

Expanded Environmental Assessment Form – Supplemental Analysis
Town of Shelter Island Proposed Shelter Island Center Municipal
Wastewater Treatment Facility

Lead Agency



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March 2023

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LIST OF ATTACHMENTS

- Attachment 1 – Shelter Island Center Municipal Wastewater Treatment System Engineering Report, July 22, 2022, revised August 15, 2022, as prepared by Lombardo Associates, Inc.
Attachment 2 – Shelter Island Center Municipal Wastewater Treatment System - Addendum #1 and Addendum #2, as prepared by Lombardo Associates, Inc.
Attachment 3 – Agency Correspondence
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Attachment 6 – NYS Office of Parks, Recreation and Historic Preservation Correspondence (August 14, 2022)

I. Introduction

This Expanded Environmental Assessment Form (EEAF) – Supplemental Analysis (hereinafter, “EEAF”) has been prepared to assess the magnitude of potential impacts that may result from implementation of the proposed action. This EEAF relies upon the data and analyses presented in the Shelter Island Center Municipal Wastewater Treatment System Engineering Report (dated July 12, 2022, revised August 15, 2022) (“Engineering Report”) (see Attachment 1), as well as two addenda, including the Shelter Island Center Municipal Wastewater Treatment System Engineering Report - Addendum #1 (dated January 9, 2023, revised March 21, 2023) (“Addendum #1”) and Shelter Island Center Municipal Wastewater Treatment System Engineering Report - Addendum #2 (dated January 20, 2023, revised March 17, 2023) (“Addendum #2”), included in Attachment 2 to this report. The Engineering Report and Addenda were prepared by the project engineer, Lombardo Associates, Inc.

Pursuant to 6 NYCRR §617.6(b)(3), coordinated review was undertaken by the Town Board for the Town of Shelter Island (Town Board) with the involved agencies and interested parties in the proposed action.¹ Specifically, by memorandum dated November 17, 2022, the Town Board indicated its intent to serve as lead agency for the proposed action unless objections were received on or before December 20, 2022. As part of coordinated review, Part 1 of the Short Environmental Assessment Form (EAF) and the Engineering Report, were transmitted to the involved and interested agencies via Federal Express and delivery confirmations were received. It is noted that none of the agencies objected to the Town Board serving as lead agency. Substantive comments on the proposed action were received from the Suffolk County Department of Health Services (SCDHS), New York State Department of Transportation (NYSDOT) and the Suffolk County Department of Economic Development and Planning (see Attachment 3).

During the environmental review process, additional correspondence was received from the Suffolk County Department of Economic Development and Planning dated February 14, 2022, which set forth impact issues for evaluation (see Attachment 3). Comment letters were also received from the Super Law Group, LLC, on behalf of the Friends of Coecles Harbor, Inc. (November 16, 2022 Correspondence with Attachments), and from D.B. Bennett Engineering, as consulting engineer to Sylvester Manor (November 29, 2022 Correspondence), which are included herein as Attachment 4. This EEAF considers the agency and public comments received during this process.

II. Description of the Proposed Action

The proposed action includes the construction of a municipal wastewater treatment facility (WWTF) at 16 Manwaring Road (proposed WWTF site) for the connection of five (5) Town-owned properties (Town Youth Center/American Legion Hall [multi-purpose facility], Town Assessors & Tax Receivers Office/Town Hall/Building & Engineering Department [Town Hall buildings complex], Town-owned residential housing, Police Department Headquarters and the Justice Court Building located respectively at 1 Bateman Road, 38 N. Ferry Road, 40 N. Ferry Road, 44 N. Ferry Road and 46 N. Ferry Road), and three (3) publicly-owned properties (Shelter Island Public Library [37 N. Ferry Road], Shelter Island Fire Department [49 N. Ferry Road], and the

¹ New York State Department of Conservation (NYSDEC) Regional Permit Administrator, NYSDEC Division of Water, New York State Department of Transportation (NYSDOT), Shelter Island Public Library, Suffolk County Department of Economic Development and Planning - Water Quality Protection Restoration Program (WQPRP), Suffolk County Department of Health Services (SCDHS), Shelter Island Union Free School District, Shelter Island Fire District, and NYS Education Department.

Shelter Island School District [33 N. Ferry Road]] (hereinafter, collectively referred to as the “affected parcels”). The proposed WWTF is to serve only the affected parcels. There is no future connection to other properties being considered, and any past representations of such are no longer valid.

It is noted that the proposed WWTF was initially designed for an effluent load of 6,200 gallons per day (gpd) which represented the total projected discharge from the affected parcels based on the current building area and design flow standards of the SCDHS. The proposed WWTF was evaluated in an Engineering Report, revised August 15, 2022 (see Attachment 1). However, as the Shelter Island Public Library is considering an expansion plan, and the Town of Shelter Island has identified the potential for redevelopment of the existing Town-owned residential housing², the design capacity for the proposed WWTF has been increased to 8,000 gpd (see Addendum #1 in Attachment 2).

The proposed action includes a septic tank-effluent wastewater collection system, which consists of septic tanks for solids removal on each affected parcel. It is expected that solids removal would be required approximately every seven (7) years. Effluent wastewater would be pumped to and treated at the proposed WWTF. The proposed WWTF is a Nitrex Sewage Treatment Plant, which is approved for use under Appendix A of the SCDHS *Standards For Approval Of Plans And Construction For Sewage Disposal Systems For Other Than Single-Family Residences*³ (see SCDHS in correspondence dated December 13, 2022 in Attachment 3).

The proposed sewer layout would consist of a gravity connection of the municipal buildings and the Shelter Island School to a pump station at the Shelter Island Library. A low-pressure sewer would run from the pump station, north along N. Ferry Road (NYS Route 114), right at Manwaring Road to 16 Manwaring Road (i.e., the proposed WWTF site) (see Section 4.2 of the Engineering Report in Attachment 1). Overall, the “project area” referenced herein represents that area of the affected parcels and the proposed sewer layout to the proposed WWTF site.

It should be noted that Nitrex treatment technology for emerging contaminants was initially proposed for the treatment and disposal to subsurface leaching pools; however, the proposed action has been modified such that no specific technology is proposed at this time. Rather, the space and electric capacity would be provided in the Operations Building to enable adding the treatment systems in the future, if desired (see Addendum #1 in Attachment 2).

The proposed action is subject to the review and approval of the New York State Department of Transportation (NYSDOT) for an easement to place sewers in NYS Route 114 (N. Ferry Road) right of way, the Shelter Island

² The existing Town-owned residential housing consists of three (3) units, (two, 2-bedroom units and one, 1-bedroom unit). While plans have not been finalized, the Town-owned housing is to be redeveloped for the potential to expand to three (3) separate dwelling units.

³ As stated in the Introduction, page 4, the *Standards For Approval Of Plans And Construction For Sewage Disposal Systems For Other Than Single-Family Residences* are the SCDHS “Standards for the Administration of Section 502, of Article 5 (Sewage Disposal), Sections 607-613 of Article 6, Sections 705, 706, 709-716 of Article 7, and Article 19 of the Suffolk County Sanitary Code. The purpose of these standards is to provide a means for achieving protection of the groundwater from excessive contaminant loading and to assure a safe, sanitary means of disposing of wastewater.” *Appendix A – Standards For Construction Of Modified Subsurface Sewage Disposal Systems And Small Community Sewerage Systems*, “sets forth standards for both modified subsurface sewage disposal systems (MSSDS), also known as denitrification systems, and for small community sewerage systems (SCSS) that do not exceed 15,000-gpd total design flow...These standards are applicable only for technologies that have received prior approval by New York State Department of Environmental Conservation for use within Suffolk County” (page 1 of 10)

Public Library for a pump station easement, the NYSDEC Division of Water for engineering and construction grants, as well as the Suffolk County Department of Economic Development and Planning for funding through the Water Quality Protection Restoration Program (WQPRP). Moreover, the proposed action is subject to the review and approval of the NYSDEC for the issuance of a State Pollutant Discharge Elimination System Permit (SPDES) permit. As indicated by the NYSDEC, the “SPDES program is designed to eliminate the pollution of New York waters and to maintain the highest quality of water possible, consistent with public health, public enjoyment of the resource, protection and propagation of fish and wildlife, and industrial development in the state. New York’s SPDES program has been approved by the United States Environmental Protection Agency for the control of surface wastewater and stormwater discharges in accordance with the Clean Water Act; however, the SPDES program is broader in scope than that required by the Clean Water Act as it controls point source discharges to groundwaters as well as surface waters.”⁴ Accordingly, the implementation of the proposed action would be performed in accordance with the NYSDEC SPDES program such that groundwater and surface water resources are not adversely impacted.

It is further noted that the proposed action may also be subject to the review and approval of the SCDHS. As such, the proposed design has considered the relevant requirements, including the *Standards for Approval of Plans and Construction for Sewage Disposal Systems for Other Than Single-Family Residences*, dated July 21, 2020, and its *Appendix A, Standards for Construction of Modified Subsurface Sewage Disposal Systems and Small Community Sewerage Systems*, dated December 1, 2020.

Institutional Structure

The Town of Shelter Island, acting through the Town Board, would be the owner and operator of the proposed wastewater collection, treatment, and disposal system (Shelter Island Wastewater System [SI WS]) and would be the applicant/permittee on all required permits. As the School District, Library and Fire District are separate municipal entities, there will be inter municipal agreements between the Town and these entities for the connection and use of the SI WS. The Town of Shelter Island, through the Town Engineer, would manage the SI WS; however, it is expected that the SI WS would be operated and maintained by a licensed contractor for at least the first 5 years. The management of the SI WS would include daily monitoring of the WWTF and monthly sampling and analysis by a NYS certified laboratory for SPDES permit required influent and effluent parameters. As indicated above, the pumping of solids on each affected parcel is expected to be required every seven (7) years (approximately).

Upon issuance of the SPDES permit, the Town (i.e., permittee) will cause to be enacted a Sewer Use Law prior to construction completion (i.e., prior to any connections). A draft Sewer Use Law will be developed during design of the proposed system and adopted prior to connection.

III. Project Purpose, Needs and Benefits

The Town Board for the Town of Shelter Island is considering the proposed WWTF in order to remove the existing on-site sanitary systems that have no nitrogen removal technology. The proposed WWTF has been identified as a desired action item in the Town’s *Ground and Surface Water Management Plan: One-Island – One Water* (2020), which is further discussed in Section VII of this EAAF.

⁴ <https://www.dec.ny.gov/permits/6054.html>

As explained in the Engineering Report (pg. 5), “All properties in the Study Area, and nearby surrounding areas, rely on individual water supply wells and septic systems (predominately cesspools). Groundwater nitrate nitrogen levels have exceeded the drinking water standard [10 mg/L] in the Study Area. The high groundwater levels of nitrate-nitrogen have been determined due to the density of the use of conventional cesspools / septic systems.” As such, the proposed action is being considered to reduce nitrogen loading from the affected parcels in the project area.

Upon implementation of the proposed action, the proposed Nitrex system would result in an effluent Total Nitrogen (TN) of 3.0 mg/L, which is well below the NYS drinking water standard of 10 mg/L⁵ and compliant with the SCDHS requirement of total nitrogen in treated effluent of 10mg/L or less.⁶ The proposed WWTF is projected to have a nitrogen loading of 54.8 lbs. per year for the design flow (8,000 gpd) or 27.4 lbs. per year for the average flow (4,000 gpd).

As summarized herein, the removal of the conventional systems and replacement with the proposed WWTF has the resultant benefit of removing 1,106 lbs. of nitrogen to groundwater, and the existing 1,133 lbs. per year of nitrogen to the Menantic Creek and Shelter Island Sound from the affected parcels. The proposed action would increase the Total Nitrogen (TN) of existing discharges to Gardiners Creek by 1.4 percent (for average flow); this increase has a nitrogen effluent equivalent impact as one (1) conventional sanitary system or 3.2 I/A OWTs. Furthermore, modeling has demonstrated that the proposed discharge would not impact any water supply wells as the proposed discharge path is either cross-gradient or downgradient from the well locations, or the discharge path is at a significant depth below the recharge area of the wells. Accordingly, the proposed action has the beneficial impact of nitrogen removal without any impact to water supply wells and a negligible increase in Total Nitrogen (TN) in Gardiners Creek. Additionally, the proposed WWTF would be designed for future treatment of emerging contaminants.

