



East Hampton Village Sewage Treatment Plant Siting Feasibility & Critical Issues Analysis

December 16, 2022



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Consulting Engineer: **H2M architects + engineers**

Introduction / Background



- Focus of Study
 - Siting feasibility for Sewage Treatment Plant (STP) and associated leaching pools
 - 75,000 gallons per day (GPD) Treatment Capacity at each site evaluated
 - Critical Issues Analysis (preliminary to SEQRA)
- Site Alternatives
 - 29 King Street (within Village boundary)
 - 172 Accabonac Road (outside of Village boundary)
- No existing sanitary collection and conveyance infrastructure

STP Regulatory Requirements



- NYSDEC
- Recommended Standards for Wastewater Facilities (10 States Standards)
- Suffolk County Department of Health Services (SCDHS)
 - Influent and Effluent Wastewater Criteria
 - Minimum Separation Distances
 - Effluent Disposal
 - 100% expansion area for STP
 - Sub-soil investigation

Suffolk County Department of Health Services

12/1/09

TABLE B1 - REQUIRED MINIMUM SEPARATION DISTANCES

	DISTANCE TO STRUCTURE OR BUILDING SETBACK	DISTANCE TO PROPERTY LINES
Sewage Treatment Processes Open To The Atmosphere	400' ³	350' ³
Sewage Treatment Processes Enclosed In a Building ¹	200' ^{2,3}	150' ³
Effluent Recharge Beds	400' ³	300' ³
Leaching Pools	25'	25'
Chemical Storage	All chemical storage, whether in dry bulk form and/or liquid stored in tanks shall meet the provisions of Article 12 of the Suffolk County Sanitary Code.	

¹ Enclosed building designation requires ventilation, odor and noise control devices in accordance with good engineering practice.

² Non-residential structures located on the same parcel may qualify for lesser distances.

³ 100 foot buffer to areas of substantial human use is to be included in this distance.

STP Site Alternatives

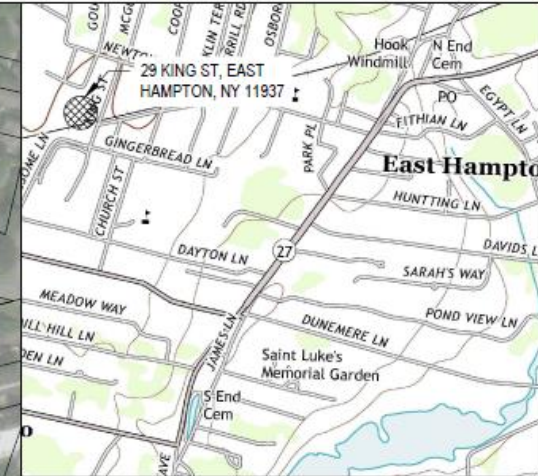


- 29 King Street (Existing Conditions)
 - 2.9 acres housing 7,000 square foot building and two garage bays
 - Adjacent to LIRR Tracks
 - Does not meet SCDHS setback distances without variance
- 172 Accabonac Road (Existing Conditions)
 - 12.5 acres housing the DPW building with employee parking, salt storage shed and miscellaneous outdoor sand and gravel storage
 - Adequate area available for STP and leaching pools per SCDHS setback distances

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1 29 King Street Engineer's Conceptual Layout
SCALE: 1" = 200' - 0"



SCALE: 1" = 1600'
LOCATION MAP

NOTE:
THIS DRAWING WAS PRODUCED FOR CONCEPTUAL PURPOSES ONLY. ALL LINE WORK IS BASED ON AERIALS AND RECORD DOCUMENTS. PRIOR TO CONSTRUCTION AREA OF WORK WILL REQUIRE MARK OUT AND SURVEY.

East Hampton Village STP Engineer's Conceptual Layout

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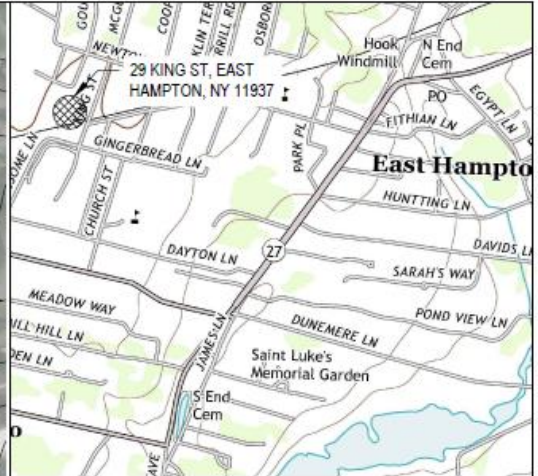
29 KING ST, EAST HAMPTON, NY 11937

25' MIN REQUIRED DISTANCE FROM PROPERTY LINE TO LEACHING POOLS

1.8 ACRES AVAILABLE FOR LEACHING POOLS

150' MIN REQUIRED DISTANCE FROM PROPERTY LINE TO ENCLOSED STP BUILDING WITH ASSUMED VARIANCE. ENCLOSED AREA IS 0.17 ACRES

