida as described in:

"Water Quality Standards for the State of Florida's Estuaries, Coastal Waters, and South Florida Inland Flowing, Federal register, Decmber 18, 2012", which provided the following approximate ranges for the site specific standards:

- ✓ Total Nitrogen 0.3 – 0.6 mg/L
- ✓ Total Phosphorus 0.02 – 0.08 mg/L
- ✓ Chlorophyll a (Algae) 4.0 – 8.0 mg/L

Water Clarity (i.e. Secchi Disc measurements) and dissolved oxygen were additional parameters proposed for the Chesapeake Bay as described in:

"Waters Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries (Regional Criteria Guidance), EPA 903-R-03-002, April 2003."

No numerical standards exist for East Hampton's Peconic Estuary embayments of

Lake Montauk
Napeague Harbor
Accabonac Harbor
3 Mile Harbor
Northwest Harbor

A TN 0.45 mg/L standard was used for the Peconic Estuary. No numerical standards exist for:

Georgica Pond
Hook Pond
Fort Pond

As Georgica Pond is considered saline, the nitrogen standard may apply, however there may be a need for a phosphorus standard as well.

Figure E-1 SCDHS Sampling Locations

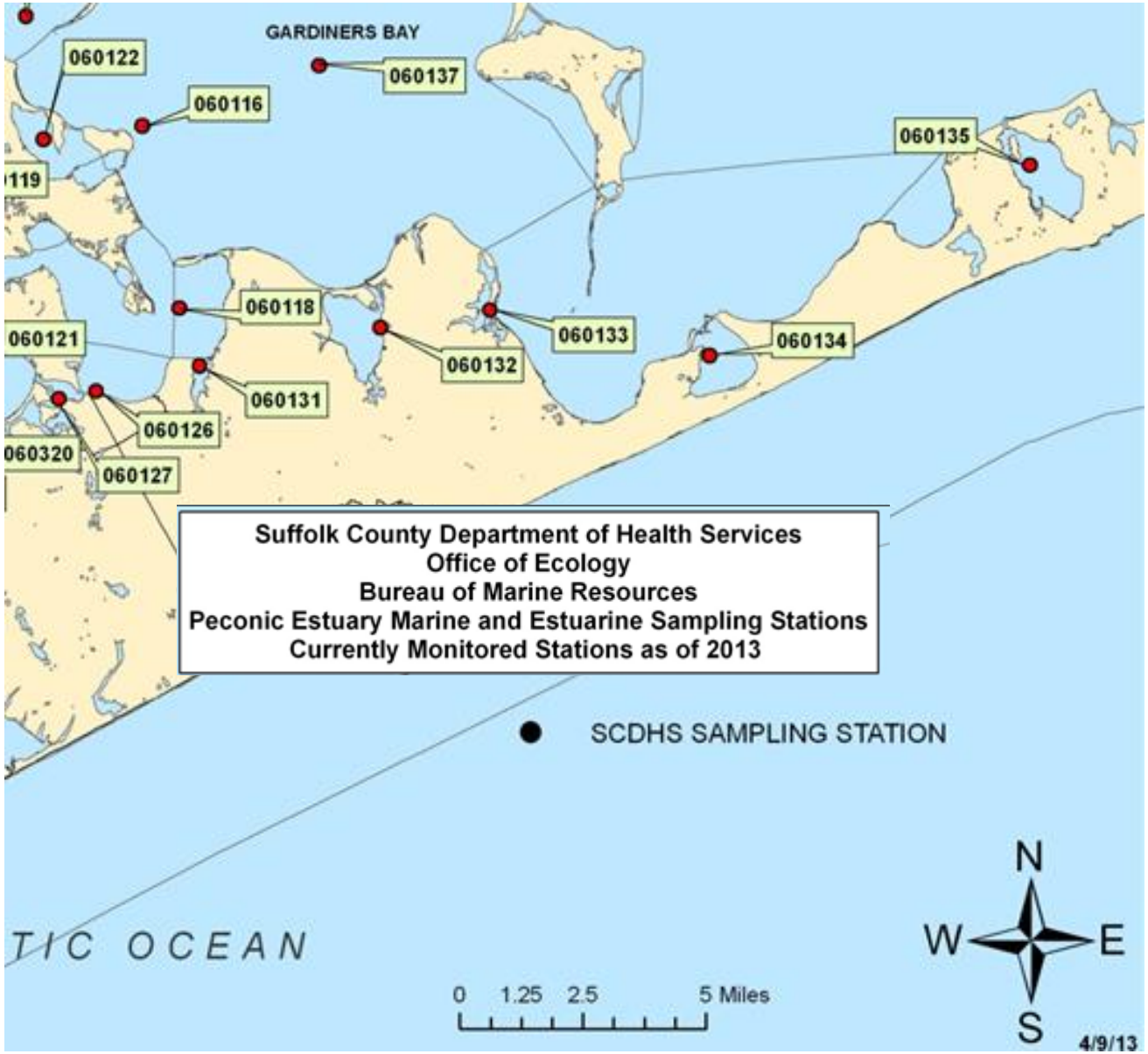


Table E-1 SCDHS Monitoring Stations ion East Hampton

Suffolk County Department of Health Services Office of Ecology Bureau of Marine Resources Surface Water Quality Sampling Station Locations				
Location	**Station_Number_BMR**	**Latitude**	**Longitude**	**Description**
Northwest harbor	060118	41.0275	-72.2600	In Northwest Harbor, midway between Cedar Pt. and Barcelona Pt.
Northwest Creek	060131	41.0104	-72.2525	In Northwest Creek, just S of the opening to Northwest Harbor
Three Mile Harbor	060132	41.0206	-72.1820	In the main channel on the E side of the harbor.
Acabonac Harbor	060133	41.0250	-72.1392	In Acabonac Harbor, on the N side of Wood Tick Island.
Napeague Harbor	060134	41.0103	-72.0542	On the eastern side of Napeague Harbor, midway between the opening to Napeague Bay and the southern shoreline
Lake Montauk	060135	41.0642	-71.9278	In the center of Lake Montauk

As it is expected that Hook Pond and Fort Pond are freshwater, the relevant US EPA and NYSDEC standards for lakes are presented on Tables E-2 and E-3 witrh Figure E-2 presenting visual representation of water quality.

Table E-2 EPA Lake Trophic Status Classification based uon chlorophyll a

Lake Classification	Chlorophyll-α Concentration	Predominant Algae Type
Oligotrophic	(<= 2 μg/L)	Diatoms
Mesotrophic	(>2 - 7 μg/L)	Green Algae
Eutrophic	(>7 - 30 μg/L)	Blue-green algae
Hypereutrophic	(> 30 μg/L)	Blue-green algae - especially cynobacteria toxins producing blue-green algae

Figure E-2 Lake Water Quality Visual Representation

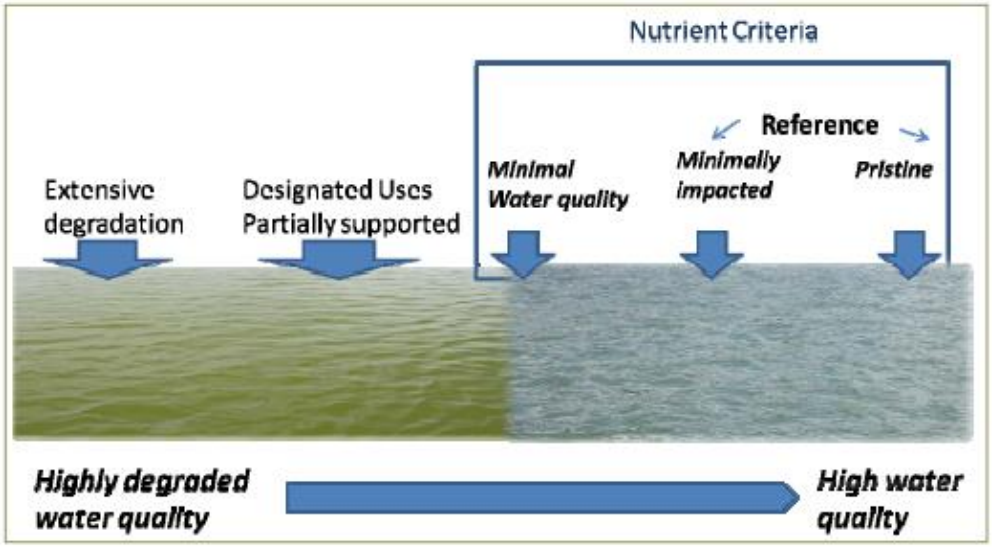
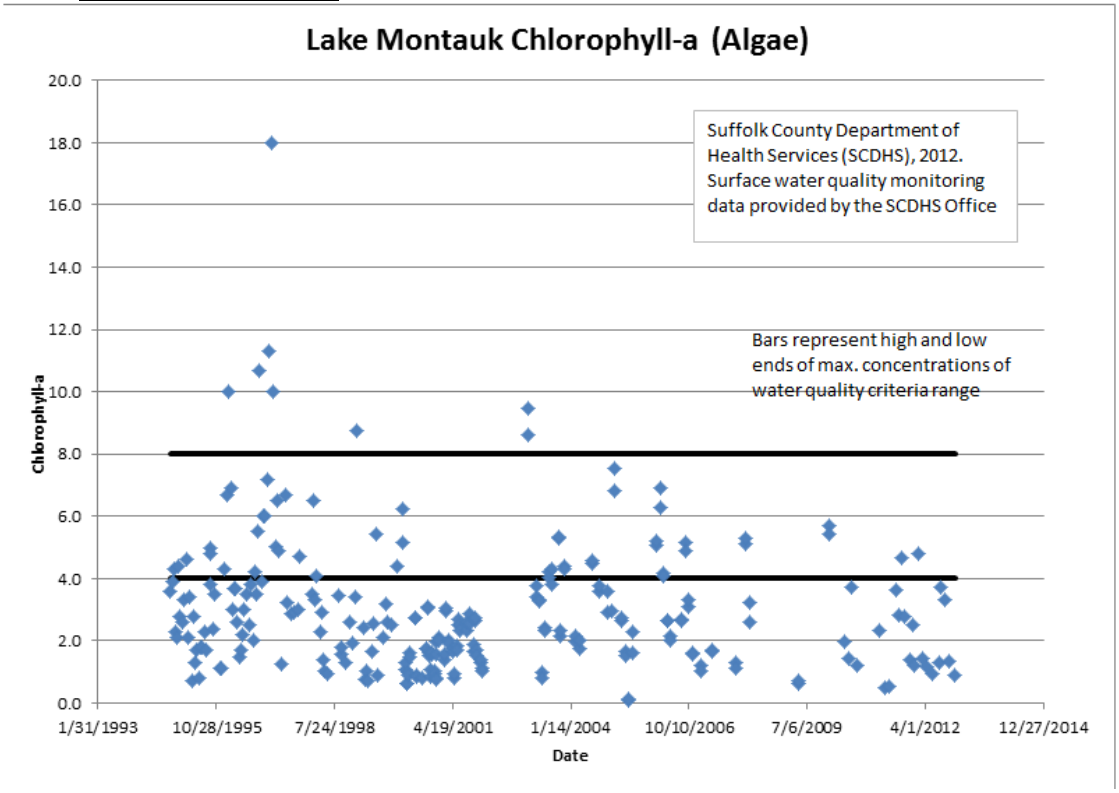