IV. Consideration of Alternatives

Both the Engineering Report and Addendum #1 set forth alternatives to the proposed WWTF, but for the reasons contained therein, the Town Board has elected to pursue the construction of the proposed WWTF at 16 Manwaring Road. It is recognized that the installation of Innovative and Alternative Onsite Wastewater Treatment System(s) (I/A OWTS) was recommended by the community as a cost-savings alternative. As defined by SCDHS, an I/A OWTS is an on-site decentralized wastewater treatment system(s) that, at a minimum, is designed to reduce total nitrogen in treated effluent to 19 mg/L. As specifically outlined in Addendum #1, Table 2-1, the installation of I/A OWTS(s) at the Town Hall buildings complex, Police Department and Justice Court would require significant variances from the SCDHS for the minimum distances to property lines and private water supply wells. Additionally, the placement of I/A OWTS(s) at the Town Hall buildings complex would impact any future renovations on the property (which could require relocation of the system). Furthermore, the I/A OWTS(s) would not provide for the desired level of nitrogen removal than that of the proposed WWTF, which would result in an effluent Total Nitrogen (TN) of 3.0 mg/L (i.e., 16 mg/L more of nitrogen removal).

A hybrid alternative was also evaluated, which included individual I/A OWTS(s) for those properties that do not require significant variances from the SCDHS (Shelter Island Fire Department, Town Youth Center /

⁵ New York State Department of Health, Part 5, Subpart 5-1, Public Water Systems
https://www.health.ny.gov/regulations/nycrr/title_10/part_5/docs/subpart_5-1_tables.pdf

⁶ SCDHS, *Standards For Approval Of Plans And Construction For Sewage Disposal Systems For Other Than Single-Family Residences*, July 21, 2020

American Legion Hall [multi-purpose facility], and Town-owned residential housing parcel) and a communal system for the Justice Court and Town Hall buildings complex (see Addendum #1 in Attachment 2). As indicated in Section 6.2 in Addendum #1, the hybrid alternative was eliminated as a feasible alternative for the Town Board for the following reasons:

“a. Location of discharge locations are at the top of watersheds which means that discharges would be in the groundwater for decades and greater than 100 years. Given the concerns with emerging contaminants such as pharmaceuticals, personal care products, PFOA/PFAS, etc., and the reliance of Shelter Island on its groundwater as its water supply, it is considered environmentally prudent to avoid the risk of discharging in the current area.

b. Managing multiple communal and small individual systems with varying wastewater flows will be more challenging than the larger community system.

c. The Fire Dept. and Library properties are not owned by the Town. The Town preference is to only use Town land.”

Alternative sites for the proposed WWTF were also considered. As indicated in Table 4-2 in the Engineering Report, five (5) Town-owned properties were evaluated, including 16 Manwaring Road, for the proposed WWTF. There was one (1) property identified as desirable (other than 16 Manwaring Road), which was the Klenawicus Airfield; however, this property was acquired with Community Preservation Funds (CPF) and could not be used for the placement of the WWTF. Additional properties were also evaluated, including the Shelter Island Fire Department, two privately-owned parcels north of the Shelter Island Library, and the Shelter Island School ballfield area. These alternative sites were eliminated from consideration due to the cost of land purchase (private sites), required relocation of water supply well (Shelter Island School ballfield area), and the desire to construct the municipal WWTF on land that is owned and controlled by the Town of Shelter Island.

V. Impacts on Water Resources

Impact on Groundwater Quality

Existing Conditions

The impact on groundwater resources has been evaluated in the Engineering Report, Addendum #1 and Addendum #2. As indicated in Section 1.4 of the Engineering Report, Figure 1-4, the depth to groundwater throughout most of the project area is greater than 40 feet (ft) below grade surface (bgs). At the proposed WWTF site, the depth to groundwater is greater than 40 ft (see Figure 1 at the end of this subsection).

As illustrated in Figure 1-5 of the Engineering Report, the project area is located within several groundwater subwatershed boundaries and located primarily within an area of 25-to-50-year groundwater travel time to surface waters (see Figure 1-6 of the Engineering Report). Table 1-3 in the Engineering Report presents the Shelter Island groundwater subwatersheds, and their respective groundwater flows to estuaries. Regarding groundwater quality, Figure 1-7 of the Engineering Report illustrates the modeled Shelter Island elevated groundwater nitrate-N levels and includes data from 2016 – 2018, as published by the U.S. Geological Survey (USGS). As indicated by the data, groundwater within the project area contains very high levels of nitrate-N.

As indicated in Section 2 of Addendum #2, the current wastewater discharge flow paths from the affected parcels have been evaluated. As set forth in Figure 2-1, the flow paths from the affected parcels notes that the larger flows and nitrogen mass discharges of the Shelter Island School, Town buildings, American Legion and

Shelter Island Library discharge to Menantic Creek, as part of watershed 193, with a 33-year travel time. Other Town properties (Police Department, Justice Court, Fire Department and Town-owned residential housing) discharge to Shelter Island Sound as part of watershed 901 with a travel time of over 100 years.

Existing Nitrogen Loading

As indicated in Table 2-1 (Nitrogen Mass Discharges to Menantic Creek & Shelter Island Sound) in Addendum #2 and included below as Table 1, the nitrogen mass discharges from each affected parcel and the mass loadings to Menantic Creek and Shelter Island Sound have been evaluated. Both the existing condition and future condition (i.e., with expansion of the Shelter Island Library and additional Town-owned residential housing) without the proposed WWTF have been evaluated. As noted in Addendum #2, as the occupancy/use/wastewater generation at the affected parcels vary significantly based upon weekday, seasonal factors, etc., such as schools and public buildings that are not open on weekends, the use of design flows would overestimate nitrogen mass loading. As such, the nitrogen mass loadings were calculated using average actual flows which are computed as 50 percent of design flow.

Table 1 – Nitrogen Mass Discharges to Menantic Creek & Shelter Island Sound

Shelter Island Center Municipal Wastewater Treatment Project Parcel	Design Flow (gpd)		Average Actual Flow (gpd)		WW TN (mg/L)	Avg. Flow WW TN to GW (lbs./year)	
	Existing	Potential Future	Existing	Potential Future		Existing	Potential Future
Police Depart. HQ	206	206	103	103	150	35	35
Justice Court Building	152	152	76	76	150	26	26
Fire Depart Center Fire House	264	264	132	132	150	45	45
Town-owned residential housing	675	1,200	338	600	65	50	89
Shelter Island Sound Discharge	1,297	1,822	649	911		157	196
Town Youth Center / American Legion Hall (one facility with multiple purposes)	2,538	2,538	1,269	1,269	150	435	435
Town Assessors + Tax Receivers Office Bldg.	333	333	166	166	150	57	57
Town Hall							
Other Building							
Public Library	535	860	268	430	150	92	147
School	1,980	1,980	990	990	150	339	339
Menantic Creek Discharge	5,386	5,711	2,693	2,855		922	978
Subtotal	6,683	7,533	3,341	3,766		1,079	1,173
Contingency	317	467	159	234	150	54	80
Total	7,000	8,000	3,500	4,000		1,133	1,253
Notes:	gpd = gallons per day		mg/L = milligrams per liter = parts per million				
1) Average flow = 50% of design flow.	WW = Raw wastewater		TN = Total Nitrogen		GW = Groundwater		
2) 25% WW TN removal in soil, therefor 75% to groundwater							

As shown in the table above, the nitrogen mass discharge from those parcels affecting Menantic Creek is estimated at 922 lbs./year and 978 lbs./year under existing and future conditions, respectively. The nitrogen mass discharge from those parcels affecting Shelter Island Sound is estimated at 157 lbs./year and 196 lbs./year under existing and future conditions, respectively. In total, approximately 1,133 lbs./year are discharged under existing conditions and 1,253 lbs./year are projected under future conditions without the proposed WWTF. It is also noted that the affected parcels are within the densely populated area of Shelter Island, and thus, the nitrogen load to groundwater results in a greater potential to impact private supply wells.

Potential Impacts of the Proposed Action

Pursuant to the SCDHS *Standards For Approval Of Plans And Construction For Sewage Disposal Systems For Other Than Single-Family Residences*, Section XVII (Leaching Structure/System Requirements), General Requirement 1.b, the “bottom of any leaching structure shall be at least three feet above the highest expected/recorded groundwater elevation at the proposed system’s location and at least two feet for shallow alternative systems (leaching pools, leaching galley, gravelless absorption trench systems and gravelless absorption bed systems) approved by the Department.” As indicated in the Engineering Report, the proposed leaching pools would be 10 ft diameter and 11 ft effective depth. With depth to groundwater greater than 40 ft bgs, there would be more than adequate separation distance from the bottom of the leaching structures (i.e., over 30 ft).

The USDA Soil Survey of Suffolk County, New York (April 1975)⁷ maps the soil type at 16 Manwaring Road as Montauk Silt Loam, 3-8 percent slopes (MkB). The MkB soils are described with a typical profile of 0 to 4 inches: loam, 4 to 26 inches: loam, 26 to 34 inches: sandy loam, 34 to 72 inches: gravelly loamy sand, and the drainage class is identified as well-drained soils. As part of the design and approval process, soil borings would be performed by the project engineer to identify the soil profile to approximately 17 feet in the proposed leaching field area. Should any soil mixing be required or any unsuitable soil material be identified, same would be performed.

Additionally, implementation of the proposed action would proceed only after the issuance of a SPDES permit, which has the intent and purpose of protecting groundwater and surface waters. As required by the SPDES permit, the influent and effluent would be monitored for flow and total nitrogen. Groundwater monitoring wells would also be installed both up- and down-gradient of the WWTF and water quality from the wells would be monitored. Finally, as noted earlier, the proposed Nitrex system is approved technology by the SCDHS for use in Suffolk County.

Post-Development Nitrogen Loading

Upon implementation of the proposed action, the proposed Nitrex system would result in an effluent Total Nitrogen (TN) of 3.0 mg/L, which is well below the NYS drinking water standard of 10 mg/L and compliant with the SCDHS requirement of total nitrogen in treated effluent of 10mg/L or less. The proposed WWTF is projected to have a nitrogen loading of 54.8 lbs. per year for the design flow (8,000 gpd) or 27.4 lbs. per year for the average flow (4,000 gpd). Based on the analysis above, the proposed WWTF would significantly reduce the nitrogen load to groundwater (see Table 2 below).

Table 2 - Wastewater Total Nitrogen (TN) (Existing and Proposed)

	Existing Conditions	Proposed
Wastewater Total Nitrogen (TN) – Lbs./Year (Avg. Flow)	1,133 lbs. per year (Avg. Flow: 3,500 gpd)	27.4 lbs. per year (Avg. Flow: 4,000 gpd)
	Net Change Post-Development: Reduction of 1,106± lbs./year	

Overall, there would be a beneficial impact to groundwater quality with the removal of conventional on-site sanitary/septic systems and replacing same with the proposed WWTF. Specifically, when evaluating the average flow under existing and post-development conditions, the proposed WWTF would have the beneficial

⁷ United States Department of Agriculture, Soil Conservation Service and Cornell Agricultural Experiment Station. Soil Survey of Suffolk County, New York. Washington, D.C. 1975.

impact of removing approximately 1,106 lbs./year of nitrogen (i.e., 1,133 lbs./year [existing conditions without WWTF] less 27.4 lbs. per year [existing conditions with WWTF]) currently being discharged to groundwater.

It is recognized that the proposed WWTF would eliminate the existing nitrogen load to Menantic Creek and Shelter Island Sound, and result in discharge to Gardiners Creek. The impact to Gardiners Creek is addressed later in the subsection entitled *Impact on Surface Waters*.

