

# Village of East Hampton Wastewater Management Peer Review & Recommended Engineering Plan Report



December 22, 2021  
Updated Through June 26, 2022

Submitted to:  
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Village Trustees  
Village of East Hampton  
86 Main Street  
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Environmental Engineers/Consultants  
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## EXECUTIVE SUMMARY

This Report is a Peer Review of the recent wastewater engineering studies for the Village of East Hampton Study Area, see Figure ES-1, and development of a recommended Wastewater Management Water Resource Recovery Engineering Plan. Project tasks consisted of:

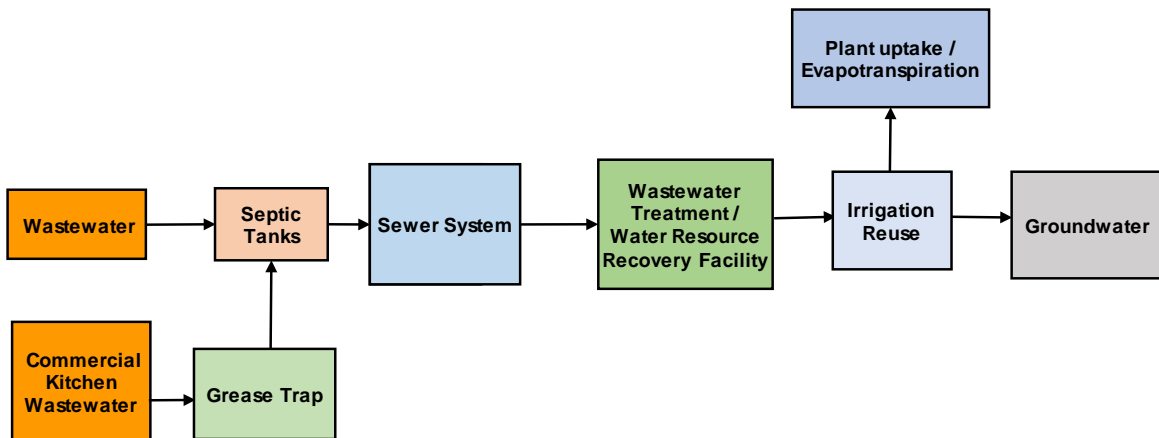
1. Review of Existing Plan and Relevant Data and Service Areas Definitions
2. Identification and Evaluation of Alternative Wastewater Management Approaches
3. NYSDEC and SCDHS Meetings
4. Recommended Wastewater Management Plan

The Peer Review identified a number of conflicts on flow estimates, sewer system layouts, lack of information on wastewater treatment technologies along with incomplete treatment system siting options.

An alternative wastewater management / water resource recovery plan was developed that consists of:

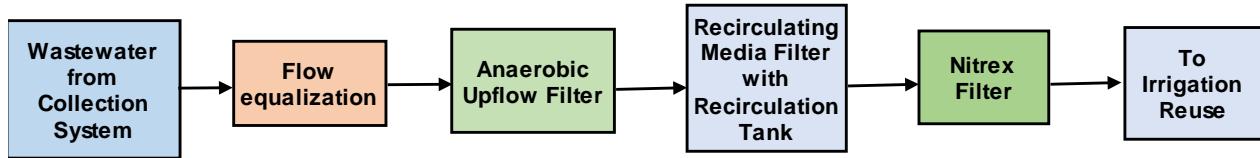
- ✓ Wastewater collection/transport using a septic tank-effluent system
- ✓ Water Resource Recovery Facility / wastewater treatment under the long-term parking lot at 2 Gingerbread Lane
- ✓ Reuse of reclaimed water for subsurface drip irrigation / subsurface discharge at Herrick Park

A simplified process flow diagram of the proposed wastewater management / water resource recovery system is presented on Figure ES-2.



**Figure ES-2 Wastewater/Water Resource Recovery System Process Flow Diagram**

Wastewater treatment / water resource recovery will be provided by a Nitrex nitrogen removal system. Figure ES-3 is a simplified process flow diagram of the Nitrex wastewater treatment system.



**Figure ES-3 Wastewater Treatment Process Flow Diagram**

Figure ES-4 presents the preliminary engineering layout of the complete proposed wastewater collection, treatment and reuse/disposal system. Figure ES-5 is a preliminary engineering layout of the proposed 76,000 gpd wastewater treatment / water resource recovery system. Achieving effluent Total Nitrogen of 3 mg/L is proposed. Table ES-1 presents Lombardo Associates, Inc. (LAI)'s opinion of probable cost of the wastewater system.

The project would be permitted by NYSDEC through the SPDES permit program. Filing and approval of a SPDES permit application, NY-2A is required by NYSDEC for the permit to be issued. At the Village's request, Lombardo Associates, Inc. (LAI) submitted a SPDES permit application for the project. NYSDEC comments on the submitted SPDES permit application are attached to this Report.

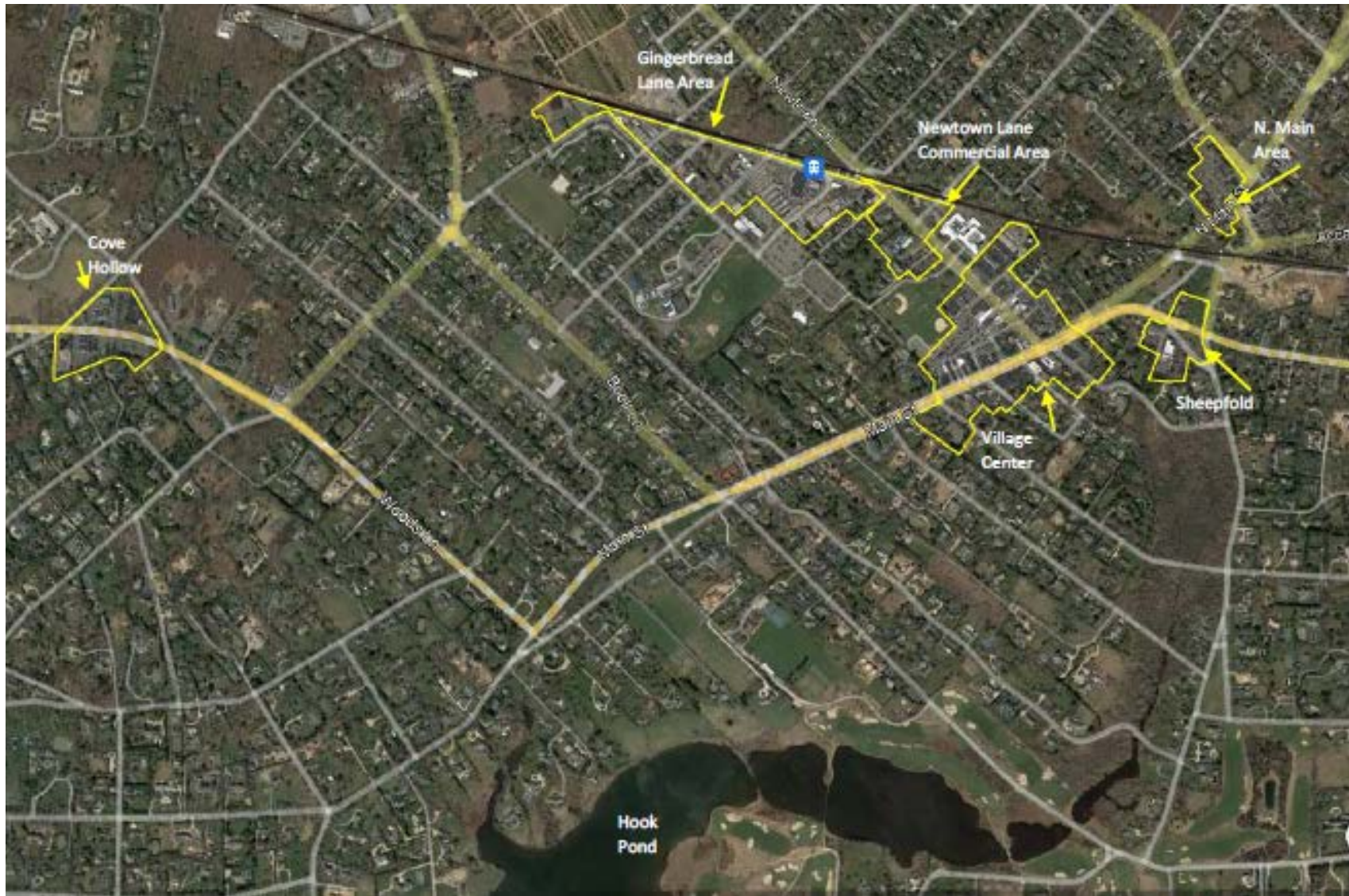


Figure ES-1 EHV Study Area Location Map on Aerial Photo





Figure ES-4 Proposed Water Resource Recovery System with Drip Irrigation



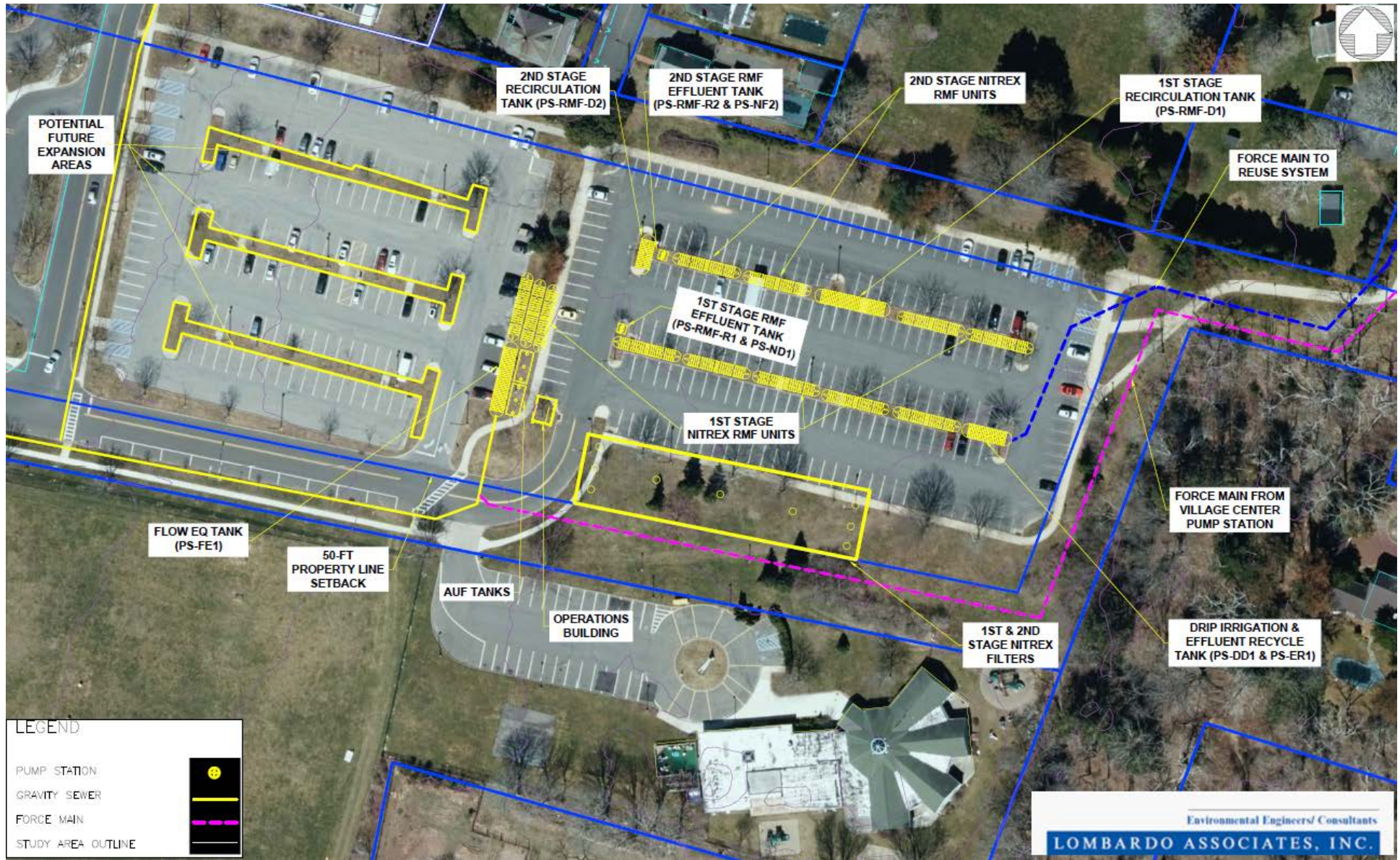


Figure ES-5 Proposed Water Resource Recovery Facility Layout

**Table ES-1 Wastewater Collection, Water Recovery Treatment & Reuse System Capital Costs**

<b>Collection System Costs - Proposed Option</b>					
Abandon Existing Septic		130	#	\$8,000	\$1,040,000
Repair / Replace Septic Tank		130	#	\$8,000	\$1,040,000
Gravity Sewer		11,800	EA	\$150	\$1,770,000
Low Pressure Sewer		920	LF	\$140	\$128,800
On-Property Pump (STEP)		20	#	\$5,000	\$100,000
Pump Station - Small		1	#	\$150,000	\$150,000
Pump Station - Large		1	#	\$75,000	\$75,000
Force Main		3,500	LF	\$150	\$525,000
<b>Subtotal - Collection System Construction Costs</b>					<b>\$4,828,800</b>
Miscellaneous		10%			\$482,880
Contingency		20%			\$965,760
Admin. & Financing		5%			\$241,440
Engineering		20%			\$1,255,500
<b>Total Collection System Capital Costs</b>					<b>\$7,774,380</b>
<b>Subtotal - WWTF System Construction Costs</b>					<b>\$7,068,000</b>
Miscellaneous		10%			\$706,800
Contingency		20%			\$1,413,600
Parking Lot Restoration		1			\$300,000
Admin. & Financing		5%			\$353,400
Engineering & admin		20%			\$1,837,700
<b>Total WWTF System Capital Costs</b>					<b>\$11,679,500</b>
<b>Total Collection &amp; WRRF &amp; Irrigation System Capital Costs (2021 \$)</b>					<b>\$19,453,880</b>
<b>Total Collection &amp; WRRF &amp; Irrigation System Capital Costs (2026 \$)</b>					<b>\$23,668,600</b>



## 1. INTRODUCTION

This Report presents the results of the Village authorized tasks of:

1. Peer Review of the Wastewater Management documents prepared by Nelson & Pope (N&P) and Nelson, Pope & Voorhis (NPV) for East Hampton Village of (EHV). No Wastewater Management Report was issued, rather individual analyses/documents as listed and attached in this Report.;
2. Identification and Evaluation of Alternative Wastewater Management Approaches
3. NYSDEC & SCDHS Communications Regarding Alternative Management Plan for EHV
4. Recommended Wastewater Management Plan for EHV

This Report provides many of the components needed for a Map & Plan to establish a Sewer / Wastewater Management District and for the Engineering Report required for NYS Environmental Facilities Corporation (EFC) and Department of Environmental Conservation (DEC) Engineering Report Outline to ensure project eligibility for EFC/DEC funding.

<https://www.efc.ny.gov/sites/default/files/uploads/Application%20Requirements/Engineering%20Report%20Outline%20FFY2019.pdf>

The EHV Study Areas consist of:

1. Village Center
2. Newtown Lane Commercial Area
3. Gingerbread Lane Area
4. Sheepfold
5. N. Main Area
6. Cove Hollow

with a Location Map presented on Figure 1-1. The core Study Areas (areas 1 through 5 excluding Cove Hollow, which is to be addressed separately) are illustrated on Figure 1-2.

The proposed project would be permitted by NYSDEC through the SPDES permit program. Filing and approval of a SPDES permit application, NY-2A is required by NYSDEC for the permit to be issued. At the Village's request, Lombardo Associates, Inc. (LAI) submitted a SPDES permit application for the project. NYSDEC comments on the submitted SPDES permit application are attached to this Report.

## Engineering Report Certification

During the preparation of this Engineering Report, I have studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is being sought from the New York State Clean Water State Revolving Fund. In my professional opinion, I have recommended for selection, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of constructing the project or activity, the cost of operating and maintaining the project or activity over the life of the project or activity, and the cost of replacing the project and activity.

Title of Engineering Report: Village of East Hampton Water Resource Recovery Engineering Plan  
Date of Report: December 22, 2021, Revised January 6, 2022; Feb. 23, 2022 & March 23, 2022  
Professional Engineer's Name: Pio S. Lombardo, NYS PE # 056900

Signature:

Date: June 23, 2022





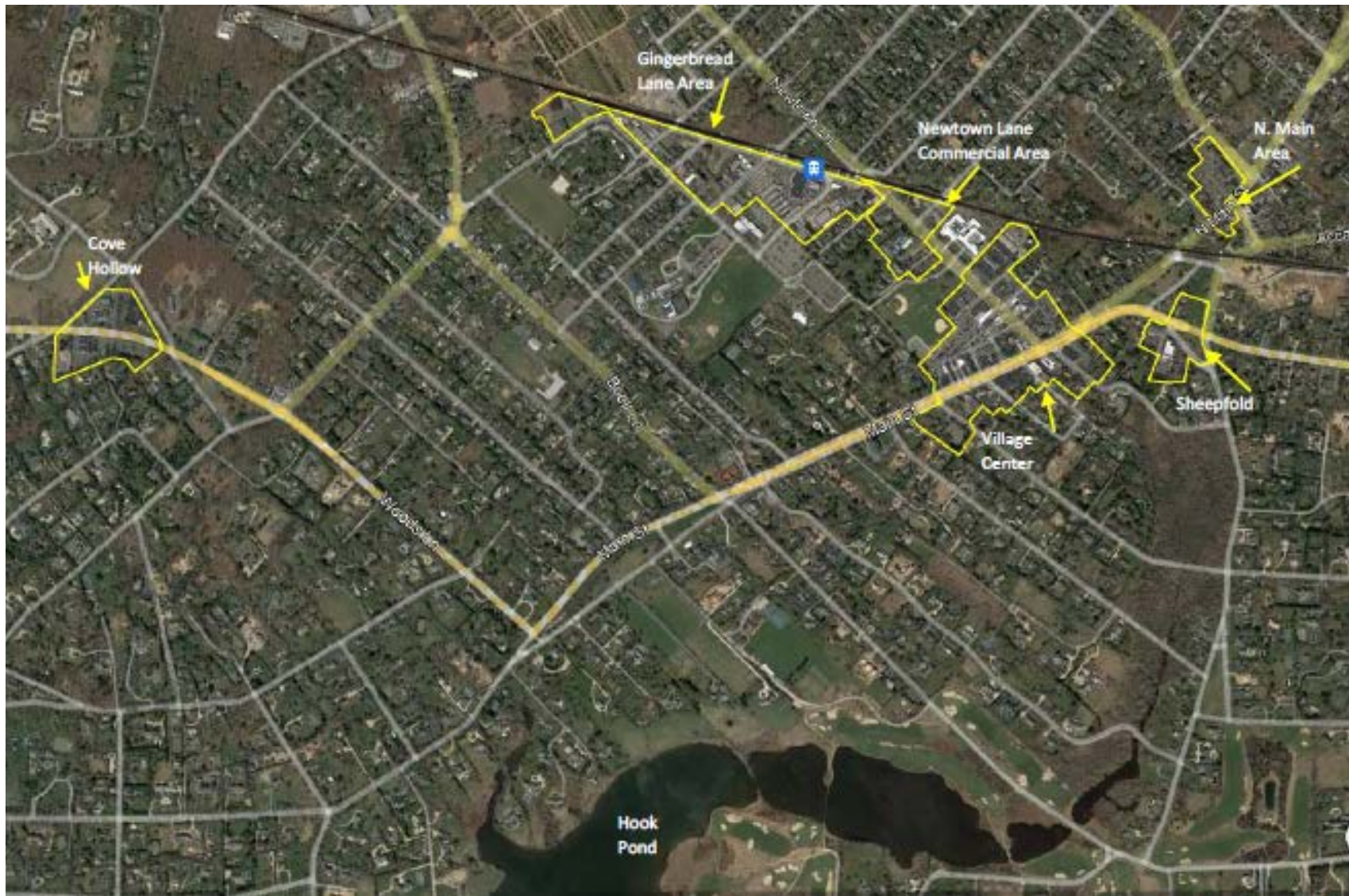


Figure 1-1 EHV Study Area Location Map on Aerial Photo





**Figure 1-2 EHV Core Study Areas on Aerial Photo**

## 2. N&P DOCUMENTS

### 2.1 LIST / DESCRIPTION OF N&P DOCUMENTS

N&P/NPV prepared the documents listed below that were provided to the Town and are included in Appendices A, B and C.

1. Figures of proposed sewer layouts for Phases IA, IB, II and III and candidate treatment plant / disposal facilities locations are presented in Appendix A with Table A-1 listing the Figures.

**Table 2-1 List of Drawings / Figures Submitted by NP**

Figure No.	Site #	Description
A-1		Overall Sewer Phasing Plan
A-2		Phase IA & IB Sewer Partial Plan
A-3		Phase II Partial Sewer Plan
A-4		Phase III Partial Sewer Plan
A-5		Phase III Sewer Layout
A-6		Sewer Route & Treat/Dispose Layout at EHV DPW Property
A-7		Treat/Dispose Layout at EHV DPW Property
A-8	1	STP Site # 1 Location Map
A-9		Treat/Dispose Layout at Site # 1
A-10	2	STP Site # 2 Location Map
A-11		Treat/Dispose Layout at Site # 2
A-12	3	STP Site # 3 Location Map
A-13		Treat/Dispose Layout at Site # 3
A-14	4	STP Site # 4 Location Map
A-15		Treat/Dispose Layout at Site # 4
A-16	5	STP Site # 5 Location Map
A-17		Treat/Dispose Layout at Site # 5
A-18	6	STP Site # 6 Location Map
A-19		Treat/Dispose Layout at Site # 6
A-20	8	Treat/Dispose Layout at Site # 8
A-21	9	Treat/Dispose Layout at Site # 9
A-22	10	Treat/Dispose Layout at Site # 10
A-23		NP Letter re Sites 8, 9 & 10

2. **Village of East Hampton Commercial Districts Revitalization Plan**, Presentation April 16, 2021, updated April 19, 2021. Appendix B contains the wastewater section of that presentation. Key aspects of the presentation are summarized on Tables 2-2 and 2-3 which present water use for the 3-year period of 2017 – 2019 and by phase. Wastewater design flows were not explicitly stated in N&P documents. Figure 2-1 illustrates the boundaries of the Phase areas. It is noted that the phases do not include the Sheepfold and N. Main Area study areas.



**Table 2-2 Average Daily Flow Based upon Water Use**

EAST HAMPTON VILLAGE WATER CONSUMPTION						
3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)						
CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (Ac)	TOTAL LAND AREA (Ac)	MAX. / MIN.	SD	90% CONFIDENCE INTERVAL
PHASE I-A	12,052.2	462.5	26.06	19,158.5 / 8,188.3	1,283.2	10,769.0 - 13,335.3
PHASE I-B	2,945.0	371.4	7.93	4,643.5 / 1,592.9	904.2	2,534.5 - 3,355.4
PHASE II	2,225.6	115.9	19.20	5,081.6 / 822.2	1,044.4	1,751.4 - 2,699.7
* PHASE III	50,713.1	123.0	412.23	74,435.0 / 21,646.0	10,808.1	39,905.0 - 61,521.2

\* PHASE III AVERAGE DAILY FLOW (ADF) INCLUDES NON-IRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.

**Table 2-3 Average Water Use by Phase**

Phase	Description	ADF	Cum Flow
IA & IB	Village Center & Upper Newtown Lane	14,997	
II	Railroad Ave. / Gingerbread Lane Area	2,226	17,223
III	Residential Area in Hook Pond Watershed	50,713	67,936
	Total	67,936	

ADF = Average Daily Flow in gallons per day (gpd)

NP recommended:

- Village Center (Phase IA), Upper Newton Lane (Phase IB), Gingerbread Lane and Railroad Avenue Phase II could be served by an Appendix A system at the Schenck property on Newtown Lane. N&P stated that the site could accommodate 40 residential units or commercial use expansion. No wastewater flows were stated in N&P documents.
- Full STP (Phases I, II and III) build out requires a full-scale plant at Village DPW parcel on Accabonac Road.
- SCDHS Appendix A System for the commercial downtown with Innovative/Alternative (I/A) systems for Single Family Homes (for the Phase III area).

3. Wastewater Flows

N&P estimated wastewater flows based upon water use with a property-by-property tabulation presented in Appendix C. However, the estimates do not include street addresses and figures that have building numbers. Consequently, the estimates are not verifiable / usable for the efforts of this Report.

4. Cost estimates

Table 2-4 presents N&P's wastewater system cost estimates by Areas IA & IB, II and III.





**Figure 2-1 Phase Area Boundaries**

**Table 2-4 NP Wastewater System Cost Estimates**

NP Estimated Project Costs (in millions)		Option 1	Option 2	Option 3
		Areas IA & IB	Area II	Area III
<b>Estimated Flow (gpd)</b>		14,997	2,226	50,713
STP Construction Costs		\$ 3.00	\$ 3.50	\$ 5.00
Collection System (gravity)		\$ 1.00	\$ 1.25	\$ 5.90
Collection System (LPS)				\$ 4.50
Grinder Pump Units (GPU)				\$ 3.00
Pump Station		\$ 0.50	\$ 0.50	\$ 1.00
Force Main		\$ 1.15	\$ 1.15	\$ 1.15
House Connections		\$ 1.25	\$ 1.50	
Abandon Septic Systems		\$ 1.25	\$ 1.50	\$ 3.75
Subtotal		\$ 8.15	\$ 9.40	\$ 24.30
Contingency	20%	\$ 1.63	\$ 1.88	\$ 4.86
Subtotal		\$ 9.78	\$ 11.28	\$ 29.16
Engineering & CM	10%	\$ 0.98	\$ 1.128	\$ 2.916
TOTAL Cost (2020 Dollars)		\$ 10.76	\$ 12.4	\$ 32.1
TOTAL Cost (2021 Dollars)	3%	\$ 11.10	\$ 13.60	\$ 33.10
TOTAL Cost (2026 Dollars at 4%/yr)	4%	\$ 13.50	\$ 16.55	\$ 40.27
Option II 2020 dollars increase to 2021 by 10% vs 3% for others				

## 5. Candidate Properties for Treatment/Disposal

Table 2-5 lists and Figure 2-2 illustrates the locations of candidate properties for Village wastewater treatment/disposal.

**Table 2-5 Candidate Locations for Village Wastewater Treatment/Disposal**

Figure No.	Site #	Description	SCTM #	Parcel Acres	Site Description	Neighborhood	Owner	Zoning	Land Use	In Town or Village
A-8	1	STP Site # 1 Location Map	300185000200002000	11.41	large area undeveloped	Residential & Industrial / RR	KEYSPAN ENERGY DEVELOPMENT CORP			Town
A-9		Treat/Dispose Layout at Site # 1								
A-10	2	STP Site # 2 Location Map	0301002000100001000	2.87	industrial developed, 29 King Street	Ag, Residential & Industrial / RR	NORFRED CORP	R-20	Industrial	Village
A-11		Treat/Dispose Layout at Site # 2								
A-12	3	STP Site # 3 Location Map	0300185000100015002	3.49	open space	Ag, & Industrial / RR	State of NY - Open Space		Vacant	Town
A-13		Treat/Dispose Layout at Site # 3								
A-14	4	STP Site # 4 Location Map	0300192000200006004	7.01	undeveloped, sand mine, add'l land avail- 120	Ag, Residential & Industrial / RR	WAINSCOTT HAMLET CENTER LLC			Town
A-15		Treat/Dispose Layout at Site # 4								
A-16	5	STP Site # 5 Location Map	0300192000300005007	3.66	Airport Area - 15 INDUSTRIAL RD, 20,340 feet force main on Montauk Highway required	Ag, Residential & Industrial / RR	Town of East Hampton			Town
A-17		Treat/Dispose Layout at Site # 5								
A-18	6	STP Site # 6 Location Map	301-04-05-4.1	12.7	Actively used DPW property 12 Accabonac Rd at Town Lane	Residential	EHV DPW Property		Transportation	Town
A-19		Treat/Dispose Layout at Site # 6								
A-20	8	Treat/Dispose Layout at Site # 8	301-04-01-31	2.62	Village property, understood to not be legally available for project 51 NORTH MAIN ST	Residential	EHV Property	R-20	Vacant	Village
A-21	9	Treat/Dispose Layout at Site # 9	301-4-2-5	1.82	Fuel storage / depot	Residential &	P.C. SCHENCK &	C	Industrial	Village
A-22	10	Treat/Dispose Layout at Site # 10	301-2-7-1.003	9.95	Long Term Parking Lots A & B 2	Residential &	EHV Property	R-20	Institutional	Village
A-23		NP Letter re Sites 8, 9 & 10								





**Figure 2-2 Candidate Parcels for Wastewater Treatment & Disposal**



### 3. PEER REVIEW OF N&P WASTEWATER DOCUMENTS

#### 3.1 PROPERTY WASTEWATER FLOWS

- The NP wastewater design spreadsheet in Appendix C does not specify which properties are in which Phases to enable a confirmation of the flow design basis – a critical project component – and to validate design flows stated on Table 2-3. Consequently, in Chapter 4 LAI presents property by property estimates of wastewater SCDHS code design flows based upon examination of GIS, assessor’s data and field review / validations.
- NP claims to have examined water use, Table 2-2, to develop Average Daily Flow (ADF) – presumably for wastewater.
  - i. It would have been of value for the ADF for each individual year to have been presented so that peak flows would be known.
  - ii. Wastewater design flows are 2 x average indoor water use to enable addressing above average / peak flows. It is not stated if this factor was considered/used.
  - iii. Due to the seasonality of wastewater generation in the study, it is LAI’s opinion that the Code flow are more applicable than quarterly water use.

#### 3.2 WASTEWATER COLLECTION SYSTEM AND ROUTE

N&P proposed a combination of grinder pump / low pressure sewers and gravity pipe to route all flows to a pump station in Herrick Park. Table 3-1 presents a summary of the NPV sewer plan.

**Table 3-1 NPV Proposed Collection System Summary**

NPV Study Area	Sub-Area Included	Comments
Area IA	Village Center	Gravity sewers in Newtown Ln., Main St., The Circle & Huntting Ln. drain to pump station in the Reutershan parking lot. Sewer partially in parking lots behind buildings. Newtown Ln. pipe shown on shoulder, but SCWA water mains are on both sides. This would require the sewer to be in center of the road. Force main runs north up Main St., Hook Mill Rd., and Accabonac Rd. to the DPW site.
Area IB	Newtown Lane	Gravity sewer in Newtown Ln. connects to Area 1A gravity sewer. Water mains on both sides of street require sewer to be in center.
Area II	Gingerbread Lane	Low pressure sewers with grinder pumps at each property. LPS connects to gravity pipe in Newtown Ln.
Area III	Residential Areas	Gravity pipe extensions on Huntting Ln and to all properties on The Circle. Low pressure sewers and grinder pumps at each property for all other areas. LPS connects to gravity sewers in Main St. & Huntting Ln.

Table 3-2 presents the quantities for the N&P proposed collection system.

**Table 3-2 NPV Collection System Quantities**

NPV Collection System Summary								
NPV Study Area	Area IA	Area IB	Phase I	Area II	Area III	Connect to DPW Site	Sheepfold	North Main St
Proposed Study Area	Village Center	Newtown Lane	Subtotal Areas IA & IB	Gingerbread Lane	n/a			
Gravity Sewer	4,400	1,450	5,850	0	1,955		not addressed	not addressed
Low Pressure Sewer	0	0	0	4,330	27,175			
Grinder Pump		0	0	32	280			
Pump Station	1	0	1	0	0			
Force Main	7,410	0	7,410	0	0			
Property Connections	92	16	108	32				
Abandon Septic Systems	92	16	108	32				

Quantities assume discharge to EHV DPW site for a 100,000 gpd WWTF

**3.3 WASTEWATER TREATMENT SITES**

The candidate wastewater treatment sites listed on Table 2-5 were evaluated by LAI to determine which sites are viable for in-depth analysis. Table 3-3 presents the evaluation. Site #2 at 29 King Street in the Village and site #10, long term parking lots (at 2 Gingerbread Lane) are the screened sites that are the best candidates for the wastewater treatment / water resource recovery facilities.