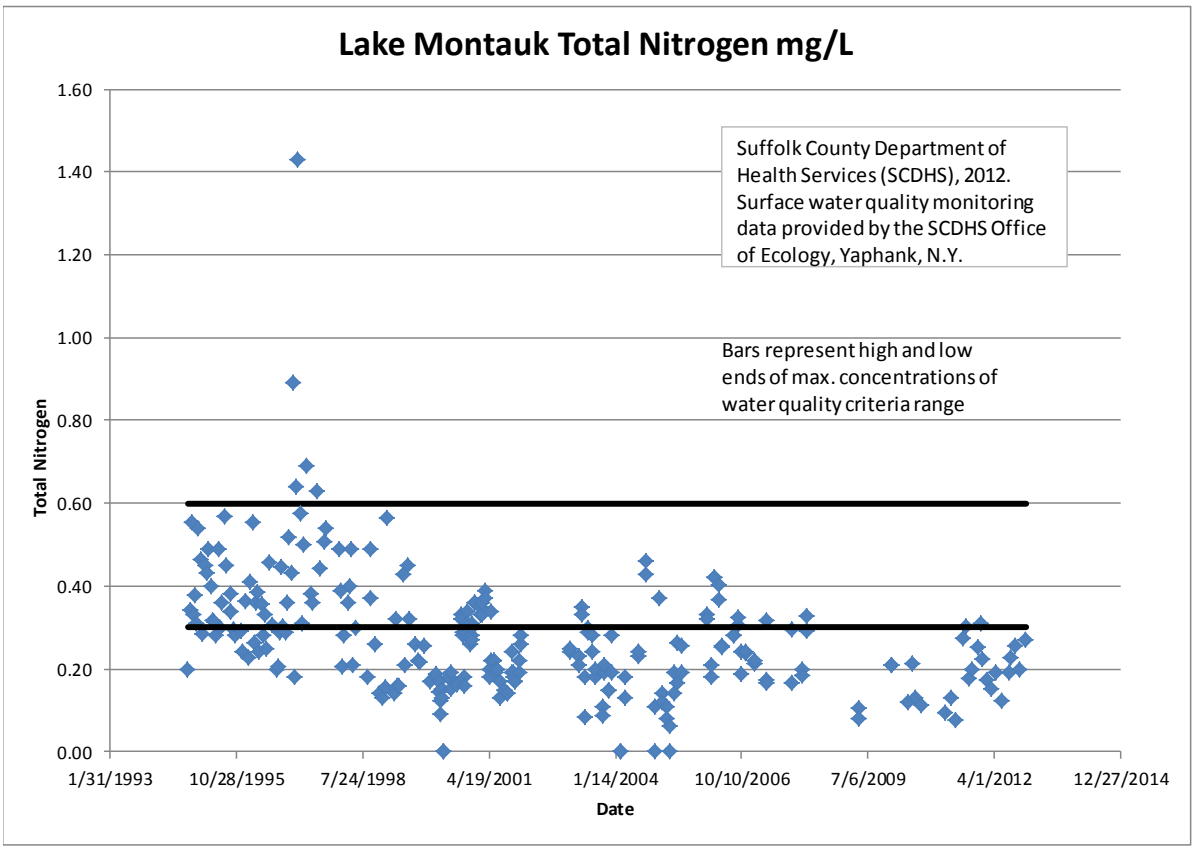
Table E-3 NYSDEC Lake Trophic Status Classification

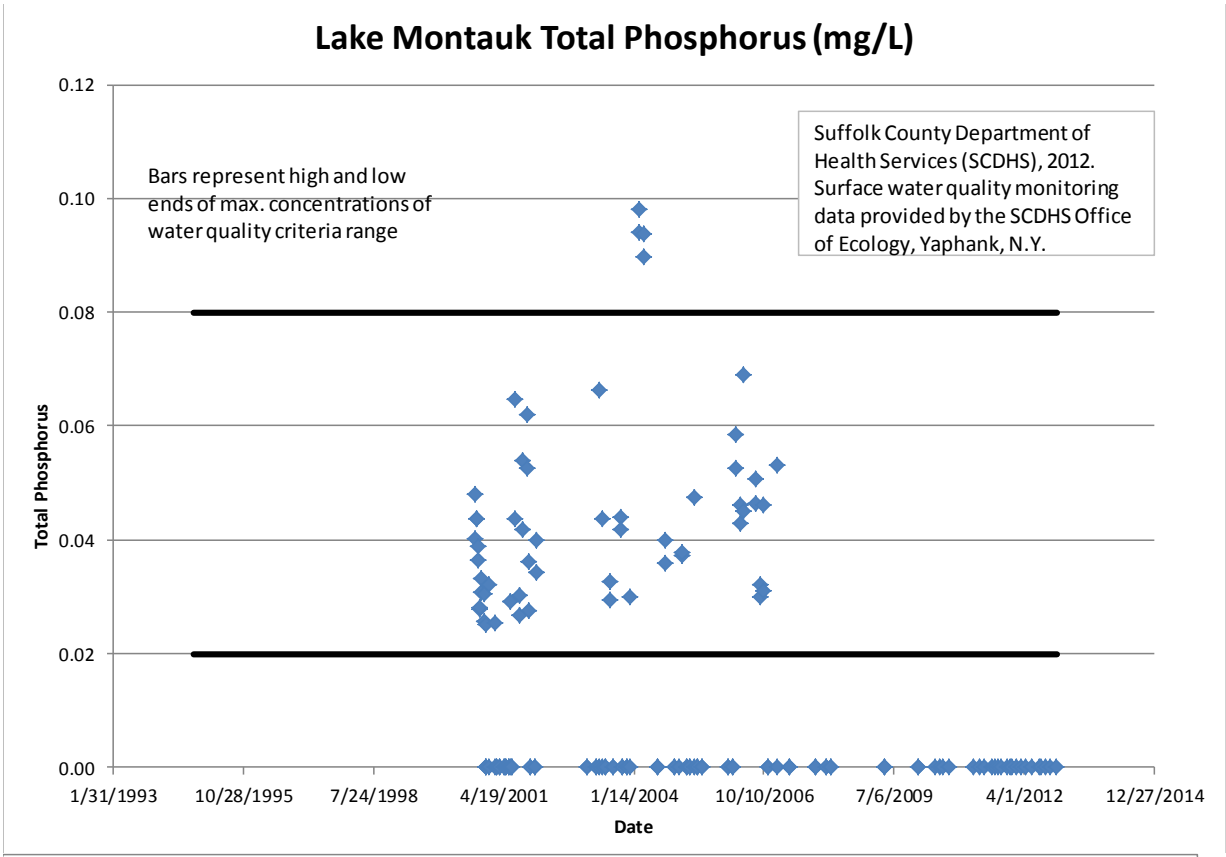
Parameter	Oligotrophic	Mesotrophic	Eutrophic	Hypereutrophic
Transparency (Secci Disk) (m)	> 5	2 - 5	< 2	
Total Phosphorus (μg/L)	< 10	10 - 20	> 20	
Chlorophyll-α (μg/L)	< 2	2 - 8	> 8	
Predominant Algae Type	Diatoms	Green Algae	Blue-green algae	Blue-green algae - especially cynobacteria toxins producing blue-green algae