Impact on Drinking Water/Surrounding Wells

Addendum #1 and Addendum #2 (see Attachment 2) evaluated the potential impact of the proposed WWTF on the nearby supply wells, as follows:

- Good Groundhog water supply well (18 Manwaring Road), which is located 350 ft to the southeast and upgradient from the WWTF disposal system leaching pools and reserve area (i.e., the treated effluent disposal beds). See Figure 5-1 in Addendum #1 and Figure 3-1 in Addendum #2. The water supply well is registered as NYS PWS ID# 5120129. According to the Well's April 25, 2018 New York State Department of Health Bureau of Water Supply Protection Approval of Plans for Public Water Supply Improvement, average system demand is anticipated to be 575 gpd with a maximum 1,200 gpd. The system is not designated for fire flow.
- Private supply well (14 Manwaring Road), which is located 150 ft to the west and cross-gradient from the treated effluent disposal beds. See Figure 3-1 in Addendum #2.
- Sylvester Manor water supply wells, which are located approximately 900 ft to the northeast of the flow path of the effluent discharge flow path. See Figures 1-5 and 3-1 in Addendum #2. The domestic wells range from 214 gpd to 572 gpd, as shown on Table 1-1 in Addendum #2.

Relevant Standards for the Protection of Wells

It is important to note that the siting of wastewater treatment systems is regulated by the New York State Department of Health (NYSDOH) as well as the SCDHS. Pursuant to the NYSDOH, Part 5, Subpart 5-1 Standards for Water Wells - Appendix 5B, the minimum horizontal separation distance from a “wastewater treatment absorption systems located in coarse gravel or in the Direct path of drainage to a well” is 200 ft (Table 1 - Required Minimum Separation Distances to Protect Water Wells From Contamination).⁸

The SCDHS also maintains standards for the siting of WWTFs set forth in the *Standards For Approval Of Plans And Construction For Sewage Disposal Systems For Other Than Single-Family Residences, July 21, 2020* (Table 2 - Minimum Horizontal Separation Distances, pg. 25) and *Appendix A – Standards For Construction Of Modified Subsurface Sewage Disposal Systems And Small Community Sewerage Systems* (Table A2 – Modified Separation Distances) (hereinafter, collectively, the “SCDHS Commercial Standards”). Specifically, the minimum horizontal separation distance requirements from leaching structures and sewer lines/force mains are set forth in the tables below.

⁸ https://www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm#table1

Table 3 - Minimum Horizontal Separation Distances for Sanitary Design (Excerpted Table 2 of SCDHS Commercial Standards)

Table of Minimum Horizontal Separation Distances From:	Septic Tank, I/A OWTS, Pump Station, Grease Trap, or Manhole	Leaching Structure ³	Sewer Line, Force Main
Building with Cellar	10 ft.	10 ft.	5 ft.
Building on Slab	5 ft.	10 ft.	5 ft.
Water Service Line/Laterals/Mains ⁵	10 ft.	10 ft.	10 ft. ⁴
Underground Utilities	5 ft.	5 ft.	5 ft.
Surface Water/Regulated Wetlands	75 ft.	100 ft.	50 ft.
Public Water Well ²	200 ft.	200 ft.	50 ft.
Private Well ¹	100 ft.	150 ft.	50 ft.
Storm Drain/Stormwater Recharge Basin ⁵	20 ft.	20 ft.	10 ft.
Catch Basins (non-leaching)/Drainage Pipe ⁶	5 ft.	10 ft.	5 ft.
Leaching Structure ⁸	8 ft.	8 ft.	10 ft. ⁷
Septic Tank, Pump Station, Grease Trap, or Manhole ⁹	5 ft.	8 ft.	5 ft.
Property Lines	5 ft.	10 ft.	5 ft.
Swimming Pool	20 ft.	20 ft.	5 ft.
Retaining Wall (water proof)	10 ft.	10 ft.	5 ft.
Fuel Storage Tanks (below ground)	20 ft.	20 ft.	10 ft.
Top of Embankment or Steep Slope (15 % slope or greater)	25 ft.	25 ft.	25 ft.
Bluffs	65 ft.	65 ft.	65 ft.

1 Increased distance between leaching pools and private wells may be required based upon the depth of the well(s) involved and the direction of groundwater flow. Refer to Standards For The Design Of Individual Water Supply Systems. Discharges from treatment works shall be located down gradient of the well or out of the groundwater flow path towards the well. Precise groundwater flow direction measurements may be required.

2 Significant discharges (generally greater than 5,000 gpd or those in proximity to wells) are subject to a separate site review by the Department.

3 Leaching pools for treatment works have different distance requirements. See Appendix A and Appendix B for distance requirements for leaching pools or recharge beds associated with modified subsurface sewage disposal systems and treatment works, respectively.

4 Water and sewer lines may be in the same trench if the water line is placed on an undisturbed bench or shelf so that the bottom of the water main is at least 18 inches higher than the top of the sewer and the sewer is not subject to settling, vibration, superimposed loads, or frost action.

5 A minimum of 10-foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage leaching structures.

6 A minimum of 5-foot separation is required between water service line/laterals/mains and the edge of all stormwater drainage non-leaching structures and associated piping.

7 Sewer piping between clusters of leaching pools may be installed at lesser separation distances.

8 Distribution manholes or distribution boxes installed preceding gravelless absorption trench systems or other leaching structures (other than leaching pools or galleys) may be installed a minimum of 3ft to the leaching structures.

9 Multiple unit septic tanks and grease traps shall be considered one structure and therefore individual components may be installed at lesser separation distances.

As indicated in Footnote 2 to Table 3 above, for discharges generally greater than 5,000 gpd or those in proximity to public supply wells, the setback of 200 ft is subject to a separate site review by the SCDHS. During the preparation of the Engineering Report, consultations were undertaken by the project engineer with the SCDHS. According to the project engineer, the SCDHS advised that the setback for the proposed WWTF to a public or community supply well should be 300 ft. (see also the correspondence from SCDHS in Attachment 3 confirming said setback). The required setback to a private well would be 150 ft.

The nearest community supply wells to the proposed WWTF are Good Groundhog and Sylvester Manor. As shown on Figures 5-1 and 1-4 in Addendum #1 and Addendum #2, respectively, the horizontal separation distances from the proposed WWTF treated effluent disposal beds to the surrounding wells would be as follows:

- Good Groundhog water supply well is located 350 ft to the southeast and upgradient from the treated effluent disposal beds, which exceeds the required 300 ft setback.
- Private supply well is located 150 ft to the west and cross-gradient from the treated effluent disposal beds, which complies with the 150 ft requirement.
- Sylvester Manor water supply wells are located approximately 900 ft to the northeast of the flow path of the effluent discharge flow path, which exceeds the required 300 ft setback.

As such, the proposed siting of the WWTF complies with the minimum horizontal separation distance to the supply wells.

As set forth in Footnote 3 to Table 3 above, leaching pools for treatment works have modified setback distance requirements, which are included in Table A2 in Appendix A of the SCDHS Commercial Standards, and included below in Table 4.

Table 4 – Modified Separation Distances (Excerpted Table A2 of SCDHS Commercial Standards)**

Separation Distances From The Nearest Part Of:	To HABITABLE* Building	To NON-HABITABLE Building	To Area of Substantial Human Use (Buffer Area)	To Property Lines	To Surface Water
Enclosed Process Tanks and Expansion Area	75 ft.	50 ft.	50 ft.	75 ft.***	100 ft. or as set by NYSDEC or local wetlands permit.
Leaching Pools and L.P. Expansion Area	25 ft.	25 ft.	May Be Included	25 ft.	100 ft. or as set by NYSDEC or local wetlands permit.

* For purposes of this appendix, **HABITABLE** buildings include those buildings intended for permanent or transient residency or recreational use, and commercial buildings in substantial use by the public (i.e., condos, apartments, co-ops, PRC, assisted living, townhouses, hotels, motels, community clubhouses, office buildings, retail stores, restaurants, etc.).

** The minimum separation distances found in TABLE 2 of the (main body of the) STANDARDS also apply to modified subsurface sewage disposal systems and small community sewerage systems.

*** May be reduced to twenty-five (25) feet when special site conditions as noted in paragraph A4.1 are present and when reduced distance does not interfere with future building setbacks for off-site vacant parcels.

As illustrated in Figure 5-1 in Addendum #1, the proposed treated effluent beds and expansion area would be located 25 ft to the nearest property line, 85 ft to the nearest residential structure to the east, and 134 ft to the nearest residential structure to the west. Additionally, the subject property is over 1,600 ft to the nearest State-regulated freshwater wetland (see Figure 2 of this EEAF) and over 2,000 ft to the nearest State-regulated tidal wetland (see Figure 3 of this EEAF) Based on the above analysis, the proposed WWTF complies with the siting requirements of the SCDHS Commercial Standards.

Hydrogeologic Analysis

To further address comments received on the potential impacts on surrounding water supply wells, an analysis was prepared by Thomas C. Cambareri, Hydrogeologist and Certified Groundwater Professional, to evaluate the potential impacts of the proposed WWTF discharge on surrounding wells. As indicated in Appendix A to Addendum #2, “the Good Groundhog wells are located upgradient from the proposed treated effluent disposal beds. Groundwater will not migrate upslope unless hydrologic conditions are significantly altered. The supply well has an estimated pumping rate of 500 [gpd] on average and 1,200 gpd for peak flows. The withdrawal area can be calculated with the application of the uniform flow field to a well. Using aquifer parameters provided...the downgradient stagnation point from the well would range from 0.72 feet to 15 feet for flow rates of 500 to 200 GPD and aquifer thickness from 100 to 20 feet, respectively. Therefore, under the most conservative assumptions the downgradient stagnation point from the well would be 15 feet which is much less than the 350 ft to the discharge beds.” Also, the analysis included an evaluation of the mounding under the effluent discharge beds for effluent discharge rates of 4,000 gpd to 8,000 gpd for average and peak conditions. The calculated groundwater flow velocity of 0.46 ft/day is equal to a groundwater flow of 170 ft per year. Accordingly, there would be no adverse impacts to the Good Groundhog well.

Regarding the potential impact on the private well at 14 Manwaring Road, Figures 3-1 and 3-2 in Addendum #2 demonstrate that the well is not in the flow path from the proposed WWTF site.

Finally, regarding the potential impact on the Sylvester Manor supply wells, the primary flow path from the treated effluent beds is to the northwest towards the Creek. As noted above, the Sylvester Manor supply wells are located laterally from the primary groundwater flow path and are well outside the required 300 ft setback (i.e., located 900± ft from the treated effluent beds).

Groundwater Modeling – Impacts on Surrounding Wells

The 2021 USGS Groundwater MODFLOW Model (2021 USGS Model) was used to evaluate wastewater discharge and the impact on private and community wells. As indicated in Appendix B to Addendum #2, due to the relative proximity of the wells and discharges, a “Shelter Island North Local Model” was built and calibrated from the 2021 USGS Model, which has 500-by-500 ft grid spacings, to 50 by 50 ft grid spacing. The calibrated groundwater model predicted flow paths of recharge areas to the existing wells of concern and discharges of 4,000 gpd (average flow) and 8,000 gpd (design flow) (illustrated in Figures 3-1 and 3-2, respectively, in Addendum #2). Based on the analysis, the travel time for the treated effluent discharge is approximately 21 to 24 years to Gardiners Creek, regardless of the effluent discharge amount.

Analysis of the impacts on the surrounding wells concludes that the 14 and 18 Manwaring Road wells are cross gradient and upgradient of proposed wastewater discharge respectively. As such, these wells and their respective recharge areas do not overlap or intersect with the treated effluent discharge. Accordingly, there would be no impact from treated effluent discharge on these wells.

The Sylvester Manor wells and treated effluent discharge overlap, but do not intersect as the discharge is significantly below the well recharge area, i.e., approximately 50+ ft. Accordingly, there would be no impact on the Sylvester Manor wells.