**Table 3-3 Evaluation of Candidate Sites**

Site #	Owner	Evaluation	Short List Recommendation
1	KEYSPAN ENERGY DEVELOPMENT CORP	Property outside of Village; 3,000 feet from Study area . Need Town approval for route. Acquisition	No
2	NORFRED CORP	Cost of property acquisition	Yes
3	State of NY - Open Space	Stormwater drainage area. State ownership located outside Village	No
4	WAINSCOTT HAMLET CENTER LLC	Private ownership. Excessive distance of 15,000++ feet & major road work	No
5	Town of East Hampton	Excessive distance of 15,000++ feet and major road work	No
6	EHV DPW Property	7,400 feet force main. Major roads thru Town. Residential area	No
8	EHV Property	Not legally available for project	No
9	P.C. SCHENCK & SONS, LLC	Private ownership. Too small	No
10	EHV Property	Very attractive	Yes

#### 4. STUDY AREA WASTEWATER DESIGN FLOWS

LAI performed a field survey of all buildings in each of the following study areas:

- Village Center
- Newtown Lane Commercial
- Gingerbread Lane
- Sheepfold
- North Main
- Cove Hollow

The Cove Hollow area is presented for informational use only as that area is not proposed to be included in the current project. The use category and relevant sizing criteria was recorded for each building. The following conditions were observed:

1. Some buildings with multiple uses on the same parcel
2. Some buildings cover multiple parcels, some with mixed uses. This was primarily observed in the Village Center area where many buildings have multiple uses.
3. Some parcels with multiple buildings

Each use within each building was assigned a use category that was then used to determine the wastewater design flow. Floor footprint areas were estimated from GIS planimetric information. Table 4-1 presents the number of parcels and buildings along with the total wastewater flows for each study area.

**Table 4-1 Wastewater Design Flows by Study Area**

Study Area	WW Flow (gpd)	# of Parcels (gpd)	# of Buildings
Gingerbread Lane	14,774	44	69
Newtown Lane Commercial	6,729	19	25
North Main	7,506	6	7
Sheepfold	2,123	6	7
Village Center	34,187	52	58
Miscellaneous / Contingency	10,000		
<b>Total</b>	<b>75,318</b>	<b>127</b>	<b>166</b>

Table 4-2 presents the wastewater flows by use type for the combined Study Area along with the use-based design criteria used to develop the flows. Wastewater strength (BOD, Total Nitrogen and Total Phosphorus), which is used for treatment system sizing, is estimated based on the use of the buildings served. For the purpose of system sizing, uses have been grouped into the following categories:

- Office / Retail uses. These flows typically have high nitrogen and phosphorus, low BOD levels
- Residential / Hotel type uses. These flows generally have average nitrogen/phosphorus and BOD levels.
- Restaurant uses. These flows typically have high BOD and average nitrogen/phosphorus levels



**Table 4-2 Building Use Based Wastewater Design Flow Criteria**

Use Type	Description	Gingerbread Lane	Newtown Ln. Com.	N Main	Sheepfold	Village Center	
1	Retail - Dry Store	1,238	1,207	182	216	5,795	
2	Wet Store, no Food Service (Hair, Nail, Pet)	153	232	248	0	409	
3	Wet Store, w/food (take-out, max 16 seats)	1,600	0	91	0	653	
4	Non-Medical Office Space	3,866	811	179	814	7,872	
5	Medical Office Space	312	886	0	122	243	
6	Restaurant w/seats	1,980	0	4,212	0	8,310	
7	Bar / Patio	0	0	0	0	0	
8	Residence - Single Family	3,300	2,200	0	0	770	
9	Residence - Multi Family	330	1,320	1,320	222	1,980	
10	Day School / Day Camp	0	0	0	0	0	
11	No WW Structure	0	0	0	0	0	
12	Spa / Fitness Center, No showers	56	0	0	0	886	
13	Spa / Fitness Center w/showers	0	0	0	0	2,267	
14	Convenience Store / Market Farm Stand	14	0	0	0	1,234	
15	General Industrial / Storage / Greenhouse	1,924	0	0	0	280	
16	Not used	0	0	0	0	0	
17	Library / Firehouse / Precinct / Museum	0	73	1,275	748	0	
18	Not Used	0	0	0	0	0	
19	Theater	0	0	0	0	900	
21	Cafeteria / Catering Hall / Conference Room	0	0	0	0	188	
22	Hotel	0	0	0	0	2,400	
<b>Total Flow (gpd)</b>		<b>14,774</b>	<b>6,729</b>	<b>7,506</b>	<b>2,123</b>	<b>34,187</b>	<b>65,318</b>
						<b>Miscellaneous / Contingency Flow (gpd)</b>	<b>10,000</b>
						<b>Total Design Flow (gpd)</b>	<b>75,318</b>

Table 4-3 presents the flows for the entire study area, grouped by the above strength categories. The flow values on Table 4-3 are rounded up for design purposes.

**Table 4-3 Wastewater Design Flows by Strength Category**

Office/ Retail	Residential / Hotel type Uses	Restaurant	Total WW Flow (gpd)
<b>33,000</b>	<b>15,900</b>	<b>17,100</b>	<b>66,000</b>

**Miscellaneous / Contingency Flow (gpd) 10,000**

**Total Design Flow (gpd) 76,000**

Table 4-4 presents the top 20 users in the Study Area. As can be seen, these users generate 45% of the wastewater flow. Individual building uses and associated wastewater flows are presented in Appendix D.

**Table 4-4 Top 20 Wastewater Flows**

Parcel ID	Address	Use	WW Flow (gpd)	Flow % Total
0301003000500002000	10 MAIN ST	Retail - Dry Store; Spa / Fitness Center, No showers; Retail - Dry Store; Restaurant w/seats; Non-Medical Office Space	4,320	5.68%
0301003000800001000	94 MAIN ST	Cafeteria / Catering Hall / Conference Room; Hotel; Restaurant w/seats	3,488	4.59%
0301004000100009000	79 N MAIN ST	Restaurant w/seats; Residence - Multi Family	3,228	4.25%
0301003000200004002	34 NEWTOWN LA	Retail - Dry Store; Non-Medical Office Space; Restaurant w/seats	2,337	3.07%
0301002000100023000	21 RAILROAD AVE	Retail - Dry Store	1,650	2.17%
0301004000200004001	68 NEWTOWN LA	Spa / Fitness Center w/showers; Wet Store, w/food (take-out, max 16 seats)	1,591	2.09%
0301003000500020003	36 MAIN ST	Theater; Retail - Dry Store; Non-Medical Office Space	1,497	1.97%
0301004000100034000	74 N MAIN ST	Restaurant w/seats; Non-Medical Office Space	1,493	1.96%
0301002000200028000	95 NEWTOWN LA	Residence - Multi Family	1,430	1.88%
0301002000100018000	31 RACE LN	Retail - Dry Store; Restaurant w/seats	1,382	1.82%
0301002000200017000	105 NEWTOWN LA	Wet Store, no Food Service (Hair, Nail, Pet); Wet Store, w/food (take-out, max 16 seats); Non-Medical Office Space; Residence - Multi Family	1,335	1.76%
0301003000400013000	21 NEWTOWN LA	Retail - Dry Store; Restaurant w/seats	1,263	1.66%
0301003000400001000	67 NEWTOWN LA	Convenience Store / Market Farm Stand; Wet Store, w/food (take-out, max 16 seats)	1,229	1.62%
0301002000200005000	3 RAILROAD AVE	Residence - Single Family; Non-Medical Office Space	1,195	1.57%
0301003000600011000	20 PARK PL	Non-Medical Office Space; Restaurant w/seats	1,167	1.54%
0301003000400035000	53 NEWTOWN LN	Retail - Dry Store; Non-Medical Office Space; Restaurant w/seats	1,139	1.50%
0301003000600017002	26 PARK PL	Non-Medical Office Space; Spa / Fitness Center w/showers	1,083	1.43%
0301004000200004002	66 NEWTOWN LN	Retail - Dry Store; Non-Medical Office Space	1,049	1.38%
0301004000100010003	N MAIN ST	Library / Firehouse / Precinct / Museum	1,033	1.36%
0301002000200030000	87 NEWTOWN LA	Retail - Dry Store; Medical Office Space	961	1.26%

**Total Flow (gpd) 33,869 44.56%**

## 5. ALTERNATIVE WASTEWATER MANAGEMENT OPTIONS

The components of wastewater management / water resource recovery are:

- Collection
- Treatment
- Reuse or disposal

The full range of technical options are illustrated on Figure 5-1.

### 5.1 WASTEWATER COLLECTION

Wastewater collection (i.e., sewer) system types are:

1. Total wastewater
  - a. Gravity
  - b. Pumped in a low-pressure system with grinder pumps (GP) or
  - c. Hybrid/combined gravity/pressure system.
  - d. Vacuum system in which wastewater moves through the collection system based upon a vacuum created at a central vacuum pump station. A vacuum sewer system consists of vacuum valve at each property and a central vacuum pump station.
2. Septic tank effluent (STE) – whereby septic tanks remain to retain solids and liquid is transported to a treatment plant.
  - a. Gravity, referred to as STEG
  - b. Pumped in a low-pressure system with septic tank effluent pumps (STEP) or
  - c. Hybrid/combined gravity/pressure system.

Based upon an examination of the topography of the study area, a hybrid gravity / pressure system, with pump station(s) is technically viable and the appropriate method. As the project can rely on gravity for much of the system, vacuum sewers are not appropriate nor cost-effective.

Consequently, the technically viable sewer options are:

Total Wastewater - Conventional gravity and pump station(s) as needed and grinder pumps.

Septic Tank Effluent (STE) - Gravity with pump station(s) as needed and STEP units

The STE technology is the recommended approach due to:

- shallower design and smaller pipe sizes results in lower cost
- enables simpler treatment systems to be used which can be placed under the Village long term parking lot – resulting in no consumptive land use and significant cost savings as compared to acquiring private property.
- Maximizes the use of any viable existing septic infrastructure



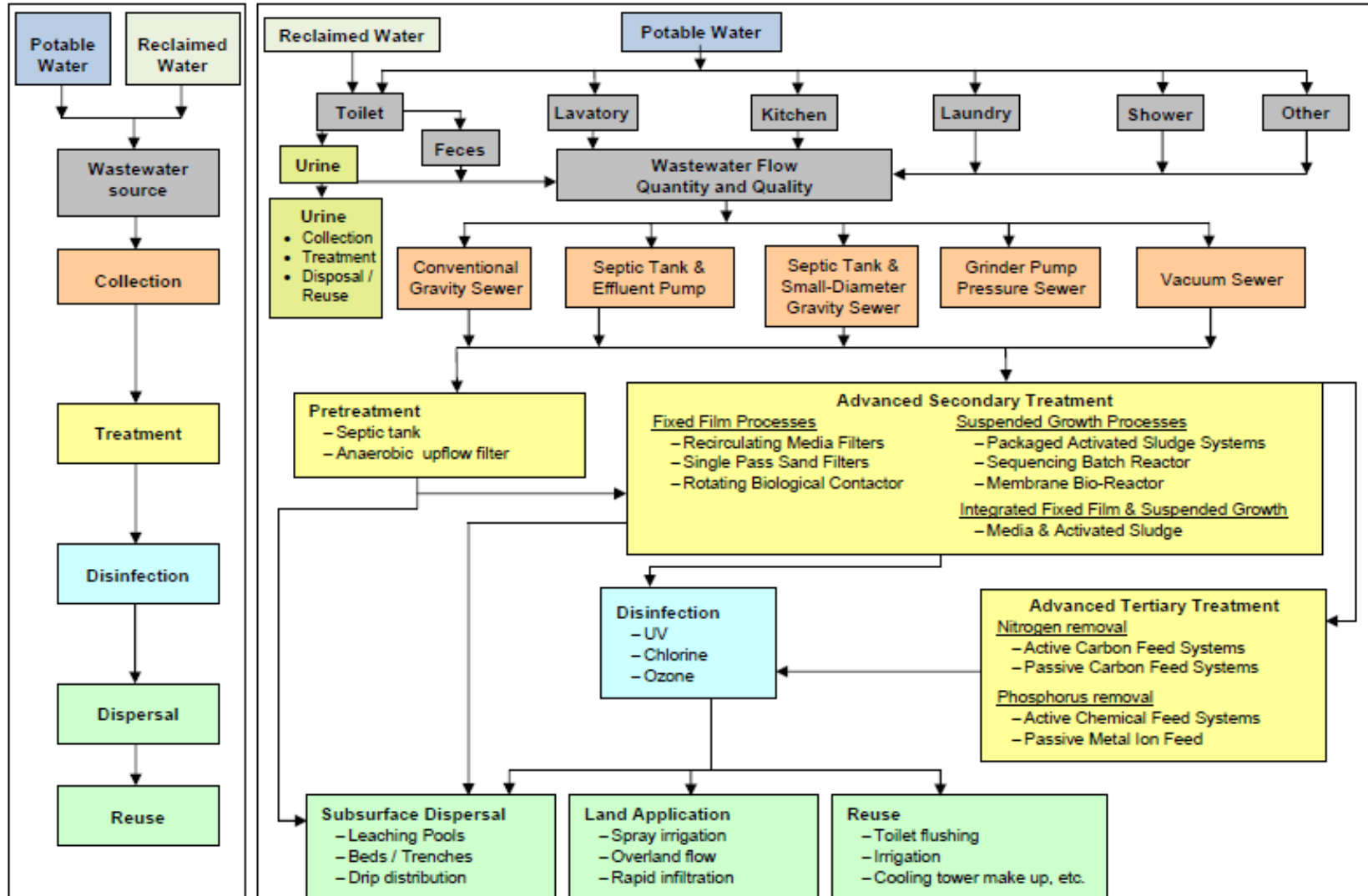


Figure 5-1 Wastewater-Water Resource Recovery–Technology Options Flow Chart

## 5.2 WASTEWATER TREATMENT / WATER RESOURCE RECOVERY

Wastewater treatment / water resource recovery 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.

Due to space constraints and need to utilize a technology that can be placed under the parking lot, the fixed film Nitrex technology is the recommended technology.

## 5.3 WATER REUSE

The water reuse opportunity is to reuse the recovered water for subsurface irrigation, using drip irrigation technology at Herrick Park. Water can be applied to the drip irrigation system at agronomic rates (which result in a larger drip irrigation footprint) or at higher water discharge rates (resulting in a smaller footprint).

## 5.4 EVALUATION OF SCREENED CANDIDATE SITES FOR WATER RECOVERY FACILITY

For the full design flow of 76,000 gpd, a minimum area of 20,000-ft<sup>2</sup> of area is required outside of applicable setbacks. The following setbacks are proposed:

- 10-ft Property Line to Force Main setback
- 25-ft Property Line to subsurface drip irrigation reuse system
- 50-ft Property Line to Nitrex Water Resource Recovery System setback

Using the above setbacks, the industrial property at 29 King Street has approximately 65,000-ft<sup>2</sup> of available area, making it a technically feasible location. Figure 5-2 presents the 29 King Street Industrial Property with the potentially available area highlighted. This property is not Village owned and would require a potentially difficult and expensive acquisition process. In addition to the property's acquisition cost, use of the property for the public purpose Water Resource Recovery Facility (WRRF) would reduce property taxes to the Village and Town and potentially negatively impact jobs.

The Village long-term parking lots have approximately 170,000 ft<sup>2</sup> that could be used for the wastewater treatment/water resource recovery facilities (WRRF). By locating the WRRF under the parking lots, no consumptive land would occur.

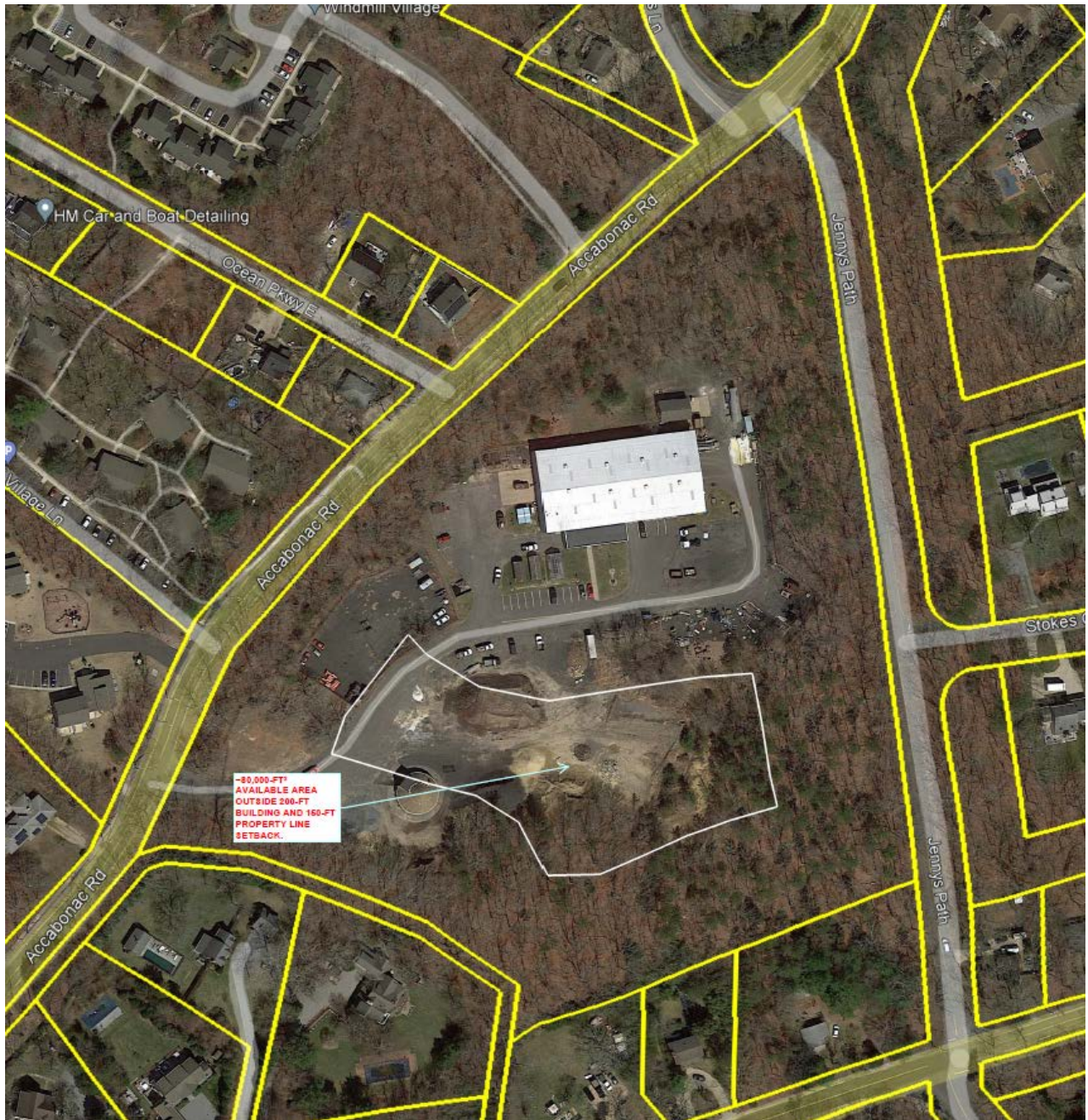
Figure 5-3 illustrates the EHV DPW site and potential area for the proposed treatment/disposal system, using 200 foot setback from habitable buildings and 150 feet from property lines. However, as the site is located in the Town (see Figure A-6), 4,500 feet from the Village, and the Town has indicated opposition to use of the site for wastewater treatment, the site is not being further considered.





**Figure 5-2 29 King St. - Industrial Property Potential Candidate for WWTF**





**Figure 5-3 EHV DPW Site**

### **5.5 CANDIDATE SITE FOR WATER REUSE**

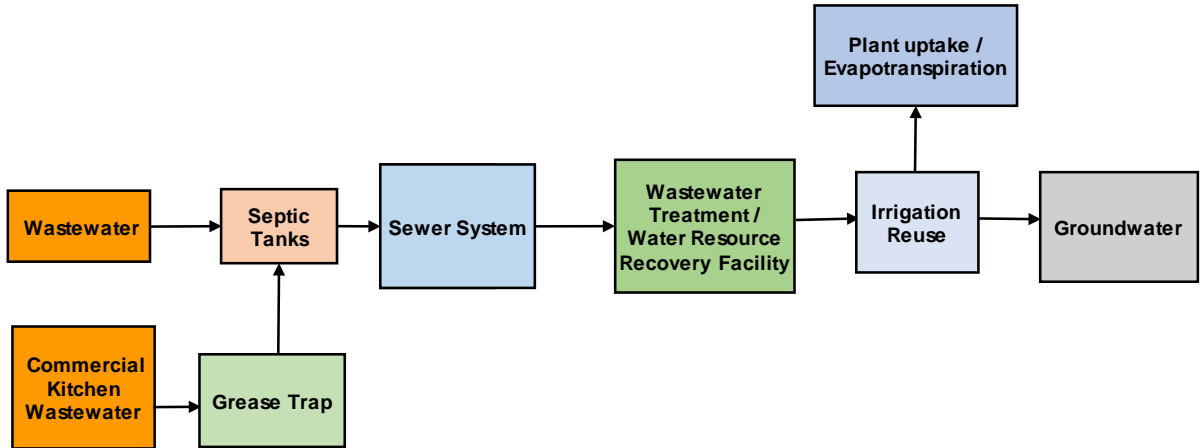
Herrick Park is adjacent to the proposed WRRF location, making it an attractive site for subsurface irrigation water reuse. Using a low agronomic application rate of approximately 0.35-gpd/ft<sup>2</sup>, the required area is approximately 217,000-ft<sup>2</sup>. Herrick Park has approximately 220,000-ft<sup>2</sup> of available greenspace outside the 25-ft property line setback. Using disposal application rate of 3+ gpd/sf<sup>2</sup> would significantly reduce the required disposal footprint area to approximately 25,000 sf. Less land area would be needed with the use of leaching pools or pressure shallow drainfields.



## 6. RECOMMENDED WASTEWATER/WATER RESOURCE RECOVERY PLAN

### 6.1 WASTEWATER / WATER RESOURCE RECOVERY SYSTEM

A simplified process flow diagram of the proposed wastewater management / water resource recovery system is presented on Figure 6-1.



**Figure 6-1 Wastewater/Water Resource Recovery System Process Flow Diagram**

Figure 6-2 is a plan view of the proposed system and illustrates the proposed:

- ✓ Wastewater collection/transport routes/methods for the Study Areas
- ✓ Water Resource Recovery Facility at the long-term parking lot
- ✓ Reuse for subsurface drip irrigation / subsurface discharge at Herrick Park

Figure 6-3 is a preliminary engineering layout of the proposed wastewater treatment / water resource recovery system, which also illustrates potential expansion areas. Wastewater system components will be designed in accordance with 2014 New York State Design Standards for Intermediate Sized Wastewater Treatment Systems (DEC 2014 Standards) and Ten State Standards as appropriate. As stated in the DEC 2014 Standards, “STEP sewer systems should be designed in accordance with the standards in the WEF’s Alternative Sewer Systems, MOP FD-12, 2008, or other states’ guidance”. It is noted that Pio Lombardo, P.E. was a co-author of WEF Alternative Sewer Systems, MOP FD-12, 2008.

Septic tanks at individual properties will be sized in accordance with Table D-2 of the DEC 2014 Standards, with adjustments made for commercial facilities with significant delivery times. These tanks will be sized on a lot-by-lot basis accounting for the significant delivery times for each facility. For facilities that require a garbage grinder, septic tanks will be increased by a factor of 33.3%. Table D-2 is presented below for reference.

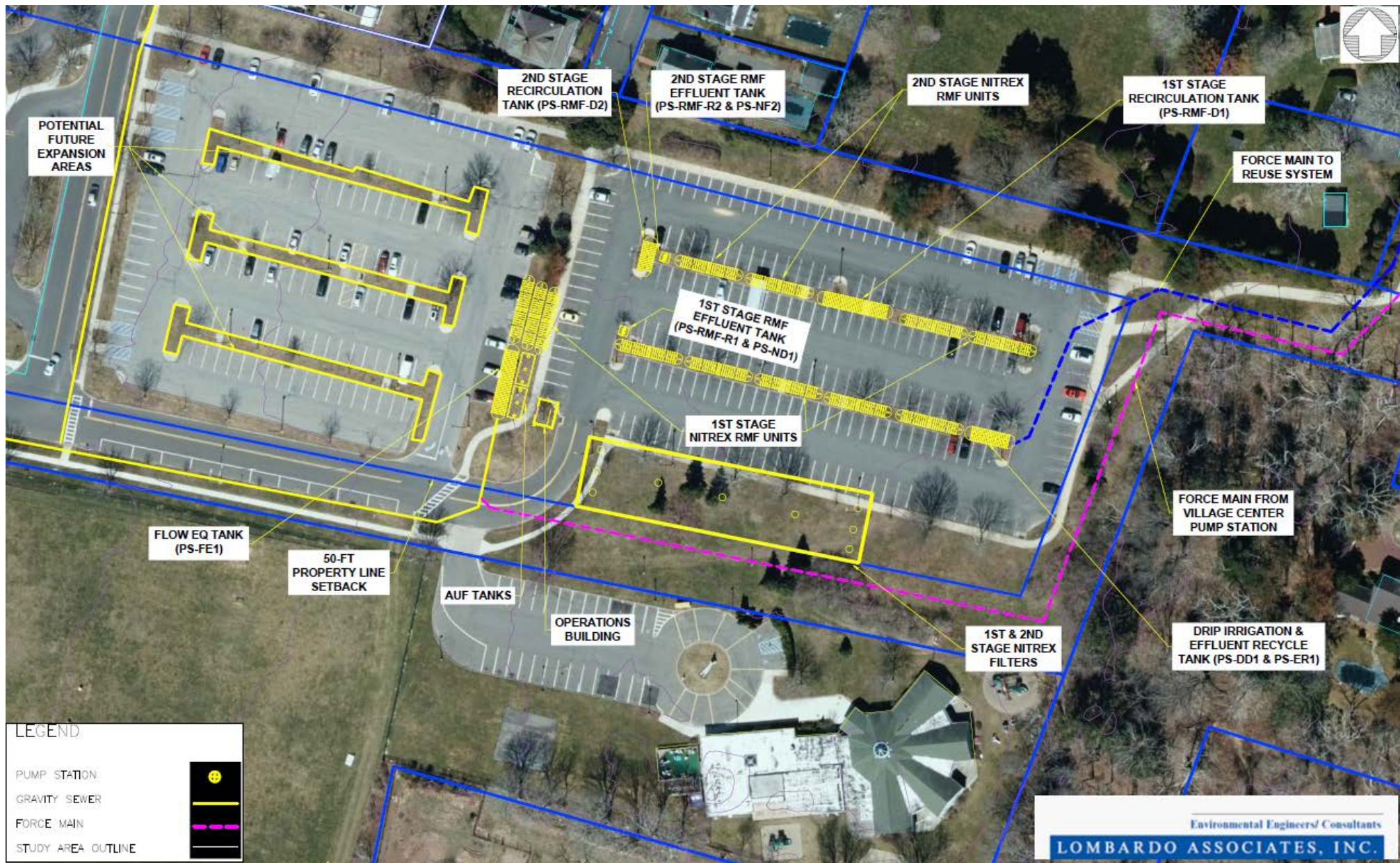
Daily Flow, Q (gpd)	Minimum Effective Tank Capacity (gal)
Under 5,000	1.5Q
5,000 to 15,000	3,750 + 0.75 Q
Greater than 15,000	Q





**Figure 6-2 Proposed Water Resource Recovery System with Drip Irrigation**





**Figure 6-3 Proposed Water Resource Recovery Facility Layout**



## 6.2 WASTEWATER COLLECTION

The wastewater collection system is proposed to be a hybrid septic tank - effluent gravity (STEG) and pressure (STEP) system to maximize gravity sections and minimize costs.

The wastewater collection system for Gingerbread Land, Newtown Lane Commercial and Village Center drains to the proposed WRRF/wastewater treatment site at the long-term parking lot. During design it may be determined that some properties will require septic tank effluent pumps to connect to the gravity or low-pressure sewers. The proposed sewer routes piping behind the buildings and off the roads to the maximum extent possible. Routing the sewers behind the buildings avoids costly roadwork, minimizes water main / service line crossings and allows for property connections to be made in close proximity to the existing septic piping, thereby minimizing/eliminating property owner connection costs. Blanket easements will be required of the property owners for property connections, including septic tanks. Easements will be required for common collection system components that are on private properties.

The North Main and Sheepfold study area collection system are proposed to be a STEG system that drains to a pump station located on the Village owned property across from the Post Office. This gravity pipe would be routed south down Main Street and under the railroad bridge. After the bridge, the gravity pipe would travel along Village owned property to the pump station. The force main from this pump station would travel across Village owned property south to Fithian Lane, then travel along Fithian Lane until it connects/discharges to the gravity sewer serving the Village Center.

Individual property septic tanks will be evaluated and repaired / replaced as needed. Septic tank effluent will flow by gravity through small diameter pipes (minimum 4") to a pump station located in the Reutershan parking lot (adjacent to Herrick Park). The force main from this pump station would travel along Village owned property to the gravity sewer draining to the treatment system site.

### **Pump Station Equipment**

Individual house pumps will be duplex, alternating effluent pumps housed in filtered pump vaults similar to the Orenco PF series pumps. These pumps are high-head pumps that can cover a wide range of hydraulic conditions within each model. The likely pump will be a 20-gpm, ½-hp pump for all but the highest of flows.

The Sheepfold Pump Station (PS-SF1) receives flow from the North Main and Sheepfold study areas. The total design flow, from Table 4-1 is 9,629-gpd. PS-SF1 consists of:

- 8-ft diameter precast concrete wetwell, 6-ft effective depth (WW-SF1)
- 9,000-gallon overflow / emergency storage tank (ES-SF1)
- Duplex, alternating submersible, centrifugal pumps with vortex impellers. 1-hp pumps similar to Goulds VTX series pumps
- Pump rails and hoisting system
- Emergency generator
- Odor control system

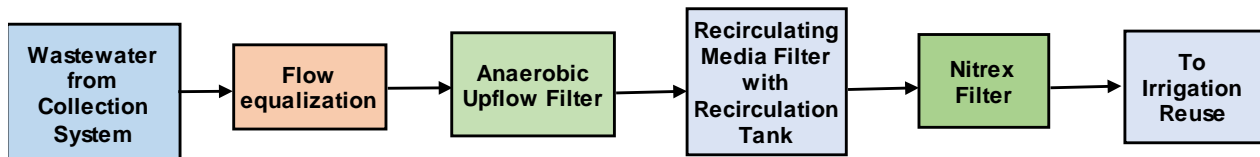
The Village Center Pump Station (PS-VC1) receives flow from PS-SF1, Village Center and Newtown Lane study areas. The total design flow, from Table 4-1 is 50,545-gpd. PS-VC1 consists of:

- 8-ft diameter precast concrete wetwell, 6-ft effective depth (WW-VC1)
- 18,000-gallon overflow / emergency storage tank (ES-VC1)
- Duplex, alternating submersible, centrifugal pumps with vortex impellers. 2-hp pumps similar to Goulds VTX series pumps
- Pump rails and hoisting system
- Emergency generator
- Odor control system

Both overflow tanks will be 8-ft diameter FRP tanks that are hydraulically connected to the pump station wetwells.

### 6.3 WASTEWATER TREATMENT

Water Resource Recovery / Wastewater Treatment will be provided by a Nitrex nitrogen removal system. Figure 6-4 is a simplified process flow diagram of the Nitrex wastewater treatment system.



**Figure 6-4 Wastewater Treatment Simplified Process Flow Diagram**

Figure 6-5 is a detailed process flow diagram of the Nitrex Water Resource Recovery / wastewater treatment system. The system will be designed to comply with the to-be-defined NYSDEC effluent permit requirements, when issued. For preliminary engineering planning purposes, the SPDES permit effluent requirements for an identical treatment process in Southampton are being used, which are:

pH	6.5 – 8.5
Total Nitrogen (TN)	< 10 mg/L
Total Dissolved Solids	1,000 mg/L

The system will be designed for phosphorus removal if deemed needed as part of the project’s environmental assessment.

Brief descriptions of treatment system components are presented below. Treatment system component equipment sizing calculations for major tanks and equipment items are presented on Tables 6-1 through 6-7.

#### **Equalization Tank**

Significant flow equalization / dampening of peak flow occurs as each property discharges to a septic tank prior to discharging to the collection system and ultimately to the treatment facility. A Flow Equalization (EQ) Tank is provided to store septic tank effluent (i.e., primary clarifier effluent) during peak flow periods to be treated during low flow periods so that the treatment system receives a constant flow throughout the day, as best as reasonably possible. The EQ tank provides additional storage volume for sustained peak flow periods. The design criteria for the EQ tank is 33% of code flow which enables sustained peak flow (SPF), which is the design basis, to be 75% of code flow.

We believe this is conservative as the system is designed based upon winter conditions (slower reaction rates for both nitrification and denitrification), whereas peak flows occur during the summer as the location is a summer resort area. Peak flows to this facility will occur during warmer weather in which the biological processes are more efficient/faster than in winter. Table 6-1 presents the sizing calculations for the flow equalization tank.