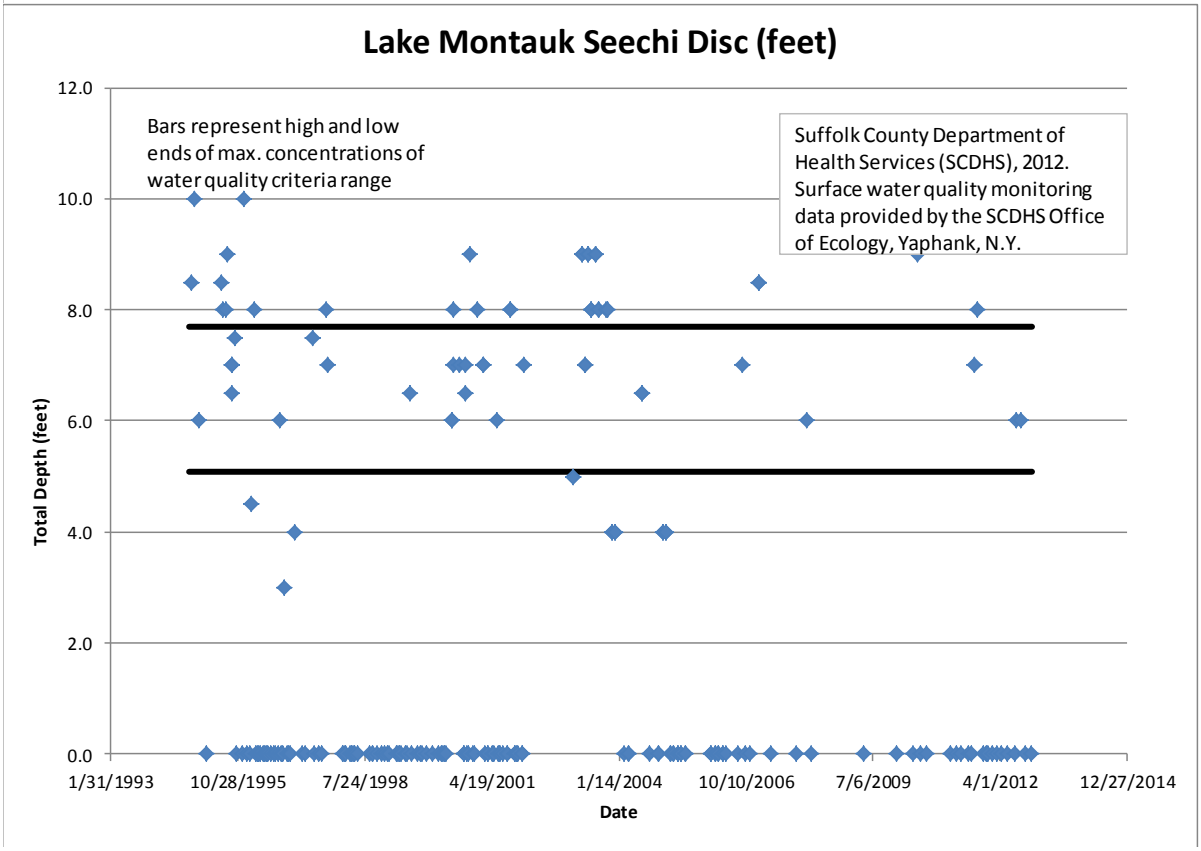
Hypereutrophy is often defined as < 1 meter transparency; > 50 ug/L TP and > 25 ug/L chlorophyll a.