Additionally, downgradient wells noted as Wells 1 and 3 (see Figures 3-1, Figures 3-3 and 3-4 in Addendum #2) overlap on the proposed discharge path but do not intersect. The analysis indicates the treated effluent discharge would be approximately 60 ft below the well recharge areas.

Based on the above analyses, the proposed WWTF would have no impact on the surrounding wells as the proposed discharge path is either cross-gradient or downgradient from the well locations, or the discharge path is at a significant depth below the recharge area of the wells. It is also important to note that groundwater monitoring wells would be installed both up and down gradient of the WWTF leaching field, and regular sampling from the wells will be performed, as required by the SPDES permit. As such, groundwater quality will be monitored during operation of the WWTF such that any exceedances of effluent standards can be promptly identified and responded to accordingly.

Impact on Suffolk County Water Authority Future Expansion Plans

Pursuant to the request of the Suffolk County Department of Planning and Economic Development (see correspondence dated February 14, 2023 in Attachment 3), consultations were undertaken with the Suffolk County Water Authority (SCWA) about future expansion plans and the potential impacts of the proposed WWTF. In a response letter dated March 8, 2023 (see Attachment 3), the SCWA indicated that the proposed action would have no impact on the existing public supply wells or on future wells that may be located at 99 N. Ferry Road. As excerpted from said correspondence:

“In the case of our existing public supply wells on Shelter Island, we have found no impact associated with the proposed location of the treatment plant and discharge. We were concerned however with the potential for contamination of future wells that we have been contemplating as part of an overall expansion of the public drinking water system. Specifically, we were concerned with future wells that in the future may be located at 99 N Ferry Road. To assess this impact, we used the groundwater model to simulate the pumping of new production wells on that property and observed their source water contributing zones. Under this scenario, we found no intersection between the future wells contributing area and the treatment plant discharge. We also investigated the impact of exporting approximately 6200 gallons per day of wastewater from the study area. Our model shows little to no impact on the local water table.”

Accordingly, the proposed action would not impact any future expansion plans of the SCWA.

Impact on Surface Waters

Impact on Menantic Creek and Shelter Island Sound (Existing/Future Conditions without WWTF)

The project area is located within several groundwater subwatershed boundaries and is primarily located in an area of 25-to-50-year groundwater travel time to surface waters (see Figures 1-5 and 1-6 in the Engineering Report and Addendum #2). Table 1-3 in the Engineering Report presents the Shelter Island groundwater subwatersheds and their respective groundwater flows to estuaries. As indicated in the Engineering Report, the study area is essentially on the top of a number of subwatersheds and any disposal system in the study area would be situated in the 25-to-50-year groundwater travel time to surface waters and is expected to travel in a variety of different directions.

Specifically, as set forth in the Engineering Report (Table 1-3, pg. 16), the project area is within several subwatersheds, including: Dering Harbor; Coecles Harbor; Gardiners Bay and Minor Tidal Tribs; Shelter Island Sound, North, and Tribs; Dickerson, Menantic, West Neck Creeks; and Shelter Island Sound, South, and Tribs. Other than the Gardiners Bay and Minor Tidal Tribs subwatershed which is part of the Long Island Sound as its receiving estuary, the aforementioned subwatersheds are part of the Peconic Estuary.

As evaluated in Addendum #2, the existing sanitary discharge from the Shelter Island School, Town Hall buildings complex, American Legion and Shelter Island Library flows to Menantic Creek, as part of watershed 193 with a 33-year travel time. Other Study Town properties (Police Department, Justice Court, Fire Department and Town-owned residential housing) flow to the Shelter Island Sound as part of watershed 901 with a travel time of over 100 years.

As included in the *Impact on Groundwater Quality* subsection above, the nitrogen mass discharges from each of the affected parcels and the nitrogen mass loadings to Menantic Creek and Shelter Island Sound were evaluated. As shown in Table 1 of this EAAF, the nitrogen mass discharge from those parcels affecting Menantic Creek is estimated at 922 lbs./year and 978 lbs./year under existing and future conditions, respectively. The nitrogen mass discharge from those parcels affecting Shelter Island Sound is estimated at 157 lbs./year and 196 lbs./year under existing and future conditions, respectively. In total, approximately 1,133 lbs./year are discharged under existing conditions and 1,253 lbs./year are projected under future conditions without the proposed WWTF.

Upon implementation of the proposed action, all sanitary systems would be removed from the affected parcels; thus, the nitrogen loading on the affected parcels would be eliminated entirely with connection to the proposed WWTF. As indicated above, the proposed WWTF would result in an effluent Total Nitrogen (TN) of 3.0 mg/L and is projected to have a nitrogen loading of 54.8 lbs. per year for the design flow (8,000 gpd) or 27.4 lbs. per year for the average flow (4,000 gpd). Accordingly, the proposed WWTF would have the beneficial impact of removing approximately 1,106 lbs./year of nitrogen currently being discharged to groundwater. An analysis of the proposed WWTF on Gardiners Creek follows.

Impact on Gardiners Creek

The proposed WWTF is situated within the Gardiners Creek watershed, and thus, an analysis has been performed to determine the potential post-development impact on same. Based on the groundwater modeling, the travel time for the treated effluent discharge would be approximately 21 to 24 years to Gardiners Creek.

As excerpted from Addendum #2, an estimate of the existing development nitrogen loading to groundwater / Gardiners Creek was developed by summing the estimated wastewater loads for each parcel within the Gardiners Creek subwatershed. The nitrogen loads from individual parcels in the Gardiners Creek subwatershed were calculated by integrating the spatial and digital data from the USGS watershed boundaries, Town GIS, and Town's Assessor's 2021 data. The Gardiners Creek subwatershed boundary was obtained from USGS (2020 & 2021) and is presented on Figure 4-1 in Addendum #2. Land use data for parcels within the Gardiners Creek subwatershed were obtained from the Town of Shelter Island Assessor, based on 2021 records.

As excerpted from Table 4-1 in Addendum #2, the total projected wastewater volume from properties situated within the Gardiners Creek watershed is approximately 11,280 gpd, with a total nitrogen loading of 2,619 lbs. per year. Based on approximately 25% of nitrogen removal in sandy soils, the estimated nitrogen loading to groundwater is approximately 1,964 lbs. per year. Approximately 61 percent of the nitrogen discharge is estimated to originate from residential land uses (see Table 5 below). It is noted that there is only one parcel

within the watershed with an I/A OWTS (18 Manwaring Road) and there are 10 pending residential applications.

Table 5 - Total Existing Wastewater Flow and Nitrogen Discharge to Gardiners Creek

	Total Avg WW Flow	Total N Load to Drainfield/Leaching Pools	Total N Load to Groundwater*
Existing Conditions	11,280 gpd	2,619 lbs./year	1,964 lbs./year
Land Use Breakdown			
Residential	8,130 gpd	1,603 lbs./year	1,202 lbs./year (61%)
Non-Residential	3,150 gpd	1,017 lbs./year	762 lbs./year (39%)
*25% of nitrogen removal in sandy soils;			

Upon implementation of the proposed action, the total estimated wastewater discharge within the Gardiners Creek watershed would increase from approximately 11,280 gpd to 15,280 gpd (an increase of 4,000 gpd based on average flow), with the potential to 21,280 gpd (based on the 8,000 gpd design flow).

The proposed WWTF would increase nitrogen loading by 27.4 lbs. per year for the average flow (4,000 gpd) or 54.8 lbs. per year for the design flow (8,000 gpd). As compared to the existing nitrogen loading from wastewater, the projected increase would be 1.4 percent (based on 4,000 gpd average flow) or 2.8 percent (based on 8,000 gpd design flow). It is noted that the proposed Total Nitrogen (TN) discharge from the WWTF has a nitrogen effluent equivalent of one additional single-family residence with conventional septic system, or 3.2 I/A OWTS(s) being installed in the Gardiners Creek watershed (see Table 6 below, which has been excerpted from Addendum #2, Table 4-2).

Table 6 - Wastewater and Nitrogen Discharge to Gardiners Creek Watershed (Existing and Proposed)

Gardiners Creek Wastewater Only Nitrogen Mass Loadings - Existing + Proposed (Table 4-2 in Addendum #2)							
Existing	WW TN (lbs./year)	2,619			SFR - Conv. Septic	SFR I/A Septic	SFR Conv to I/A Septic
	TN to GW (lbs./year)	1,964					
	TN to GW (kg/day)	2.4					
Proposed	16 Manwaring Discharge	Design	Average	Single Family Residence (SFR)			
	Flow (gpd)	8,000	4,000		200	200	
	Effluent TN (mg/L)	3	3		65	19	
	Soils Reduction	25%	25%		25%	25%	
	TN to GW (lbs./year)	54.8	27.4		29.7	8.7	21.0
	TN to GW (kg/year)	24.9	12.5		13.5	3.9	9.5
	TN (lbs./year) to GW as % of Existing WW TN (lbs./year)	2.8%	1.4%				
	TN to GW as Equivalent # of SFR	1.8	0.9				
	TN to GW as Equivalent # of I/A	6.3	3.2				
	TN to GW as Equivalent # of converted Conv. to I/A SFR	2.6	1.3				
Notes:	gpd = gallons per day	mg/L = milligrams per liter			Lpd = liters per day		
	WW = Raw wastewater	TN = Total Nitrogen	GW = Groundwater				
1) Average flow = 50% of design flow.							
2) 25% WW TN removal in soil, therefor 75% to groundwater							

A Total Maximum Daily Load (TMDL) assessment was performed by the project engineer and is included in Addendum #2. The impact analysis performed by the project engineer estimated the increase in groundwater Total Nitrogen (TN) from the proposed treated effluent discharge and the impact of such on Gardiners Creek.⁹ That analysis is summarized in Table 4-3 in Addendum #2 and has been excerpted and included herein as Table 7 below.

⁹ The analysis presents the estimated average increase in groundwater Total Nitrogen (TN) concentration from existing wastewater discharges and that which would result from the proposed discharge. The calculations make no allowance from other nitrogen loading sources (including Agriculture, Fertilizer, Atmospheric Deposition [Dry & Wet], Stormwater Runoff, Waterfowl and Benthic Flux).

Table 7 - Gardiners Creek Estimated Groundwater Nitrogen Concentrations in Wastewater

Gardiners Creek Estimated Groundwater Nitrogen Concentrations in Wastewater – (Existing and Proposed) (Table 4-3 in Addendum #3)			
Watershed Groundwater Flow (gpd)		452,390	from USGS, 2021
Watershed Groundwater Flow (Lpd)		1,712,482	from USGS, 2022
Estimate - Avg. Existing GW WW TN (mg/L)		1.428	Note (2)
Water Quality (WQ) TN Target (mg/L)		0.36	From TMDL studies (1)
Existing GW TN as % of WQ Target		397%	
Proposed WWTF Discharge		Design	Average
Change in GW TN (mg/L) ⁽²⁾		0.040	0.020
Proposed as % of Existing GW TN from WW		2.8%	1.4%
Existing GW TN as % of GW TN Target		11%	6%
Notes:			
(1) The water quality TN target is the surface water quality target that has been established in numerous watershed TMDL studies on Suffolk County (see https://www.suffolkcountyny.gov/Departments/Health-Services/Environmental-Quality/Water-Resources/Comprehensive-Water-Resources-Management-Plan) and Cape Cod / SE Massachusetts (https://www.mass.gov/guides/the-massachusetts-estuaries-project-and-reports) that cannot be exceeded to achieve water quality standards.			
(2) The change in GW TN concentration in mg/L is calculated by dividing the annual TN loading from Table 4-2 in Addendum #2 (Table 6 of this EEAF) (in mg=1,000,000 *kg) by the aquifer’s annual flushing volume of 625,055,800 Liters.			