**Table 6-1 Flow Equalization Tank Sizing**

Flow EQ Tank Sizing	
Code Flow (gpd)	76,000
Design HRT (day)	0.333
Min. Vol. (gal)	25,308
Prop. Tank Vol. (gal)	30,000
Dead Storage Vol. (gal)	1,500
Prop. EQ. Vol. (gal)	28,500
Proposed Vol. as % of Minimum Vol.	112.6%

The flow EQ tank will be a 30,000-gallon FRP tank housing the Flow Equalization Pump Station (PS-FE1). PS-FE1 will dose the AUF from this tank. This pump station will be a duplex, alternating effluent pump station. The pumps will be vertical turbine pumps housed in filtered pump vaults similar to the Orenco PF series pumps. These pumps will be 50-gpm, 1-h.p. pumps and will be operated based on timer settings to provide a steady flow to the treatment facility.

**Anaerobic Upflow Filter**

An anaerobic upflow filter (AUF) is an upflow media filter that is located between the Flow Equalization Tank and the 1st Stage Recirculation Tank. AUF's typically remove 50+% of septic tank effluent BOD/TSS load. The AUF provides redundancy as no AUF BOD removal is assumed for subsequent treatment components for design purposes.

The AUF will be constructed within two (2) 8,000-gallon precast concrete tanks. These tanks will have a seam at the top to allow for assembly of the AUF prior to installing the top slab.

**Table 6-2 AUF Tank Sizing**

AUF Sizing	
Sustained Peak Flow (gpd)	57,000
Porosity (%)	60%
Design HRT (hr)	4.0
Min. Vol. (gal)	15,833
Prop. Vol. (gal)	16,000
Prop. Vol. as % of Min. Vol.	101.1%

**Recirculating Media Filter**

The Waterloo Biofilter has been selected for use as the Nitrex™ RMF. The total RMF treatment capacity will be split between the 1<sup>st</sup> and 2<sup>nd</sup> Stage RMFs, each having its own recirculation tank.



The first stage RMF will have approximately 100% of the total treatment capacity and the 2<sup>nd</sup> Stage RMF will have approximately 20% of the capacity. The Waterloo Biofilter uses 3" x 3" x 3" polyurethane foam cubes as the media.

The technology provider has developed this system utilizing a design organic loading rate of 0.021-lb/day/ft<sup>3</sup>. This loading rate is within the range of values reported in Table 7-15 on page 785 of the textbook "Small and Decentralized Wastewater Management Systems" (Tchobanoglous & Crites, 1998) for high rate attached growth trickling filters. The range reported is 10 – 25-lb/day/1,000ft<sup>3</sup>, or 0.01 – 0.025-lb/day/ft<sup>3</sup>. This organic loading rate assumes adequate circulation and ventilation is maintained so that the air in contact with the thin film of wastewater coating the media is not depleted of oxygen. Circulation and ventilation are achieved via an internal circulation fan and an active ventilation system.

Table 6-3 presents the recirculation tanks sizing. Table 6-4 presents the oxygen demand calculation and the resulting volume of media required to facilitate sufficient oxygen transfer to meet the demand.

The 1<sup>st</sup> Stage Recirculation Tank (RT-1) will be a 10-ft diameter, 30,000-gallon FRP tank. This tank will house the 1<sup>st</sup> Stage RMF Dose Pump Stations (PS-RMF-D1A and PS-RMF-D1B) dosing the 1<sup>st</sup> Stage RMF units. Each pump station will dose up to five (5) RMF units. There will be manual shutoff valves on the inlets of each unit so that they can be shut off and/or turned on as needed in response to changing flows and loads. Both pump stations will be a duplex, alternating effluent pump stations that will operate based on timer settings to achieve a recirculation ratio up to 3:1. The pumps will be 180-gpm, 3-h.p. vertical turbine pumps housed in filtered pump vaults similar to the Orenco PFG series high-flow submersible effluent pumps.

The RMF units will be furnished in 8-ft diameter, 16,000-gallon FRP tanks providing 2,100-ft<sup>3</sup> of media in each unit. Ten (10) units will serve as the 1<sup>st</sup> Stage RMFs and two (2) units will serve as the 2<sup>nd</sup> Stage RMFs.

**Table 6-3 1<sup>st</sup> & 2<sup>nd</sup> Stage Recirculation Tank Sizing**

Recirculation Tanks Sizing		
1st Stage	Sustained Peak Flow (gpd)	57,000
	Design HRT (day)	0.5
	Min. Vol. (gal)	28,500
	Prop. Vol. (gal)	30,000
	Prop. Vol. as % of Min. Vol.	105.3%
2nd Stage	Sustained Peak Flow (gpd)	57,000
	Design HRT (day)	0.25
	Min. Vol. (gal)	14,250
	Prop. Vol. (gal)	15,000
	Prop. Vol. as % of Min. Vol.	105.3%

## **Recirculation and Nitrex™ Dosing Pump Station Tanks (EFT-1, EFT-2)**

Effluent from the RMFs gets split between recirculation and forward flow. Recirculation flows are pumped back to the recirculation tanks while forward flows are pumped to the Nitrex™ tank zones. RMF effluent flows to the tanks EFT-1 and EFT-2 for 1<sup>st</sup> and 2<sup>nd</sup> stage respectively. Both tanks are 8' diameter precast concrete chambers with 6-ft liquid levels, resulting in a total capacity of 1,600-gallons. EFT-1 houses the 1<sup>st</sup> Stage Recirculation Pump Station (PS-RMF-R1) and EFT-2 houses the 2<sup>nd</sup> Stage Recirculation Pump Station (PS-RMF-R2). Both pump stations will be duplex, alternating pump stations. The pumps will be 180-gpm, 2-h.p. vertical turbine pumps housed in filtered pump vaults similar to the Orenco PFG series high-flow submersible effluent pumps. These pumps will operate based on timer settings to achieve the desired recirculation ratio.

The Nitrex Dose Pump Stations (PS-ND1 & PS-ND2) will operate on-demand for forward flow. Both pump stations will be duplex, alternating pump stations. The pumps will be 50-gpm, 1-h.p. vertical turbine pumps housed in filtered pump vaults similar to the Orenco PF series submersible effluent pumps.

## **Nitrex Denitrification Filter**

The Nitrex™ denitrification filter consists of concrete tanks, a wood-based media mix, internal piping, control valves, inlet and outlet manifolds. The tanks will be dosed in sequence; with the system control panel selecting the next tank in sequence after the previous tank is dosed. LAI has 20+ years of extensive experience with sizing and dosing the Nitrex™ filters for specific wastewater nitrogen removal applications. Table 6-5 presents Nitrex system sizing calculations.

**Table 6-4 1<sup>st</sup> & 2<sup>nd</sup> Stage Nitrex RMF Sizing**

<b>RMF Influent Oxygen Demand and Required RMF Media Volume</b>		
<b>Design Criteria</b>	<b>1st Stage</b>	<b>2nd Stage</b>
<b>BOD (mg/L)</b>	<b>220</b>	<b>30</b>
<b>TSS</b>	<b>125</b>	<b>30</b>
<b>BOD Oxygen Demand Factor (mg/L O<sub>2</sub>/mg/L BOD)</b>	<b>1.8</b>	<b>1.8</b>
<b>TKN (mg/L)</b>	<b>110</b>	<b>10</b>
<b>TKN O<sub>2</sub> Demand Factor (mg/L O<sub>2</sub> / mg/L BOD)</b>	<b>4.6</b>	<b>5.6</b>
<b>Total Oxygen Demand</b>	<b>902</b>	<b>110</b>
<b>Sustained Peak Flow (gpd)</b>	<b>57,000</b>	<b>57,000</b>
<b>O<sub>2</sub> Demand Mass (lb/day)</b>	<b>429.0</b>	<b>52.3</b>
<b>Waterloo Media O<sub>2</sub> Transfer</b>	<b>0.021</b>	<b>0.021</b>
<b>Minimum Media Volume</b>	<b>20,830</b>	<b>2,540</b>
<b>Proposed Media Volume</b>	<b>21,000</b>	<b>4,200</b>
<b>Prop. Vol. as % of Min. Vol.</b>	<b>101%</b>	<b>165%</b>

**Table 6-5 Nitrex Filter Sizing**

<b>Nitrex Filter Sizing</b>	
<b>Sustained Peak Flow (gpd)</b>	<b>57,000</b>
<b>Design HRT (day)</b>	<b>4.40</b>
<b>Min. Pore Vol. (gal)</b>	<b>250,800</b>
<b>Nitrex™ Filter Vol. (gal)</b>	<b>420,000</b>
<b>Porosity</b>	<b>60%</b>
<b>Total Pore Vol. (gal)</b>	<b>252,000</b>
<b>Prop. Vol. as % of Min. Vol.</b>	<b>100.5%</b>

The performance of the Nitrex™ denitrification filter has been independently tested by SCDHS to achieve an average TN of 1.58 mg/L in its 2013 evaluation report. LAI's experience with the Nitrex™ denitrification filter is that TN geometric mean averages of < 3 mg/l is consistently achieved. USEPA has determined that Nitrex™ achieves an effluent TN of 2.4 mg/L. Numerous Long Island and Massachusetts installation have an average effluent TN < 3 mg/L.

The Nitrex™ filter will be constructed in a cast-in-place concrete tank. This tank will be dividend into treatment zones via internal baffle walls. Each treatment zone will be dosed via a common force main and solenoid zone valves to divide flow between the 1<sup>st</sup> and 2<sup>nd</sup> Stage as well as to allow for zones to be shut off or brought online in response to seasonal changes in collection system flows.

### **Drip Irrigation**

Table 6-6 presents the effluent dosing tank sizing caluclations for discharge to drip irrigation or leaching pools.

**Table 6-6 Effluent Dosing Tank Sizing**

<b>Drainfield Dosing Tank Sizing</b>	
<b>Sustained Peak Flow (gpd)</b>	<b>57,000</b>
<b>Design HRT (day)</b>	<b>0.33</b>
<b>Min. Vol. (gal)</b>	<b>18,810</b>
<b>Pump Min. Op. Level (in)</b>	<b>12</b>
<b>Dosing Tank gal/in</b>	<b>83</b>
<b>"Dead" Storage (gal)</b>	<b>1,000</b>
<b>Total Tank Vol. Req'd (gal)</b>	<b>19,810</b>
<b>Prop. Vol. (gal)</b>	<b>20,000</b>
<b>Prop. Vol. as % of Min. Vol.</b>	<b>101%</b>

This tank will be a 20,000-gallon, 10-ft diameter FRP tank housing the Drip Irrigation Feed and Effluent Recycle pump stations (PS-DD1 & PS-ER1). PS-DD1 will be sized in accordance with the drip system manufacturers guidelines. Drip irrigation systems are typically furnished with the pumps and controls. It is anticipated that this pump station will be a duplex, alternating pump station utilizing 2-hp effluent pumps similar to the Orenco PF series pumps.



The Effluent Recycle Pump Station (PS-ER1) recycles water back to the 1<sup>st</sup> Stage Recirculation Tank. This pump station will be a duplex, alternating effluent pump station. The pumps will be vertical turbine pumps similar to the Orenco PF series pumps. These pumps will be 30-gpm, ½ - h.p. pumps. This pump station is designed to recycle up to 30% of design flow.

### **Equipment Summary**

Table 6-7 presents a list of tanks with details on materials, size and pump stations housed within.

**Table 6-7 WWTF Tank Summary**

<b>Tank ID</b>	<b>Description</b>	<b>Size (gal)</b>
<b>WW-SF1</b>	<b>8-ft diameter, 6-ft effective depth Sheepfold + North Main pump station wetwell</b>	<b>2,200</b>
<b>ES-SF1</b>	<b>Emergency Storage / overflow tanks for PS-SF1. 10-ft Diameter FRP tank</b>	<b>9,000</b>
<b>WW-VC1</b>	<b>8-ft diameter, 6-ft effective depth Village Center pump station wetwell</b>	<b>1,600</b>
<b>ES-VC1</b>	<b>10-ft diameter FRP tank. Emergency Storage / overflow for PS-SF1.</b>	<b>20,000</b>
<b>EQ-1</b>	<b>Flow Equalization Tanks. 10-ft Diameter, 30,000-gallon FRP Tank</b>	<b>30,000</b>
<b>AUF-1</b>	<b>Anaerobic Upflow Filter Tanks, Two (2) precast 8,000-gallon tanks</b>	<b>16,000</b>
<b>RT-1</b>	<b>1st Stage Recirculation Tanks, 10-ft Diameter, 30,000-gallon FRP Tanks</b>	<b>30,000</b>
<b>RT-2</b>	<b>2nd Stage Recirculation Tank, 10-ft Diameter, 15,000-gallon FRP Tank</b>	<b>15,000</b>
<b>RMF-1</b>	<b>1st Stage RMF units. Ten (10) 2,100-ft<sup>3</sup> units, housed in 8-ft diameter, 16,000-gallon FRP tanks</b>	<b>160,000</b>
<b>EFT-1</b>	<b>Tank receiving effluent from the 1st Stage RMF units. 6-ft Diameter, 6-ft effective depth tank housing recirculation and Nitrex dosing pump stations.</b>	<b>1,600</b>
<b>RMF-2</b>	<b>2nd Stage RMF units. Two (2) 2,100-ft<sup>3</sup> units, housed in 8-ft diameter, 16,000-gallon FRP tanks</b>	<b>32,000</b>
<b>EFT-2</b>	<b>Tank receiving effluent from the 1st Stage RMF units. 6' x 6' precast chamber, 6-ft effective depth tank housing 2nd stage RMF Recirculation and Nitrex Dosing pump stations.</b>	<b>1,600</b>
<b>Nitrex</b>	<b>Nitrex tank with Nitrex media &amp; piping. Cast-in-place concrete chamber, 200'L x 48'W, 6-ft liquid level, 7-ft internal height. Internal walls divide between 1st and 2nd stage media zones.</b>	<b>420,000</b>
<b>DD-1</b>	<b>Final effluent tank housing the drip irrigation feed and effluent recycle pump stations.</b>	<b>20,000</b>

## **6.4 WASTEWATER – WATER RESOURCE RECOVERY SYSTEM COSTS**

LAI's opinion of probable costs for wastewater collection system, treatment/water recovery and drip irrigation are presented on Table 6-8.

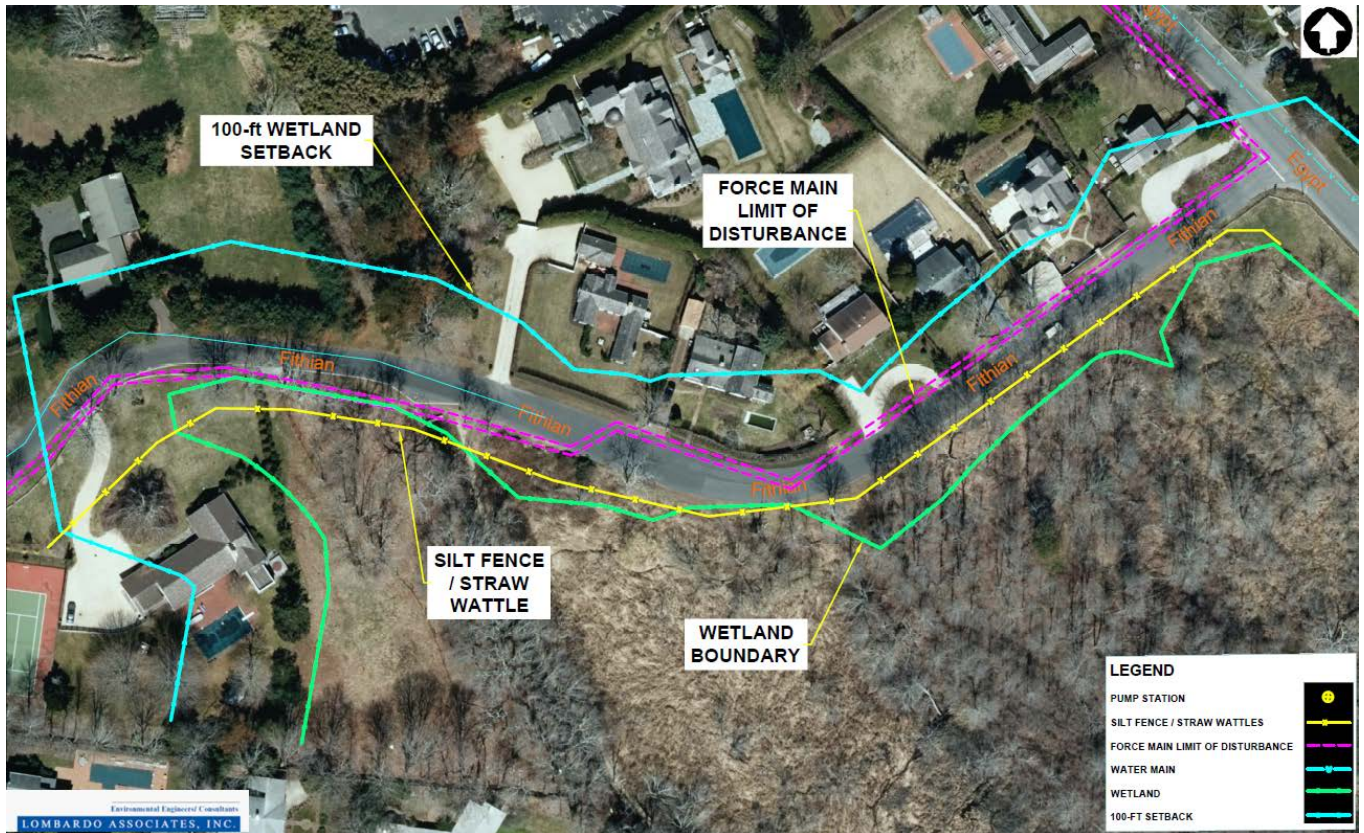
**Table 6-8 Wastewater Collection, Water Recovery Treatment & Reuse System Capital Costs**

<b>Collection System Costs - Proposed Option</b>					
Abandon Existing Septic		130	#	\$8,000	\$1,040,000
Repair / Replace Septic Tank		130	#	\$8,000	\$1,040,000
Gravity Sewer		11,800	EA	\$150	\$1,770,000
Low Pressure Sewer		920	LF	\$140	\$128,800
On-Property Pump (STEP)		20	#	\$5,000	\$100,000
Pump Station - Small		1	#	\$150,000	\$150,000
Pump Station - Large		1	#	\$75,000	\$75,000
Force Main		3,500	LF	\$150	\$525,000
<b>Subtotal - Collection System Construction Costs</b>					<b>\$4,828,800</b>
Miscellaneous		10%			\$482,880
Contingency		20%			\$965,760
Admin. & Financing		5%			\$241,440
Engineering		20%			\$1,255,500
<b>Total Collection System Capital Costs</b>					<b>\$7,774,380</b>
<b>Subtotal - WWTF System Construction Costs</b>					<b>\$7,068,000</b>
Miscellaneous		10%			\$706,800
Contingency		20%			\$1,413,600
Parking Lot Restoration		1			\$300,000
Admin. & Financing		5%			\$353,400
Engineering & admin		20%			\$1,837,700
<b>Total WWTF System Capital Costs</b>					<b>\$11,679,500</b>
<b>Total Collection &amp; WRRF &amp; Irrigation System Capital Costs (2021 \$)</b>					<b>\$19,453,880</b>
<b>Total Collection &amp; WRRF &amp; Irrigation System Capital Costs (2026 \$)</b>					<b>\$23,668,600</b>

## 6.5 WETLAND CONSIDERATIONS

The proposed treatment and reuse/disposal system is greater than 100 feet away from any New York State or Federally designated wetlands. The only area of the proposed wastewater collection system that is within wetland jurisdictional areas is the area along Egypt Lane and Fithian Lane, as illustrated on Figure 6-5.

Limits of clearing and ground disturbance in the wetlands jurisdictional areas are also shown on Figure 6-5. Erosion controls for work in wetland jurisdictional areas are presented on Figure 6-6.



**Figure 6-5 Proposed Sewer in Wetland Areas-Limits of Disturbance & Erosion Controls**



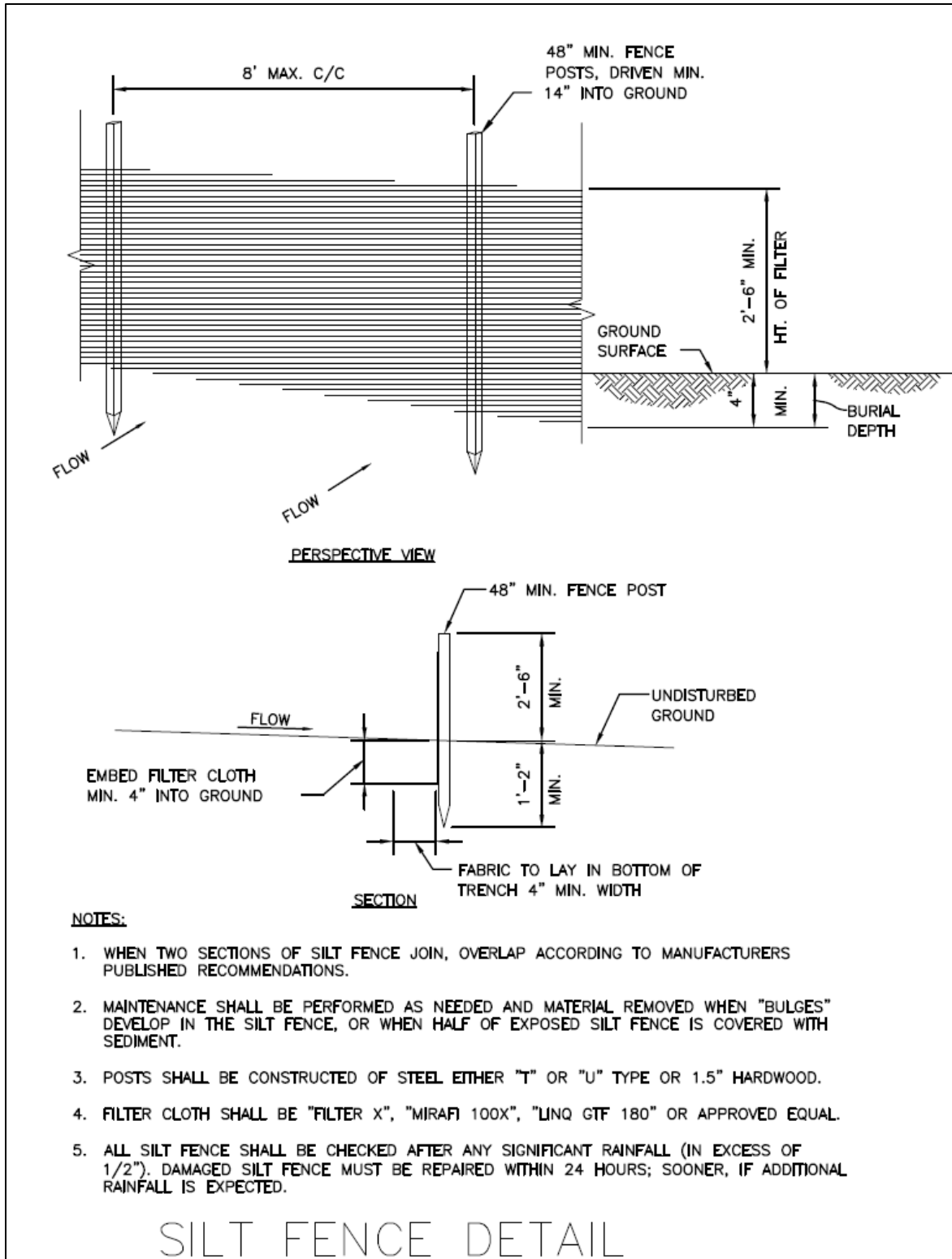


Figure 6-6 Work in Wetland Jurisdictional Areas - Erosion Controls

## **7. ENVIRONMENTAL IMPACTS / ISSUES**

### **7.1 NITROGEN AND PHOSPHORUS REMOVAL**

The wastewater treatment / water resource recovery facility is proposed to achieve total nitrogen removal of approximately 49 kg/day and total phosphorus removal of approximately 3.5 kg/day during full design flow conditions.

### **7.2 ODOR CONTROL**

Odor management will be achieved by having a positive ventilation that extracts the foul gases and purifies them through the use of a soil odor filter (SOF). The SOF utilizes naturally occurring microbes in the soil to neutralize system odors, predominately oxidation of hydrogen sulfide. The soil odor filter will discharge the treated air to the atmosphere.

### **7.3 NOISE ATTENUATION**

All pumps are submersible that are located below grade and under water, consequently make no discernible noise. The only equipment unit that will be operating outside of the building and above grade is the ventilation blower. The blower has a measured sound pressure of 85 dB(A) at a distance of one meter and will be housed in a sound attenuation enclosure.

### **7.4 SYSTEM REDUNDANCY**

All pump stations within the collection and treatment system will be duplex, alternating pump stations capable of delivering the full design flow with one of the pumps out of service. Each pump station will be equipped with current sensors to detect when pumps are drawing too many or too few amps, indicating a failing or failed pump. Should one pump in a pump station fail, an alarm will alert the system operator and the failed pump will be taken out of service. The pump station will continue to operate as a simplex station until the failed pump is repaired or replaced. No interruption in treatment will occur due to the failure of one pump in a pump station. A minimum of one spare for each pump type will be stored on-site to enable rapid replacement of any failed pump.

## 8. PERMITTING & IMPLEMENTATION PLAN

### 8.1 PERMITTING

The project is permitted by NYSDEC through the State Pollutant Discharge Elimination System (SPDES) permit program. Permitting requirements are the filing of a SPDES Application Form NY-2A for the project, Environmental Assessment Form and responding to NYSDEC comments.

A courtesy virtual meeting was held with SCDHS on Feb. 17, 2022 to brief the County on the SPDES application to NYSDEC. A pre-application virtual meeting was held with NYSDEC on Feb 24, 2022. A NYSDEC SPDES Permit Application (Form NY-2A) was submitted to NYSDEC starting on December 23, 2021 with updated applications submitted through March 24, 2022.

NYSDEC issued comment letters dated March 18, 2022 and May 17, 2022 and a June 14, 2022 email on the SPDES permit applications. The NYSDEC letters/email, Lombardo Associates, Inc. March 24, 2022 response letter and the support from Assemblyman Thiele are attached in Appendix F.

### 8.2 LEGAL

Once a District is formed, project bonding will be necessary, with authorization by the Village. Key grant funding opportunities are:

1. Town of East Hampton CPF
  - a. 2<sup>nd</sup> Round deadline August 2022
2. NYSDEC WQIP – application deadline typically late July, with awards in December
3. EFC / NYSDEC grant programs
4. County grant programs

### 8.3 SCHEDULE

A District Formation and Wastewater System Implementation Road Map is presented on Figure 8-1. A proposed schedule is:

Engineering Report Presentation to Village Trustees	July 2022
Village Review	July – August 2022

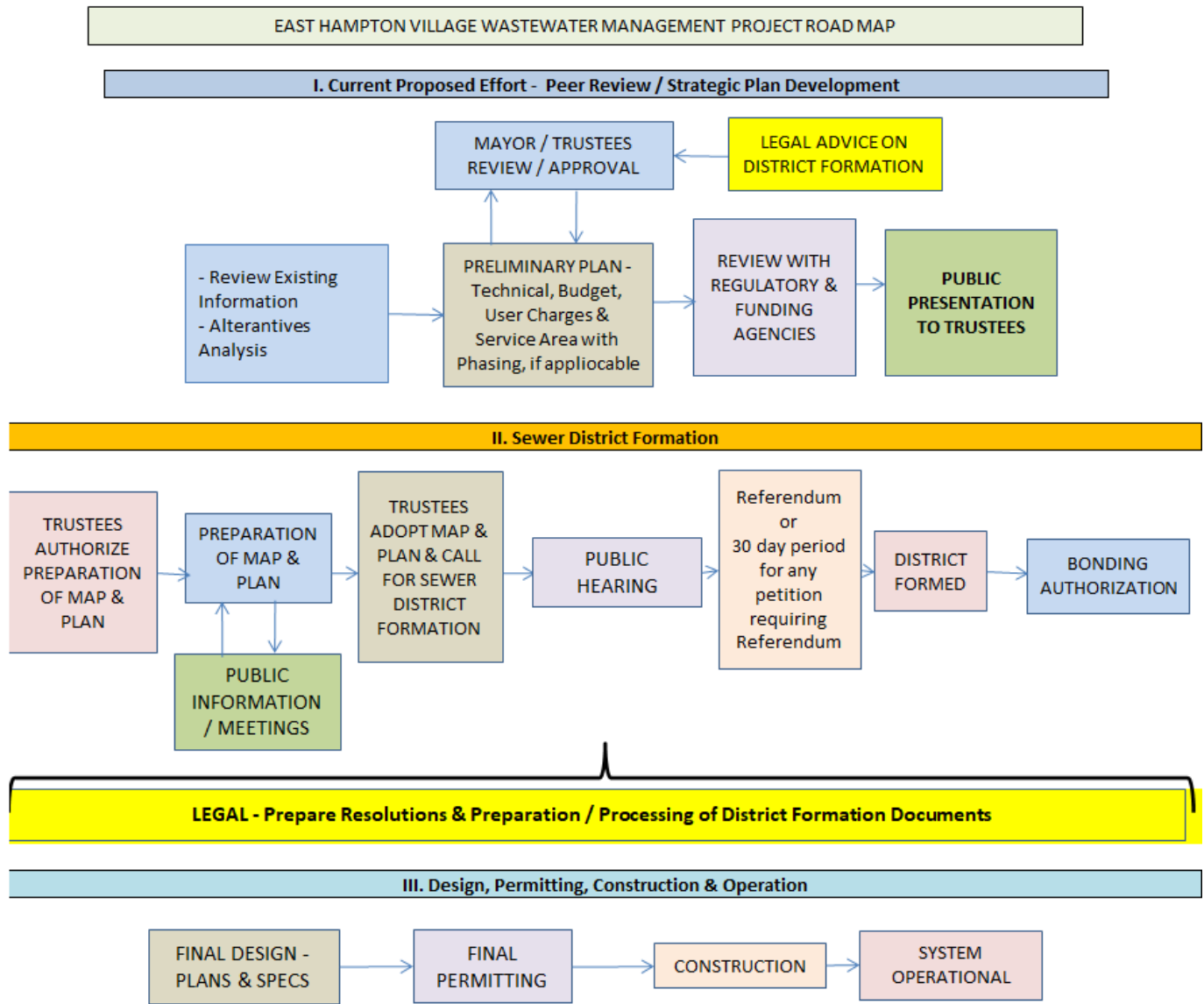
Legal formation of Wastewater District

- |  |                    |
|--|--------------------|
| ▪ Trustees Authorizes Preparation of Map & Plan                      | Fall 2022          |
| ▪ Map & Plan Completion & Public Hearings                            | Dec. 2022          |
| ▪ Trustees Adopt Map & Plan & Call For Wastewater District Formation | Feb. 2023          |
| ▪ Referendum or 30-day period for any Referendum petition            | March – April 2023 |
| ▪ District formed  | June 2023          |
| ▪ Bonding Authorization  | July – August 2023 |

Design	Fall 2023 – Fall 2025
Construction	2026 - 2028







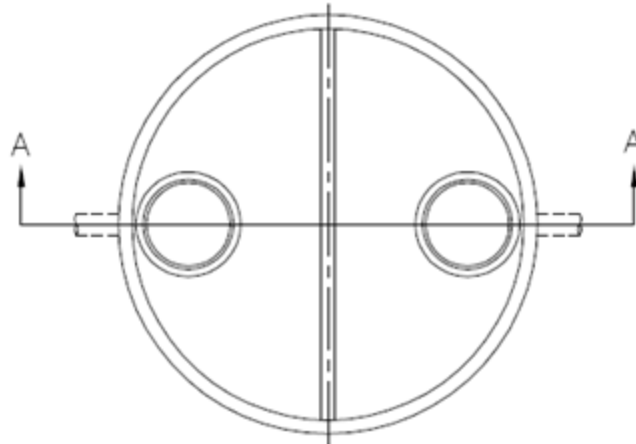
**Figure 8-1 Wastewater Project Roadmap**

## 9. EQUIPMENT DETAILS

Following are details for the following major pieces of equipment:

Pre-Cast Concrete Tanks – 1,200 gallons; 1,800 gallons  
Xerxes Tanks – 9,000; 15,000; 20,000; and 30,000 gallons  
Waterloo Biofilter = Nitrex RMF – 16,000 gallon tanks

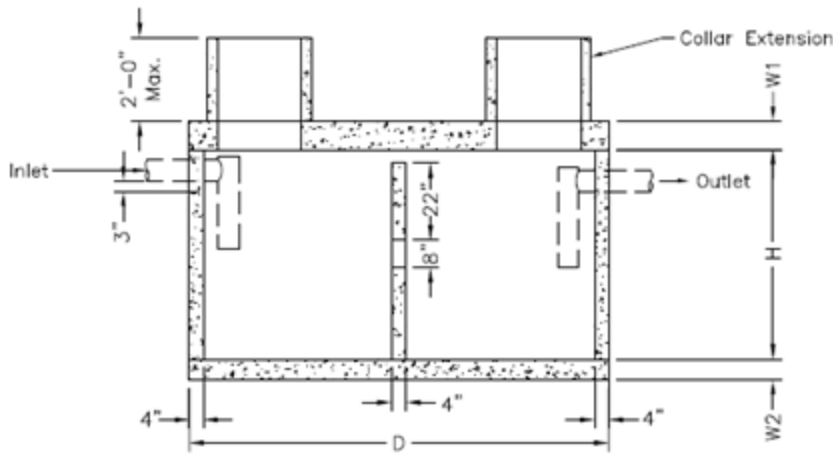




**PLAN**

**GENERAL NOTES:**

1. Concrete to Test 4,000 P.S.I @ 28 Days
2. Reinforcement Meets A.S.T.M. A-615, A-185 Specifications
3. Designed for AASHTO HS-20 loading with 24" ground cover.
4. Piping by others.