150' MIN REQUIRED DISTANCE FROM PROPERTY LINE NOT ACCOUNTED FOR ON SOUTH SIDE. AVAILABLE AREA INCLUDES 200' SETBACK FROM EXISTING STRUCTURES





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LEGEND:

-  AVAILABLE AREA FOR STP BUILDING
-  AVAILABLE AREA FOR LEACHING POOLS

1 29 King Street Engineer's Conceptual Layout With Variance

SCALE: 1" = 200' - 0"

**East Hampton Village STP
Conceptual Layout With Variance**

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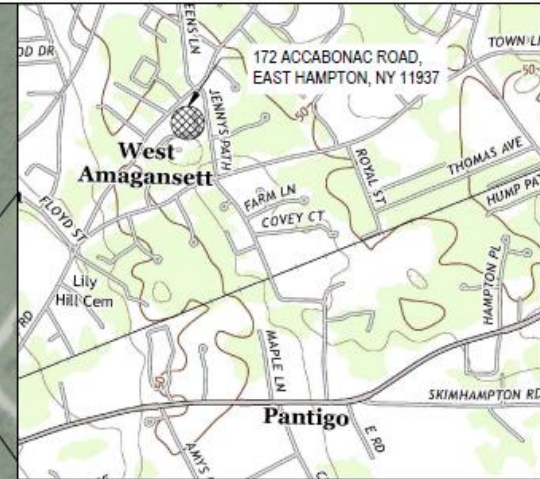
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LEGEND:

-  AVAILABLE AREA FOR STP BUILDING
-  AVAILABLE AREA FOR LEACHING POOLS

1 172 Accabonac Road Engineer's Conceptual Layout
SCALE: 1" = 200' - 0"

**East Hampton Village STP
Engineer's Conceptual Layout**

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STP Process Technology Alternatives



- Biologically Engineered Single Stage Treatment (BESST) System
 - Suspended growth, activated sludge process
 - Provides carbonaceous BOD removal, nitrification and denitrification
 - Utilizes one (1) tank with three (3) distinct zones
- Sequencing Batch Reactors (SBR)
 - Treatment is completed in a single basin
 - Fill-and-draw principle
 - Equalization, biological treatment, and secondary clarification is achieved in single basin using time-controlled sequence
- Membrane Bioreactor (MBR)
 - Suspended growth biological reactor with solids removal via filtration
 - Membrane filtration system can replace the secondary clarifier and sand filters in typical activated sludge treatment system

STP Process Technology Alternatives



System	Pros	Cons
Biologically Engineered Single Stage Treatment (BESST) System	<ul style="list-style-type: none">• Commonly used, numerous installations• Minimal odor generation due to fully aerated process• Easy to maintain due to minimal equipment in tanks	<ul style="list-style-type: none">• Requires more acreage than other treatment alternatives
Sequencing Batch Reactor (SBR)	<ul style="list-style-type: none">• Equalization, primary clarification, biological treatment and secondary clarification can be achieved in a single reactor vessel• Operating flexibility and control• Potential capital cost savings by eliminating clarifiers and other equipment• Operators are familiar with this system	<ul style="list-style-type: none">• Sophisticated controls and timing units.• Biological process maintained within one common tank for each process train
Membrane Batch Reactor (MBR)	<ul style="list-style-type: none">• High quality effluent• Small footprint requirement• Ease of automation• High volumetric loading rates which result in lower hydraulic retention times• Filtration is included in the system	<ul style="list-style-type: none">• High capital, operating and energy costs• Requires chemical addition for membrane maintenance

STP Process Technology Alternatives



- BESST & SBR
 - Requires building 50' x 125'
- MBR
 - Requires building 50' x 70'
- 29 King St
 - Only MBR will fit with the recommended variance however there is not adequate area for 100% STP expansion
- 172 Accabonac
 - All three technologies will fit without required variance

STP Effluent Disposal Evaluation



Characteristic	Shallow Sub-Surface Disposal	Deep Sub-Surface Disposal
Maximum Effective Depth	4 Feet	16 Feet
Leaching Area to be Installed at time of Initial Construction	200% of Calculated Leaching Area	200% of Calculated Leaching Area
Additional non-disturbed Area Reserved	N/A	100% of Calculated Leaching Area
Installation Requirements	3 Feet above highest recorded groundwater elevation	3 Feet above highest recorded groundwater elevation

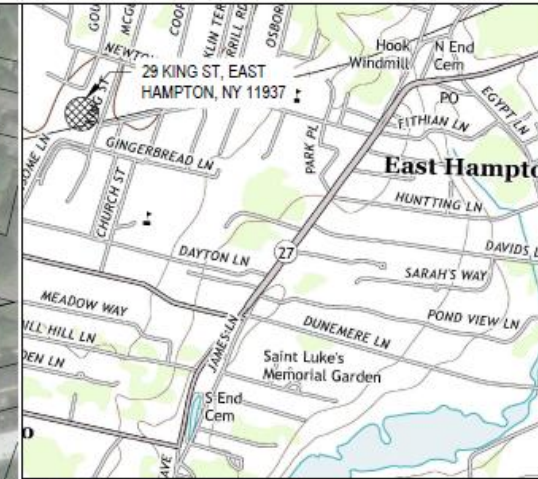
STP Effluent Disposal Evaluation



- 29 King Street
 - Groundwater is 31 to 50 feet below land surface¹
 - Deep leaching pools can be installed
- 172 Accabonac Road
 - Groundwater ranges from 11 to 50 feet below land surface¹
 - Groundwater will need to be confirmed however deep leaching pools are assumed to be viable