As shown in the table above, the Total Nitrogen (TN) from wastewater only in Gardiners Creek is currently 1.428 mg/L. Based on the analysis, upon implementation of the proposed action, the Total Nitrogen (TN) in wastewater discharge to Gardiners Creek would increase by 0.020 mg/L to 1.448 mg/L (i.e., 1.4 percent increase). It is important to note that, based on the data presented by the project engineer, the total groundwater flow to Gardiners Creek is approximately 452,390 gpd and as indicated earlier in this section of the EEAF, approximately 11,280 gpd is the average wastewater flow in the watershed; thus, approximately 2.5 percent of the existing total groundwater flow is from wastewater. Upon implementation of the proposed action, the estimated average wastewater flow would increase by 4,000 gpd to 15,280 gpd, which would increase the total percentage of wastewater within the overall groundwater flow to the Creek from 2.5± percent to 3.3± percent (15,280 gpd/456,390 gpd total groundwater flow to watershed). As such, the additional 4,000 gpd of wastewater flow would represent an increase of 0.8 percent in total wastewater flow to Gardiners Creek.

The 1.4 percent increase in Total Nitrogen (TN) in wastewater would be expected to have a minimal impact on Gardiners Creek as wastewater represents a small percentage of the total groundwater flow to the watershed (i.e., 2.5% under existing conditions and 3.3% post-development).

While the proposed action would increase the Total Nitrogen (TN) of existing discharges (from wastewater) to Gardiners Creek by 1.4 percent (for average flow), it is important to note that the discharge from 16 Manwaring Road would have a nitrogen effluent equivalent impact as one (1) conventional sanitary system or 3.2 I/A OWTs. Also, the removal of the conventional systems and replacement with the proposed WWTF has the resultant benefit of eliminating the existing 1,133 lbs. per year of nitrogen loading to the Menantic Creek and Shelter Island Sound from the affected parcels and having the net benefit of removing 1,106 lbs. of nitrogen currently being discharged to groundwater. Furthermore, modeling has demonstrated that the proposed discharge would not impact any water supply wells as the proposed discharge path is either cross-gradient or

downgradient from the well locations, or the discharge path is at a significant depth below the recharge area of the wells. Accordingly, the proposed action has the beneficial impact of nitrogen removal without any impact to water supply wells and negligible increase in Total Nitrogen (TN) from wastewater in Gardiners Creek.

Impact on Wetlands

Review of the NYS Freshwater Wetlands Map and NYS Tidal Wetlands Map indicates that the proposed WWTF would be located no less than 1,600± ft and 2,200± ft from a State-designated freshwater wetland and State-regulated tidal wetland, respectively (see figures at the end of this subsection). As such, the proposed action would not have any significant adverse impacts on wetland areas.

Impact on Drainage/Stormwater Runoff

Stormwater runoff would only be generated by the development of the 16 Manwaring Road parcel for the WWTF equipment. As such, any stormwater generation from the proposed action would be contained through engineered drainage structures designed to accommodate a 2-inch rain event. As indicated above, there is sufficient depth to groundwater (i.e., greater than 40 feet) for the placement of engineered drainage structures.

Impact on Coastal Resources

The project area is located within the boundaries of the New York State Department of State (NYS DOS) Coastal Management Zone (see Figure 4). To evaluate consistency with the NYS Coastal Policies, a Coastal Assessment Form (CAF) has been completed and is included herein as Attachment 5. As indicated in the CAF, the proposed action would not have a significant effect on any of the resource areas within the coastal area.

Figure 1 - Depth to Groundwater (USGS, 2016)

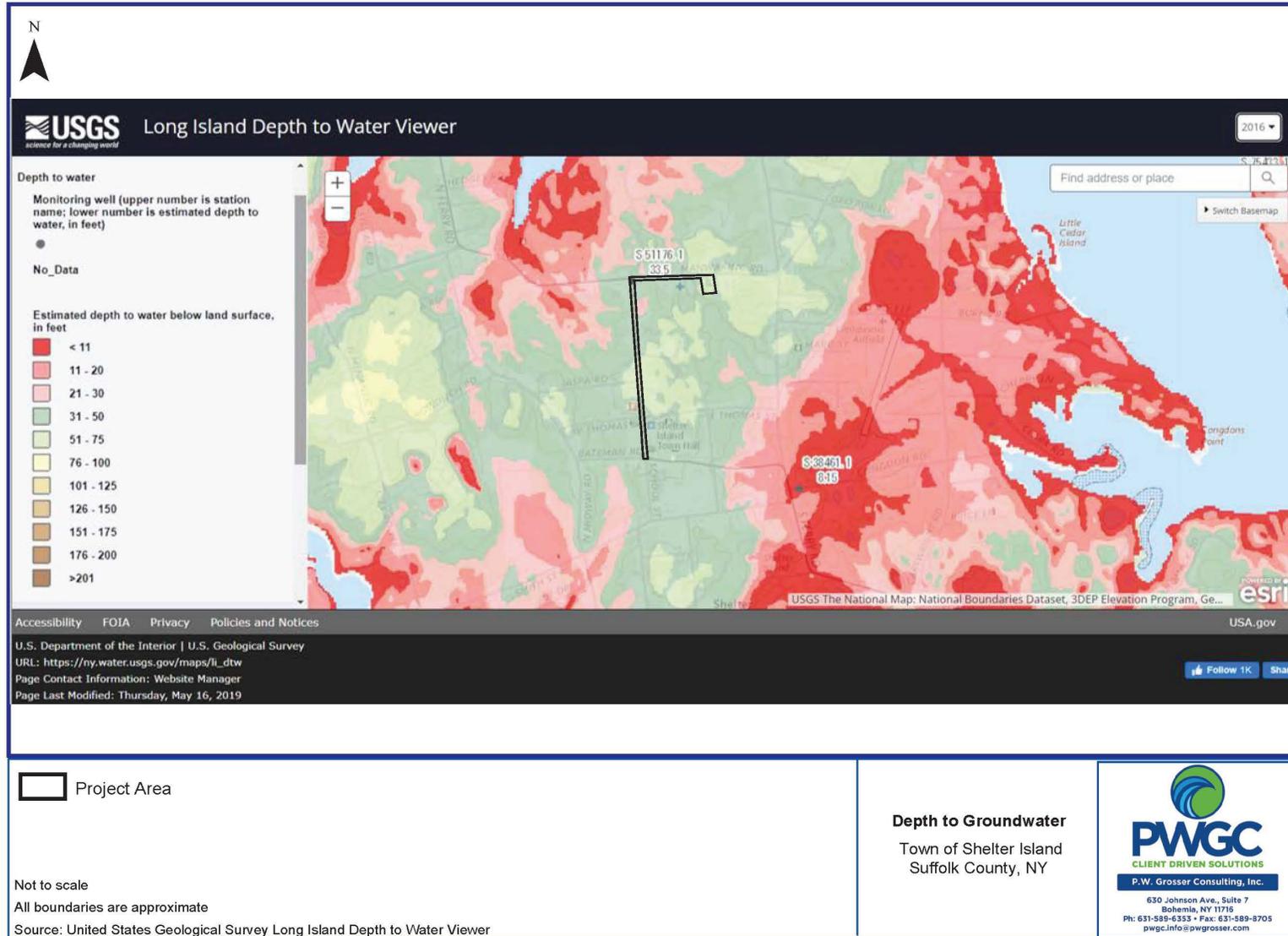


Figure 2 - NYS Freshwater Wetlands Map

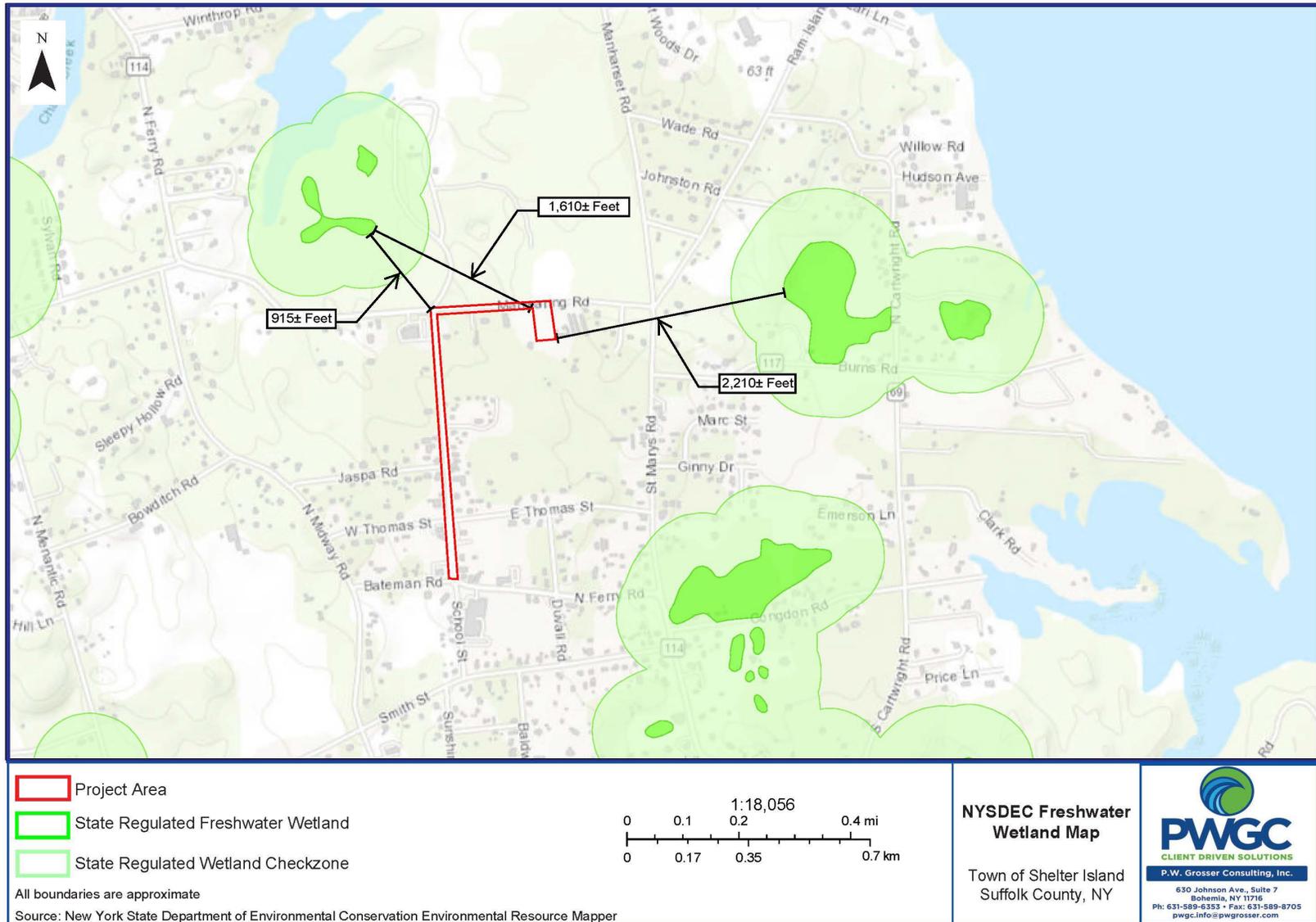
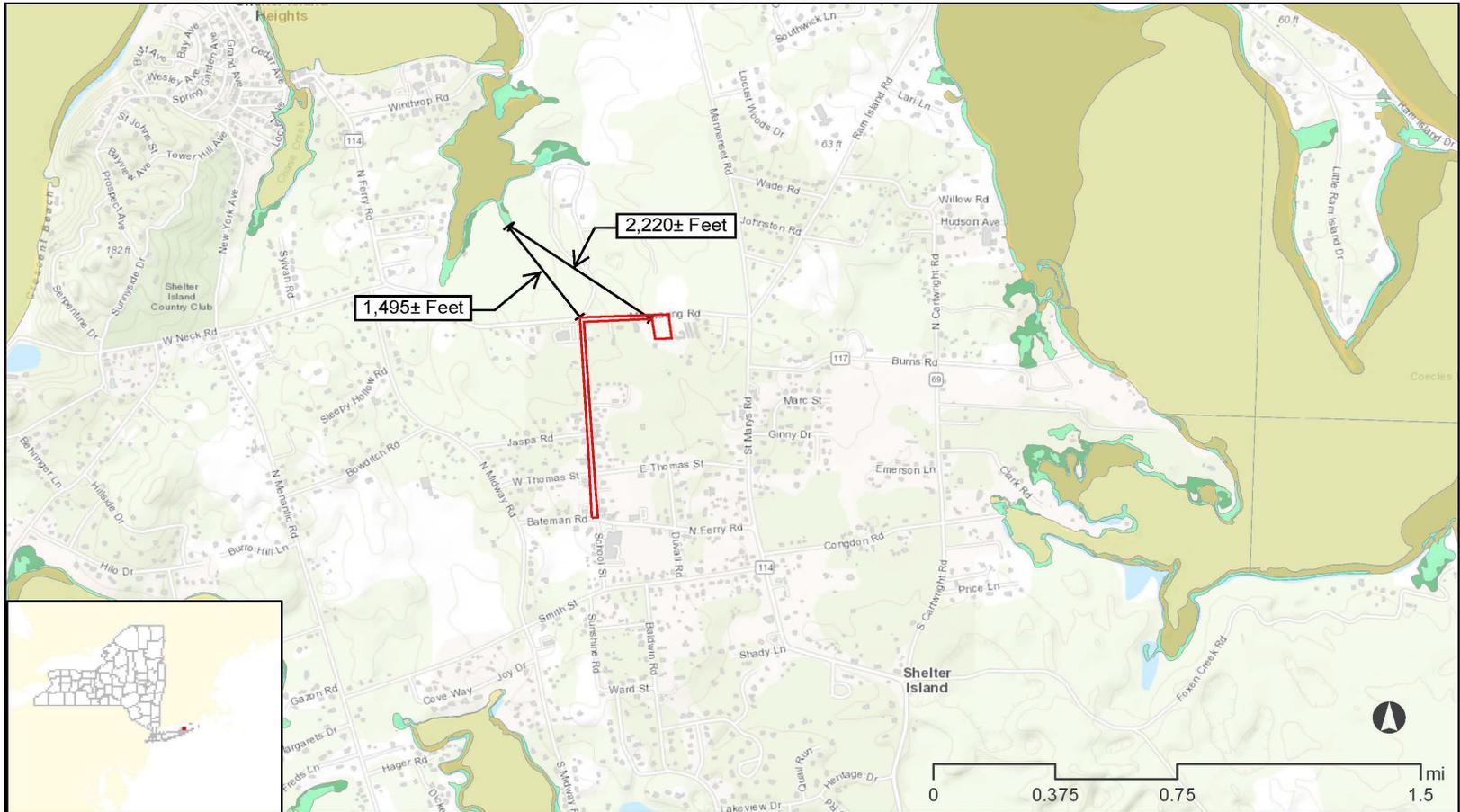