**SECTION A-A**

SEPTIC TANK SPECIFICATIONS					
LIQUID CAP/GAL	"D"	"H"	"W1"	"W2"	HEAVIEST PIECE/LBS
1200	8'-0"	5'-0"	8"	6"	5,052
* 1500	8'-0"	6'-0"	8"	6"	5,052
* 1800	8'-0"	7'-0"	8"	6"	5,052
* 2000	10'-0"	5'-0"	8"	6"	7,894
* 2500	10'-0"	6'-0"	8"	6"	7,894
* 3000	10'-0"	7'-0"	8"	6"	7,894
* 3750	12'-0"	6'-0"	10"	8"	14,080
* 4500	12'-0"	7'-0"	10"	8"	14,080
* 5250	12'-0"	8'-0"	10"	8"	14,080

\* Wall Section is in Two Pieces, Not One Piece



114 Rocky Point Rd. Middle Island, New York 11953  
Phone: 631-924-7400 Fax: 631-924-2243

**STWTS**

FILE NAME: 334ESCSTWTS\_CHART

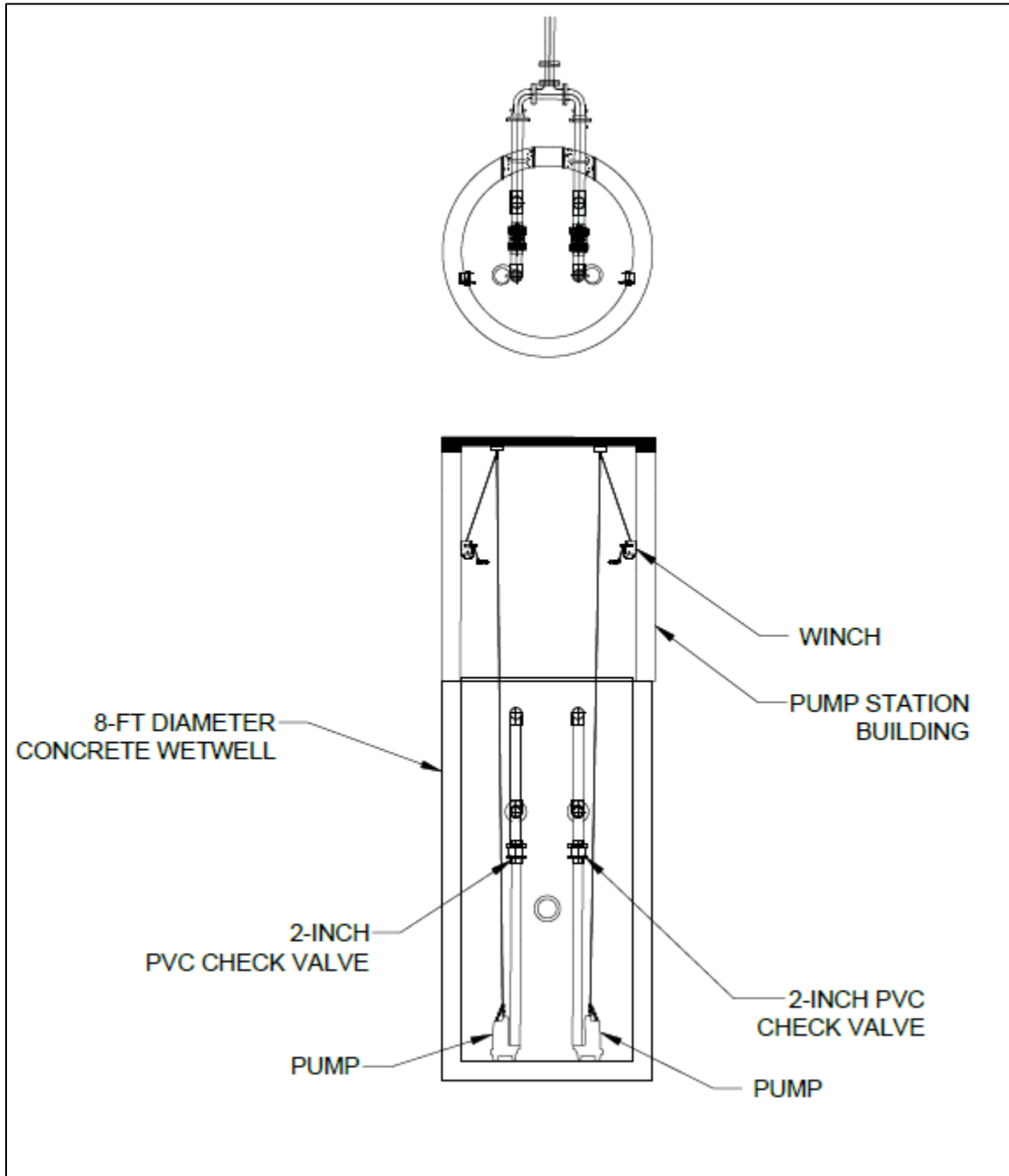
ISSUE DATE: January, 2004

[www.afcoprecast.com](http://www.afcoprecast.com)

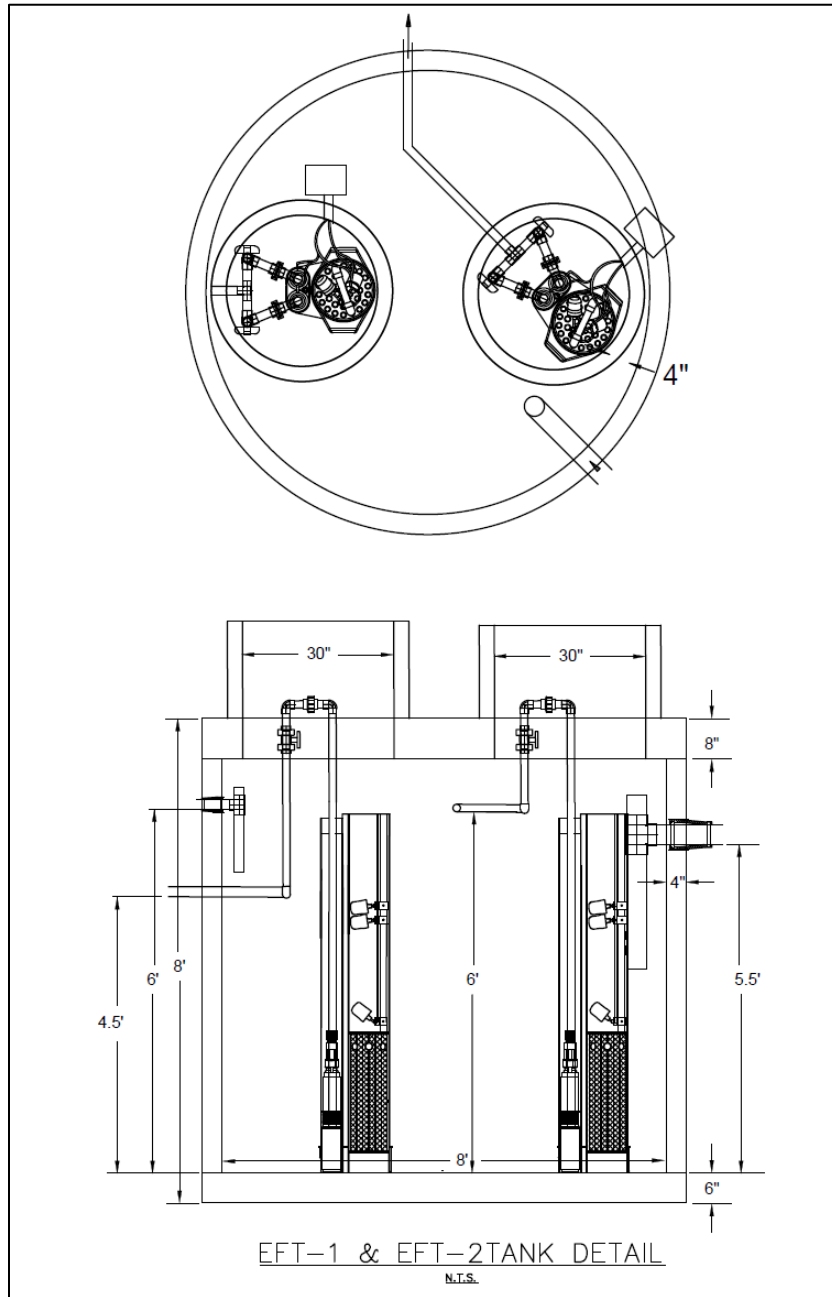
**Septic Tank with Top Slab  
1200 to 5250 Gallons**

Copyright © 2004 Oldcastle Precast

**COLLECTION SYSTEM TYPICAL PUMP STATION WETWELL (WW-SF1, WW-VC1)**

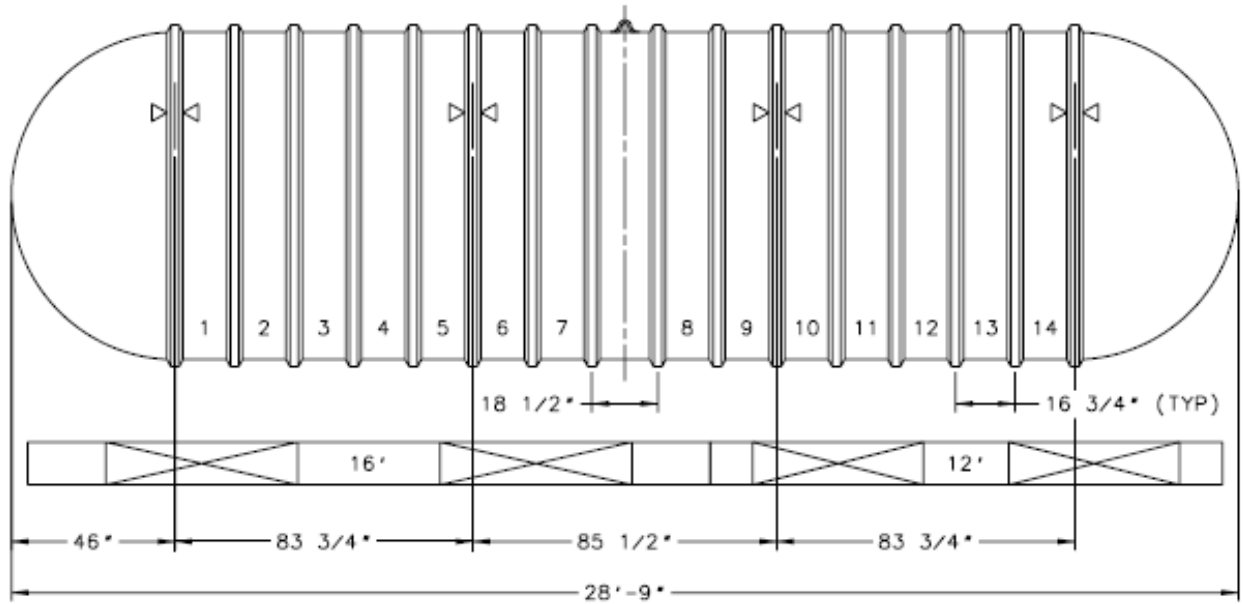


# PUMP STATION TANKS – 2 DUPLEX PUMP STATIONS (EFT-1, EFT-2, DD-1)





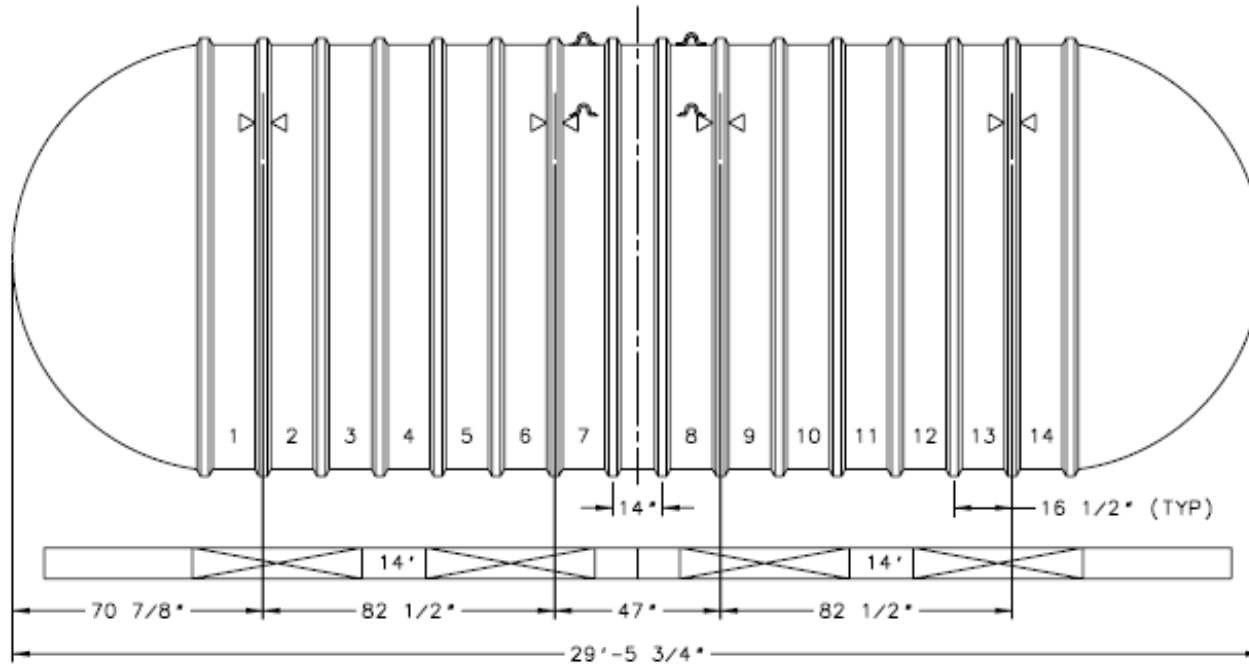
**XERXES 9,000-GALLON FRP TANK (ES-SF1)**



Optional prefabricated engineered concrete deadmen shown

<b>XERXES<sup>®</sup></b> a <b>ZCL</b> company	
TITLE 8" DIA. SINGLE-WALL CAP. 9,000 GALLONS	
DATE 1-12	DR. NO. S10-876.01

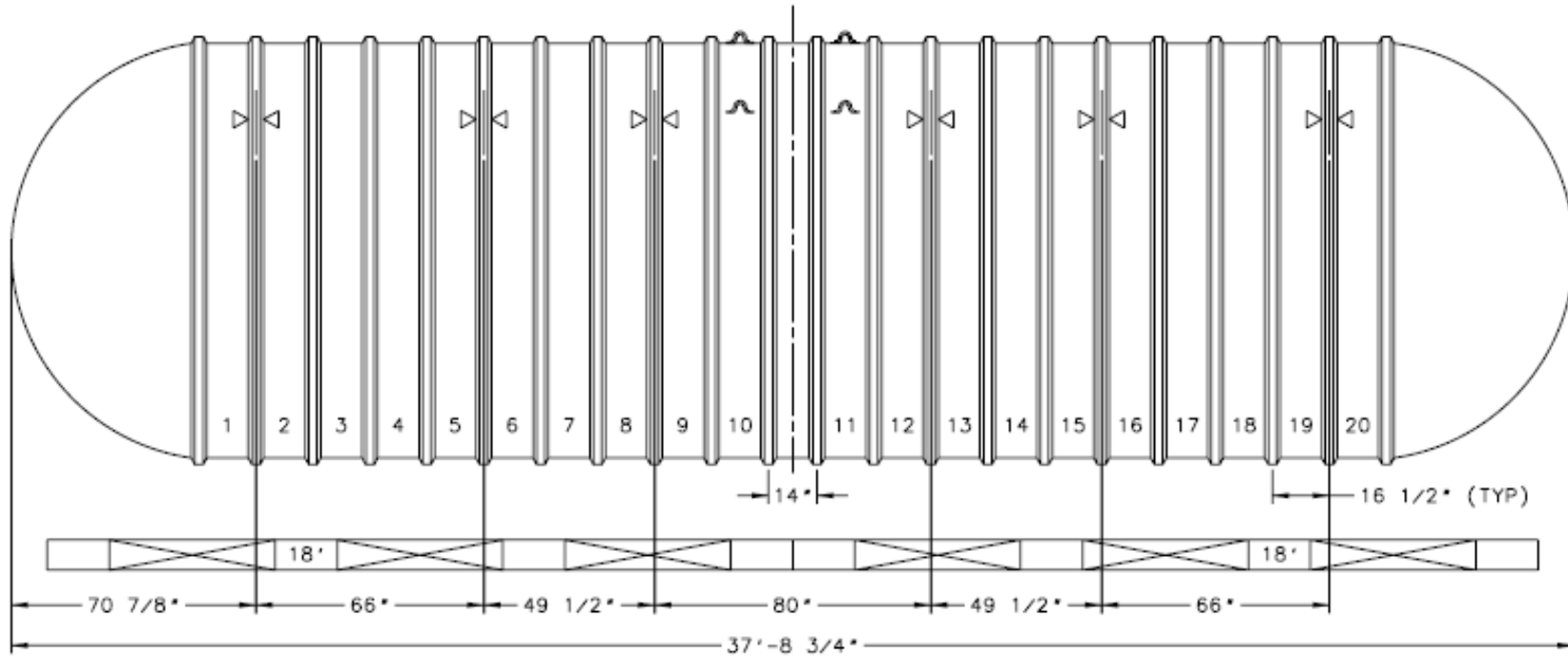
**XERXES 15,000-GALLON FRP TANK (RT-2)**



Optional prefabricated engineered concrete deadmen shown

<b>XERXES<sup>®</sup></b> a <b>zcl</b> company	
TITLE 10' DIA. SINGLE-WALL CAP. 15,000 GALLONS	
DATE 1-12	DR. NO. S10-888.05

**XERXES 20,000-GALLON FRP TANK (ES-VC1, DD-1)**

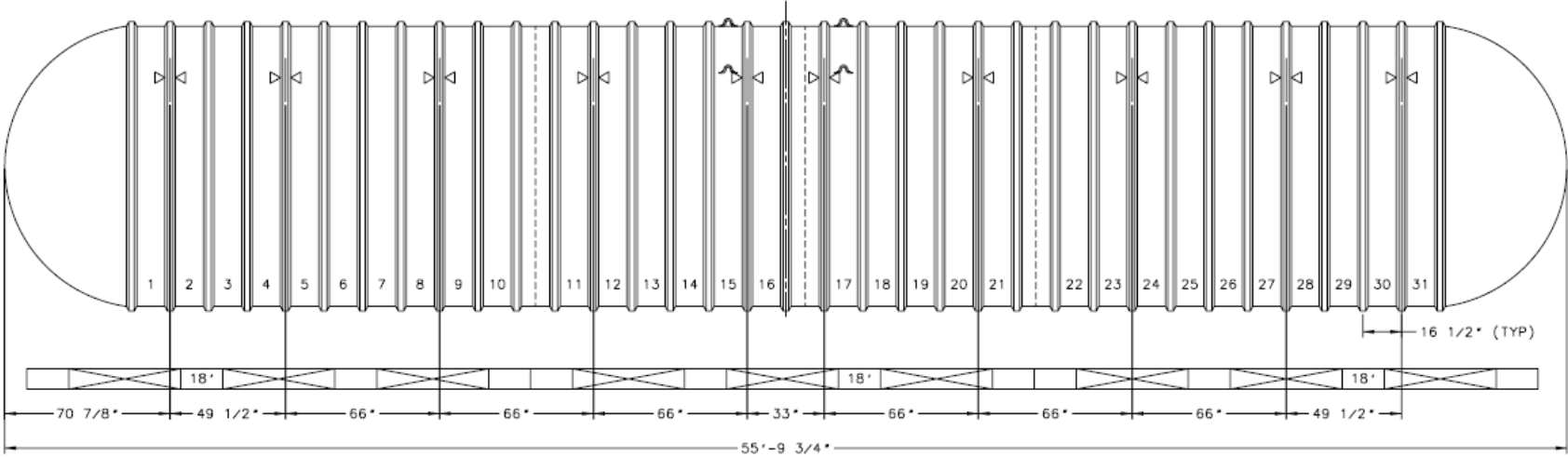


Optional prefabricated engineered concrete deadmen shown

<b>XERXES<sup>®</sup></b> a ZCL company	
TITLE 10' DIA. SINGLE-WALL CAP. 20,000 GALLONS	
DATE 1-12	DR. NO. S10-889.05



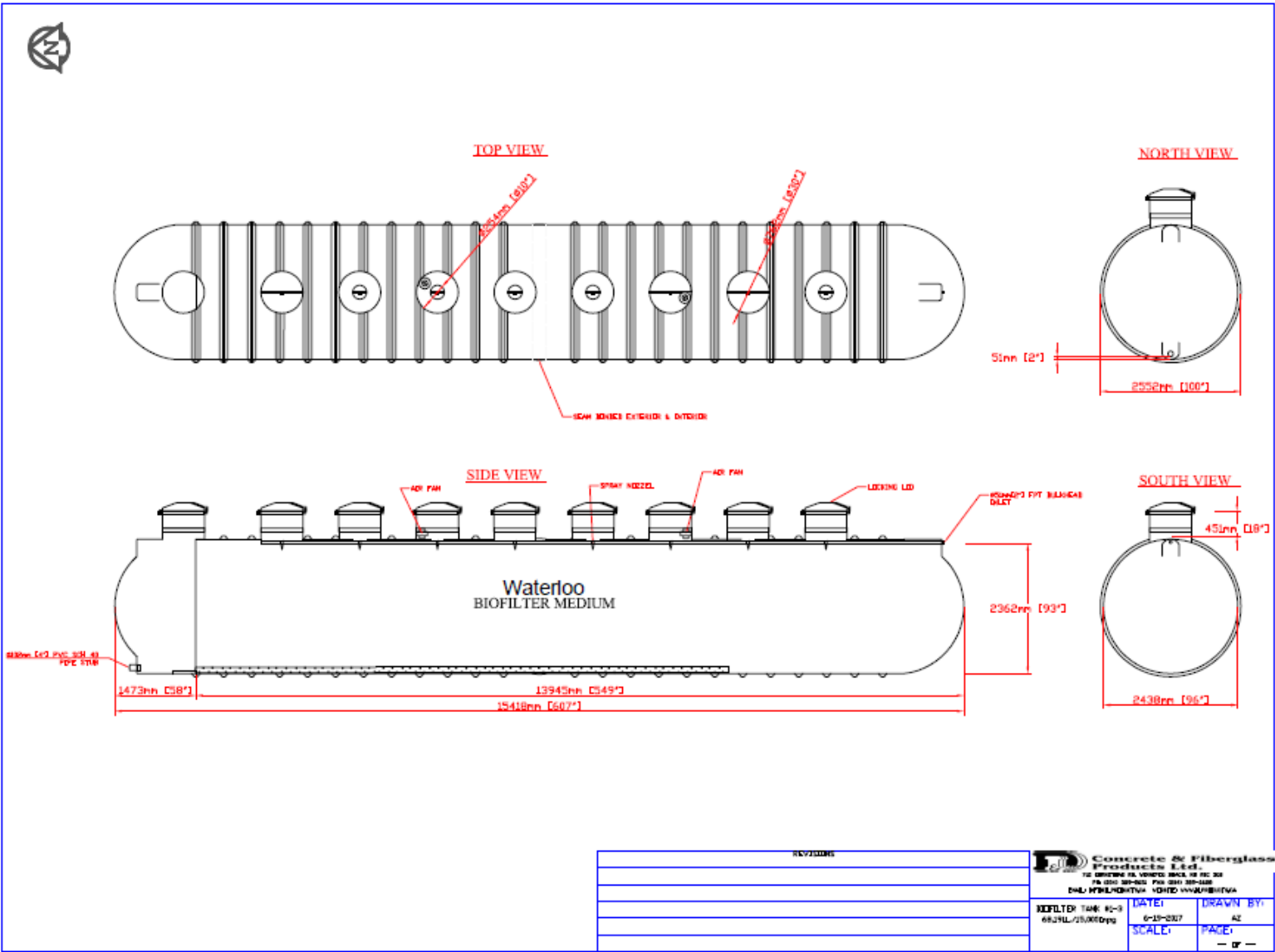
**XERXES 30,000-GALLON FRP TANK (FE-1, RT-1)**



Optional prefabricated engineered concrete deadmen shown

<b>XERXES<sup>®</sup></b> a zcl company	
TITLE 10' DIA. SINGLE-WALL CAP. 30,000 GALLONS	
DATE	DR. NO.
1-12	S10-892.05

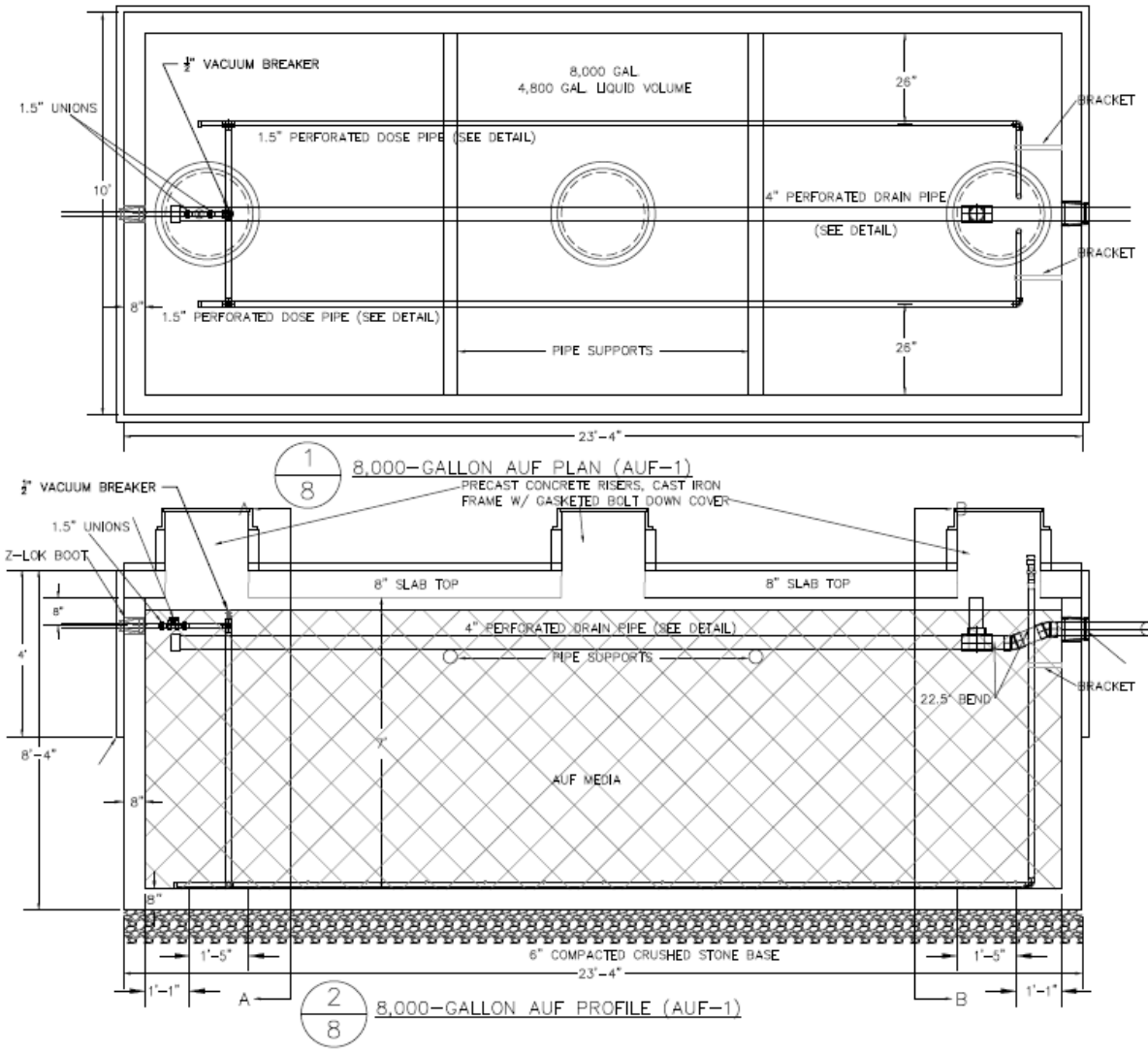
**WATERLOO BIOFILTER = NITREX RECIRCULATING MEDIA FILTER (RMF-1 & RMF-2 UNITS)**



REVISIONS	

<p>Concrete &amp; Fiberglass Products Ltd.          15 GERRARD ST. WEST, SUITE 101          TORONTO, ONTARIO M5H 2E4          TEL: (416) 593-1111 FAX: (416) 593-1112</p>		
BIOFILTER TANK #2-3 6629L/25,000Dys	DATE: 6-18-2022 SCALE:	DRAWN BY: AL PAGE: 1 of 1

**8,000-GALLON AUF TANK (AUF-1)**



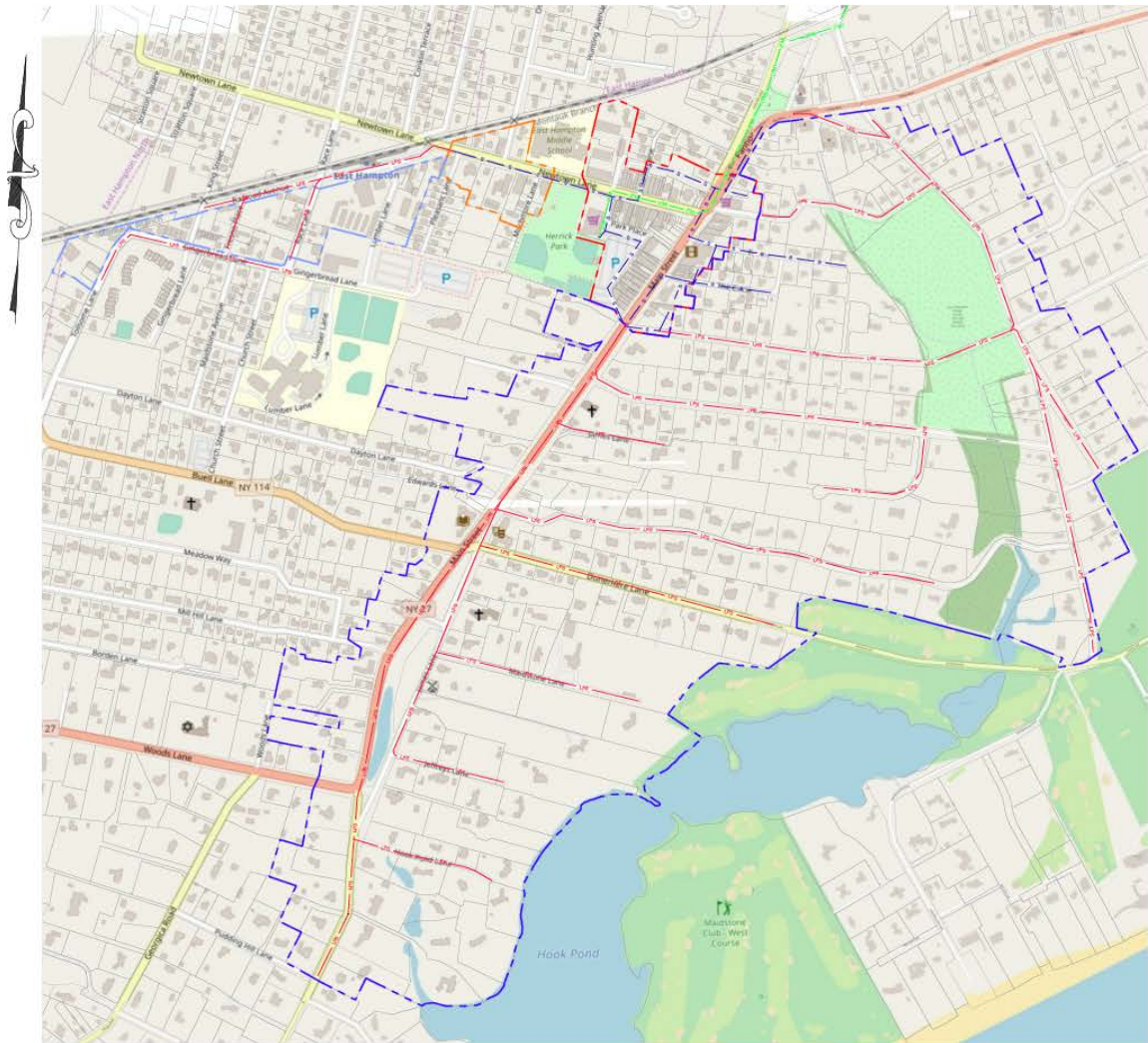


## APPENDIX A N&P/NPV WASTEWATER MANAGEMENT DOCUMENTS

Table A-1 lists the drawings / figures produced by the N&P efforts that were submitted to EHV and provided to LAI. Figure A-24 presents an agricultural 4.2 acre candidate site at Toilsome Lane in the Town.