E.1 LAKE MONTAUK

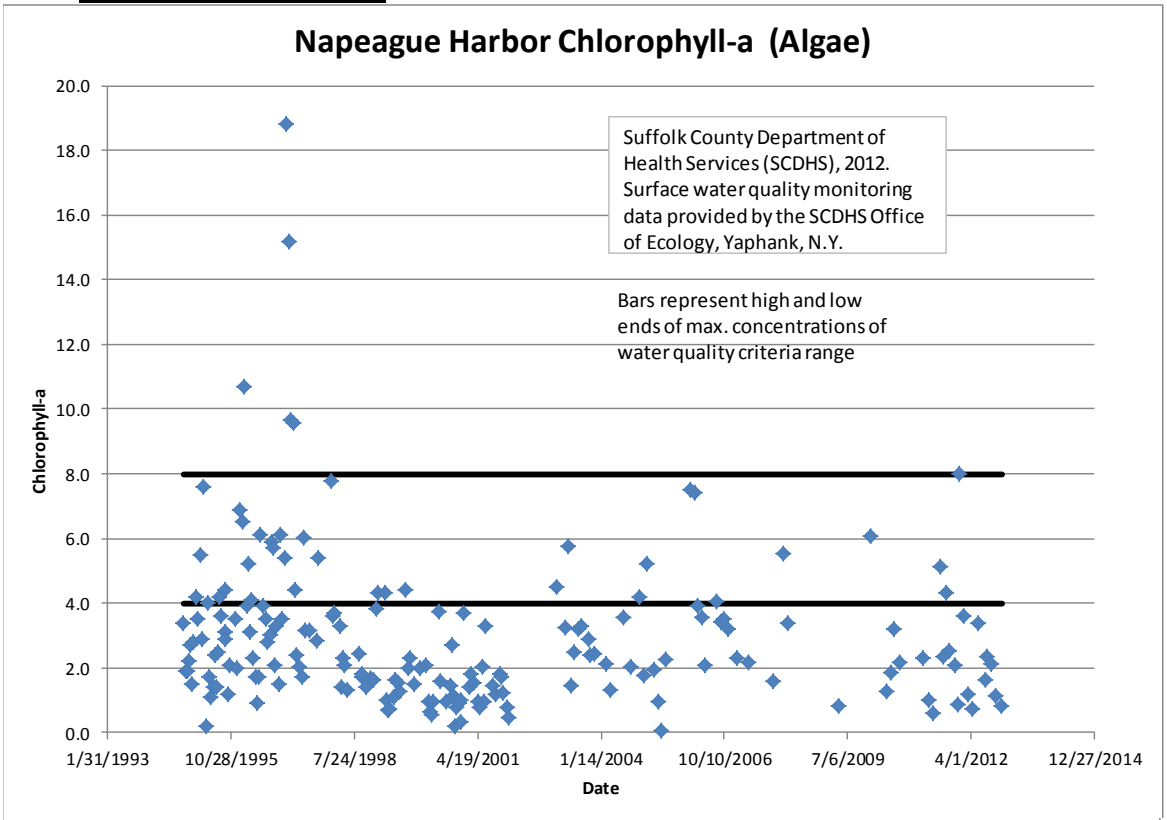


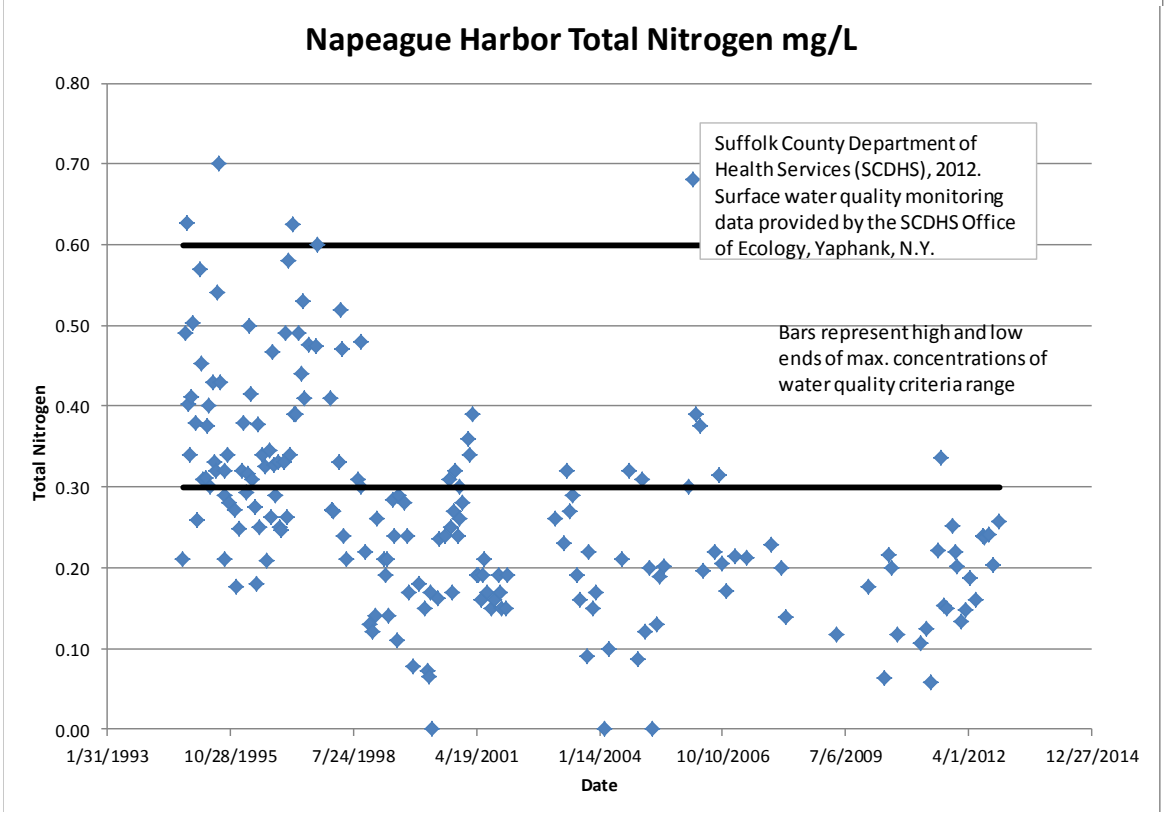


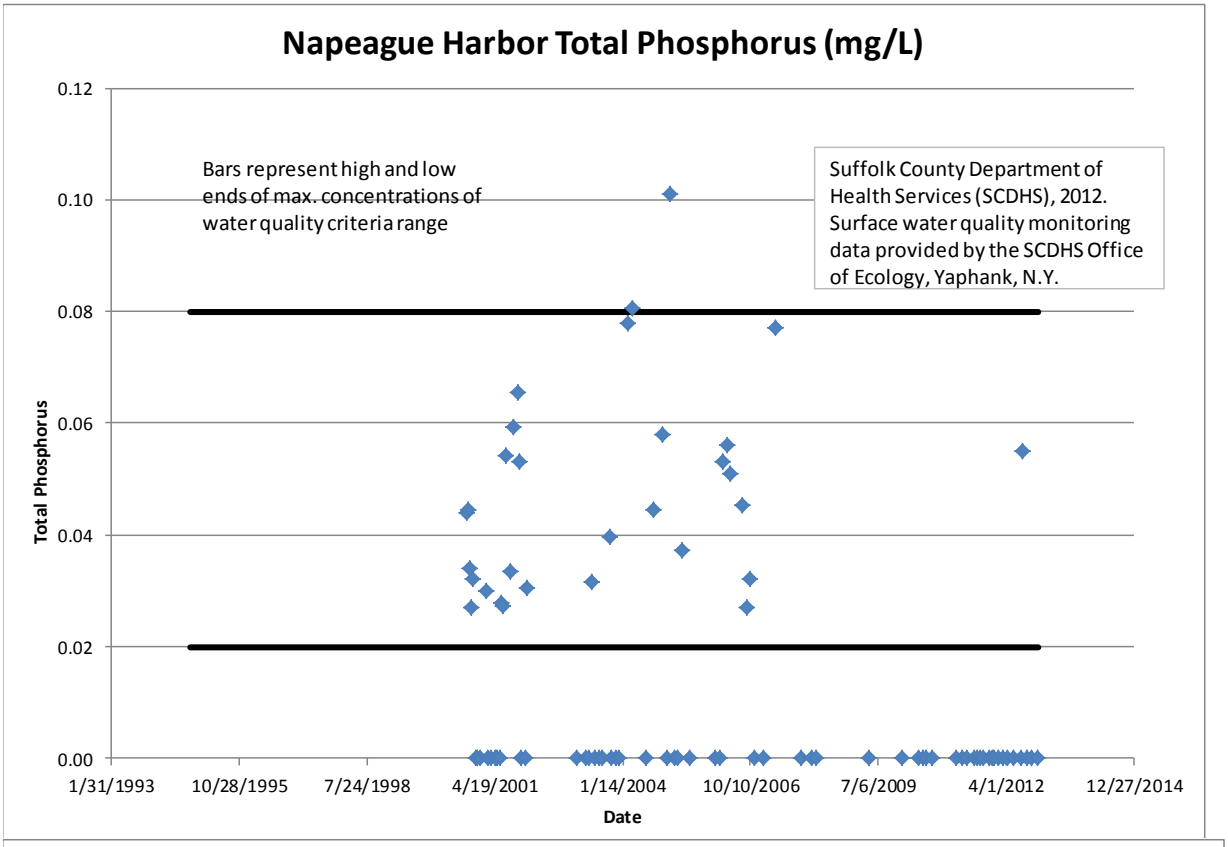

Lake Montauk Total Phosphorus (mg/L)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Phosphorus
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

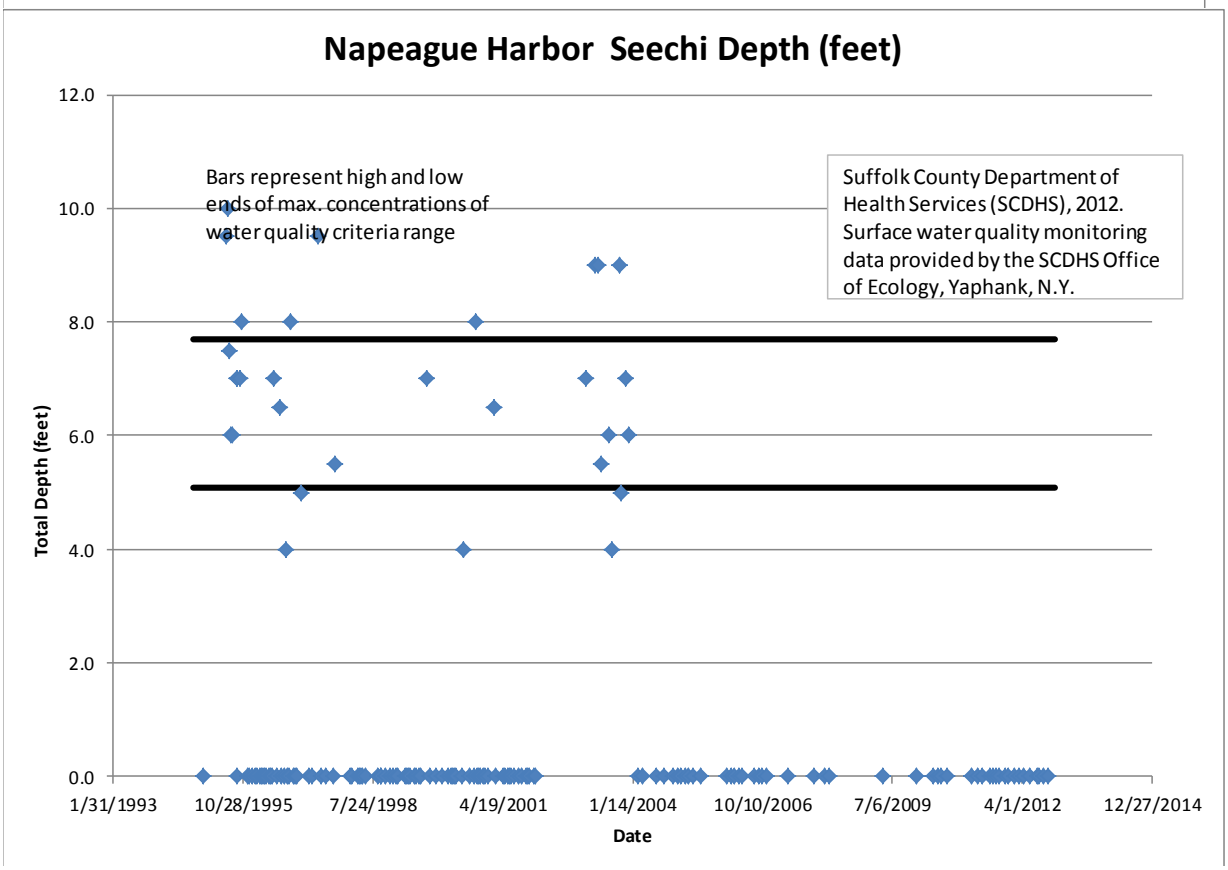

Lake Montauk Seechi Disc (feet)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Depth (feet)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