Figure 3 - NYS Tidal Wetlands Map



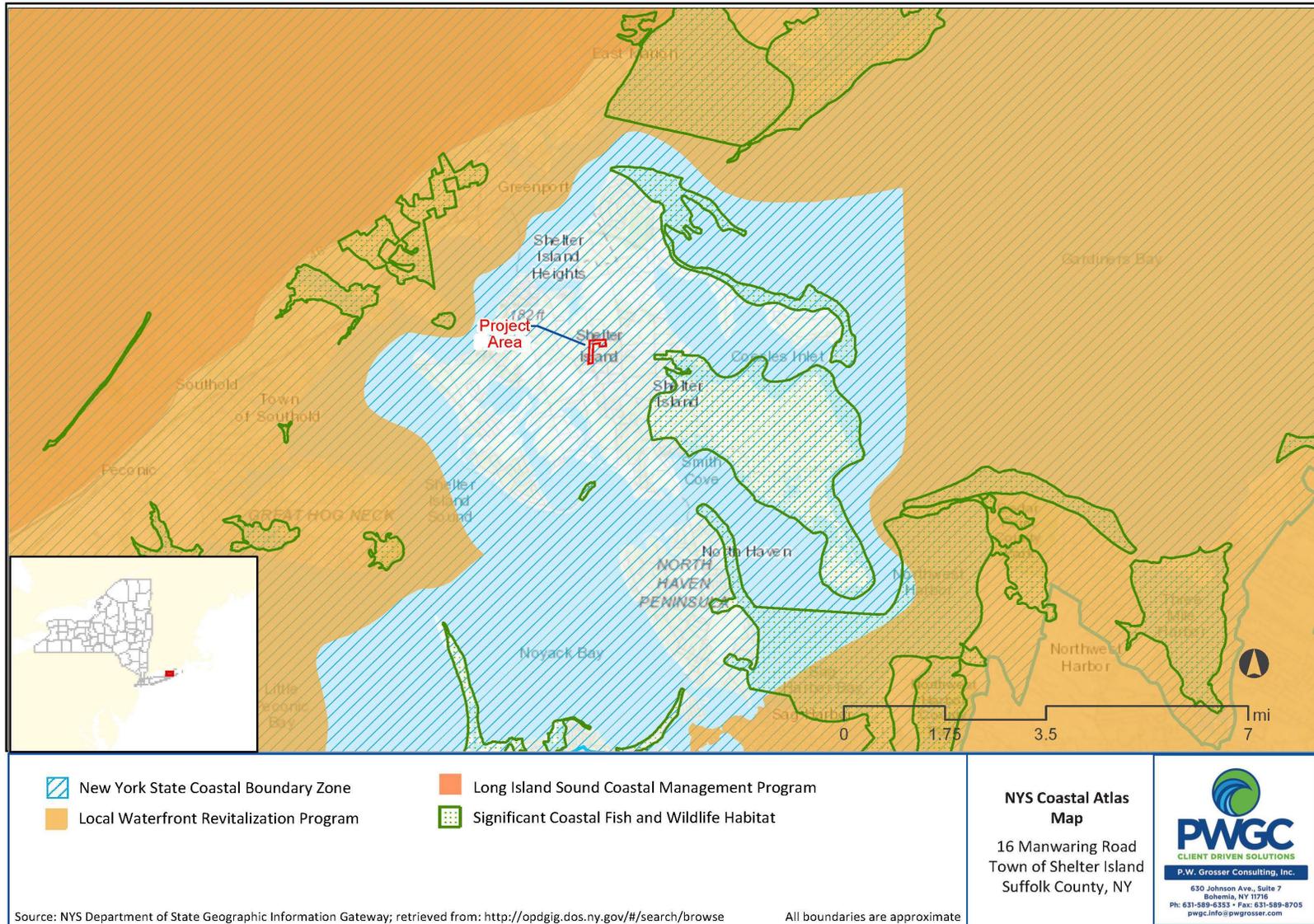
Project Area	Formerly Connected (FC)	High Marsh (HM)	Littoral Zone (LZ)
Dredged Soil (DS)	Fresh Marsh (FM)	Intertidal Marsh (IM)	Coastal Shoals, Bars and Mudflats (SM)

Source: New York State Department of State Geographic Information Gateway All boundaries are approximate

Tidal and Freshwater Wetlands Map
 16 Manwaring Road
 Town of Shelter Island
 Suffolk County, NY

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Figure 4 - NYS Coastal Atlas Map



VI. Impact on Land Use and Community Character

The proposed action includes the siting of a WWTF on Town-owned land, which is currently undeveloped. To the adjacent east and west of the proposed WWTF site are residential land uses, to the north is the Sylvester Manor Educational Farm and to the south is a jointly owned Town/County of Suffolk CPF land. Pursuant to the Town Zoning Map, the properties along the north and south sides of Manwaring Road are zoned Business (B). Beyond the Business (B) zoning is AA Residential to the north and C Residential to the south (see figure below).

Upon implementation of the proposed action, the site would be converted from vacant, undeveloped land to a WWTF, consisting of an approximately 20 ft by 20 ft (400 square feet) operations and controls building, and below grade components. The proposed building would be set back 85± ft from Manwaring Road and 100± ft, 54± ft, and 192± ft from the east, west, and southern property lines, respectively.

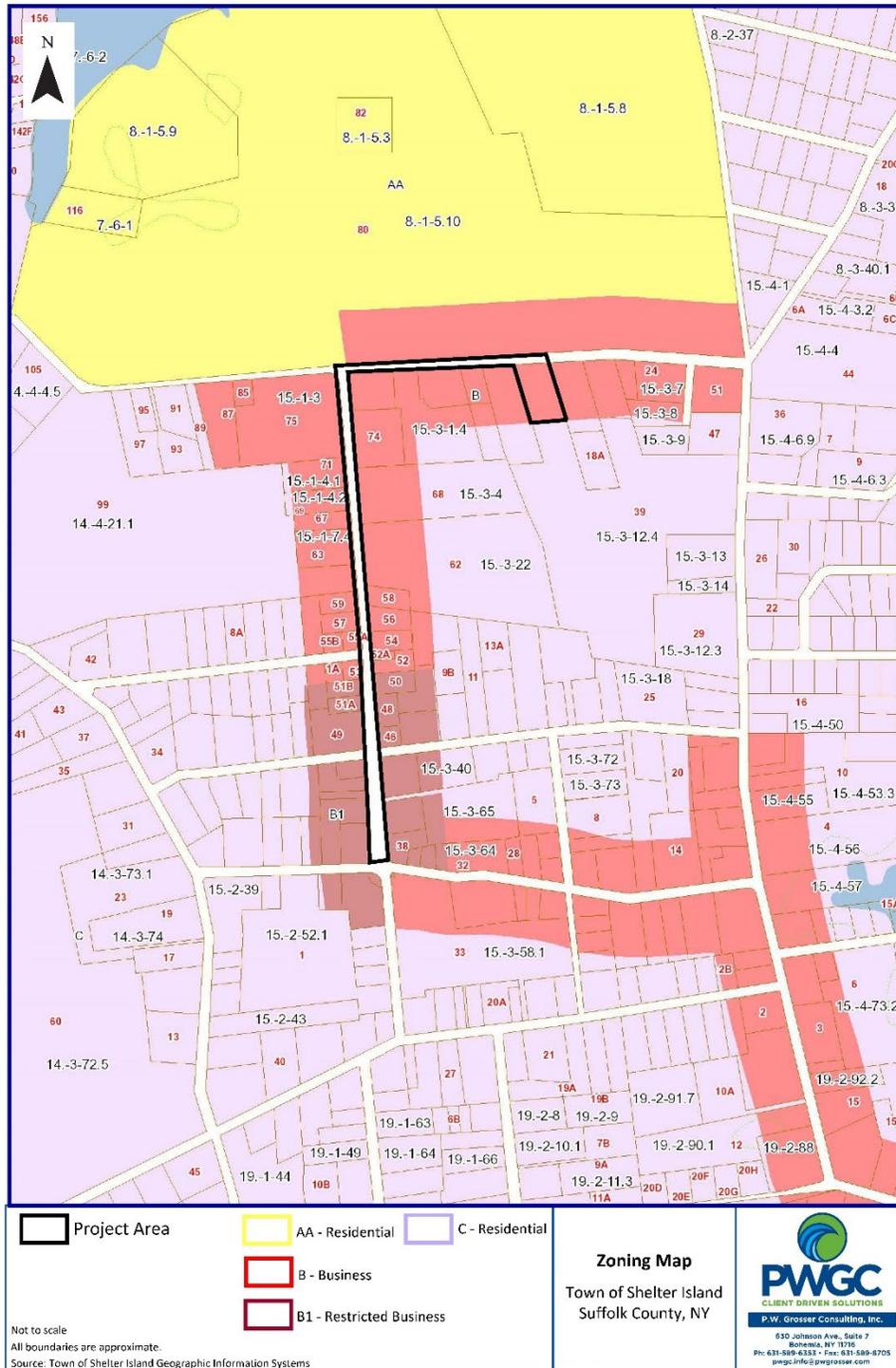
The proposed building would be pre-cast concrete, and the building façade would be developed during the design phase and presented at public meetings to solicit community preferences. As illustrated in Figure 8-1 in Addendum #1, the façade options include stucco, brick appearance or composite siding.