**Table A-1 List of Drawings / Figures Submitted by NP**

Figure No.	Site #	Description
A-1		Overall Sewer Phasing Plan
A-2		Phase IA & IB Sewer Partial Plan
A-3		Phase II Partial Sewer Plan
A-4		Phase III Partial Sewer Plan
A-5		Phase III Sewer Layout
A-6		Sewer Route & Treat/Dispose Layout at EHV DPW Property
A-7		Treat/Dispose Layout at EHV DPW Property
A-8	1	STP Site # 1 Location Map
A-9	1	Treat/Dispose Layout at Site # 1
A-10	2	STP Site # 2 Location Map
A-11	2	Treat/Dispose Layout at Site # 2
A-12	3	STP Site # 3 Location Map
A-13	3	Treat/Dispose Layout at Site # 3
A-14	4	STP Site # 4 Location Map
A-15	4	Treat/Dispose Layout at Site # 4
A-16	5	STP Site # 5 Location Map
A-17	5	Treat/Dispose Layout at Site # 5
A-18	6	STP Site # 6 Location Map
A-19	6	Treat/Dispose Layout at Site # 6
A-20	8	Treat/Dispose Layout at Site # 8
A-21	9	Treat/Dispose Layout at Site # 9
A-22	10	Treat/Dispose Layout at Site # 10
A-23		NP Letter re Sites 8, 9 & 10



**OVERALL PHASING PLAN**  
SCALE: 1" = 400'

**Figure A-1  
Overall  
Phasing  
Plan**

**LEGEND**

- - - PHASE I-A CONSTRUCTION
- - - PHASE I-B CONSTRUCTION
- - - PHASE II CONSTRUCTION
- - - PHASE III CONSTRUCTION

EAST HAMPTON VILLAGE WATER CONSUMPTION 3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)						
CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (Ac)	TOTAL LAND AREA (Ac)	MAX. / MIN.	SD	90% CONFIDENCE INTERVAL
PHASE I-A	12,052.2	462.5	26.06	19,158.5 / 8,188.3	1,283.2	10,769.0 - 13,336.3
PHASE I-B	2,946.0	371.4	7.93	4,643.6 / 1,562.9	904.2	2,534.5 - 3,355.4
PHASE II	2,226.6	115.9	19.20	5,081.0 / 822.2	1,044.4	1,751.4 - 2,699.7
* PHASE III	50,713.1	123.0	412.23	74,435.0 / 21,646.0	10,808.1	39,905.0 - 61,521.2

\* PHASE III AVERAGE DAILY FLOW (ADF) INCLUDES NON-IRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.



Figure A-2  
Phase IA &  
IB Partial  
Plan

**PHASE IA & IB PARTIAL PLAN**

SCALE 1" = 150'

**LEGEND**

- - - - PHASE I-A CONSTRUCTION
- - - - PHASE I-B CONSTRUCTION
- - - - PHASE II CONSTRUCTION
- - - - PHASE III CONSTRUCTION

PHASE IA PRELIMINARY QTO				
# OF LOTS	TOTAL LF GRAVITY SEWER PIPING 8-INCH FORCE MAIN	TOTAL LF LPS PIPING PIPING WILL BE INCLUDED IN PHASE IA CONSTRUCTION	TOTAL # OF 8-ONE PS UNITS	* TOTAL LF 4-INCH FM PIPING TO PROPOSED STP
92	4,400 LF	0	0	7,410 LF

PHASE IB PRELIMINARY QTO			
# OF LOTS	TOTAL LF GRAVITY SEWER PIPING	TOTAL LF LPS PIPING	TOTAL # OF 8-ONE PS UNITS
16	1,480 LF	0	0

EAST HAMPTON VILLAGE WATER CONSUMPTION						
3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)						
CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (GPD)	TOTAL LAND AREA (AC)	MAX. / MIN.	SD	95% CONFIDENCE INTERVAL
PHASE I-A	12,052.2	462.5	26.06	15,158.5 / 8,169.3	1,283.2	10,769.0 - 13,335.3
PHASE I-B	2,945.0	371.4	7.93	4,643.5 / 1,092.9	904.2	2,534.5 - 3,355.4
PHASE II	2,226.6	115.9	19.20	5,081.6 / 822.2	1,044.4	1,751.4 - 2,699.7
* PHASE III	50,713.1	123.0	412.23	74,435.0 / 21,646.0	10,908.1	39,906.0 - 61,521.2

\* PHASE III AVERAGE DAILY FLOW (ADF) INCLUDES NONIRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.



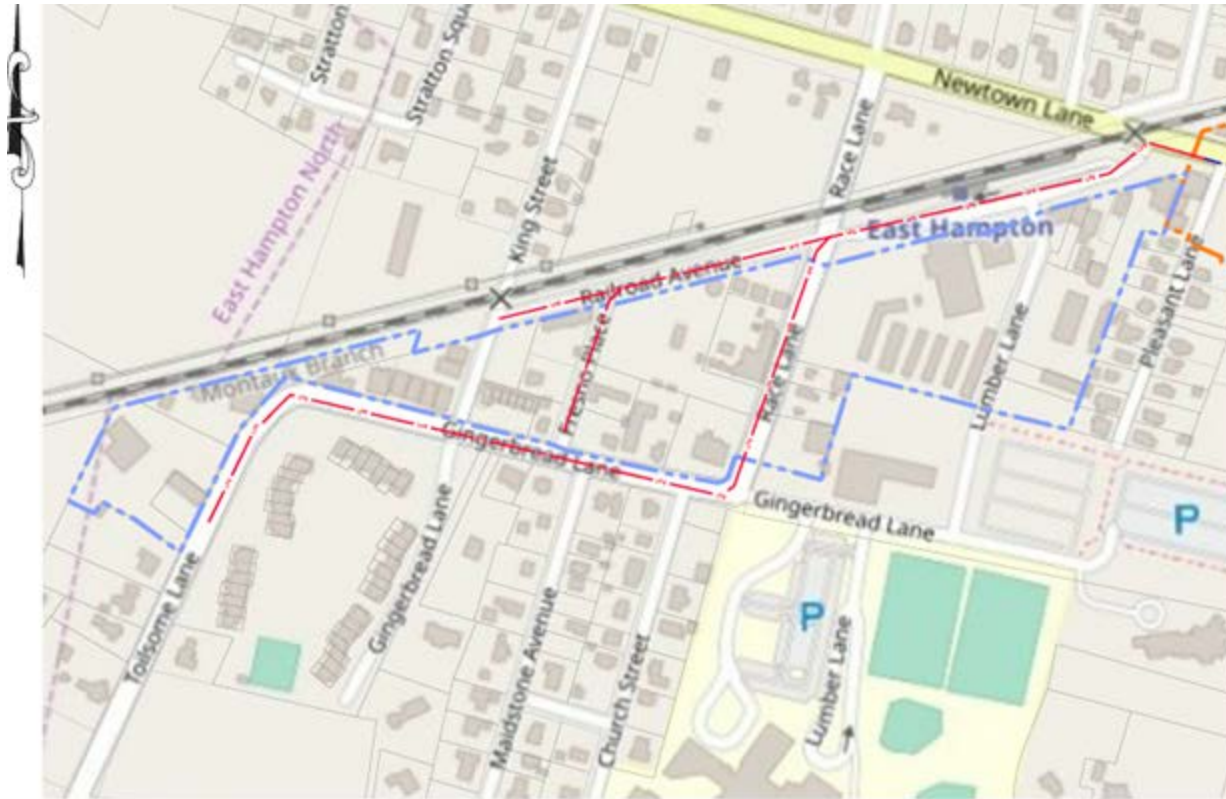


Figure A-3  
Phase II  
Partial Plan

PHASE II PARTIAL PLAN  
SCALE 1" = 150'

**LEGEND**

- - - PHASE I-A CONSTRUCTION
- - - PHASE I-B CONSTRUCTION
- - - PHASE II CONSTRUCTION
- - - PHASE III CONSTRUCTION

PHASE II PRELIMINARY QTO			
# OF LOTS	TOTAL LF GRAVITY SEWER PIPING	TOTAL LF LRS PIPING	TOTAL # OF E-ONE PS UNITS
32	0	4,330 LF	32

EAST HAMPTON VILLAGE WATER CONSUMPTION						
3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)						
CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (GPD)	TOTAL LAND AREA (AC)	MAX. / MIN.	SD	95% CONFIDENCE INTERVAL
PHASE I-A	12,052.2	462.6	26.26	19,158.5 / 8,188.3	1,283.2	10,769.0 - 13,336.3
PHASE I-B	2,346.0	371.4	7.93	4,643.5 / 1,992.9	904.2	2,534.5 - 3,365.4
PHASE II	2,226.4	115.9	19.20	5,081.6 / 822.2	1,044.4	1,751.4 - 2,699.7
*PHASE III	90,713.1	123.0	412.23	74,435.0 / 21,646.0	10,808.1	29,905.0 - 61,521.2

\* PHASE II AVERAGE DAILY FLOW (ADF) INCLUDES NON-IRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.



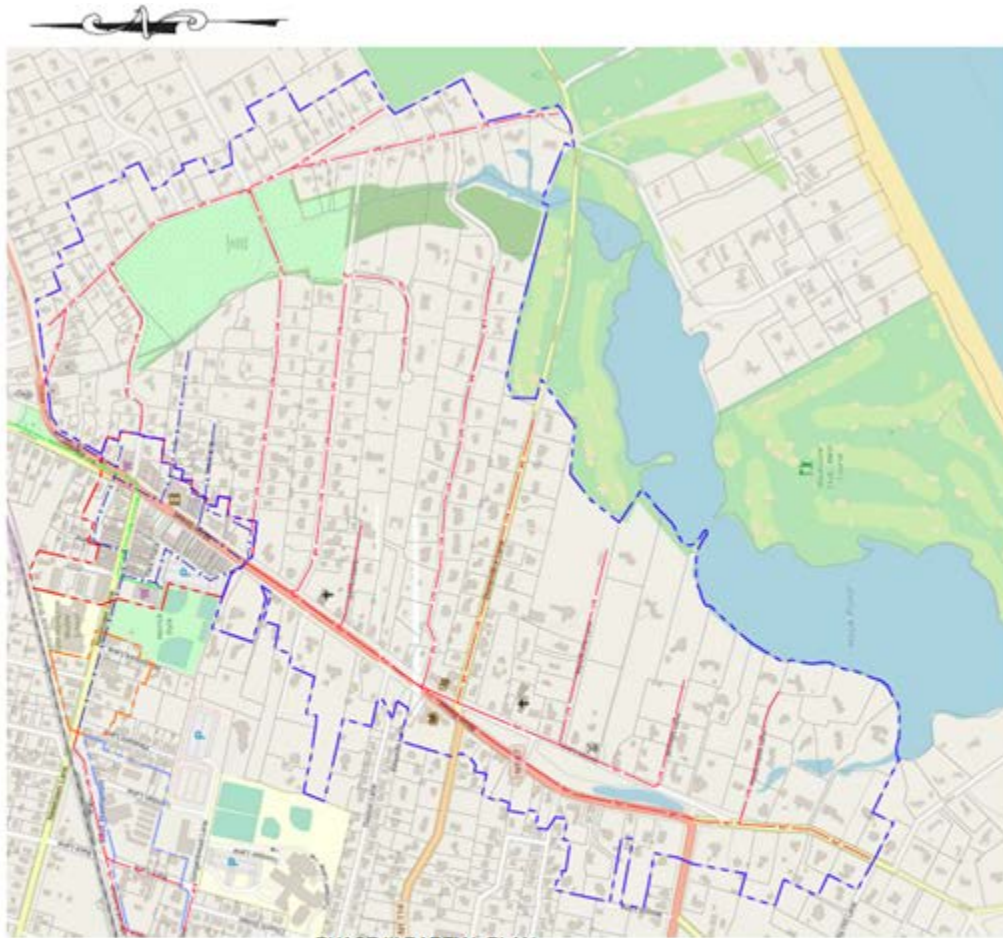


Figure A-4  
Phase III  
Partial Plan

**LEGEND**

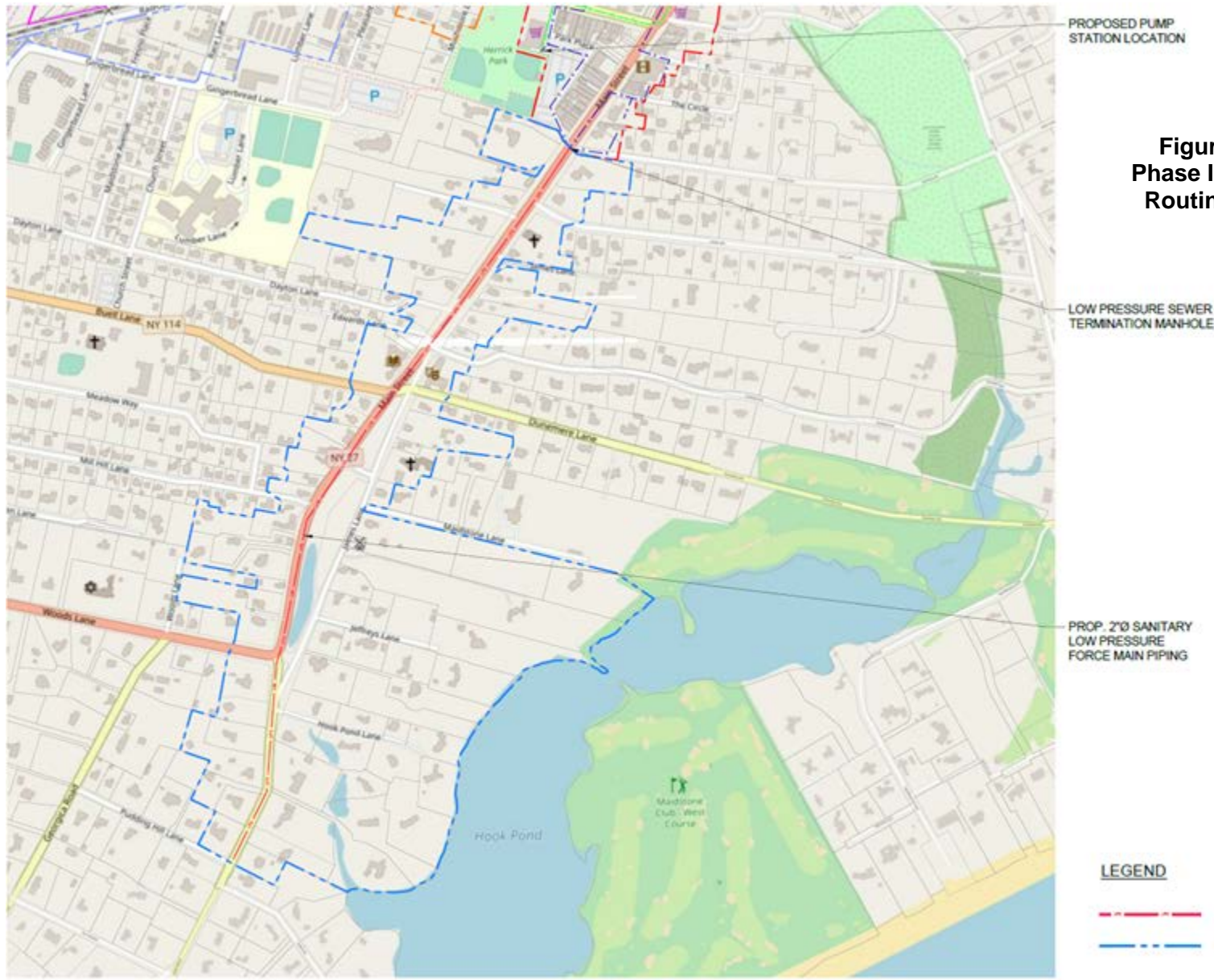
- - - PHASE IA CONSTRUCTION
- - - PHASE IB CONSTRUCTION
- - - PHASE II CONSTRUCTION
- - - PHASE III CONSTRUCTION

**PHASE III PARTIAL PLAN**  
SCALE: 1" = 400'

PHASE III PRELIMINARY QTO			
# OF LOTS	TOTAL LF GRAVITY SEWER PIPING	TOTAL LF LPS PIPING	TOTAL # OF 8-INCH PS UNITS
305	1,965 LF	27,175 LF	380

EAST HAMPTON VILLAGE WATER CONSUMPTION						
CONSTRUCTION PHASE	3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)					
	ADF	ADF / TOTAL LAND AREA (GPD)	TOTAL LAND AREA (AC)	MAX. / MIN.	SD	95% CONFIDENCE INTERVAL
PHASE IA	12,062.2	462.5	26.06	19,198.5 / 8,189.3	1,263.2	10,769.0 - 13,336.3
PHASE IB	2,945.0	371.4	7.93	4,643.5 / 1,592.9	904.2	2,594.5 - 3,355.4
PHASE II	2,226.6	116.9	19.20	5,091.6 / 822.2	1,044.4	1,751.4 - 2,699.7
* PHASE III	60,713.1	123.0	412.23	74,436.0 / 21,646.0	10,809.1	39,906.0 - 61,521.2

\* PHASE III AVERAGE DAILY FLOW (ADF) INCLUDES NON-IRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.



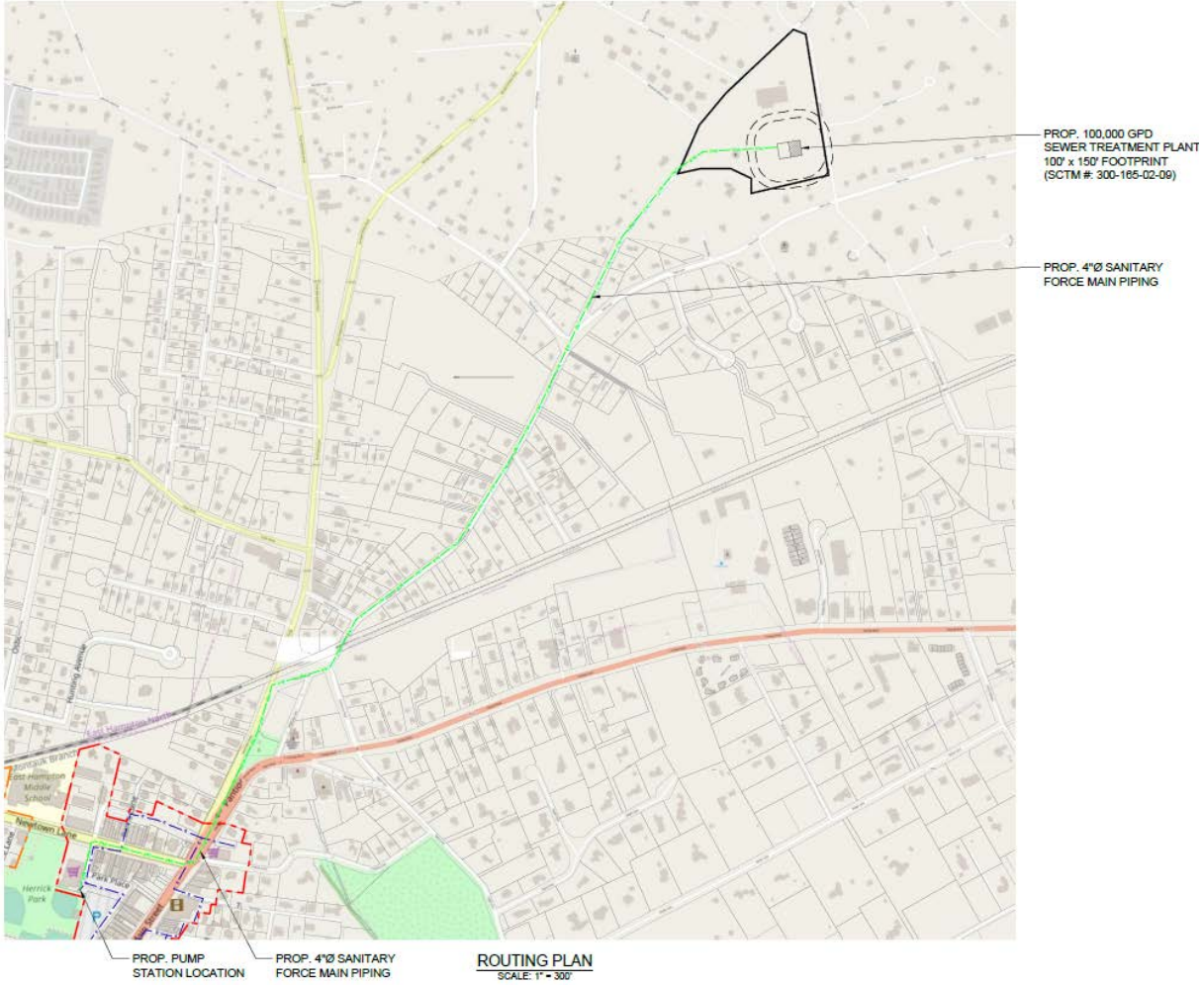
**Figure A-5  
Phase III Sewer  
Routing Plan**

- LEGEND**
- - - LOW PRESSURE SEWER MAIN
  - - - PHASE III CONSTRUCTION

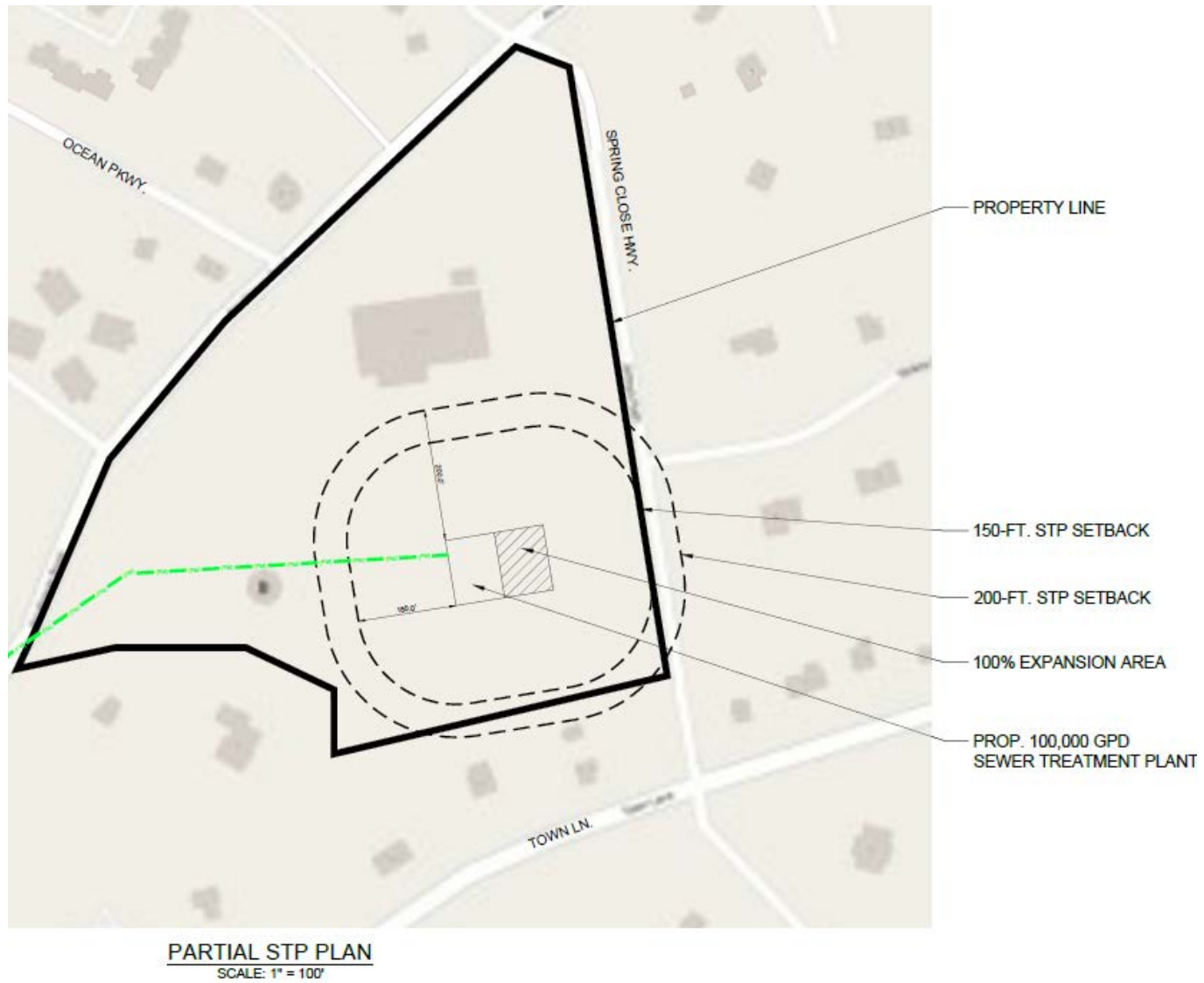
**ROUTING PLAN**  
SCALE: 1" = 300'