E.2 Napeague Harbor

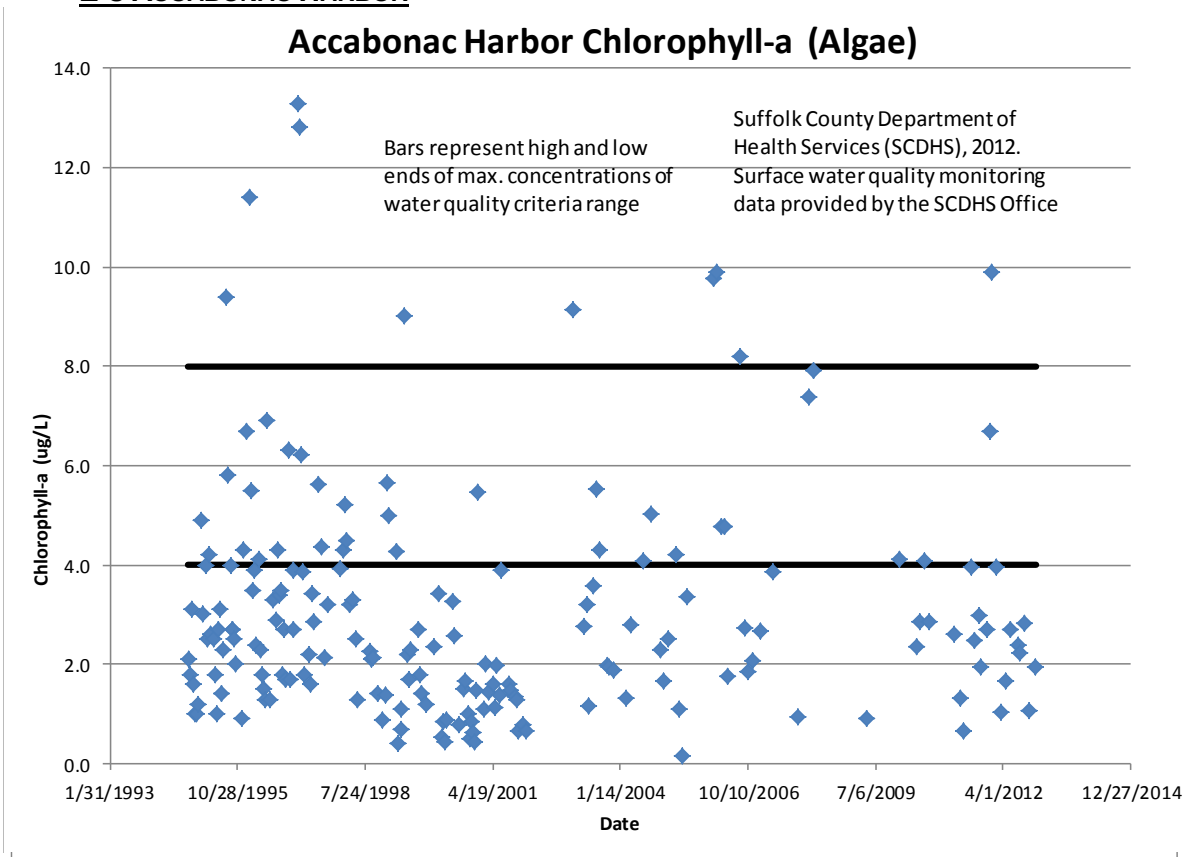


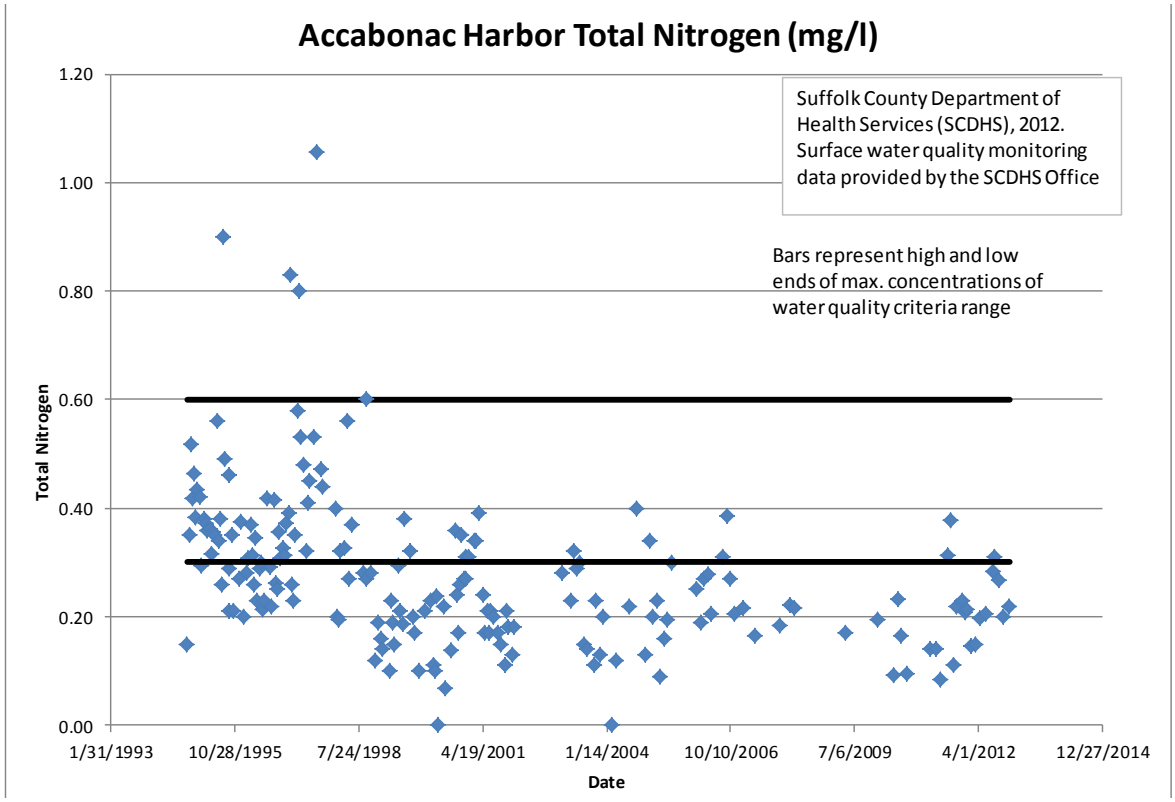


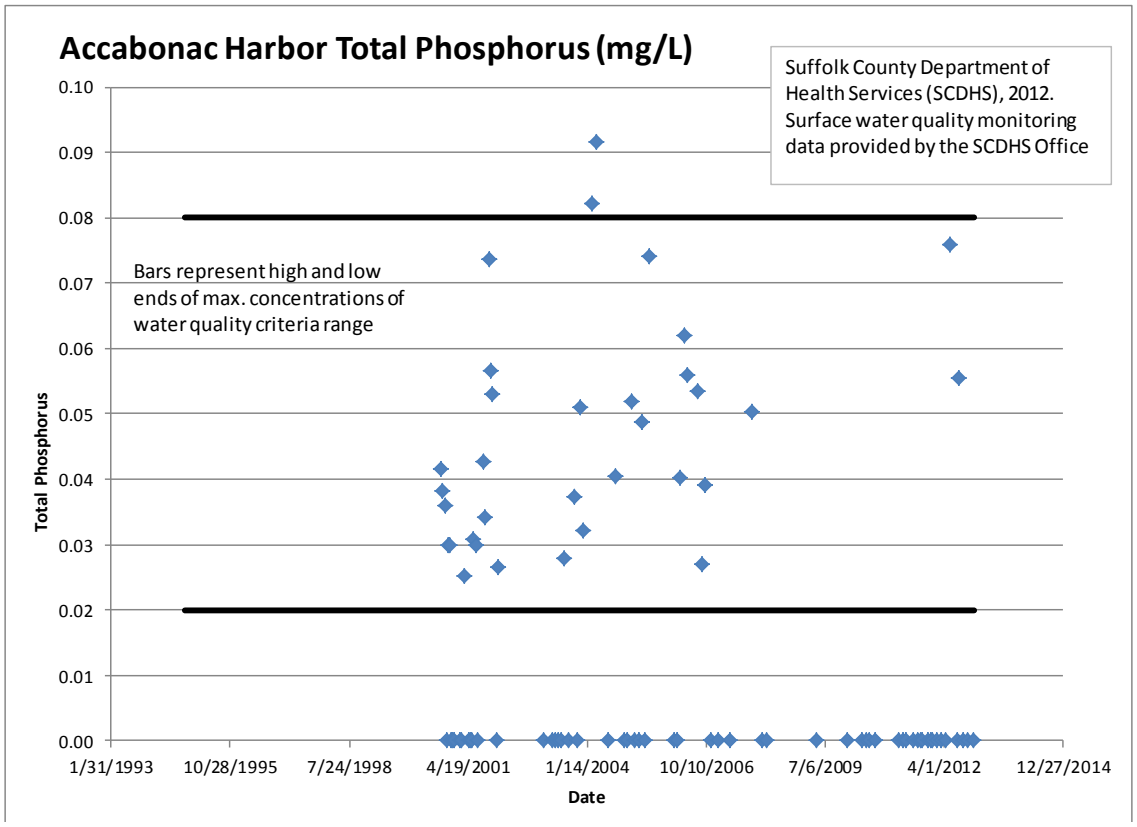

Napeague Harbor Total Phosphorus (mg/L)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Phosphorus
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