As part of the proposed action, fencing would be installed along the treatment area and evergreens would be planted around the fencing perimeter such that there would be no exposed fencing. Evergreens would also be planted along the site boundaries.

Upon implementation of the proposed action, the use of the 16 Manwaring Road parcel for the proposed WWTF would limit its suitability for other public purposes. However, the subject parcel is Town-owned and serves to provide the community with beneficial treatment of sanitary waste from municipal properties located in the Town center. It is noted that to the south of the subject parcel is jointly owned Town/County of Suffolk CPF land and a walking path could be developed on the 16 Manwaring Road parcel, if desired in the future.

As noted in Section I. and included in Section 4.3 of the Engineering Report, the Town evaluated four (4) Town-owned properties for the proposed action; however, these sites were undesirable for several reasons. Specifically, as indicated in Section 4.3 of the Engineering Report, the Klenawicus Airfield was desirable for its short time to surface water, few houses downgradient and the availability of open space; however, as a CPF property, the proposed WWTF cannot be constructed without an act by the New York State Legislature and a local law amendment to modify the CPF project plan. The property at 299 N Ferry Road was also evaluated, but determined to be undesirable because discharge would be in groundwater with long (decades) travel time. The Goat Hill Golf Course was also determined to be undesirable as it is situated within a public water supply recharge area. The property at 4N Menantic & Bowditch Roads Area was also determined to be undesirable as a former landfill (unknown site conditions, as well as its existing known condition as an unlined landfill and the presence of a surface cap, and its elevation in relation to the affected parcels which would increase operational costs). Finally, the Town of Shelter Island maintains additional properties that could be used for public purposes, other than the proposed WWTF. As such, no significant adverse land use or community character impacts would result from this proposed action.

Figure 5 - Zoning Map



VII. **Consistency with Land Use and Community Plans**

Town of Shelter Island Comprehensive Plan Update

The Town of Shelter Island is currently in the process of updating their Comprehensive Plan. To date, the existing conditions have been published in the *2020 Shelter Island Comprehensive Plan Update*¹⁰ (“Shelter Island 2020 - Existing Conditions”). As noted in the Shelter Island 2020 – Existing Conditions, the existing groundwater quality and the impacts associated with septic/individual wastewater systems have been documented, as follows:

- *A significant issue is contamination of the aquifer with Nitrates and other pollutants, largely due to recharge from individual wastewater systems, including antiquated cesspools lacking septic tanks (pg. I-79)*
- *Shelter Island has an adequate drinking water supply system, provide for the most part by individual private wells, but water quality is an issue in some parts of the island, most notably elevated nitrates in the center, saltwater intrusion along the coast, and chemical contamination from old gas stations and other sources (pg. I-87)*
- *Septic systems are contributing nitrogen and other pollutants that are impacting both drinking water and surface water (pg. I-87)*

Accordingly, the purpose and intent of the proposed action to reduce nitrogen loading by replacing the existing on-site sanitary systems with the proposed WWTF responds directly to the existing documented conditions.

Town of Shelter Island Ground and Surface Water Management Plan: One Island – One Water

The Ground and Surface Water Management Plan: One Island – One Water¹¹ (“One Island – One Water Plan”) dated February 27, 2020, was prepared by the Town of Shelter Island Water Advisory Committee. As excerpted, the One Island – One Water Plan “presents the current status of Shelter Island’s aquifer, the threats to it as a drinking water source for the Island in the short and long-term, and its impacts on surface waters contained within and adjacent to the Island. A vision for the future is embodied in four, strategic, ‘Key Outcomes’ that describe desired future states. A series of recommendations for actions to be taken over period of 0-5 years, 6-10 years, and 11 years and beyond, to ultimately achieve each of the Key Outcomes is also included in this Plan. While several of the recommendations can and should be acted on immediately, others need to be further developed through a robust stakeholder engagement process. This Plan is intended to be the primary resource document to support that process. Once modified by stakeholder input, this Plan is expected to serve as the

¹⁰

<https://static1.squarespace.com/static/5a08c0d490bade4b441a184/t/6034f7a0b4a58450d1f68e88/1614084006961/ShelterIsland+book+2020-0222+low+res.pdf>

¹¹

<https://static1.squarespace.com/static/5a08c0d490bade4b441a184/t/5f18c38bcfc54b2b8b6e17c4/1595458446710/Water+Mgmt+Plan+Final+3-3-20.pdf>

Island’s Strategic Plan for Ground and Surface Water Management and to be incorporated into the Town’s Comprehensive Plan update” (pg. 4).

The four (4) key outcomes and the consistency of the proposed action therewith, are identified and discussed below.

1. Key Outcome 1: *All Shelter Island residents have ready access to drinking water that meets all applicable local, state and federal standards.*
2. Key Outcome 2: *All wastewater effluent on Shelter Island discharged into the aquifer will be at a maximum of 19 mg/L.*
3. Key Outcome 3: *As Shelter Island’s sole groundwater aquifer, the Upper Glacial aquifer’s quality and quantity will continue to support the drinking water needs of residents without the need for “off-island” water.*
4. Key Outcome 4: *Surface waters surrounding Shelter Island will not be negatively impacted by human activity on Shelter Island.*

As evaluated in Section V of this EEAF, the proposed action would have the beneficial impact of reducing nitrogen loading to groundwater and surface waters and would not have any adverse impacts to surrounding wells. Additionally, the One Island-One Water Plan specifically identifies the proposed action as a plan under consideration under Key Outcome #2,¹² and makes a recommendation within 0-5 years to: “Continue the plan to develop a centralized wastewater treatment plant to serve effluents from municipal buildings in Town Center. Design the treatment process (and purchase required land) based on a modular approach that will enable expansion to service residences and other structures in the Center in the future... Complete construction and begin operations of Phase I of the Center Wastewater Treatment Facility.” (pgs. 11 and 12) Accordingly, the proposed action is consistent with the recommendation set forth in the One Island-One Water Plan.

It is recognized that the One Island-One Water Plan considered the centralized wastewater treatment plant as a two-phased project with a 6-to-10-year plan to: “Expand the Center wastewater treatment system (Phase II) to serve additional structures in the Center.” As noted in Section II of this analysis, the proposed action does not include any expansion plans.

Suffolk County Subwatersheds Wastewater Plan (SWP)

In July 2020, the SCDHS prepared the Suffolk County SWP to fulfill the recommendations of the Suffolk County Comprehensive Water Resources Management Plan and to address and reduce nitrogen pollution in surface waters and groundwater within Suffolk County. The intent of the SWP is to provide a roadmap for Suffolk County to take meaningful steps to implement recommendations aimed at reducing nitrogen loading from wastewater resources into the waters of Suffolk County (page 1-4). Additionally, the SWP encourages the use of I/A OWTS and Sewage Treatment Plants (STP’s) for future development.

As evaluated in the Engineering Report (pg. 16), the project area is within several subwatersheds, including: Dering Harbor; Coecles Harbor; Gardiners Bay and Minor Tidal Tribs; Shelter Island Sound, North, and Tribs; Dickerson, Menantic, West Neck Creeks; and Shelter Island Sound, South, and Tribs. Other than the Gardiners Bay and Minor Tidal Tribs subwatershed which is part of the Long Island Sound as its receiving estuary, the

¹² As excerpted from page 11, “The Town is studying a small wastewater treatment system to service several municipal buildings located in the Town Center.”

aforementioned subwatersheds are part of the Peconic Estuary. The location of the affected parcels and the proposed WWTF site are within the 25-to-50-year groundwater travel time to surface waters.

As evaluated in Section V. of this EEAF, the nitrogen mass discharges from each of the affected parcels and the nitrogen mass loadings to Menantic Creek and Shelter Island Sound were evaluated. As shown in Table 1 of this EEAF, the nitrogen mass discharge from those parcels affecting Menantic Creek is estimated at 922 lbs./year and 978 lbs./year under existing and future conditions, respectively. The nitrogen mass discharge from those parcels affecting Shelter Island Sound is estimated at 157 lbs./year and 196 lbs./year. In total, approximately 1,133 lbs./year are discharged under existing conditions and 1,253 lbs./year are projected under future conditions without the proposed WWTF.

Upon implementation of the proposed action, all sanitary systems would be removed from the affected parcels; thus, the nitrogen loading on the affected parcels would be eliminated entirely with connection to the proposed WWTF. As indicated above, the proposed WWTF would result in an effluent Total Nitrogen (TN) of 3.0 mg/L and would have the beneficial impact of removing approximately 1,106 lbs./year of nitrogen currently being discharged to groundwater.

The proposed WWTF would be situated on property within the Gardiners Creek watershed. As evaluated in Section V. of this EEAF, the proposed action would increase the total estimated wastewater discharge within the Gardiners Creek watershed from approximately 11,280 gpd to 15,280 gpd (an increase of 4,000 gpd based on average flow), with the potential to 21,280 gpd (based on the 8,000 gpd design flow). The proposed WWTF would increase nitrogen loading by 54.8 lbs. per year for the design flow (8,000 gpd) or 27.4 lbs. per year for the average flow (4,000 gpd). As compared to the existing nitrogen loading from wastewater, the projected increase would be 1.4 percent (based on 4,000 gpd average flow) or 2.8 percent (based on 8,000 gpd design flow).

While the proposed action would increase the Total Nitrogen (TN) of existing discharges by 1.4 percent, it is important to note that the discharge from 16 Manwaring Road would have an equivalent impact as one conventional sanitary system or 3.2 I/A OWTs. Additionally, the 1.4 percent increase in Total Nitrogen (TN) in wastewater would be expected to have a minimal impact on Gardiners Creek as wastewater represents a small percentage of the total groundwater flow to the watershed (i.e., 2.5% under existing conditions and 3.3% post-development). Also, the removal of the conventional systems and replacement with the proposed WWTF has the resultant benefit of removing 1,106 lbs. of nitrogen currently being discharged to groundwater, and the existing 1,133 lbs. per year of nitrogen to the Menantic Creek and Shelter Island Sound.

Accordingly, based on the above, the proposed action would be consistent with the intent of the SWP to reduce nitrogen loading to surface waters.

Peconic Estuary Comprehensive Conservation and Management Plan, 2020

The project area is situated within the boundaries of the Peconic Estuary System. The Peconic Estuary is situated on the east end of Long Island, between the North and South Forks, and includes more than 100 distinct bays, harbors, embayments, and tributaries. The Peconic Estuary Program¹³ (PEP) is sponsored by the USEPA, the NYSDEC, and the SCDHS, and together with the PEP Management Conference, completed the first Comprehensive Conservation and Management Plan in 2001 (CCMP 2001). In October 2020, the PEP completed its second Comprehensive Conservation and Management Plan (CCMP 2020). The four goals of the

¹³ <https://www.peconicestuary.org/news-and-events/maps-gis/maps-watershed-boundaries/>

CCMP 2020 include strong partnerships and engagement, resilient communities prepared for climate change, clean waters for ecosystem health and safe recreation, and healthy ecosystem with abundant, diverse wildlife.

It is noted that the Shelter Island 2020 – Existing Conditions (page 1-45) indicates nitrogen loading as a threat to the habitats of the Peconic Estuary.

The proposed action would have the beneficial impact of reducing nitrogen loading from septic systems and achieving greater nitrogen reduction in wastewater when compared to I/A OWTSSs. As the project area is located within several subwatersheds of the Peconic Estuary, there would be a resultant benefit to the estuary. Additionally, as indicated in Section V. above, stormwater runoff from the proposed action would be contained on-site through engineered drainage structures designed to accommodate a 2-inch rain event, without the need for off-site discharge. Furthermore, a Stormwater Pollution Prevention Program (SWPPP) would be prepared and would include methods and controls that are consistent with the *New York Standards and Specifications for Erosion and Sediment Control* (NYSDEC, 2016), as well as the water quality and quantity requirements set forth in the *New York State Stormwater Management Design Manual* (NYSDEC, 2015).