**Figure A-6 Sewer Route & Layout at EHV DPW Property**







**Figure A-7 Treatment/Disposal Layout at EHV DPW Property**



# STP SITE #1



Figure A-8 Site # 1 Keyspan Energy Site Location Map in Town



# STP SITE #1

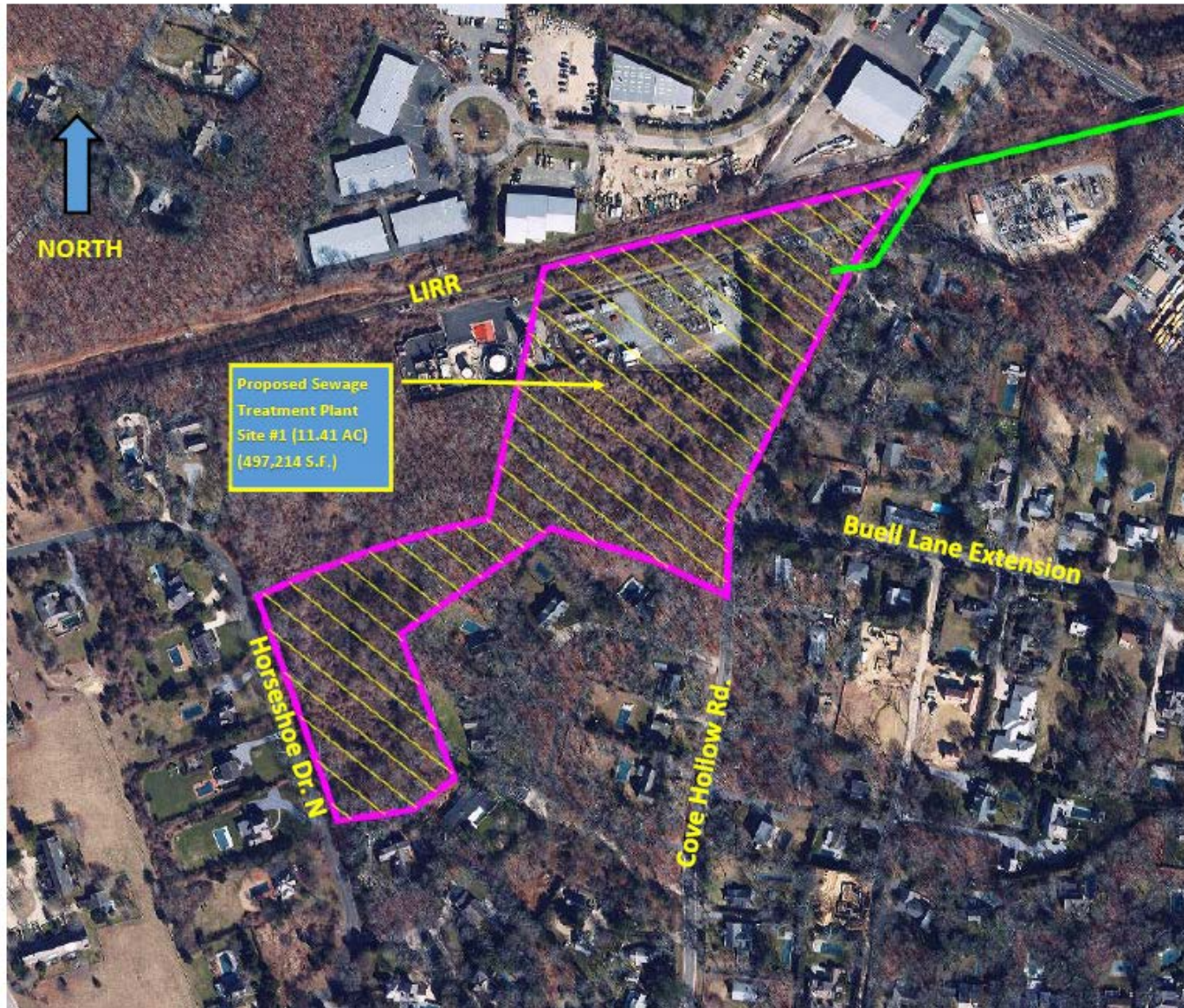


Figure A-9 Site # 1 Keyspan Energy Site Map



## STP SITE #2

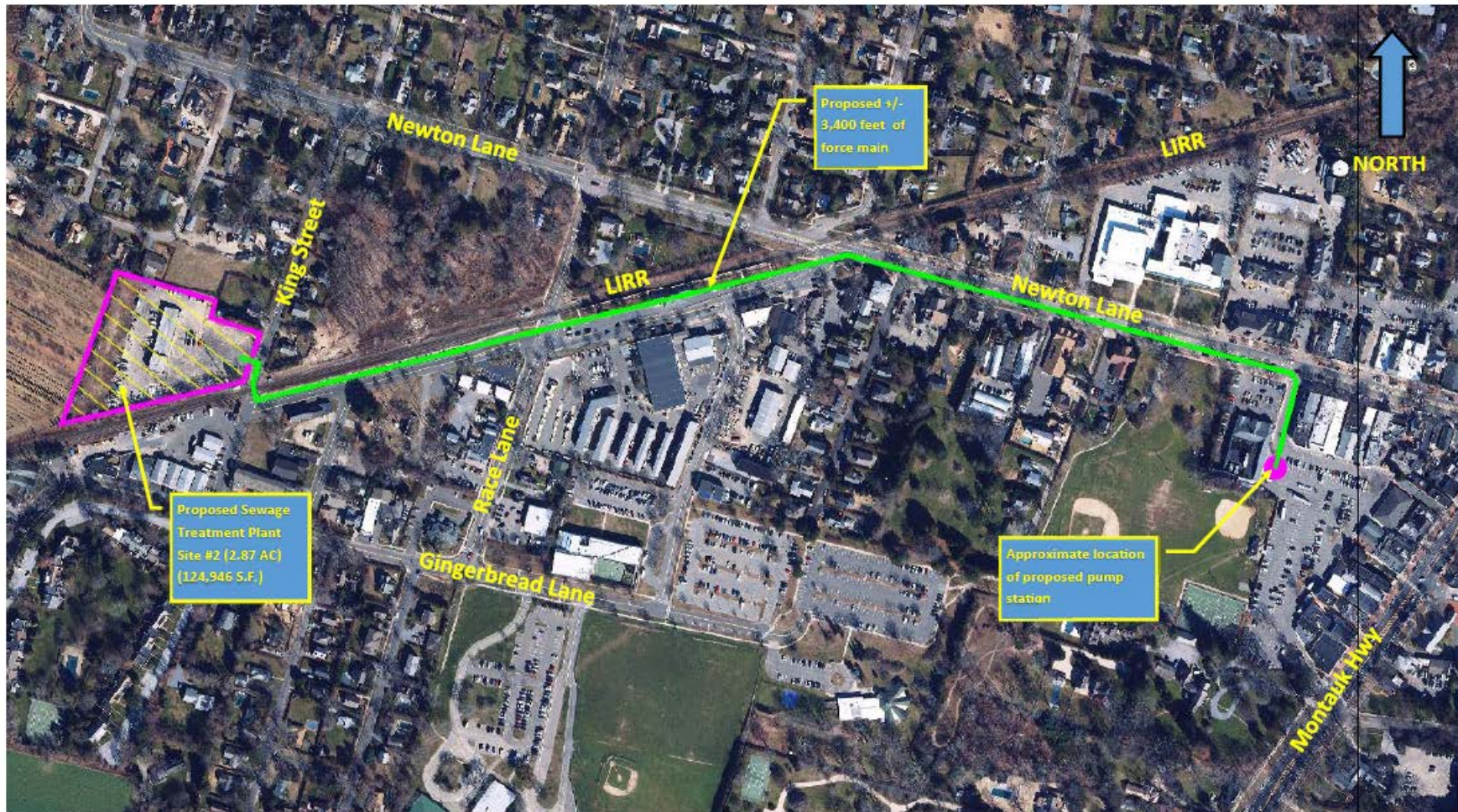


Figure A-10 Site # 2 Location Map 29 King Street Site in Village



## STP SITE #2



Figure A-11 Site # 2 Site Map 29 King Street



### STP SITE #3



Figure A-12 Site # 3 Location Map NYS Property Rt 114 & RR in Town



### STP SITE #3

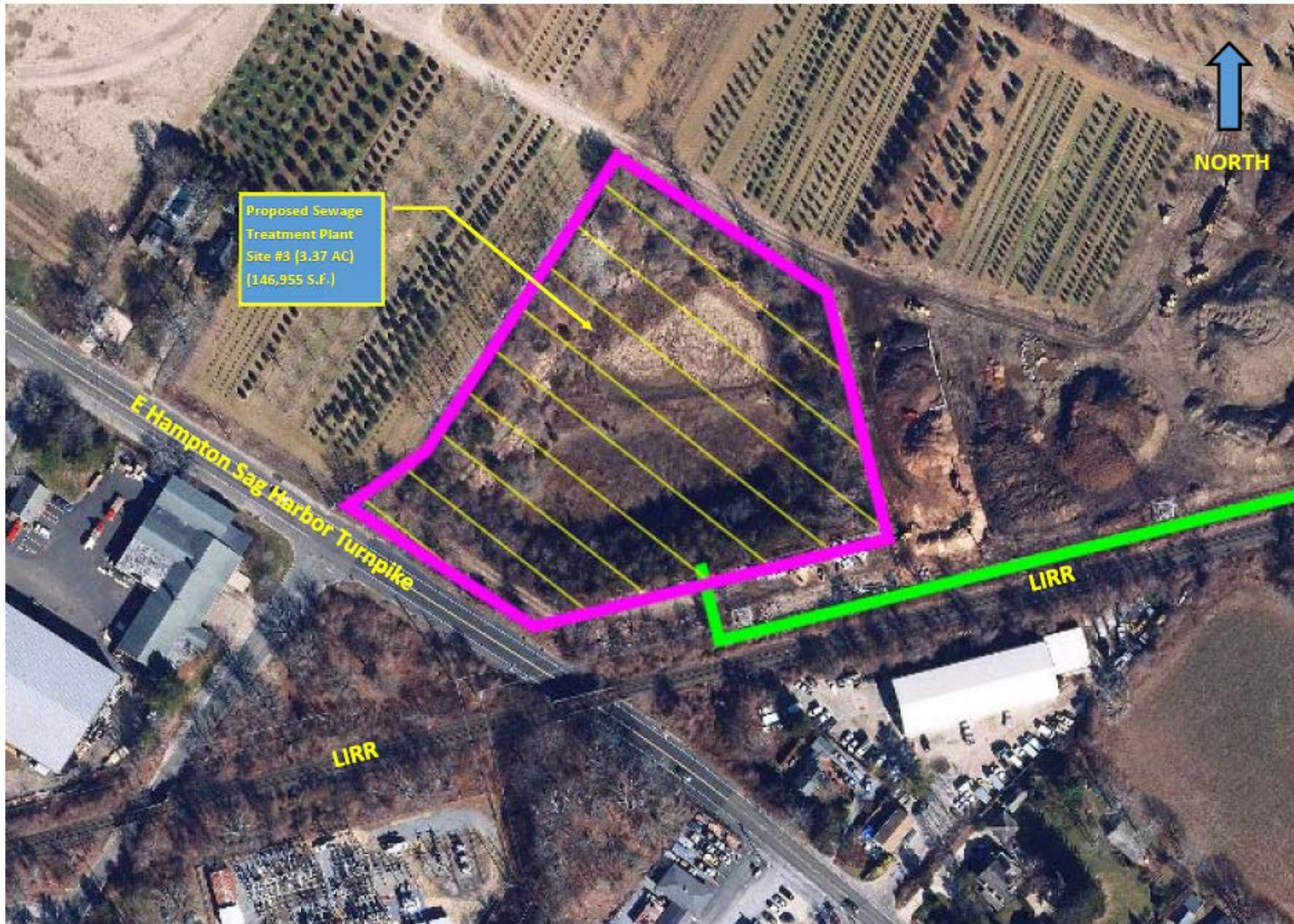


Figure A-13 Site # 3 Map NYS Property Rt 114 & RR





Figure A-14 Site # 4 Location Map – South of Airport Sand Mine in Town



# STP SITE #4 - FORCE MAIN OPTION 1



Figure A-15 Site # 4 Site Map – South of Airport Sand Mine



## STP SITE #5



Figure A-16 Site # 5 Location Map – At Airport in Town



# STP SITE #5

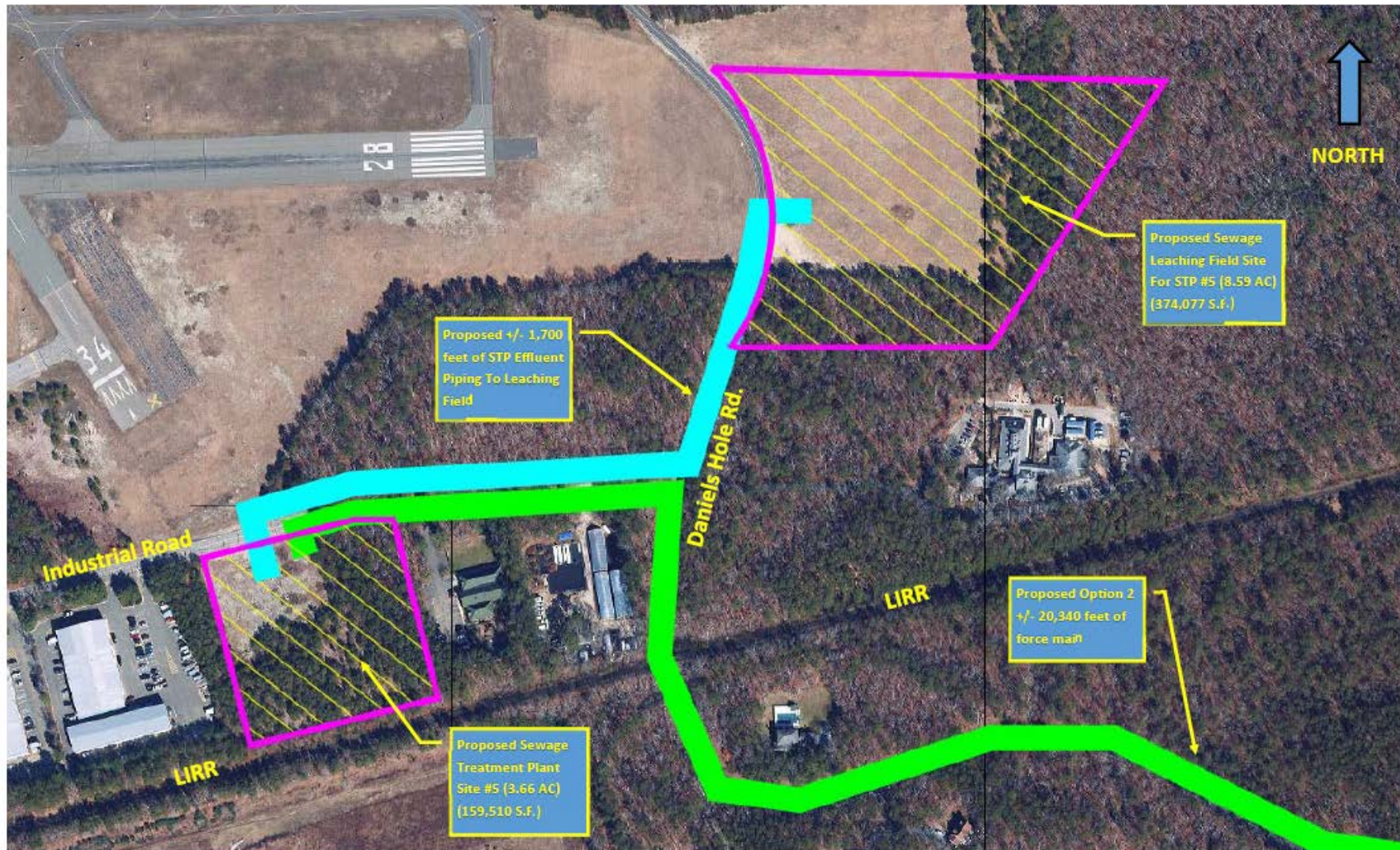


Figure A-17 Site # 5 Site Map – At Airport



# STP SITE #6



Figure A-18 Site # 6 Location Map – At VEH DPW Site in Town



# STP SITE #6

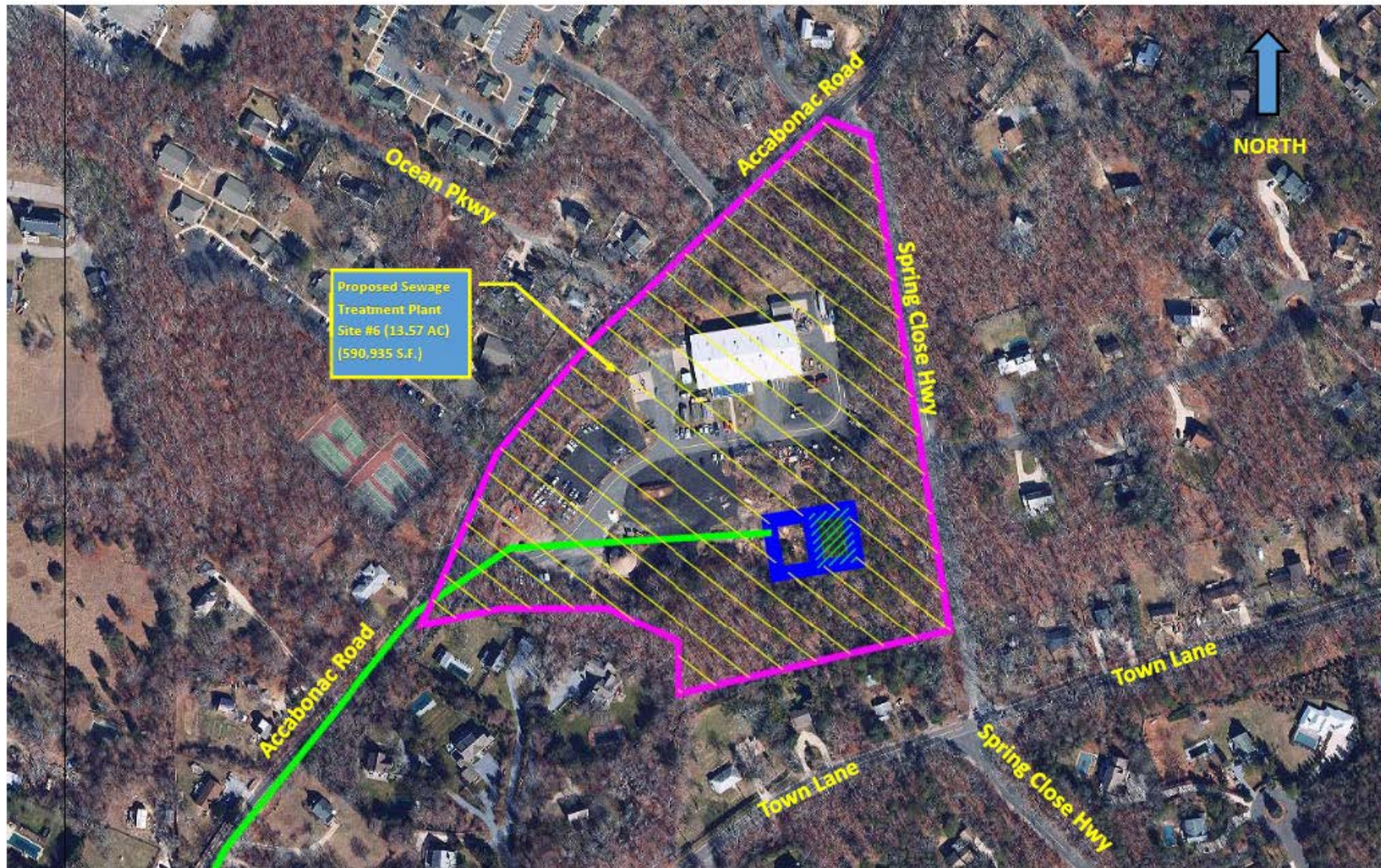
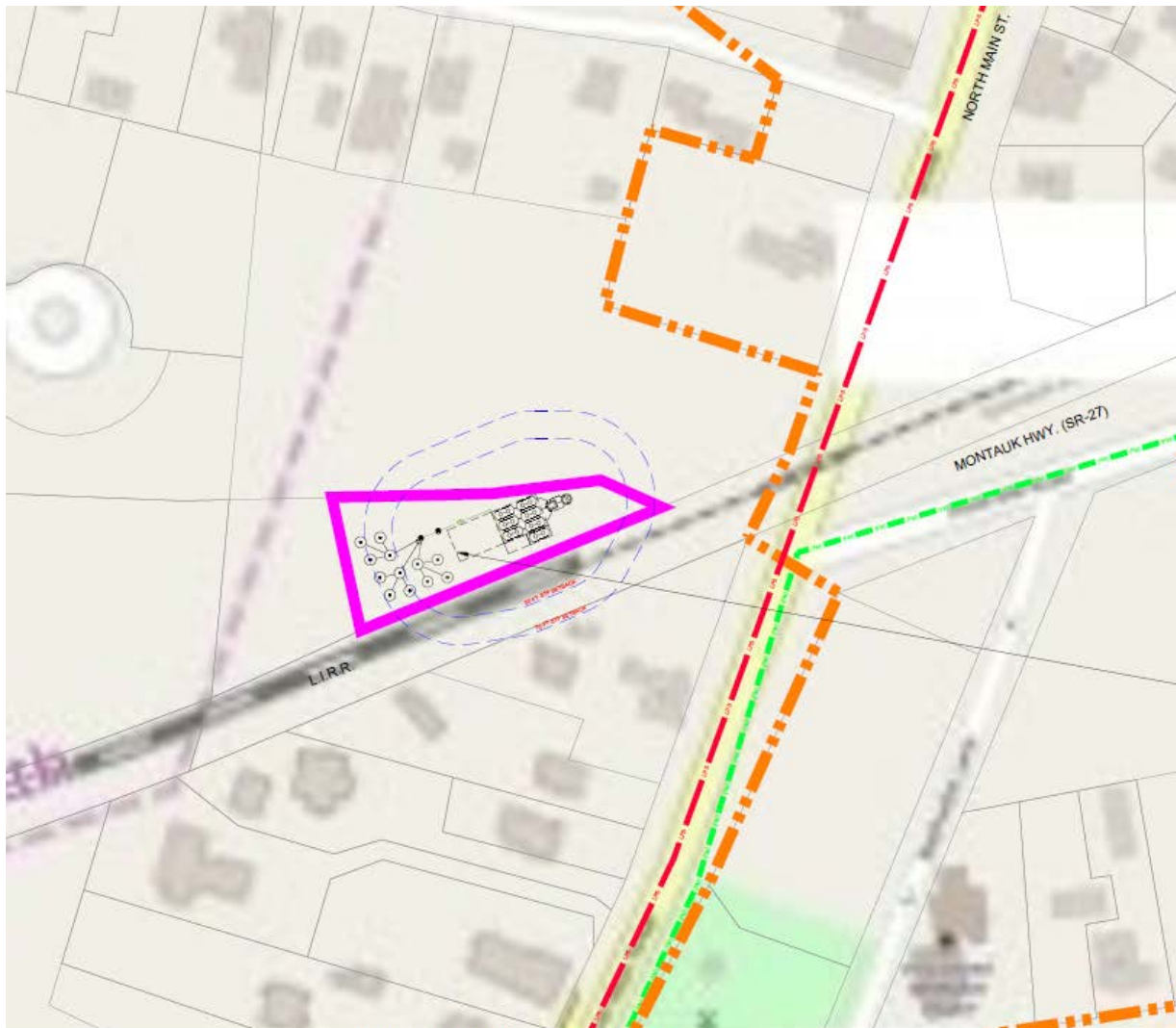


Figure A-19 Site # 6 Site Map



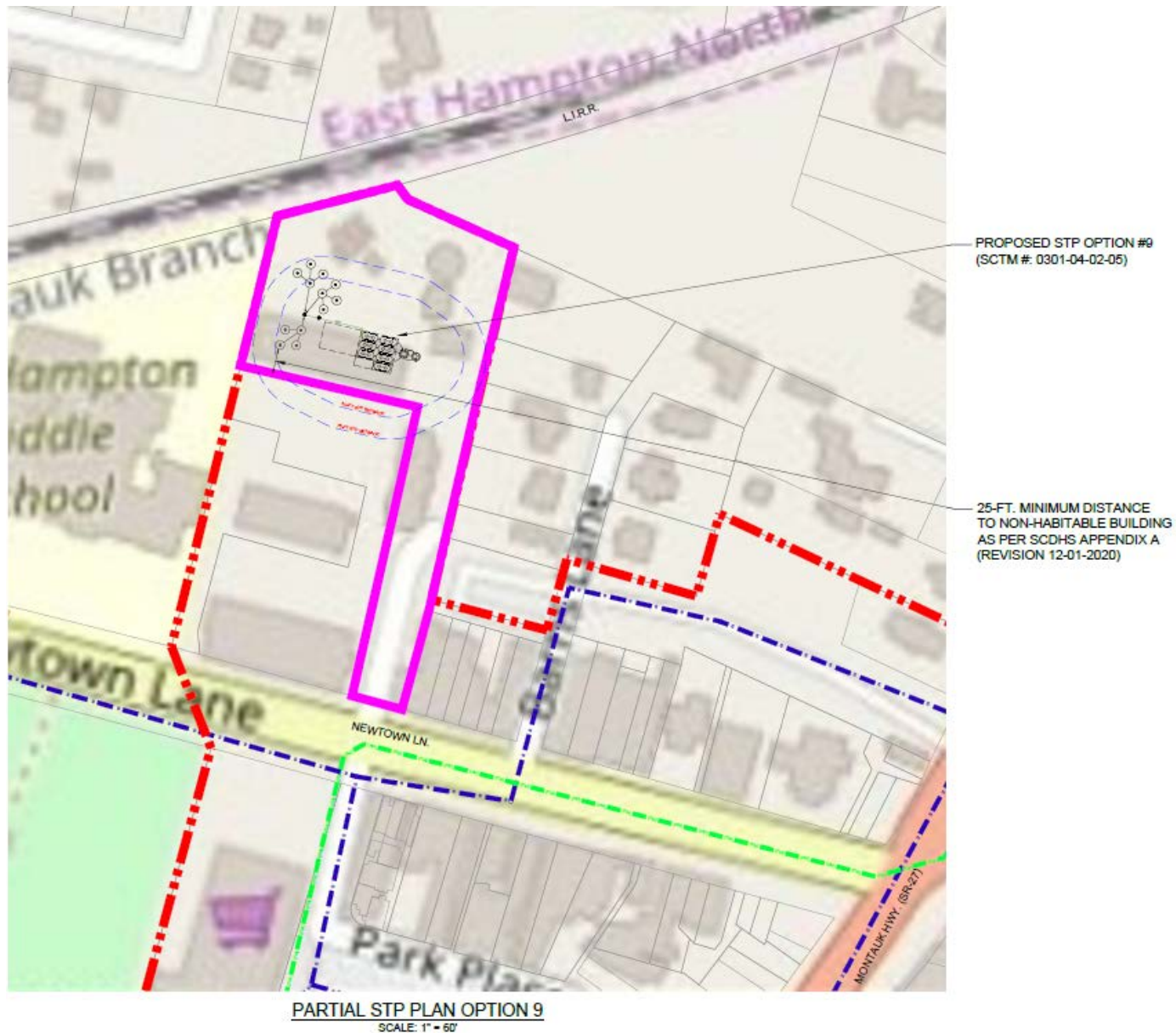


**PARTIAL STP PLAN OPTION 8**

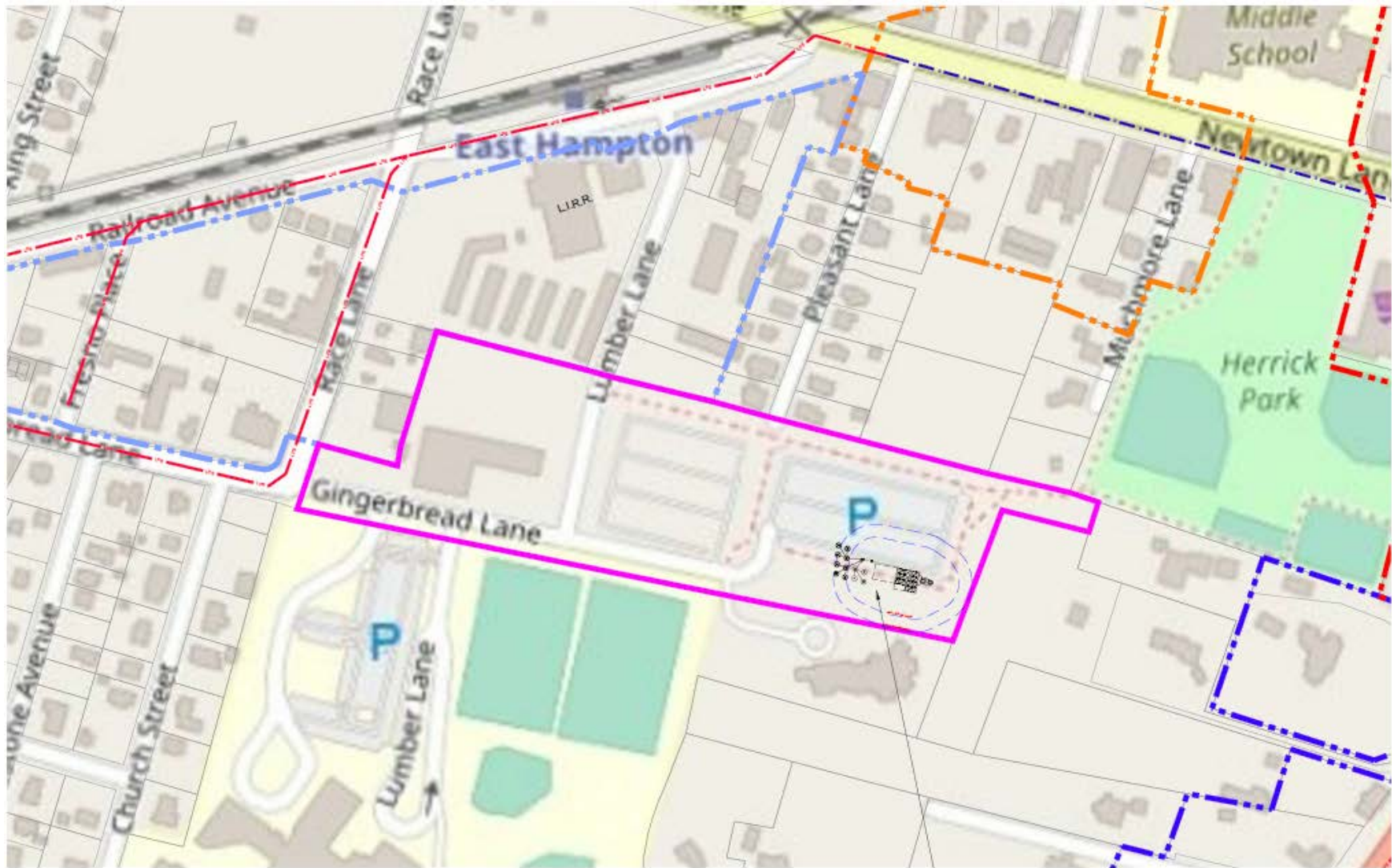
SCALE: 1" = 60'

**Figure A-20 Site # 8 Location & Site Map – off North Main Street in Village**





**Figure A-21 Site # 9 Location & Site Map – Schenck Terminal off Newtown Lane in Village**



PARTIAL STP PLAN OPTION 10  
SCALE: 1" = 100'

PROPOSED STP OPTION #10  
(SCTM #: 0301-02-07-1.3)

Figure A-22 Site # 10 Location & Site Map – Lumber Lane Parking Lots in Village





September 2, 2021

Mr. Billy Hajek  
Village Planner  
Inc. Village of East Hampton  
88 Newtown Lane  
East Hampton, NY 11937

Re: Village of East Hampton Sewering Study  
Additional Parcel Study  
N+P Project

Dear Mr. Hajek:

Pursuant to your request to analyze additional locations for possible sewage treatment plant locations, we have prepared the following letter report for your consideration. It details each site and the benefits and drawbacks to locating a sewage treatment facility on the parcels. As part of our analysis, we reviewed historical groundwater data, site geometry and site proximity to the downtown to provide a high-level overview of each parcel. Please recall, we previously analyzed seven locations. To remain consistent with our original analysis, the parcels in this letter are labelled Option 8, 9 & 10. The description of each parcel is listed individually below. Also please refer to the graphic for each parcel located at the back of the letter report.

Option #8 SCTM No. 301-4-1-31

This parcel is 0.47 acres in land area and is currently owned by the Village. It is currently landlocked but shares a boundary with another Village owned parcel that has access to N. Main Street. The parcel shares its southern boundary with a Long Island Railroad ROW. Site elevation varies from 17 MSL to 28 MSL from north to south. Groundwater in that area is 6 feet below grade in its lowest location. The site is 1,500 feet north of the downtown.

Although this parcel shares a property line with a utility/public ROW, the size of the parcel constrains it from useful STP development. Specifically, as can be seen from Conceptual Plan #8, the northerly setbacks significantly encroach on the adjacent parcel. The ground water conditions in the area also necessitate alternative leaching system design which further complicate the STP design. The parcel is somewhat distant from the downtown, which will require additional infrastructure to convey sewage to the treatment plant location. Lastly, the parcel is adjacent to another Village owned parcel that may not provide access since the parcel was purchased with CPF funds. For those reasons we recommend eliminating this from consideration.

**Figure A-23 NP Evaluation of Sites 8, 9 & 10**

Option #9 SCTM No. 301-4-2-5

This parcel is 1.81 acres and is currently owned by PC Schenck & Sons LLC. The parcel has access to Newtown Lane and zoned for an industrial use. The parcels immediately surrounding the subject parcel are zoned for commercial use. We have utilized reduced setbacks for the treatment system that have recently been adopted by SCDHS as related to SCDHS Appendix A Sewage Treatment Systems. This allows the location of the system to be moved further south away from the residential development north of the LIRR ROW. If the Village decides that they would prefer to maintain setbacks consistent with the old SCDHS Appendix A requirements, this parcel still is viable for the placement of a system.

With a surface elevation from 32 MSL to 36 MSL and depth to groundwater 20 feet below grade, the site is not restricted for the placement of leaching facilities. The parcel is located centrally in the Village downtown which decreases infrastructure cost for sewage conveyance facilities. The decreased infrastructure cost may be offset or increase the overall cost because of the cost to acquire the parcel.

One concern with the parcel is the use as a fuel depot. The site has had active enforcement activity as recently as February of 2012 but has been in compliance for the last 12 quarters as reported on the EPA ECHO webpage. If this parcel is selected, an intensive environmental investigation is recommended. This site has the potential to support a sanitary treatment system for the downtown area and should be further investigated.

Option #10 SCTM No. 301-2-7-1.3

This parcel is known as the long term parking lot and is currently operated by the Village as such. There is some available land area located in the southeast corner of the parcel that could support a sewage treatment facility. The parcel slopes downward generally from northwest to southeast from 40MSL to 35MSL. Groundwater is located approximately 27 feet below grade. Again, this allows for deep recharge facilities which will minimize the parcel size required.

Of particular note on this parcel is the proximity to the school directly to the south. Due to that, we have maintained a 75-foot setback to the property line. The distinct disadvantage of that is the need to eliminate parking on the north side of the treatment facility. As many as 40 spaces may need to be eliminated to comply with the SCDHS 50-foot substantial human use buffer. It will also increase the overall project cost to realign the existing parking lot for circulation purposes.

Although the parcel is near the Village downtown area, it will require a pump station located near the downtown to convey sewage to the plant. This will increase the cost, but to a lesser extent than Option 8.

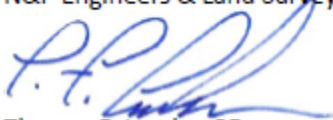




Conclusions

Given all the parcels recently investigated, the Schenck parcel offers the best opportunity to develop a downtown Village treatment facility. Primarily, this is due to the proximity to the downtown and the ability to support the calculated flow for the future buildout. We are happy to discuss the letter further if you have any questions or concerns.

Respectfully submitted,  
N&P Engineers & Land Surveyors, PLLC



Thomas F. Lembo, PE

## Initial Sewer Feasibility



Determine Capacity Needs for Existing Commercial Uses

Based upon water usage and current mix of uses  
Identify plant size required and possible locations



Existing commercial uses in the core could be served by a small-scale system.

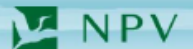
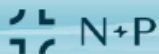


Previously a 15,000 gallon per day limit. County recently increased to 30,000 gpd. This would allow for expanded uses, including housing units.



Determine future capacity needs and expanded environmentally sensitive areas.

Provide capacity for apartments in the downtown  
Phased plan for commercial areas  
Possible inclusion of residential properties  
Consideration for connecting Town of East Hampton multifamily developments



## Sewer Options

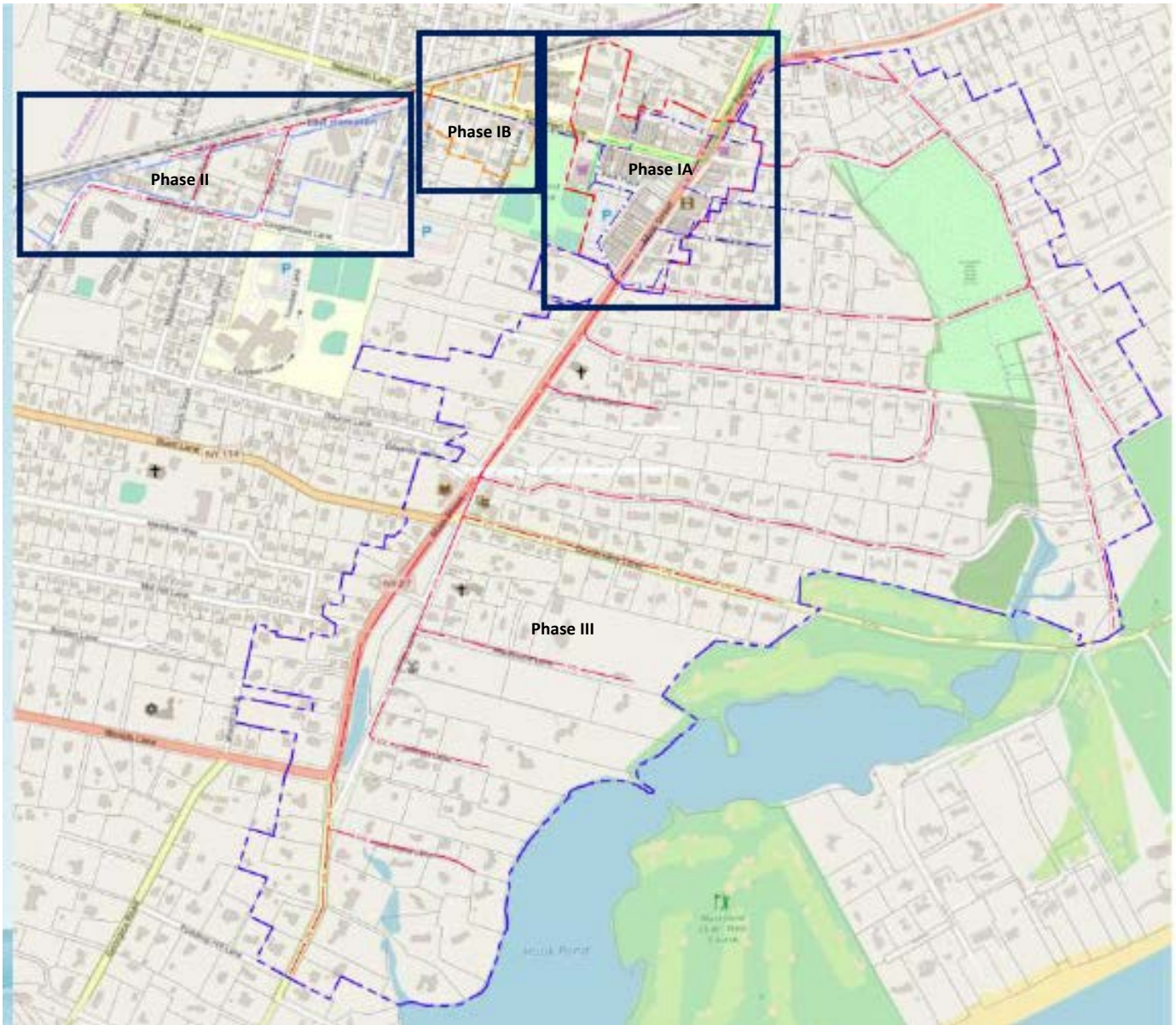
### Sewering (existing conditions)

- Phase IA and IB (Village Center & Upper Newtown Lane)
- Phase II (Railroad/Gingerbread)
- Phase III (Residential area near Hook Pond Watershed)

### Sewering (future conditions)

- New housing and expanded flexibility for commercial uses (within Phase IA and IB areas)
- Option for residential area





**EAST HAMPTON VILLAGE WATER CONSUMPTION**

3-YEAR WATER CONSUMPTION DATA (2017, 2018, 2019)

CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (Ac)	TOTAL LAND AREA (Ac)	MAX. / MIN.	SD	99% CONFIDENCE INTERVAL
PHASE I-A	12,052.2	462.5	26.06	19,136.5 / 8,188.3	1,253.2	10,769.0 - 13,335.3
PHASE I-B	2,945.0	371.4	7.93	4,643.5 / 1,592.9	904.2	2,534.5 - 3,355.4
PHASE II	2,225.6	115.9	19.20	5,081.6 / 822.2	1,044.4	1,751.4 - 2,899.7
* PHASE III	50,713.1	123.0	412.23	74,435.0 / 21,646.0	10,808.1	39,905.0 - 61,521.2

\* PHASE III AVERAGE DAILY FLOW (ADF) INCLUDES NON-IRRIGATION MONTHS ONLY DUE TO HIGH PERCENTAGE OF LOTS BEING DESIGNATED AS RESIDENTIAL.