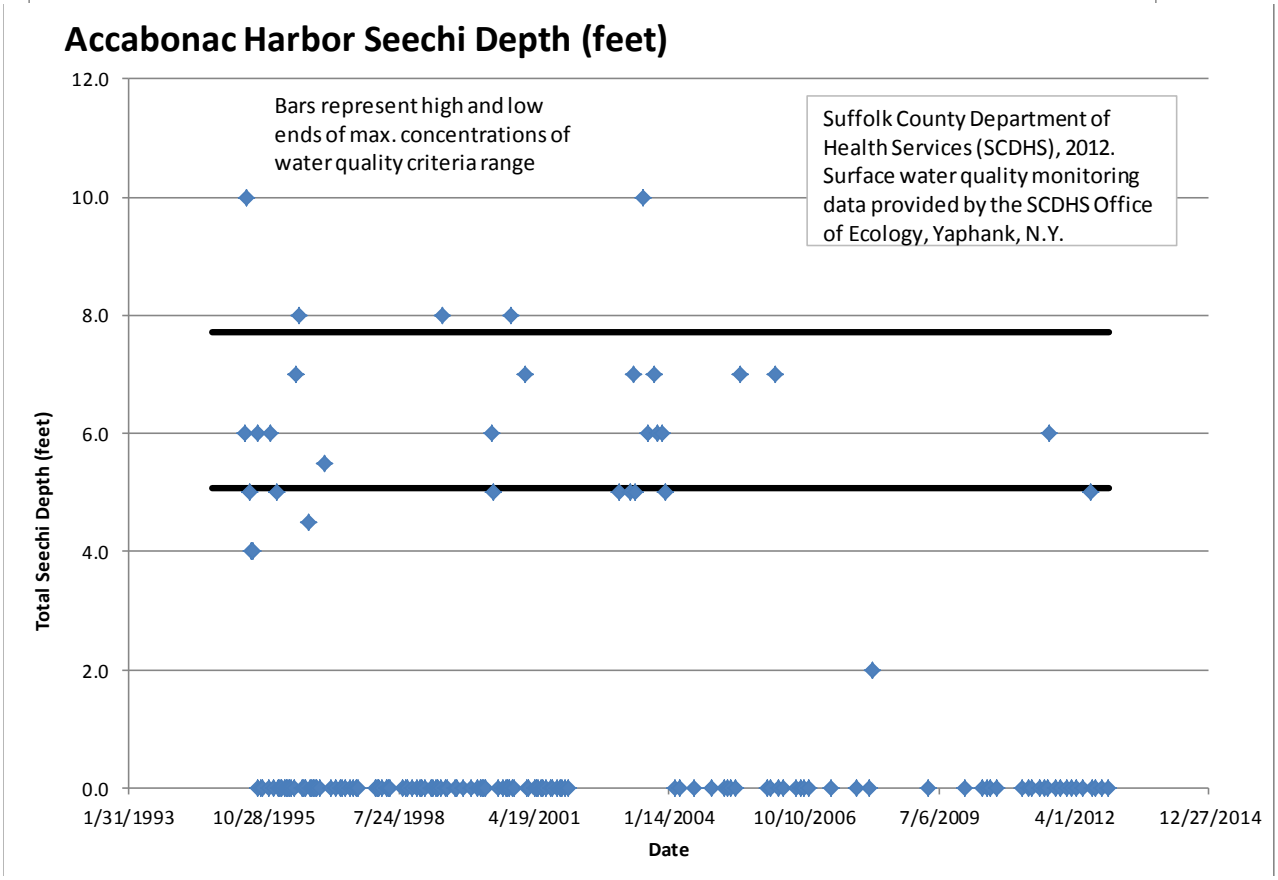

Napeague Harbor Seechi Depth (feet)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Depth (feet)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