VIII. Impact on Ecological Resources

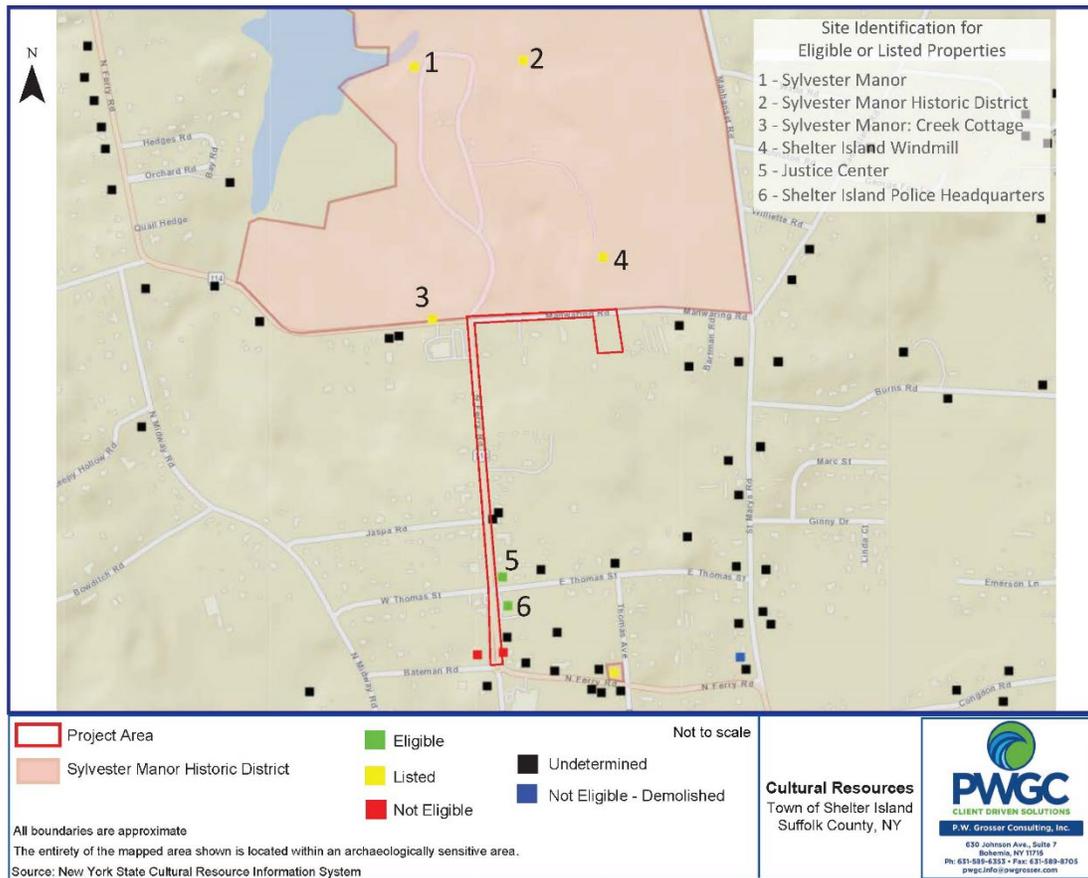
Review of the New York State EAF Mapper (<https://gisservices.dec.ny.gov/eafmapper/>) indicates that the project area does not contain any designated significant natural communities. Regarding wildlife, the project area is located proximate to known habitat for the Northern long-eared bat (*Myotis septentrionalis*). According to the NYSDEC, tree cutting in locations with known habitat for the Northern long-eared bat between March 1 and November 30 of any calendar year may result in the "take" of this species or their habitat within the meaning of Environmental Conservation Law (ECL) §11-0535. As defined, "take" is defined in part as the direct killing or injury of individual members of a protected species, interference with critical breeding, foraging, migratory or other essential behaviors, or the adverse modification of the species' habitat. The "take" of a species listed as threatened is prohibited in the absence of a permit from the NYSDEC. To avoid a species "take," the NYSDEC recommends that tree cutting activities be conducted between December 1 and February 28 of any calendar year.

In accordance with the NYSDEC recommendation, the clearing of trees at 16 Manwaring Road would only occur during this timeframe. It is noted that there is no proposed tree removal outside of 16 Manwaring Road. Accordingly, based on the above, the proposed action would not result in any significant adverse ecological impacts.

IX. Impact on Cultural Resources

The subject property is located in an archaeologically-sensitive area and is also located proximate to the eligible and listed historic properties and the Sylvester Manor Historic District (see below figure). It is noted that consultations were undertaken with the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) and by correspondence dated August 14, 2022, OPRHP concluded "The project area is close to the National Register listed Sylvester Manor Historic District. The project area also comes very close to the 1932 National Register eligible Town Buildings. Because of this, we have reviewed the project. The project is appropriate. Therefore, it is the opinion of OPRHP that the project will have No Adverse Impact on historic resources" (see Attachment 6). Accordingly, the proposed action would not have a significant adverse impact on cultural resources.

Figure 6 - Historic and Archaeological Resources



X. Impact on Energy Resources

Based on information provided by the project engineer, the estimated energy use for the wastewater collection system pump station and WWTF would be approximately 1,500 kWh per month.¹⁴ Electrical service is available in Manwaring Road, and as part of the proposed action, a connection on-site would be established. The proposed design would include the installation of an energy-efficient heat pump in the Operations Building. A solar canopy over the treatment area may also be considered to reduce the energy demand of the proposed WWTF.

As part of the proposed action, an emergency generator would also be installed on-site, as required, and is expected to be fueled by either diesel or propane.

Overall, the energy demand for the proposed WWTF is not expected to result in significant adverse impacts on the electrical grid.

¹⁴ For comparative purposes, residential electricity consumption in New York averages 603 kWh/month (<https://www.electricitylocal.com/states/new-york/>).

XI. Other Construction-Related Impacts

Proposed Construction Schedule

According to the project engineer and illustrated in the proposed construction schedule included in Addendum #1 (Figure 8-3), the total duration of construction is approximately (nine) 9 months and would commence after approval of funding and all requisite permits. The proposed construction schedule anticipates project commencement in February 2024 and completion by October 2024, with connections established by January 2025 and is sequenced as follows:

- Tree clearing at 16 Manwaring Road would occur in February 2024 (in accordance with NYSDEC recommendations – see Section VIII of this EAAF).
- Installation of collection system in the road shoulders of NYS Route 114 and Manwaring Road would commence in March 2024 and is expected to be completed in June 2024.
- Installation of wastewater treatment and disposal system at 16 Manwaring Road, and the pump station at the Library property would commence in April 2024 and is expected to be completed in September 2024.
- Connection of the individual properties would occur after the WWTF is operational (i.e., has achieved substantial completion, estimated to occur between October 2024 and December 2024).

It is noted that the proposed construction schedule avoids the installation of the collection system along NYS Route 114 and Manwaring Road during the summer months of July and August.

Potential Land Disturbance Impacts

The total land disturbance associated with the proposed WWTF would be approximately 1.5± acres. As the construction activities would involve soil disturbance of one or more acres, a SPDES General Permit for Stormwater Discharges from Construction Activity GP-0-20-001 (SPDES General Permit GP-0-20-001) would be required from the NYSDEC. Prior to filing for coverage under the General Permit, a SWPPP would be prepared and would include methods and controls that are consistent with the *New York Standards and Specifications for Erosion and Sediment Control* (NYSDEC, 2016), as well as the water quality and quantity requirements set forth in the *New York State Stormwater Management Design Manual* (NYSDEC, 2015).

The proposed erosion and sedimentation control measures to be undertaken prior to and during construction would include, but not be limited to stockpile protection, inlet sediment control devices for storm structure protection, curb inlet protection, silt fencing and a stabilized construction entrance to prevent off-site sediment tracking from construction vehicles. All erosion and sediment control measures would be routinely inspected and maintained. Dust that may be generated during periods of dry weather would be controlled with watering of the soils. Accordingly, there would be no significant adverse impacts associated with erosion and sedimentation, or dust-related impacts.

Regarding the potential impacts of land disturbance on ecological resources, as indicated in Section VIII and above, the proposed clearing of all woodlands at 16 Manwaring Road would take place within the permitted window of December 1 to February 28 for protection of the Northern long-eared bat.

Potential Construction-Related Traffic Impacts

According to the project engineer and illustrated in Figure 8-3 in Addendum #1, the total length of construction would be approximately nine (9) months, which includes the removal of existing sanitary systems on the affected parcels, the clearing and regrading of the land area at 16 Manwaring Road, installation of infrastructure at the affected parcels, installation of sewer lines along Ferry Road (NYS Route 114) to the WWTF, installation of the proposed WWTF, and connection of the affected parcels. As indicated earlier, the installation of the collection system in the road shoulders of NYS Route 114 and Manwaring Road is proposed to commence in March 2024 and completed in June 2024.

As part of the proposed action, the placement of sewer lines along Ferry Road (NYS Route 114) would be subject to a Highway Work Permit from the NYSDOT prior to work occurring within the State Right of Way (ROW). As indicated earlier, the NYSDOT was consulted as part of coordinated review and the Town will submit a formal application for the Highway Work Permit. As noted in NYSDOT’s correspondence (see Attachment 3), as part of the Highway Work Permit, a Work Zone Traffic Control plan would be prepared and submitted. Additionally, the installation within the State ROW would also meet the requirements of the NYSDOT *Standard Specifications and the Requirements for the Design and Construction of Underground Utility Installations within the State Highway Right of Way*. The Work Zone Traffic Control plan would include appropriate signage and/or flagmen to direct traffic movements during installation and repair of asphalt within the State ROW. Furthermore, to mitigate traffic-related impacts during construction, the proposed construction schedule avoids the installation of the collection system along NYS Route 114 and Manwaring Road during the summer months of July and August.

Based on the preliminary site plan and design, there is no material to be removed as part of construction. All woodland material is proposed to be chipped and used in landscaping on-site. There would be trucks associated with material deliveries for the proposed WWTF. Based on the project engineer, approximately 25 trucks (total) are expected for delivery of equipment and materials for the proposed WWTF over a duration of approximately four-to-five-months. When averaging the total number of trucks over a five-month period, the proposed project would generate an average of five [5] trucks per month. As such, the proposed action would not result in a significant volume of construction vehicles. All trucks would arrive either the North Ferry or South Ferry, and travel to the site via NYS Route 114. As noted above, traffic along NYS Route 114 would be controlled with appropriate signage and/or flagmen for safe circulation and pedestrian movements.

Overall, based on the above, the proposed action would not have a significant adverse impact on the surrounding roadway network and all work is subject to the review and approval of the NYSDOT.

Potential Construction-Related Noise Impacts

During construction, the removal of vegetation and grading of the site for the placement of the proposed WWTF, and the use of heavy equipment and construction vehicles, would all generate noise above ambient (existing) levels. It is recognized that the Town of Shelter Island regulates noise in Chapter 92 of the Town Code; however, there are no specific sensitive periods identified and construction noise is not specifically regulated. To minimize impacts on surrounding properties, all construction activities would be limited to eight (8) hours per day, Monday through Friday, within the non-sensitive time periods of 7:00 AM to 5:00 PM. Additionally, the idling of construction vehicles would be controlled. Accordingly, construction-related noise would be minimized. Overall, although the proposed action would result in an increase in ambient (existing) noise levels during construction, the impact would be temporary in duration and all activities would occur during non-sensitive time periods during the weekday.

XII. Growth-Inducing Impacts

The growth-inducing impacts of a proposed action are those that may “encourage or lead to further increases in population or business activity.”¹⁵ As noted in Section II. above, the proposed WWTF is being considered to accommodate and treat sanitary waste from the affected parcels, which are municipal properties located in the Town center. The proposed design considers future potential changes to the Shelter Island Library and the Town-owned residential housing, as explained and evaluated in this EAAF and the Addenda prepared by the project engineer. As there is no future connection to other properties being considered, and because the proposed action, this EAAF and Addenda consider and evaluate the future potential demand and maximum design capacity of the WWTF (i.e., 8,000 gpd design flow), no additional analysis is required.

¹⁵ NYSDEC SEQR Handbook, Fourth Edition, 2020 (pg. 84)