CONSTRUCTION PHASE	ADF	ADF / TOTAL LAND AREA (Ac)
PHASE I-A	12,052.2	482.5
PHASE I-B	2,945.0	371.4
PHASE II	2,225.6	115.9
* PHASE III	50,713.1	123.0

## Summary

- Village Center, Upper Newtown, Gingerbread and Railroad can be serviced by an “Appendix A System” at the Schenck property on Newtown Lane. This could accommodate 40 residential units or commercial use expansion
- Full STP (Phases I, II and III) build out requires a **full scale** plant at the Village DPW parcel on Accabonac Road
- Appendix A System for the commercial downtown with Innovative/Alternative (“I/A”) Systems for Single Family Homes (for the Phase III area)



## APPENDIX C NP PROPERTY WASTEWATER FLOW CALCULATIONS

LIST BLDG ID	ACRE CALC.	LAST NAME	FIRST NAME	STREET	BLDG USE	EST. BLDG SF	#OF SEATS	SAN. FLOW RATE	KIT. FLOW RATE	SAN. FLOW	KITCH EN FLOW	TOTAL FLOW
1	0.263	PARSONS LLC		TOILSOME	MEDICAL OFFICE	3,000		0.10	0.00	300	0	300
2	1.628	MILL HILL REALTY CORP		TOILSOME	STORAGE	8,100		0.04	0.00	324	0	324
3	0.718	BERNARD I KRUPINSKI		TOILSOME	STORAGE	1,000		0.04	0.00	40	0	40
4					STORAGE	900		0.04	0.00	36	0	36
5					NON-MEDICAL OFFICE	7,500		0.06	0.00	450	0	450
6	0.267	RAUSCHER PROPERTIES LLC		GINGERBREAD	NON-MEDICAL OFFICE	2,400		0.06	0.00	144	0	144
7	0.381	LYNCH	STEPHE	GINGERBREAD	STORAGE	300		0.04	0.00	12	0	12
8		RAUSCHER PROPERTIES LLC		GINGERBREAD	NON-MEDICAL OFFICE	3,125		0.06	0.00	188	0	188
9	0.635	BISTRIAN LAND CORP		GINGERBREAD & KING	DRY STORE	2,400		0.03	0.00	72	0	72
10					DRY STORE	2,400		0.03	0.00	72	0	72
11					DRY STORE	2,400		0.03	0.00	72	0	72
12					DRY STORE	2,400		0.03	0.00	72	0	72
13					DRY STORE	2,300		0.03	0.00	69	0	69
14					DRY STORE	2,000		0.03	0.00	60	0	60
15	0.381	UNIT OWNERS			NON-MEDICAL OFFICE	7,500		0.06	0.00	450	0	450
16	0.138	PASSAMONTE	CHARLE	GINGERBREAD	RESIDENCE	1		400	0.00	400	0	400
17	0.254	TWO BEACHES LLC		FRESNO	NON-MEDICAL OFFICE	3,600		0.06	0.00	216	0	216
18					STORAGE	300		0.04	0.00	12	0	12
19	0.328	COLLINS	DAVID	FRESNO	STORAGE	300		0.04	0.00	12	0	12
20					NON-MEDICAL OFFICE	4,000		0.06	0.00	240	0	240
21	1.586	LULCO		FRESNO	STORAGE	300		0.04	0.00	12	0	12
22					UTILITY OFFICE	1,500		0.06	0.00	90	0	90
23					STORAGE	300		0.04	0.00	12	0	12
24	0.295	SISKA	BRUCE	RACE	DRY STORE	1,028		0.03	0.00	31	0	31
25					DRY STORE	1,028		0.03	0.00	31	0	31
26					WET STORE	1,500	16	0.03	0.12	45	180	225
27	0.665	LAUNDRY CO LLC		RACE	CONVENIENCE STORE	300		0.03	0.02	9	6	15
28					CONVENIENCE STORE	300		0.03	0.02	9	6	15
29					CONVENIENCE STORE	3,500		0.03	0.02	105	70	175
30					CONVENIENCE STORE	300		0.03	0.02	9	6	15
31					CONVENIENCE STORE	300		0.03	0.02	9	6	15
32	0.848	WESSBERG	KENNET		STORAGE	300		0.04	0.00	12	0	12
33					STORAGE	300		0.04	0.00	12	0	12
34	0.298	FRESNO PLACE LLC		FRESNO	RESTAURANT	3,200	60	10	20.0	600	1,200	1,800
35		WESSBERG	KENNET		NURSERY/GREENHOUSE	1,500		0.03	0.00	45	0	45
36					STORAGE	300		0.04	0.00	12	0	12
37					DRY STORE	5,000		0.03	0.00	150	0	150
38					DRY STORE	500		0.03	0.00	15	0	15
39					DRY STORE	750		0.03	0.00	23	0	23
40	0.68	BRIDGEHAMPTON		GINGERBREAD	NON-MEDICAL OFFICE	5,000		0.06	0.00	300	0	300
41	0.447	G & T DAIRIES INC			WET STORE	3,000		0.03	0.07	90	210	300
42					WET STORE	750		0.03	0.07	23	53	75
43	0.275	HOPSON	BERTHA	RACE	NON-MEDICAL OFFICE	500		0.06	0.00	30	0	30
44					NON-MEDICAL OFFICE	1,200		0.06	0.00	72	0	72
45					NON-MEDICAL OFFICE	400		0.06	0.00	24	0	24
46	0.19	CASPER	ROBERT	RACE	NON-MEDICAL OFFICE	1,500		0.06	0.00	90	0	90
47					NON-MEDICAL OFFICE	750		0.06	0.00	45	0	45
48	3.764	RIVERHEAD BUILDING		RACE	GENERAL INDUSTRIAL	6,000		0.04	0.00	240	0	240
49					GENERAL INDUSTRIAL	4,200		0.04	0.00	168	0	168
50					GENERAL INDUSTRIAL	3,100		0.04	0.00	124	0	124
51					GENERAL INDUSTRIAL	3,100		0.04	0.00	124	0	124
52					GENERAL INDUSTRIAL	3,100		0.04	0.00	124	0	124
53					GENERAL INDUSTRIAL	5,400		0.04	0.00	216	0	216
54					GENERAL INDUSTRIAL	300		0.04	0.00	12	0	12
55					GENERAL INDUSTRIAL	20,000		0.04	0.00	800	0	800
56					GENERAL INDUSTRIAL	7,200		0.04	0.00	288	0	288
57	0.118	STEPHEN HANDS PATH		LUMBER	NON-MEDICAL OFFICE	9,200		0.06	0.00	552	0	552
58	0.286	9 RAILROAD AVENUE		RAILROAD								
59	0.139	GEFHRENG	JOHN	RAILROAD								
60	0.126	NACLERIO	SAVERIO	RAILROAD	WET STORE	750		0.03	0.12	23	90	113
61		9 RAILROAD AVENUE		RAILROAD	NON-MEDICAL OFFICE	1,000		0.06	0.00	60	0	60
62	1.648	3 RAILROAD AVENUE		RAILROAD	NON-MEDICAL OFFICE	1,000		0.06	0.00	60	0	60
63					NON-MEDICAL OFFICE	2,000		0.06	0.00	120	0	120
64					NON-MEDICAL OFFICE	750		0.06	0.00	45	0	45
65	0.224	LUMBER LANE PARTNERS		LUMBER	NON-MEDICAL OFFICE	1,200		0.06	0.00	72	0	72
66		3 RAILROAD AVENUE		RAILROAD	MIXED USE	7,500		0.30	0.15	2,250	1,125	3,375
67	0.214	NEWTOWN RAILROAD LLC		NEWTOWN	WET STORE	1,060		0.03	0.12	32	127	159
68					WET STORE	1,400		0.03	0.12	42	168	210
69					WET STORE	3,500		0.03	0.12	105	420	525

LIST BLDG ID	ACRE CALCULATED	LAST NAME	FIRST NAME	STREET	BLDG USE	EST. BLDG SF	# OF SEATS	SAN. FLOW RATE	KIT. FLOW RATE	SAN. FLOW	KITCH EN FLOW	TOTAL FLOW
68	0.653	BB EQUITIES LLC		NEWTOWN	NON-MEDICAL OFFICE	5,000		0.06	0.00	300	0	300
69	0.708	DAYTON	EILEEN	NEWTOWN	RESIDENCE	1		400.00	0.00	400	0	400
70					RESIDENCE	1		400.00	0.00	400	0	400
71					RESIDENCE	1		400.00	0.00	400	0	400
72	1.074	DAYTON	RALPH	NEWTOWN	NURSERY/GREENHOU	1,800		0.03	0.00	54	0	54
73					NURSERY/GREENHOU	1,800		0.03	0.00	54	0	54
74					NURSERY/GREENHOU	2,000		0.03	0.00	60	0	60
75					NURSERY/GREENHOU	1,800		0.03	0.00	54	0	54
76					NURSERY/GREENHOU	300		0.03	0.00	9	0	9
77					NURSERY/GREENHOU	5,200		0.03	0.00	156	0	156
78	0.484	SCHLOSSBERG	MONA	NEWTOWN	DRY STORE	7,200		0.03	0.00	216	0	216
79	0.246	GEORGES FAMILY TRUST		NEWTOWN	RESIDENCE	1		400.00	0.00	400	0	400
80	0.217	71 MUCHMORE LLC		MUCHMORE	RESIDENCE	1		400.00	0.00	400	0	400
81	0.365	11 MUCHMORE LANE LLC		MUCHMORE	NON-MEDICAL OFFICE	1,400		0.06	0.00	84	0	84
82	0.176	BRESLIN	AMY	MUCHMORE	RESIDENCE	1		400.00	0.00	400	0	400
83	0.324	HALFWOOD		NEWTOWN	DRY STORE	4,800		0.03	0.00	144	0	144
84	1.029	67 NEWTOWN LANE		NEWTOWN	SUPER MARKET	18,750		0.03	0.02	563	375	938
85	0.161	UNIT OWNERS			DRY STORE	6,000		0.03	0.00	180	0	180
	0	PARK PLACE POOH LLC		NEWTOWN								
	0	ZABORSKI	JAMES									
86	0.156	51 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	5,250		0.03	0.00	158	0	158
	0.105	BB EQUITIES LLC		NEWTOWN								
87	0.124	CHERIO CORP		NEWTOWN	DRY STORE	5,000		0.03	0.00	150	0	150
	0.08	RUMTREE LTD		PARK								
	0.069	DALT INC		NEWTOWN								
88	0.146	GRACE PROPERTIES LTD		NEWTOWN	MARKET	2,700		0.03	0.02	81	54	135
	0.112	NEWTOWN LAND GROUP		NEWTOWN	WET STORE W/ FOOD	3,000		0.03	0.12	90	360	450
89	0.115	I W I LLC		NEWTOWN	DRY STORE	4,000		0.03	0.00	120	0	120
90	0.047	FOUR STARS REALTY CO LLC		NEWTOWN	WET STORE W/ FOOD	3,600	16	0.03	0.12	108	432	540
	0.032	NEWTOWN LAND GROUP		NEWTOWN	WET STORE W/ FOOD	3,600	16	0.03	0.12	108	432	540
	0.073	21 NEWTOWN LANE II LLC		NEWTOWN	DRY STORE	1,200		0.03	0.00	36	0	36
91	0.044	TRUNZO FAMILY LIMITED		MAIN	DRY STORE	1,917		0.03	0.00	58	0	58
	0.055	ET 1 MAIN STREET LLC		MAIN	DRY STORE	2,396		0.03	0.00	72	0	72
	0.021	SUMI FAMILY TRUST		MAIN	DRY STORE	915		0.03	0.00	27	0	27
	0.038	23 MAIN STREET LLC		MAIN	DRY STORE	1,655		0.03	0.00	50	0	50
	0.022	11 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	958		0.03	0.00	29	0	29
	0.017	ELEVEN POOH LLC		NEWTOWN	DRY STORE	741		0.03	0.00	22	0	22
	0.05	ET 1 MAIN STREET LLC		NEWTOWN	DRY STORE	2,178		0.03	0.00	65	0	65
92	0.17	SQUIRES FAMILY LIMITED		MAIN	DRY STORE	7,405		0.03	0.00	222	0	222
	0.072	1000 PARK CORP		MAIN	DRY STORE	3,136		0.03	0.00	94	0	94
93	0.085	EAST HAMPTON SQUARE		MAIN	DRY STORE	3,703		0.03	0.00	111	0	111
	0.13	GAZPACHO REALTY LLC		MAIN	DRY STORE	5,663		0.03	0.00	170	0	170
94	0.381	EAST HAMPTON SQUARE		MAIN	DRY STORE	16,596		0.03	0.00	498	0	498
95					DRY STORE	6,500		0.03	0.00	195	0	195
96	0.042	51 MAIN STREET II LLC			DRY STORE	1,830		0.03	0.00	55	0	55
	0.149	55 MAIN STREET LLC		MAIN	DRY STORE	6,490		0.03	0.00	195	0	195
	0.105	STANLEY	CAREN	MAIN	DRY STORE	4,574		0.03	0.00	137	0	137
97	0.066	EAST HAMPTON VILLAGE			WET STORE W/ FOOD	5,000	16	0.03	0.12	150	600	750
	0.041	OLD BARN DEVELOPMENT CORP			DRY STORE	1,786		0.03	0.00	54	0	54
	0.099	ROLIN EAST LLC		MAIN	DRY STORE	4,312		0.03	0.00	129	0	129
		RALPH LAUREN RETAIL INC										
		RALPH LAUREN RETAIL INC										
98	0.107	MILL HILL REALTY CORP		MAIN	DRY STORE	4,661		0.03	0.00	140	0	140
99	0.095	69 MAIN ST LLC		MAIN	NON-MEDICAL OFFICE	4,138		0.06	0.00	248	0	248
	0.061	GROSSMAN	CARLO	MAIN	NON-MEDICAL OFFICE	2,657		0.06	0.00	159	0	159
100	0.084	FINK	DAVID	MAIN	DRY STORE	3,659		0.03	0.00	110	0	110
101	0.043	SALOMAE LLC		PARK	DRY STORE	1,873		0.03	0.00	56	0	56
102	0.039	EHV PARK PLACE LLC			DRY STORE	1,699		0.03	0.00	51	0	51
103	0.052	FLACH REALTY LLC		MAIN	DRY STORE	2,265		0.03	0.00	68	0	68
104	0.098	81 NYC LLC		MAIN	DRY STORE	4,269		0.03	0.00	128	0	128
105	0.07	I & A REALTY ASSOCIATES		MAIN	DRY STORE	3,049		0.03	0.00	92	0	92
	0.05	TULIP EQUITIES LLC		MAIN	DRY STORE	2,178		0.03	0.00	65	0	65
	0.051	FINK	DAVID	PANTIGO	DRY STORE	2,222		0.03	0.00	67	0	67
106	0.07	TRUNZO FAMILY LIMITED		MAIN	DRY STORE	3,049		0.03	0.00	92	0	92
107	0.509	EAST HAMPTON VILLAGE		MAIN	NON-MEDICAL OFFICE	3,000		0.06	0.00	180	0	180
108	0.244	78 MAIN STREET LLC		MAIN	NON-MEDICAL OFFICE	8,500		0.06	0.00	510	0	510
109	0.809	JPMORGAN CHASE BANK NATIONAL		MAIN	NON-MEDICAL OFFICE	6,500		0.06	0.00	390	0	390
110	0.085	D & B REALTY POOH LLC		THE CIRCLE	DRY STORE	2,700		0.03	0.00	81	0	81
111	0.175	GEORGICA REALTY CORP		THE CIRCLE	MEDICAL OFFICE	1,800		0.10	0.00	180	0	180



LIST BLDG ID	ACRE CALCULATED	LAST NAME	FIRST NAME	STREET	BLDG USE	EST. BLDG SF	# OF SEATS	SAN. FLOW RATE	KIT. FLOW RATE	SAN. FLOW	KITCH EN FLOW	TOTAL FLOW
112	0.736	FROG CO LLC			MIXED USE	36,000		0.30	0.15	10,800	5,400	16,200
	0.335	UNIT OWNERS										
	0	FT 54 MAIN STREET LLC										
	0	FT 53 MAIN STREET LLC		MAIN								
	0	ELIE TAHARI 48 MAIN		MAIN								
	0	ELIE TAHARI 46 MAIN		MAIN								
	0	SAG HARBOR POOH LLC		THE CIRCLE								
	0	VILLAGE MAIN STREET										
	0	AVIKZER	DEVORA	MAIN								
113	0.175	PARRISH MEWS LP		MAIN	MIXED USE	25,000		0.30	0.00	7,500	0	7,500
	0.207	EAST HAMPTON 14 MAIN		MAIN								
	0.401	SMITHIE LLC		MAIN								
	0.146	CANDY REALTY INC										
114	0.546	PELTIER	JACK	FITHIAN	RESIDENCE	1		400.00	0.00	400	0	400
115	0.162	PANTIGO LANE ASSOCIATES		MAIN	MARKET	7,800		0.03	0.12	234	936	1,170
	0.628	PANTIGO LANE ASSOCIATES		FITHIAN								
116	0.289	MARVIN HYMAN ESTATE		PANTIGO	RESIDENCE	1		400.00	0.00	400	0	400
117	0.074	KABROOK LLC		PANTIGO	NON-MEDICAL OFFICE	2,600		0.06	0.00	156	0	156
118	0.909	HOOK MILL ASSOCIATES		PANTIGO	MARKET	8,000		0.02	0.03	160	240	400
119	1.209	UNITED STATES POSTAL			NON-MEDICAL OFFICE	16,000		0.06	0.00	960	0	960
120	0.656	11 GAY ROAD LLC		GAY	NON-MEDICAL OFFICE	9,000		0.06	0.00	540	0	540
121	0.738	INCORPORATED VILLAGE		PANTIGO								
122	0.27	EAST END HOOK CORP			NON-MEDICAL OFFICE	1,500		0.06	0.00	90	0	90
123	0.282	41 PANTIGO LLC		PANTIGO	NON-MEDICAL OFFICE	1,500		0.06	0.00	90	0	90
124		EAST END HOOK CORP			NON-MEDICAL OFFICE	1,500		0.06	0.00	90	0	90
125	0.564	EAST HAMPTON NORTH			GREENHOUSE	1,200		0.03	0.00	36	0	36
126												
127	0.264	HILLSTONE RESTAURANT		NORTH MAIN	RESTAURANT	4,200	75	10.00	20.00	750	1,500	2,250
128	2.06	EAST HAMPTON VILLAGE		CEDAR	NON-MEDICAL OFFICE	23,000		0.06	0.00	1,380	0	1,380
129	0.267	STAYTHECOURSE LLC			NON-MEDICAL OFFICE	2,500		0.06	0.00	150	0	150
130	0.025	3 NORTH MAIN LLC		MAIN	DRY STORE	1,500		0.03	0.00	45	0	45
131	0.049	RED LAD LLC		NEWTOWN	DRY STORE	2,134		0.03	0.00	64	0	64
	0.046	LIFTON	ELAINE			2,004		0.03	0.00	60	0	60
	0.038	LIFTON	ELAINE	NEWTOWN		1,655		0.03	0.00	50	0	50
132	0.301	ELFET BANK OF NEW YORK			NON-MEDICAL OFFICE	5,400		0.06	0.00	324	0	324
133	0.226	16 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	3,600		0.03	0.00	108	0	108
134	0.181	Z&S REALTY LLC		NEWTOWN	DRY STORE	2,800		0.03	0.00	84	0	84
135	0.079	30 34 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	3,441		0.03	0.00	103	0	103
	0.059	30 34 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	2,570		0.03	0.00	77	0	77
	0.053	32 NEWTOWN LANE LLC		NEWTOWN	DRY STORE	2,309		0.03	0.00	69	0	69
	0.096	SAMNROSE REALTY LLC		NEWTOWN	DRY STORE	4,182		0.03	0.00	126	0	126
	0.093	400 POOH LLC		BARNS	DRY STORE	4,051		0.03	0.00	122	0	122
136	1.104	66 NEWTON CORP			MIXED USE	15,000		0.30	0.15	4,500	2,250	6,750
137	0.508	NEWTOWN ASSOCIATES LL		NEWTOWN	DRY STORE	7,000		0.03	0.00	210	0	210
138	1.813	P C SCHENCK & SONS LLC		NEWTOWN	NON-MEDICAL OFFICE	18,000		0.06	0.00	1,080	0	1,080
148	0.421	EAST HAMPTON VILLAGE		NEWTOWN	DRY STORE	1,200	N/A	0.03	0.00	36	0	36
149												
150	0.266	VILLAGE OF EASTHAMPTON		OSBORNE	RESIDENCE	1	N/A	400.00	0.00	400	0	400
151	0.236	RUMTREE LTD			DRY STORE	6,000	N/A	0.03	0.00	180	0	180
152	0.298	NEWTOWN LANE		NEWTOWN	NON-MEDICAL OFFICE	1,500	N/A	0.06	0.00	90	0	90
153					NON-MEDICAL OFFICE	400	N/A	0.06	0.00	24	0	24
154	0.175	GRETZ 2012 FAST			WET STORE W/O	2,200	N/A	0.03	0.07	66	154	220
155					STORAGE	500	N/A	0.04	0.00	20	0	20
156	0.108	SQUIRES LLC		NEWTOWN	LAUNDROMAT	3,000	N/A	0.03	0.12	90	360	450
TOT	44.614											
SAN	26.768											
										TOTAL		69,097

**APPENDIX D LAI PROPERTY WASTEWATER FLOW CALCULATIONS**

STUDY AREA #	BLDG #	PARCEL ID	ADDRESS	# of Uses	USE Descriptions	BLDG AREA (ft <sup>2</sup> )	WW Flow (gpd)	WW Flow % of Total
1	30	0301002000100015003	11 FRESNO PL	1	Restaurant w/seats	2,583	780	1.20%
1	26	0301002000100008000	4 FRESNO PL	1	Non-Medical Office Space	295	18	0.03%
1	27	0301002000100008000		1	Non-Medical Office Space	3,498	210	0.32%
1	24	0301002000100009000	8 FRESNO PL	1	Retail - Dry Store	1,170	35	0.05%
1	25	0301002000100009000		1	Non-Medical Office Space	286	17	0.03%
1	28	0301002000100019002	12 GINGERBREAD LA	1	Residence - Single Family	4,703	330	0.51%
1	29	0301002000100019002		0	No WW Structure	334	0	0.00%
1	31	0301002000100019002		1	Non-Medical Office Space	535	32	0.05%
1	47	0301002000100019002		0	No WW Structure	263	0	0.00%
1	59	0301002000100019002		1	Non-Medical Office Space	1,003	60	0.09%
1	60	0301002000100019002		2	Non-Medical Office Space; Residence - Single Family	1,122	343	0.53%
1	58	0301002000100011000	22 GINGERBREAD LA	1	Residence - Single Family	855	330	0.51%
1	23	0301002000100025000		3	Retail - Dry Store; Medical Office Space; Non-Medical Office Space	6,249	781	1.20%
1	21	0301002000100003000	60 GINGERBREAD LA	0	No WW Structure	301	0	0.00%
1	41	0301002000100005000	50 GINGERBREAD LN	1	Non-Medical Office Space	2,119	127	0.20%
1	42	0301002000100005000		1	Non-Medical Office Space	2,001	120	0.18%
1	43	0301002000100005000		1	Non-Medical Office Space	2,006	120	0.18%
1	44	0301002000100005000		1	Non-Medical Office Space	2,114	127	0.19%
1	45	0301002000100005000		1	Non-Medical Office Space	2,151	129	0.20%
1	46	0301002000100005000		1	Retail - Dry Store	1,724	52	0.08%
1	20	0301002000100004000	58 GINGERBREAD LN	1	Non-Medical Office Space	2,348	141	0.22%
1	22	0301002000100004000		1	Non-Medical Office Space	3,071	184	0.28%
1	61	0301002000100019003	8 GINGERBREAD LN	1	Non-Medical Office Space	1,278	77	0.12%
1	74	0301002000200006000	11 LUMBER LA	4	Non-Medical Office Space; General Industrial / Storage / Greenhouse; Spa / Fitness Center, No showers; Wet Store, w/food (take-out, max 16 seats)	3,375	523	0.80%
1	69	0301002000200017000	105 NEWTOWN LA	0	No WW Structure	1,231	0	0.00%
1	70	0301002000200017000		4	Wet Store, no Food Service (Hair, Nail, Pet); Wet Store, w/food (take-out, max 16 seats); Non-Medical Office Space; Residence - Multi Family	3,056	895	1.38%
1	82	0301002000200017000		1	Residence - Single Family	1,457	440	0.68%
1	81	0301002000200015000	11 PLEASANT LN	1	Residence - Single Family	965	440	0.68%
1	67	0301002000200016000	7 PLEASANT LN	0	No WW Structure	415	0	0.00%
1	68	0301002000200016000		1	Residence - Single Family	950	440	0.68%
1	53	0301002000100017000	17 RACE LA	1	Wet Store, w/food (take-out, max 16 seats)	1,267	190	0.29%
1	54	0301002000100017000		1	Wet Store, w/food (take-out, max 16 seats)	1,219	183	0.28%

STUDY AREA #	BLDG #	PARCEL ID	ADDRESS	# of Uses	USE Descriptions	BLDG AREA (ft <sup>2</sup> )	WW Flow (gpd)	WW Flow % of Total
1	55	0301002000100017000		1	Retail - Dry Store	1,028	31	0.05%
1	33	0301002000100021000	32 RACE LA	0	No WW Structure	185	0	0.00%
1	34	0301002000100021000		1	Residence - Single Family	1,010	330	0.51%
1	35	0301002000100021000		1	Residence - Single Family	289	330	0.51%
1	32	0301002000100022000	30 RACE LN	1	Non-Medical Office Space	1,658	99	0.15%
1	63	0301002000100022000		1	Non-Medical Office Space	484	29	0.04%
1	36	0301002000100018000	31 RACE LN	1	Convience Store / Market Farm Stand	282	14	0.02%
1	37	0301002000100018000		2	Retail - Dry Store; Restaurant w/seats	7,912	1,259	1.93%
1	51	0301002000100018000		0	No WW Structure	323	0	0.00%
1	52	0301002000100018000		1	Non-Medical Office Space	848	102	0.16%
1	56	0301002000100018000		1	Retail - Dry Store	225	7	0.01%
1	62	0301002000100020000	36 RACE LN	1	Wet Store, w/food (take-out, max 16 seats)	4,538	681	1.05%
1	66	0301002000200002000	11 RAILROAD AVE	1	General Industrial / Storage / Greenhouse	7,503	300	0.46%
1	39	0301002000100023000	21 RAILROAD AVE	1	General Industrial / Storage / Greenhouse	4,948	198	0.30%
1	40	0301002000100023000		1	General Industrial / Storage / Greenhouse	3,928	157	0.24%
1	72	0301002000100023000		1	General Industrial / Storage / Greenhouse	4,742	190	0.29%
1	73	0301002000100023000		1	General Industrial / Storage / Greenhouse	2,514	101	0.15%
1	76	0301002000100023000		1	General Industrial / Storage / Greenhouse	2,700	108	0.17%
1	77	0301002000100023000		1	General Industrial / Storage / Greenhouse	2,520	101	0.15%
1	78	0301002000100023000		1	Retail - Dry Store	18,949	568	0.87%
1	79	0301002000100023000		1	Retail - Dry Store	7,199	216	0.33%
1	84	0301002000100023000		1	General Industrial / Storage / Greenhouse	284	11	0.02%
1	64	0301002000200005000	3 RAILROAD AVE	1	Non-Medical Office Space	2,541	152	0.23%
1	65	0301002000200005000		1	Retail - Dry Store	2,040	61	0.09%
1	75	0301002000200005000		1	General Industrial / Storage / Greenhouse	6,221	249	0.38%
1	83	0301002000200005000		2	Residence - Single Family; Non-Medical Office Space	4,473	733	1.13%
1	38	0301002000100015001	53 RAILROAD AVE	0	No WW Structure	1,273	0	0.00%
1	48	0301002000100015001		1	General Industrial / Storage / Greenhouse	236	9	0.01%
1	49	0301002000100015001		1	General Industrial / Storage / Greenhouse	1,383	55	0.08%
1	50	0301002000100015001		1	General Industrial / Storage / Greenhouse	275	11	0.02%
1	71	0301002000200004000	7 RAILROAD AVE	1	Wet Store, w/food (take-out, max 16 seats)	1,554	233	0.36%
1	80	0301002000200003000	9 RAILROAD AVE	1	Non-Medical Office Space	2,086	125	0.19%