E-3 ACCABONAC HARBOR

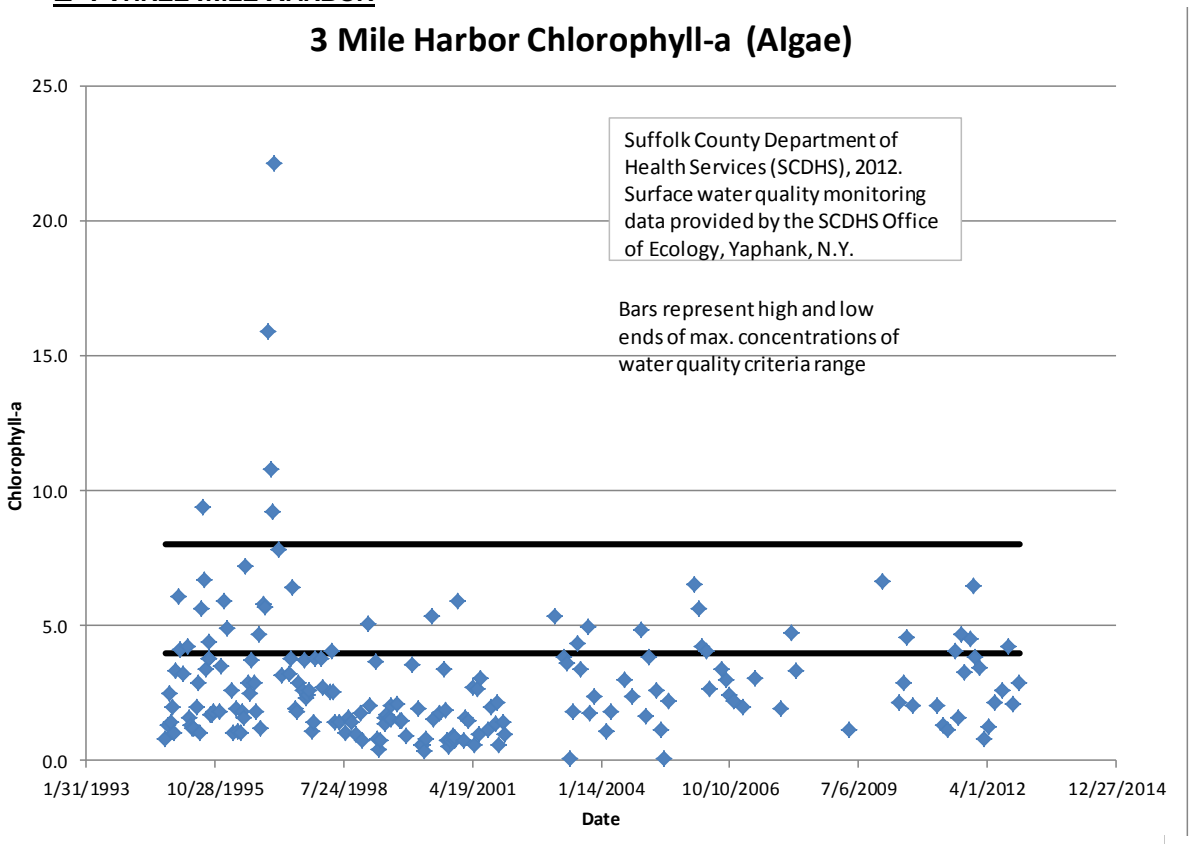


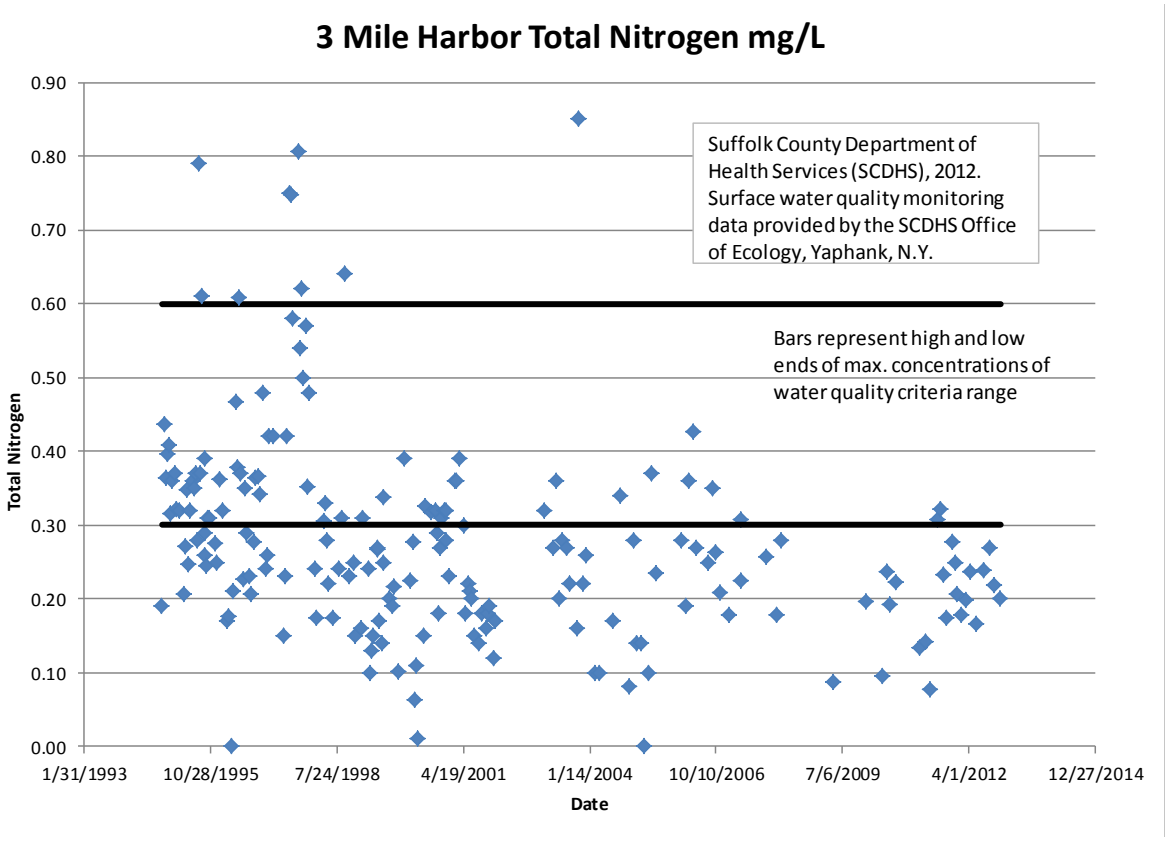


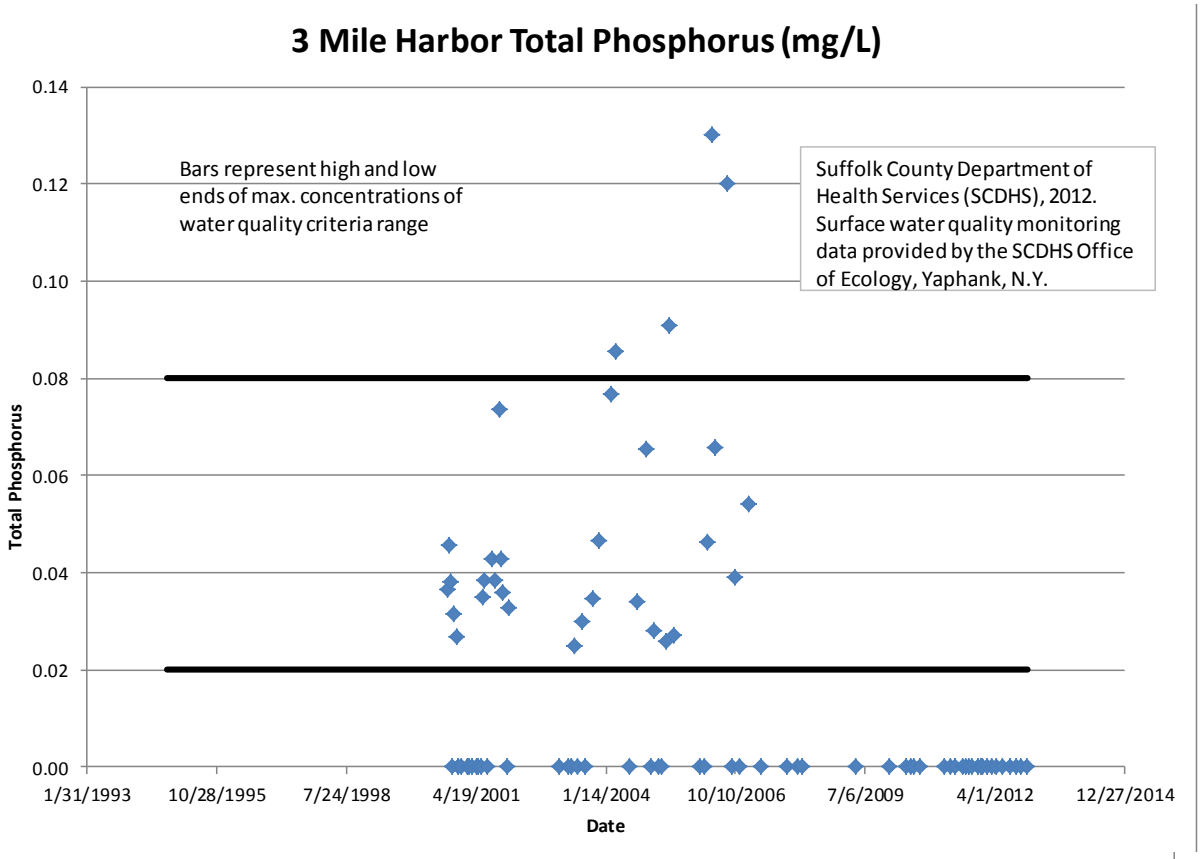

Accabonac Harbor Total Phosphorus (mg/L)
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office
Bars represent high and low ends of max. concentrations of water quality criteria range
Total Phosphorus
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

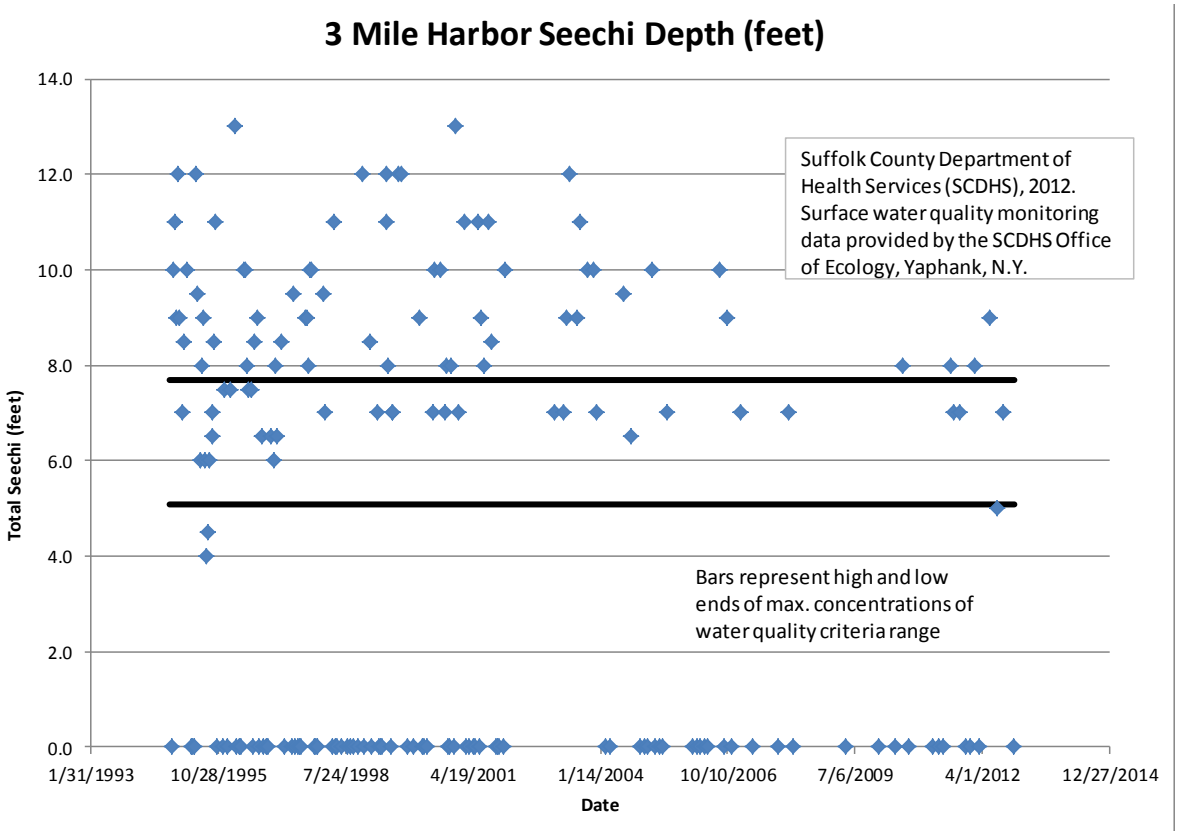

Accabonac Harbor Seechi Depth (feet)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Seechi Depth (feet)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