¹ Per USGS Long Island Depth to Water Viewer, dated 2016

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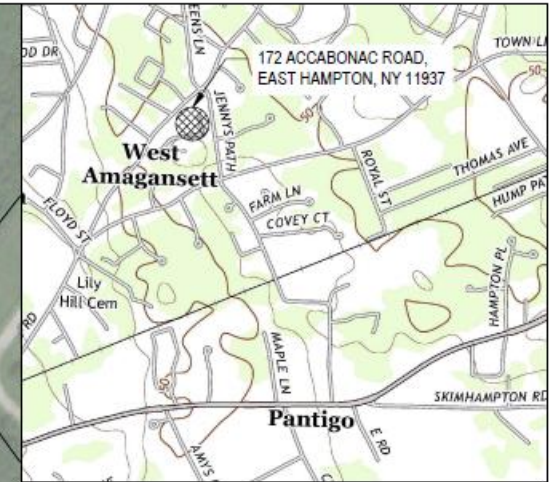
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1 29 King Street MBR Conceptual Layout
SCALE: 1" = 200' - 0"

**East Hampton Village STP
MBR Conceptual Layout**

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1 172 Accabonac Road MBR Conceptual Layout
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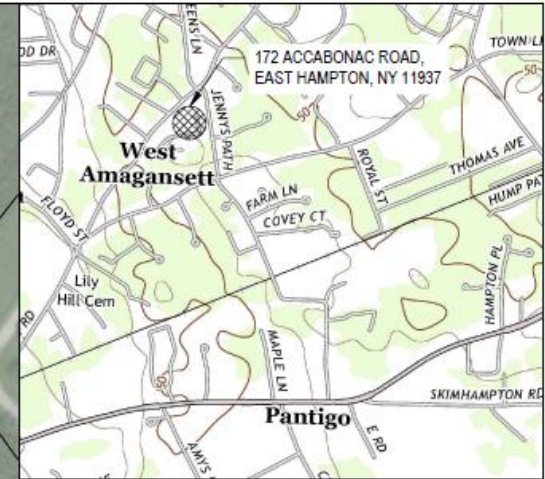
East Hampton Village STP MBR Conceptual Layout

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1 172 Accabonac Road BESST and SBR Conceptual Layout
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**East Hampton Village STP
BESST & SBR Conceptual Layout**

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Critical Issues Analysis



- Identify potential issues that will likely be encountered when complying with the New York State Environmental Quality Review Act (SEQRA)
- Threatened and Endangered Species
 - 29 King St – Unlikely
 - 172 Accabonac Road – May contain listed species. Field investigation and analysis will be required
- Critical Environmental Area (CEA) of Suffolk County Ground Water Protection Area (SGPA)
 - Both project sites are located within CEA of SGPA
 - Design and mitigation methods will need to be addressed during SEQR process
- Archeological Buffer Area
 - Both sites are within buffer area
 - Consultation with New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) required

STP Alternatives Cost Opinions



System	Cost Opinion
BESST	\$ 11,500,00
SBR	\$ 11,500,00
MBR	\$ 12,000,00

- Construction Cost Only
- Engineering design, soft costs and collection and conveyance system construction costs were not included
- Budgetary construction cost opinion reflects a 35% contingency due to the current unknowns and preliminary level of detail know at this time

Site Recommendation



Location	Pros	Cons
29 King Street	<ul style="list-style-type: none">• Located in the Village of East Hampton• Minimal site improvements• Unlikely to contain vulnerable species	<ul style="list-style-type: none">• Will not meet SCDHS setback distances• Variance will be required• Currently zoned as R-40 Residential; STP will require special permit• Site is surrounded by single family residences• Located within the Critical Environmental Area of Suffolk County Ground Water Protection Area• Located within the archeological buffer area
172 Accabonac Road	<ul style="list-style-type: none">• Currently used as DPW property• Existing buffer area between the property and surrounding residential properties• Adequate space is available• Currently in zoning district A – single family residential; “Public Utility” is a permitted use via special use permit in zone A	<ul style="list-style-type: none">• Located outside the Village of East Hampton• Significant tree removal• Potential to contain vulnerable species• Located within the Critical Environmental Area of Suffolk County Ground Water Protection Area• Located within the archeological buffer area

Next Step Considerations



- Map and Plan
 - Identify service area boundaries
 - Sanitary Flow Projections
 - Preliminary engineering analyses
 - Associated tax implications
- SEQRA
 - Considers environmental impacts with social and economic factors to determine if an Environmental Impact Statement is required