STUDY AREA #	BLDG #	PARCEL ID	ADDRESS	# of Uses	USE Descriptions	BLDG AREA (ft <sup>2</sup> )	WW Flow (gpd)	WW Flow % of Total
1	16	0301002000300003000	15 TOILSOME LA	1	Non-Medical Office Space	3,779	453	0.70%
1	57	0301002000300002000	17 TOILSOME LA	1	General Industrial / Storage / Greenhouse	7,905	316	0.49%
1	17	0301002000300001000	5 TOILSOME LN	1	General Industrial / Storage / Greenhouse	927	37	0.06%
1	18	0301002000300001000		1	General Industrial / Storage / Greenhouse	884	35	0.05%
1	19	0301002000300001000		2	Retail - Dry Store; Non-Medical Office Space	7,672	345	0.53%
2	92	0301002000200032000	7 MUCHMORE LA	3	Retail - Dry Store; Non-Medical Office Space; Medical Office Space	1,469	213	0.33%
2	85	0301004000500003000	8 MUCHMORE LA	2	Retail - Dry Store; Residence - Single Family	1,462	374	0.57%
2	106	0301002000200033000	11 MUCHMORE LN	2	Retail - Dry Store; Residence - Single Family	2,049	391	0.60%
2	90	0301002000200030000	87 NEWTOWN LA	2	Retail - Dry Store; Medical Office Space	7,393	961	1.48%
2	86	0301002000200029000	93 NEWTOWN LA	2	Retail - Dry Store; Non-Medical Office Space	5,161	201	0.31%
2	87	0301002000200029000		1	Retail - Dry Store	277	8	0.01%
2	102	0301002000200029000		1	Retail - Dry Store	1,804	54	0.08%
2	103	0301002000200029000		1	Retail - Dry Store	2,617	78	0.12%
2	104	0301002000200029000		1	Retail - Dry Store	1,986	60	0.09%
2	105	0301002000200029000		1	Retail - Dry Store	1,903	57	0.09%
2	98	0301001000700004002	94 NEWTOWN LA	2	Retail - Dry Store; Wet Store, no Food Service (Hair, Nail, Pet)	4,266	227	0.35%
2	88	0301002000200028000	95 NEWTOWN LA	1	Residence - Multi Family	1,378	660	1.01%
2	89	0301002000200028000		1	Residence - Single Family	1,440	440	0.68%
2	108	0301002000200028000		1	Residence - Single Family	464	330	0.51%
2	95	0301001000700003001	100 NEWTOWN LN	2	Wet Store, no Food Service (Hair, Nail, Pet); Residence - Multi Family	1,798	750	1.15%
2	101	0301001000700003001		0	No WW Structure	531	0	0.00%
2	107	0301001000700001000	106 NEWTOWN LN	1	Retail - Dry Store	1,948	58	0.09%
2	93	0301004000500001000	79 NEWTOWN LN	1	Retail - Dry Store	5,026	302	0.46%
2	91	0301002000200031000	83 NEWTOWN LN	1	Residence - Single Family	970	440	0.68%
2	99	0301004000200002000	88 NEWTOWN LN	1	Non-Medical Office Space	1,286	77	0.12%
2	109	0301004000200002000		0	No WW Structure	483	0	0.00%
2	96	0301001000700004001	98 NEWTOWN LN	0	No WW Structure	732	0	0.00%
2	97	0301001000700004001		2	Library / Firehouse / Precinct / Museum; Residence - Single Family	1,458	403	0.62%
2	94	0301002000200019001	99 NEWTOWN LN	1	Non-Medical Office Space	5,359	643	0.99%
2	100	0301004000200001000	8 OSBORNE LN	0	No WW Structure	1,773	0	0.00%
3	114	0301004000100010003	N MAIN ST	1	Library / Firehouse / Precinct / Museum	20,656	1,033	1.59%
3	110	0301004000100019001	69 N MAIN ST	0	No WW Structure	730	0	0.00%
3	113	0301004000100019001		5	Wet Store, w/food (take-out, max 16 seats); Residence - Multi Family; Residence - Multi Family; Retail - Dry Store; Retail - Dry Store	4,842	932	1.43%
3	111	0301004000100034000	74 N MAIN ST	2	Restaurant w/seats; Non-Medical Office Space	3,980	1,493	2.29%

STUDY AREA #	BLDG #	PARCEL ID	ADDRESS	# of Uses	USE Descriptions	BLDG AREA (ft <sup>2</sup> )	WW Flow (gpd)	WW Flow % of Total
3	112	0301004000100009000	79 N MAIN ST	2	Restaurant w/seats; Residence - Multi Family	4,352	3,228	4.96%
3	112A		0	1	Library / Firehouse / Precinct / Museum	730	37	0.06%
3	115	0301004000100036000	80 N MAIN ST	2	Wet Store, no Food Service (Hair, Nail, Pet); Residence - Multi Family	2,479	578	0.89%
4	121	0301004000600012001	12 GAY RD	1	Library / Firehouse / Precinct / Museum	14,958	748	1.15%
4	120	0301004000600014000	18 GAY RD	1	Non-Medical Office Space	8,345	751	1.15%
4	116	0301004000600011002	38 PANTIGO RD	1	Retail - Dry Store	7,207	216	0.33%
4	117	0301004000300006004	41 PANTIGO RD	1	Non-Medical Office Space	1,057	63	0.10%
4	118	0301004000300006003	43 PANTIGO RD	1	Day School / Day Camp	2,076	222	0.34%
4	119	0301004000300006003		1	Medical Office Space	1,218	122	0.19%
4	122	0301004000300008000	51 PANTIGO RD	0	No WW Structure	9,329	0	0.00%
5	154	0301003000300001002	10 FITHIAN LA	1	Residence - Single Family	1,516	440	0.68%
5	155	0301003000300001002		0	No WW Structure	666	0	0.00%
5	168	0301003000300004000	16 FITHIAN LA	1	Residence - Multi Family	2,086	660	1.01%
5	152	0301003000500004000	7 FITHIAN LA	1	Residence - Multi Family	2,176	660	1.01%
5	153	0301003000500005000	11 FITHIAN LN	1	Residence - Multi Family	1,438	660	1.01%
5	179	0301003000500002000	10 MAIN ST	5	Retail - Dry Store; Spa / Fitness Center, No showers; Retail - Dry Store; Restaurant w/seats; Non-Medical Office Space	21,727	4,320	6.63%
5	178	0301003000400020000	19 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	7,513	676	1.04%
5	177	0301003000400024000	31 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	4,989	449	0.69%
5	176	0301003000400025000	35 MAIN ST	1	Non-Medical Office Space	6,299	378	0.58%
5	128	0301003000500020003	36 MAIN ST	3	Theater; Retail - Dry Store; Non-Medical Office Space	34,108	1,497	2.30%
5	151	0301003000400034000	41 MAIN ST	3	Retail - Dry Store; Non-Medical Office Space; Wet Store, no Food Service (Hair, Nail, Pet)	6,448	355	0.54%
5	162	0301003000400034000		2	Retail - Dry Store; Non-Medical Office Space	6,309	568	0.87%
5	131	0301003000600026001	53 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	11,144	669	1.03%
5	123	0301003000600023000	63 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	4,902	368	0.56%
5	129	0301003000700001000	66 MAIN ST	1	Non-Medical Office Space	5,458	327	0.50%
5	124	0301003000600022000	67 MAIN ST	1	Retail - Dry Store	3,367	152	0.23%
5	125	0301003000600021001	69 MAIN ST	3	Retail - Dry Store; Convenience Store / Market Farm Stand; Wet Store, no Food Service (Hair, Nail, Pet)	4,994	375	0.58%
5	127	0301003000600020000	75 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	2,753	248	0.38%
5	138	0301003000700024000	78 MAIN ST	1	Non-Medical Office Space	6,137	491	0.75%
5	133	0301003000600018000	79 MAIN ST	2	Retail - Dry Store; Wet Store, no Food Service (Hair, Nail, Pet)	1,231	160	0.25%
5	134	0301003000600017001	81 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	1,942	175	0.27%
5	135	0301003000600015000	85 MAIN ST	2	Retail - Dry Store; Non-Medical Office Space	6,366	255	0.39%

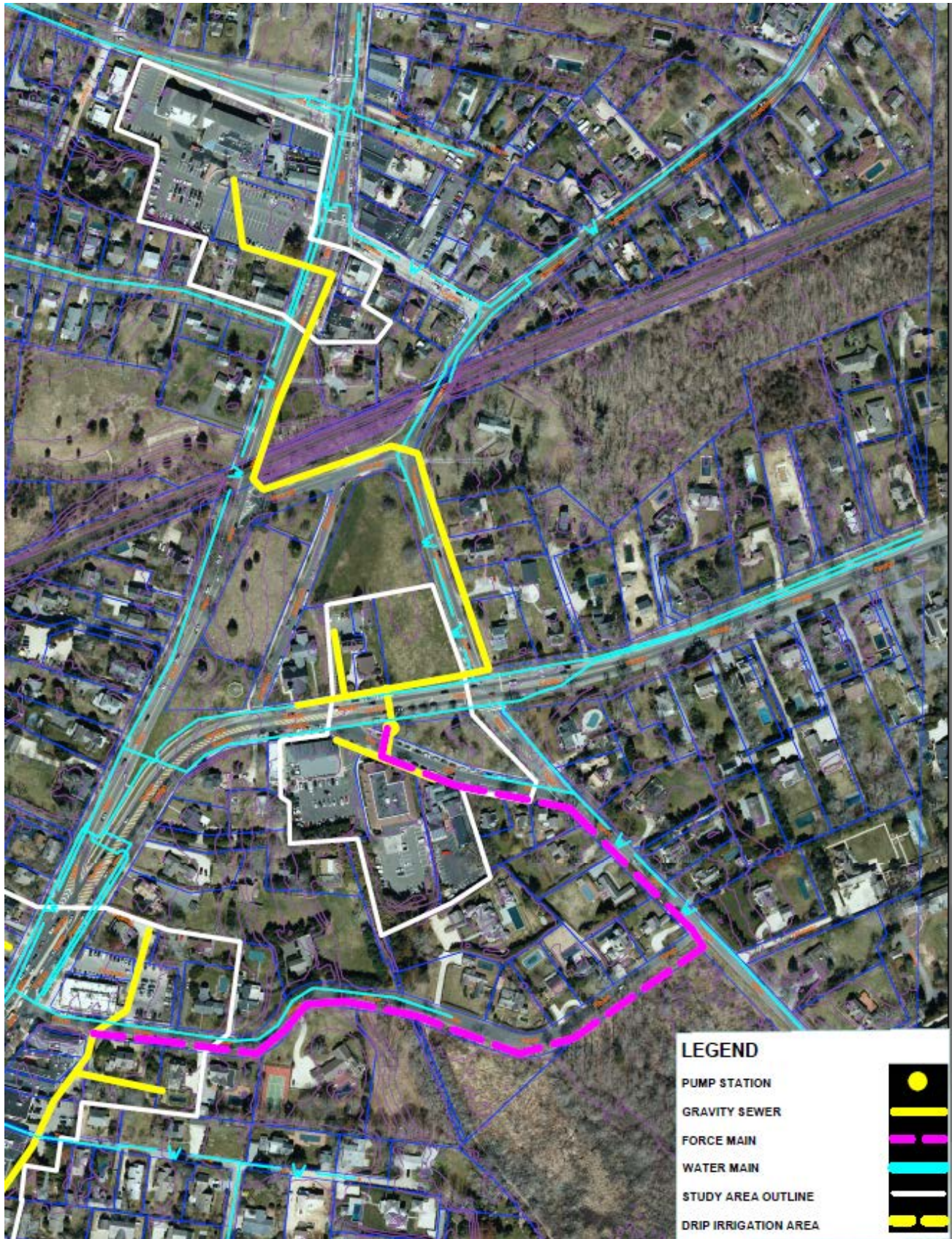
STUDY AREA #	BLDG #	PARCEL ID	ADDRESS	# of Uses	USE Descriptions	BLDG AREA (ft <sup>2</sup> )	WW Flow (gpd)	WW Flow % of Total
5	139	0301003000700025000	86 MAIN ST	1	Non-Medical Office Space	2,669	160	0.25%
5	141	0301003000800001000	94 MAIN ST	3	Cafeteria / Catering Hall / Conference Room; Hotel; Restaurant w/seats	5,695	3,488	5.36%
5	142	0301003000200010000	3 N MAIN ST	0	No WW Structure	913	0	0.00%
5	143	0301004000200020001	9 N MAIN ST	1	Non-Medical Office Space	2,101	252	0.39%
5	175	0301003000400013000	21 NEWTOWN LA	2	Retail - Dry Store; Restaurant w/seats	9,675	1,263	1.94%
5	174	0301003000400012000	27 NEWTOWN LA	1	Retail - Dry Store	1,369	41	0.06%
5	157	0301003000200006002	28 NEWTOWN LA	1	Retail - Dry Store	2,516	151	0.23%
5	147	0301003000200004002	34 NEWTOWN LA	3	Retail - Dry Store; Non-Medical Office Space; Restaurant w/seats	13,896	2,337	3.59%
5	150	0301003000400001000	67 NEWTOWN LA	2	Convenience Store / Market Farm Stand; Wet Store, w/food (take-out, max 16 seats)	18,908	1,229	1.89%
5	149	0301004000200004001	68 NEWTOWN LA	2	Spa / Fitness Center w/showers; Wet Store, w/food (take-out, max 16 seats)	6,062	1,591	2.44%
5	165	0301003000200008001	14 NEWTOWN LN	1	Non-Medical Office Space	4,919	295	0.45%
5	164	0301003000200007000	16 NEWTOWN LN	1	Retail - Dry Store	4,060	122	0.19%
5	173	0301003000400009000	33 NEWTOWN LN	2	Retail - Dry Store; Non-Medical Office Space	8,754	788	1.21%
5	171	0301003000400005000	51 NEWTOWN LN	1	Retail - Dry Store	7,460	336	0.52%
5	163	0301003000100003000	52 NEWTOWN LN	2	Retail - Dry Store; Non-Medical Office Space	13,214	555	0.85%
5	170	0301003000400035000	53 NEWTOWN LN	3	Retail - Dry Store; Non-Medical Office Space; Restaurant w/seats	6,361	1,139	1.75%
5	144	0301004000200005000	60 NEWTOWN LN	0	No WW Structure	1,254	0	0.00%
5	145	0301004000200005000		0	No WW Structure	1,036	0	0.00%
5	146	0301004000200005000		0	No WW Structure	1,212	0	0.00%
5	148	0301004000200005000		2	Retail - Dry Store; Non-Medical Office Space	4,566	411	0.63%
5	158	0301004000200005000		0	No WW Structure	159	0	0.00%
5	159	0301004000200005000		0	No WW Structure	398	0	0.00%
5	160	0301004000200005000		0	No WW Structure	306	0	0.00%
5	161	0301004000200005000		0	No WW Structure	226	0	0.00%
5	166	0301004000200005000		2	General Industrial / Storage / Greenhouse; Non-Medical Office Space	8,753	385	0.59%
5	180	0301004000200005000		0	No WW Structure	310	0	0.00%
5	169	0301004000200004002	66 NEWTOWN LN	2	Retail - Dry Store; Non-Medical Office Space	11,661	1,049	1.61%
5	156	0301003000300001001	10 PANTIGO RD	1	Non-Medical Office Space	2,157	259	0.40%
5	167	0301003000300003000	2 PANTIGO RD	2	Convenience Store / Market Farm Stand; Restaurant w/seats	7,361	668	1.03%
5	136	0301003000600011000	20 PARK PL	2	Non-Medical Office Space; Restaurant w/seats	2,888	1,167	1.79%
5	132	0301003000600017002	26 PARK PL	2	Non-Medical Office Space; Spa / Fitness Center w/showers	3,010	1,083	1.66%
5	126	0301003000600019000	30 PARK PL	1	Spa / Fitness Center, No showers	1,716	343	0.53%
5	172	0301003000400007001	84 PARK PL	2	Retail - Dry Store; Medical Office Space	9,734	681	1.05%
5	137	0301003000500027000	55 THE CIRCLE	1	Residence - Single Family	2,056	330	0.51%
5	140	0301003000700002000	60 THE CIRCLE	1	Retail - Dry Store	2,631	79	0.12%
5	130	0301003000700003000	56 THE CIRCLE	1	Non-Medical Office Space	1,747	105	0.16%

Total WW Design Flow (gpd) **65,112**     **1**



## APPENDIX E MAPS OF SEWER LAYOUTS

1. Sheepfold and North Main Street
2. Newtown Lane / Village Center
3. Gingerbread Lane



**Figure E-1 North Main and Sheepfold Sewer Layout**





Figure E-2 Village Center and Newtown Lane Sewer Layout





Figure E-3 Gingerbread Lane Sewer Layout



## APPENDIX F NYSDEC COMMENTS ON SPDES PERMIT APPLICATION

### NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1  
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790  
P: (631) 444-0365 | F: (631) 444-0360  
www.dec.ny.gov

March 18, 2022

Pio Lombardo  
Lombardo Associates, Inc.  
188 Church St.  
Newton, MA 20485

Re: Application #1-4724-02503/00001  
Village of East Hampton Sewer District

Dear Pio Lombardo:

The Department of Environmental Conservation (DEC) has completed a review of your client's request to establish a new sewer district and we have the following comments.

#### Division of Water Comments:

1. The average daily flow is noted at 68,000 GPD, which is 90% of the noted 76,000 GPD. These numbers do not appear to have the capacity for additional expansion. Please explain.
2. The Village of East Hampton has a seasonal population, leading to increased flow during the summer months and a decreased flow in the winter months. Please detail how this could affect the treatment system.
3. You must clarify what "# of" represents in Table 4-1.
4. As per 6 NYCRR Part 703.6 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, pH shall be ranged no lower than 6.5 or the pH of the natural groundwater, whichever is lower, nor shall be greater than 8.5 or the pH of the natural groundwater, whichever is greater. Please detail the expected pH of the effluent.
5. You must discuss potential vibrations from the pump and sewer system and the impact it may have.
6. You must detail the proposed size of each tank and pump, with detailed diagrams for the structures.
7. You must provide more details regarding the filters, including the composition and quantity.
8. Disinfection is required for the surface application proposal. You must update the engineering report to include a disinfection system.



**Bureau of Ecosystem Health Comments:**

1. The area south of Fithian Lane contains the northern extend of NYS regulated freshwater wetland EH-3, which may be impacted by the installation of the force main. You must revise the pages depicting work in this area to show the freshwater wetland boundary. If any work is proposed within 100' of the freshwater wetland boundary, then the plans must show a limits of clearing and ground disturbance line as well as any necessary erosion controls.

Please revise the documents as indicated above and submit three copies of revised documents to my attention. Be advised that additional comments may be sent to you following pending DEC conversations with the Suffolk County Department of Health Services.

Please call Brian Lee of the Division of Water unit at 631-444-0405 with any technical questions, or myself at 631-444-0364 with any procedural questions.

Sincerely,



Elyssa Scott  
Environmental Analyst

cc: Village of East Hampton  
B. Lee – DOW  
P. Davis - BEH  
File



March 24, 2022

PN 6708

NYSDEC Division of Environmental Permits  
50 Circle Road  
Stony Brook, NY 11790  
Attn: Elyssa Scott

Dear Ms. Scott:

Re: Village of East Hampton  
SPDES Permit Application - NY-2A  
Application #1-4724-02503/00001

In response to NYSDEC's March 18, 2022 letter on the referenced SPDES Permit Application, pasted below are NYSDEC's comments and Lombardo Associates, Inc. (LAI) responses in this font following DEC comments. Attached are three (3) copies of the revised SPDES Permit Application - NY-2A.

Division of Water Comments:

1. The average daily flow is noted at 68,000 GPD, which is 90% of the noted 76,000 GPD. These numbers do not appear to have the capacity for additional expansion. Please explain.

Tables 4-2 & 4-3 present current code flows at 66,000 gpd. The 10,000 gpd contingency is 16% of existing code flow. The Village will be seeking project funding from the Town's Community Preservation Fund (CPF). CPF funds cannot be used to fund growth. Should the Village need capacity for additional expansion, the Town parking lot adjacent to the proposed site is available and would be used, see Figure 6-3 of the revised Engineering Plan.

2. The Village of East Hampton has a seasonal population, leading to increased flow during the summer months and a decreased flow in the winter months. Please detail how this could affect the treatment system.

The treatment system is designed based upon peak flows that could occur during the winter or summer. The treatment plant biological processes (as all biological processes) perform better/faster during the warmer summer months. Consequently, the treatment system is conservatively designed.

As the treatment systems is modular, during the lower flow winter months, portions of the treatment processes would be bypassed/shut down. As opposed

to activated sludge systems which require significant time to achieve steady state, the proposed fixed film processes require little time. We have never observed permit non-compliance due to start-up. It is noted that our Southampton system that uses a similar treatment process achieve permit compliance immediately after receiving wastewater.

3. You must clarify what "# of" represents in Table 4-1.

Per the sentence above Table 4-1, "Table 4-1 presents the number of parcels and buildings along with the total wastewater flows for each study area."

Table 4-1 has been corrected and pasted below

TABLE 4-1 WASTEWATER DESIGN FLOWS BY STUDY AREA

Study Area	WW Flow (gpd)	# of Parcels (gpd)	# of Buildings
Gingerbread Lane	14,774	44	69
Newtown Lane Commercial	6,729	19	25
North Main	7,506	6	7
Sheepfold	2,123	6	7
Village Center	34,187	52	58
Miscellaneous / Contingency	10,000		
<b>Total</b>	<b>75,318</b>	<b>127</b>	<b>166</b>

4. As per 6 NYCRR Part 703.6 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, pH shall be ranged no lower than 6.5 or the pH of the natural groundwater, whichever is lower, nor shall be greater than 8.5 or the pH of the natural groundwater, whichever is greater. Please detail the expected pH of the effluent.

The expected pH of the effluent is 7 +/- . It is noted that groundwater pH in a nearby location that we monitor has periodically been < 6.0 S.U.

5. You must discuss potential vibrations from the pump and sewer system and the impact it may have.

As the proposed collection system pumps are centrifugal and are braced in pump chambers, vibrations from the pumps does not occur. In the collection system thrust blocks and/or restrained joints will be used to protect against flow conditions that could cause damage. LAI has engineered 50+ miles of collection systems identical to the system proposed that have been operating for 40+/- years, including multiple municipal systems in New York State. None have experience vibration problems.

Environmental Engineers/ Consultants

**LOMBARDO ASSOCIATES, INC.**



6. You must detail the proposed size of each tank and pump, with detailed diagrams for the structures.

**Tanks and pump sizes and details along with a description of their operation have been added to the Engineering Plan.**

7. You must provide more details regarding the filters, including the composition and quantity.

**Both the Recirculating Media Filters and the Nitrex™ Filters have proprietary media within the tanks they are furnished in. The Report contains the tank sizes and the volume of media for each unit. The Waterloo Biofilter uses 3" x 3" x 3" foam cubes and the Nitrex™ filters uses a wood-based media mix.**

8. Disinfection is required for the surface application proposal. You must update the engineering report to include a disinfection system.

**No surface application is proposed. Rather subsurface drip irrigation is proposed and would be designed in accordance with "Section E.18 Drip and Other Low-Profile Dispersal Systems" of the 2014 New York State Design Standards for Intermediate Sized Wastewater Treatment Systems.**

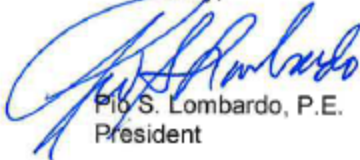
**Bureau of Ecosystem Health Comments:**

1. The area south of Fithian Lane contains the northern extend of NYS regulated freshwater wetland EH-3, which may be impacted by the installation of the force main. You must revise the pages depicting work in this area to show the freshwater wetland boundary. If any work is proposed within 100' of the freshwater wetland boundaries, then the plans must show limits of clearing and ground disturbance line as well as any necessary erosion controls.

**The Report has been accordingly revised.**

We look forward to NYSDEC's consideration of these comments. If you have any questions on the revised Permit Application / Engineering Report, please do not hesitate to contact me by telephone (617) 964-2924 or E-mail Plo@LombardoAssociates.com. Thank you.

Yours truly,



Pio S. Lombardo, P.E.  
President

cc: EHV Mayor Jerry Larsen; Marco Baladron; Attorney Vincent Messina; Bill Hajek

Environmental Engineers/ Consultants

**LOMBARDO ASSOCIATES, INC.**

## NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1  
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790  
P: (631) 444-0365 | F: (631) 444-0360  
[www.dec.ny.gov](http://www.dec.ny.gov)

May 17, 2022

Pio Lombardo  
Lombardo Associates, Inc.  
188 Church St.  
Newton, MA 20485

Re: Application #1-4724-02503/00001  
Village of East Hampton Sewer District

Dear Pio Lombardo:

The Department of Environmental Conservation (DEC) has completed a review of your client's request most recent submission, dated March 24, 2022, to establish a new sewer district and we have the following comments.

### Comments on Form NY-2A:

1. The contact information in Section 1.1 must be a Village of East Hampton official, or Section 1.3 must be filled out with a contact for the Village.
2. The application proposes two pump stations. Therefore, Section 2.1 must be checked "yes" and Table H must be completed.
3. Table F and Table H must be selected in Section 6.1
4. Section 6.2 must be signed by a Village of East Hampton executive officer.
5. You must detail why Table A notes the value of mercury is "TBD" and indicate whether mercury from industrial sources can be expected.
6. As proposed, the effluent will be used as an irrigation source. Therefore, Table C and Table D must be completed.
7. Table F appears incomplete. Please complete this table.

### Comments on the Engineering Report:

1. You must provide more detailed information for the proposed STEG and STEP systems in Section 6.2, including general sizes for each residential and commercial area. Detailed drawings, calculations and narratives are required for each pump station.
2. The pH limits in Section 6.3 are noted as ranging from 5.5 to 8.5. This must be corrected to the acceptable range of 6.5 to 8.5.
3. Figure 6-5 on page 41 appears to be missing the proposed sewer route.



4. Additional details are required for the proposed anaerobic upflow filter, including the size of the filter openings. Calculations for the removal of 50+% of septic tank effluent BOS/TSS loads must be provided.
5. Additional details are required for the proposed recirculating media filter (RMF):
  - The size of filter openings must be specified.
  - You must detail the claim that oxygen is not depleted using RMF technology. Specifically, you must note how oxygen is provided. If oxygen is achieved by circulation and ventilation, then calculations must be provided.
  - Odor control system information must be discussed.
  - Note whether RT-1 is in series with RT-2, and whether RT-2 has Dose Pump Stations.
6. You must indicate how influent BOD, TSS and TKN levels were determined in Table 6-4, showing calculations.
7. Please provide calculations for the Nitrex denitrification filter.
8. Figure 6-6 notes straw wattle proposed for erosion and sediment control. Straw wattle is not an approved method per the New York State Standards and Specifications for Erosion and Sediment control, and must be removed from the drawing.

**Additional Division of Water Comments:**

1. Monitoring wells are required. You must provide locations of the proposed monitoring wells with at least 1 well upgradient and 2 wells downgradient.
2. Additional information is required regarding the proposed effluent irrigation system:
  - A cross section depicting the groundwater table at the proposed irrigation location is required. NYS design standards require at least a 2' separation between groundwater and the irrigation system components. The plan must note the composition and porosity of the soil in the proposed irrigation area.
  - A maintenance plan must be provided, detailing how the Village will maintain the system and address issues such as clogging.
  - *Due to public health concerns, DEC highly recommends disinfection of the effluent and requests an updated design that includes a UV disinfection system. DEC has requested comments from the New York State Department of Health (DOH) for the proposed use of effluent as irrigation. Please be advised that additional comments on the matter may follow once DEC receives comments from DOH.*
  - If mercury or any other chemical listed in Table C or Table D are present in the effluent, irrigation is not recommended and additional treatment will be required.
3. A plan must be submitted for the proposed collection system that includes:
  - Drawings for the STEG, STEP, pipe routes, profiles, pump station, pipe materials, manholes, air-relief valves, water tightness test methods and construction procedures.
  - The plan must detail how the Village will maintain the STEG and STEP process.



- Please be advised that irrigation will not be permitted for industrial wastewater. The plan must detail how the Village will enforce the requirement that industries and residences only discharge sanitary waste.
4. All new applications for wastewater treatment require submission of a contingency plan that must be in place in the event of a treatment system or collection system failure. Please submit a contingency plan for our review.
  5. You must detail how the facility will operate and discharge during all seasons, including the non-growing winter season, and weather events, peak season versus off-peak, and during exceptionally wet weather when the groundwater table is high or the soil is saturated.
  6. A project that will involve soil disturbance of one or more acres must obtain coverage under the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity. This permit is not issued out of this Regional office. Please visit the following webpage for more information: <https://www.dec.ny.gov/chemical/43133.html>
  7. You must detail how members of the public will be restricted from entering the treatment systems and operations facility.

Please revise the documents as indicated above and submit two copies of revised documents to my attention, with a cover letter detailing which items were revised. Be advised that additional comments from Bureau of Ecosystem Health staff may follow.

This application will remain incomplete until a final SEQR decision has been made. If the Village of East Hampton intends to act as Lead Agency, please provide their intent in writing accompanied with a completed Full Environment Assessment Form (copy enclosed).

Please contact Brian Lee of the Division of Water unit at [brian.lee@dec.ny.gov](mailto:brian.lee@dec.ny.gov) with any technical questions, or myself at 631-444-0364 with any procedural questions.

Sincerely,



Elyssa Scott  
Environmental Analyst

cc: Village of East Hampton  
B. Lee - DOW  
File

---

From: Fred Thiele <fwt1953@yahoo.com>  
Sent: Wednesday, June 15, 2022 9:41 AM  
To: Pio Lombardo <pio@lombardoassociates.com>  
Cc: Fred Thiele (ThieleF@assembly.state.ny.us) <thielef@assembly.state.ny.us>; Mayor Larsen <mayor@easthamptonvillage.org>  
Subject: Re: East Hampton Village - Wastewater Plan request NYSDEC Plan approvable

Hi Pio:

I got a call from the Deputy Regional Director at DEC stating that DEC had reached out directly to you to address the matters in their notice of incomplete application. Let me know how discussions go and if there is the need for any further action by my office, including a meeting.

Regards,

F

On Tuesday, June 14, 2022, 9:41:18 AM EDT, Fred Thiele <[fwt1953@yahoo.com](mailto:fwt1953@yahoo.com)> wrote:

Hi Pio:

I have contacted DEC regarding your request and will let you know when I hear back.

Thanks!

F

On Monday, June 13, 2022, 12:47:00 PM EDT, Pio Lombardo <[pio@lombardoassociates.com](mailto:pio@lombardoassociates.com)> wrote:

Hi Assemblyman Thiele,

Again, many thanks for your valued assistance on this matter.

The Village needs to receive DEC comments on whether the innovative Wastewater Plan we developed is approvable. While we are happy to provide requested clarifications, feedback (i.e., detailed design requests) we are receiving is that DEC requires SPDES permit application with essentially Plans & Specifications (P&S) prior to providing "approval". This requires a major expenditure by the Village and a 2 year effort – all at risk. It has been my experience in NY (going back to 1980) and many other states that Wastewater Engineering Plans are approved prior to preparation of P&S. Over the past 40 years, I have authored numerous manuals for the US EPA on this topic, in particular the issues

that need to be addressed and how in an Engineering Plan, as well as advised NYSDEC in ~ 2012 on its update to its Design Manual.

In the past, NYSDEC approved Wastewater Management Facility Plans (i.e., Map & Plan), which became the basis for bonding and P&S. It is respectfully requested that a virtual meeting with the Region 1 Water Engineer be held to obtain the needed clarifications. As the former Region 1 Water Engineer, Anthony Leung, recently retired I do not know who, if anyone, replaced him

Thank you

If you have any questions on this matter, please do not hesitate to contact me

Regards,

Pio

**LOMBARDO ASSOCIATES, INC.**

Environmental Engineers/Consultants

---

Pio Lombardo, P.E. | Lombardo Associates, Inc. | 188 Church Street | Newton, MA 02458 Tel: 617-964-2924 | Fax: 857-858-4002 | Cell: 617-529-4191 | 53 Hill Street | Southampton, NY 11968 | Phone: 631-379-2662 | Email: [Pio@LombardoAssociates.com](mailto:Pio@LombardoAssociates.com) | [www.LombardoAssociates.com](http://www.LombardoAssociates.com)  
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---

**From:** Fred Thiele <[fwt1953@yahoo.com](mailto:fwt1953@yahoo.com)>  
**Sent:** Tuesday, May 17, 2022 12:05 PM  
**To:** Pio Lombardo <[pio@lombardoassociates.com](mailto:pio@lombardoassociates.com)>  
**Cc:** Fred Thiele ([ThieleF@assembly.state.ny.us](mailto:ThieleF@assembly.state.ny.us)) <[thielef@assembly.state.ny.us](mailto:thielef@assembly.state.ny.us)>; Mayor Larsen <[mayor@easthamptonvillage.org](mailto:mayor@easthamptonvillage.org)>  
**Subject:** Re: EXTERNALRE: East Hampton Village - Wastewater SPDES Permit Application t NYSDEC

Hi PIO:

I have contacted the Deputy Regional Director at DEC again this morning. Will let you know when I get a response.

Regards,

F



---

**From:** Scott, Elyssa E (DEC) <Elyssa.Scott@dec.ny.gov>  
**Sent:** Tuesday, June 14, 2022 3:13 PM  
**To:** Pio Lombardo <pio@lombardoassociates.com>  
**Subject:** RE: 1-4724-02503/00001 Village of East Hampton Proposed Sewer District

Good afternoon Pio,

I looked further into what is required at this time in the permitting process. As per the State Pollutant Discharge Elimination System Permit regulations (6 NYCRR Part750), specifically Part 750-1.7(a)(15), engineering reports and plans and specifications are listed as permit application requirements for all dischargers seeking to obtain an individual SPDES permit. I'm not sure about what DEC has approved in the past regarding wastewater plans that became the basis of the plans and specs, but in this case Division of Water staff require all the information as requested in the May 17<sup>th</sup> letter as the Village is proposing a unique design. DEC regional staff do not routinely review upflow filtration and Nitrex systems, nor is using treated wastewater as irrigation a routine proposal. Therefore, DEC staff are requiring the information from the 5/17/22 letter at this time.

Please feel free to give me a call if you have any questions. I'll be at my desk until around 4:30 today.

Elyssa

**Elyssa Scott**

she/her/hers

*Environmental Analyst, Division of Environmental Permits*

**New York State Department of Environmental Conservation**

50 Circle Road, Stony Brook, NY 11790

P: (631) 444-0364 | [elyssa.scott@dec.ny.gov](mailto:elyssa.scott@dec.ny.gov)

[www.dec.ny.gov](http://www.dec.ny.gov) |  |  | 