E-4 THREE MILE HARBOR

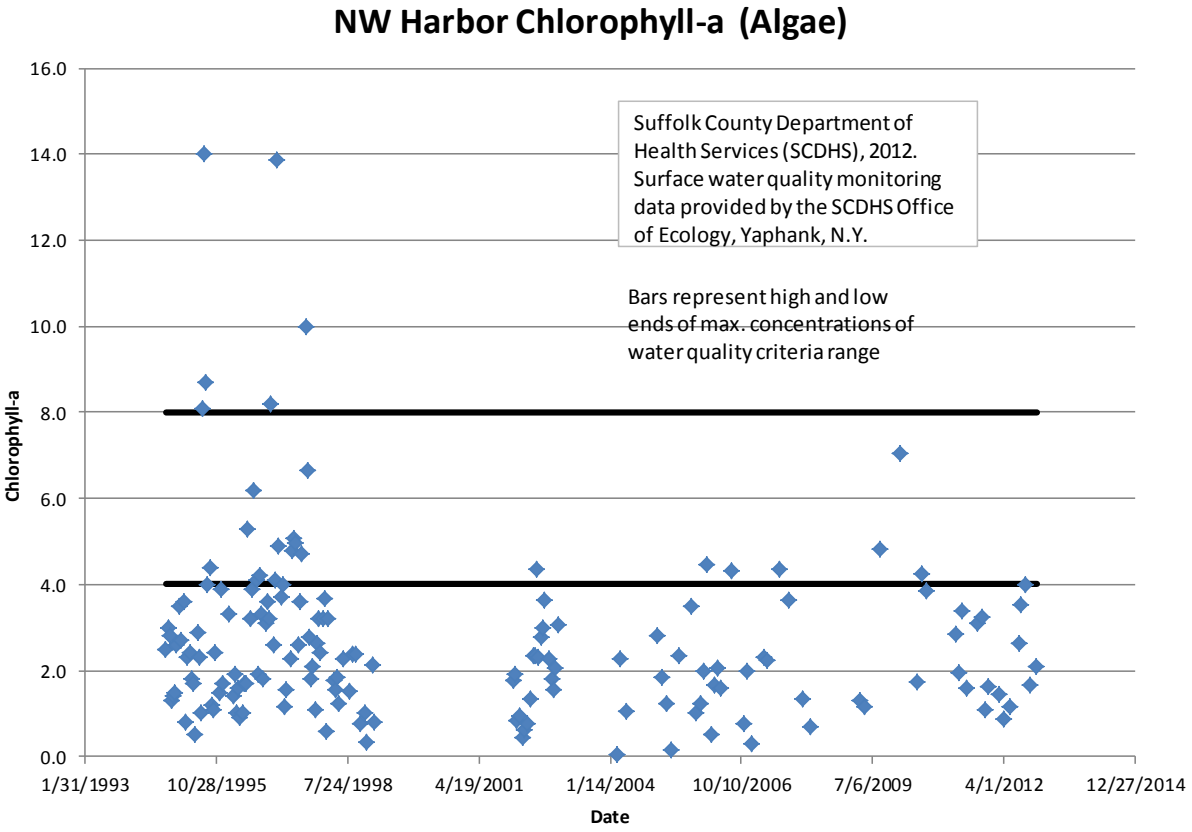


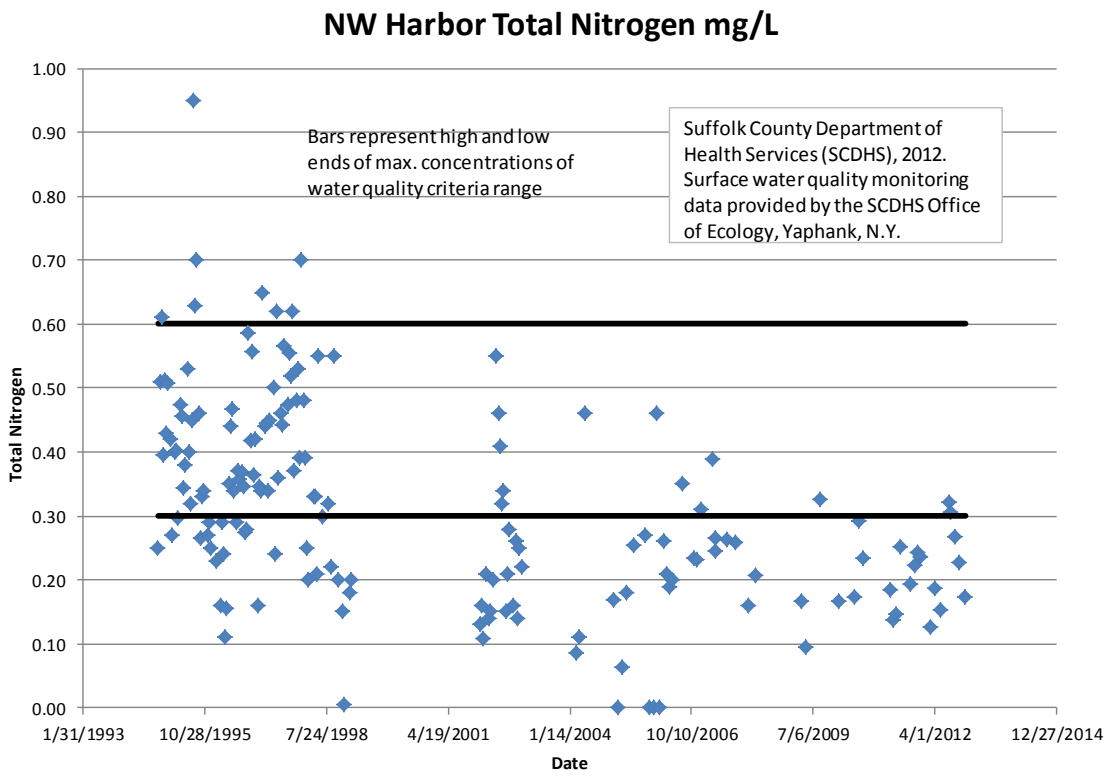


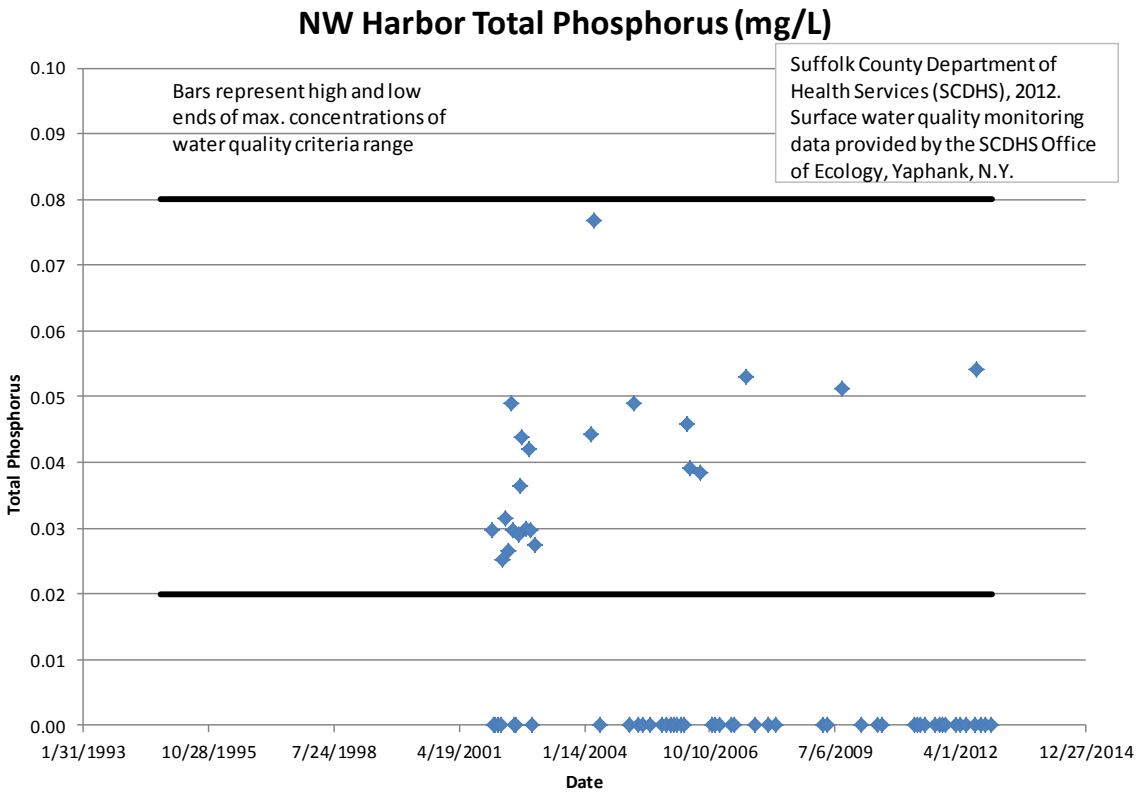

3 Mile Harbor Total Phosphorus (mg/L)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Phosphorus
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

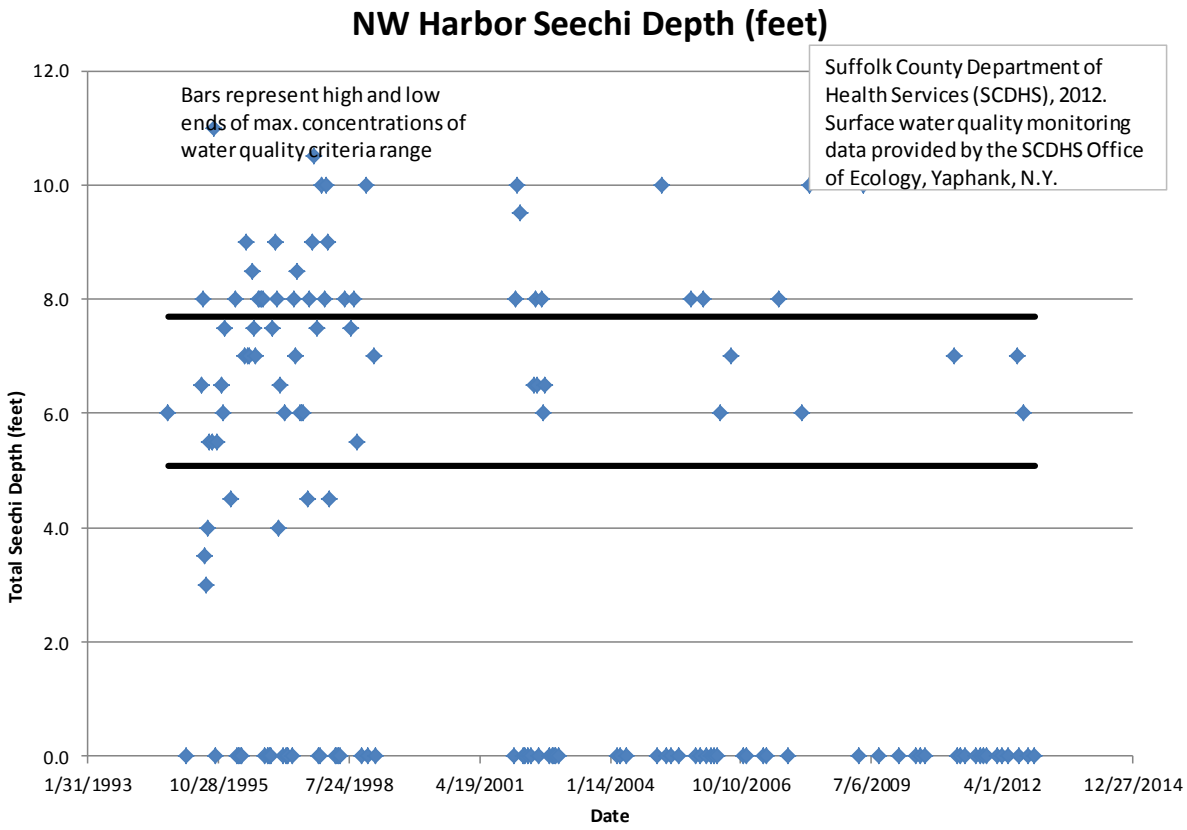

3 Mile Harbor Seechi Depth (feet)
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Bars represent high and low ends of max. concentrations of water quality criteria range
Total Seechi (feet)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date

E-5 NORTHWEST HARBOR






NW Harbor Total Phosphorus (mg/L)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Phosphorus
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date


NW Harbor Seechi Depth (feet)
Bars represent high and low ends of max. concentrations of water quality criteria range
Suffolk County Department of Health Services (SCDHS), 2012. Surface water quality monitoring data provided by the SCDHS Office of Ecology, Yaphank, N.Y.
Total Seechi Depth (feet)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
12/27/2014
Date