
APPENDIX E-2

Sewer Service Feasibility Report For Suffolk Technology Project

Prepared by Nelson + Pope- September 26, 2023

26 September 2023

Mr. David Williams
Bristol Group, Inc.
350 Sansome Street, Suite 900,
San Francisco, CA 94104

Subject: Suffolk Technology Center, Pinelawn, New York
SCTM # 0100-038.00-01.00-001.000

Dear Mr. Williams:

N+P has performed an evaluation of the area surrounding the subject project site to determine the methods of sewage disposal system available and applicable for the project. We studied the hydrogeology and topographical nature of the area in the vicinity of the project site and investigated on-site and off-site sewer service options for the property.

An on-site sewage disposal system appeared to be not a viable option because of insufficient available space on the property. N+P contacted SCDPW for information pertaining to existing manhole location near the project site for a plausible out-of-district connection to serve the property. The enclosed technical report illustrates the facts and findings of several options evaluated by N+P and the option found to be feasible for the project.

Should you have any questions and/or need additional information, please do not hesitate to contact me at (631) 427-5665.

Regards,



Thomas F. Lembo P.E.
Senior Partner

CC:

Sewer Service Feasibility Report For Suffolk Technology Center Project Wyandanch, Town of Babylon, NY

N&P Project No. 21022

September 26, 2023

Executive Summary

Suffolk Technology Center is a proposed development to be located on an approximately 109.23- acres of land situated on the northeast corner of Little East Neck Road and Long Island Avenue and is identified as SCTM No. 0100-38-1-1. The proposed development involves construction of nine (9) buildings accommodating separate tenant spaces for Office/warehouse uses. As an option, an “out-of-district” connection to the Suffolk County Sewer District No. 3 - Southwest (SCSD) is proposed for providing sewer service for the development. The property will be served by Suffolk County Water Authority. A water main extension from the intersection of Little East Neck Road and Long Island Avenue will be required to serve the property.

N+P has been contacted to perform an evaluation of the existing conditions of the area surrounding the project site and the existing SCSD manholes in the vicinity of the project site to assess the sewer service options available to the property which would be physically and economically feasible. Based upon the information provided in the “Due Diligence Report” prepared by Bohler along with the information gathered from web search and available other pertinent documents, and from discussion with the Suffolk County Sewer Agency, N+P found two existing SCSD manholes near the project site – one is located at the intersection of Straight Path and Long Island Avenue and the other one, on Conklin Street located to the west of the Little E Neck Road. We narrowed down five different options of servicing sewer for the development. Four options pertain to connection to the aforementioned two nearby manholes either via gravity or via a pump station and force main system. The fifth option pertains to an on-site sewage treatment plant. Each option was further evaluated in light of constructability, local constraints, availability of public sewer service, and cost benefit assessment. Among the options, connection to the Conklin Street manhole via a pump station and force main system has been found to be the most appropriate and feasible option which has been demonstrated in the proceeding sections. The cost of the system has been projected to be \$3.83 M without taking into consideration ancillary costs such as dewatering, relocation of existing utility lines/service lines, access to public right-of-way, etc.

Section 1 - Introduction

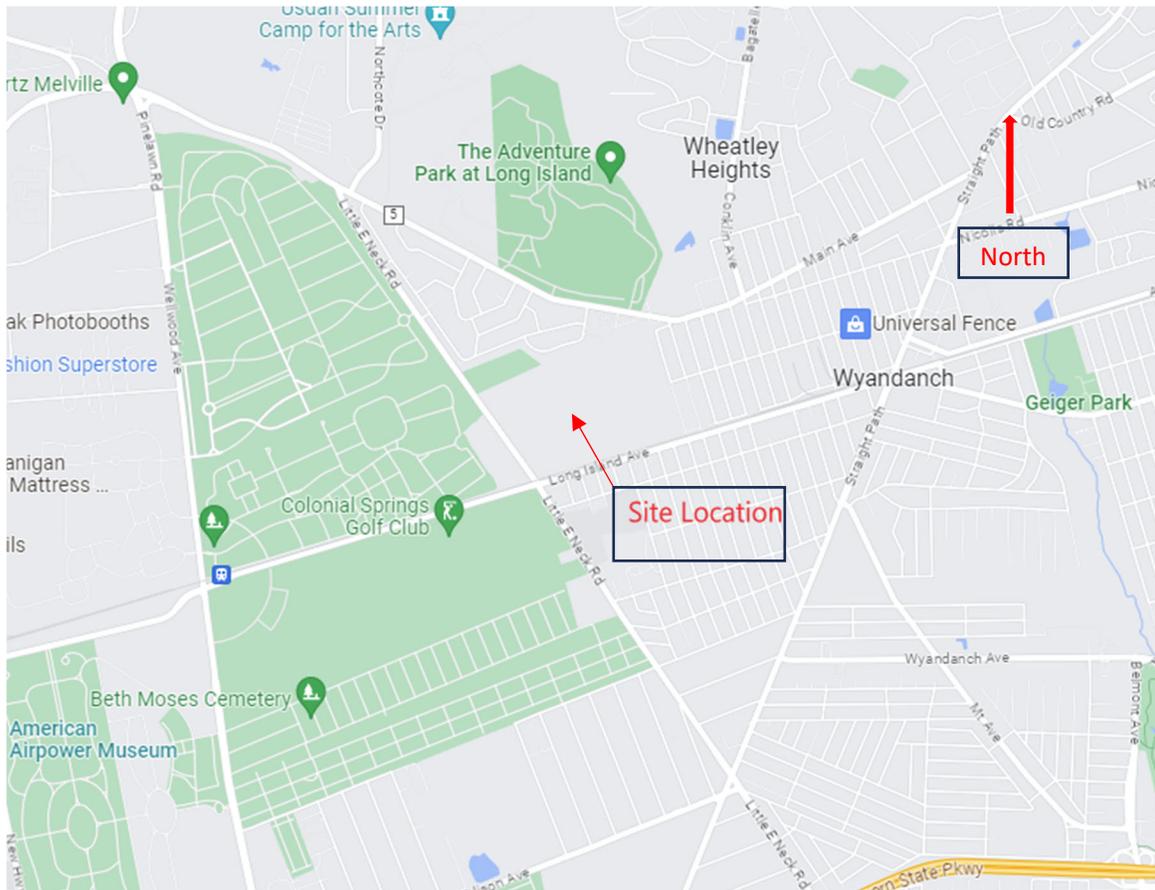
This document is prepared as part of a feasibility study for the proposed commercial development called “Suffolk Technology Center”. The proposed development involves construction of nine (9) buildings accommodating separate tenant spaces for Office/warehouse uses with an overall total tenant space of 1,617,849 sf. including 122, 200 sf. of office space. The proposed use of the buildings

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is warehouse. The “Due Diligence Report” prepared by Bohler Engineering indicates that the total wastewater to be generated by the development is estimated to be 67,157.6 gallons per day (gpd).

N+P contacted Suffolk County Sewer Agency (SCSA) for information regarding location of existing manholes in Sewer District 3 in the vicinity of the project site and found two (2) sewer district manholes within two miles of the project site. The location of the site is depicted on Figure 1 – Key Map below.

**Figure 1 – Key Map
(Google Maps 2021)**



Section 2 – Existing Conditions

The 109.23-acre parcel is located in A Residence District where business uses and storage of commercial vehicles are prohibited. In the Town of Babylon, the proposed uses of the project are commensurate with the uses permitted in Planned Industrial Park District-1 (PIP-1). Therefore, rezoning of the property to PIP-1 district will be required to permit the proposed uses.

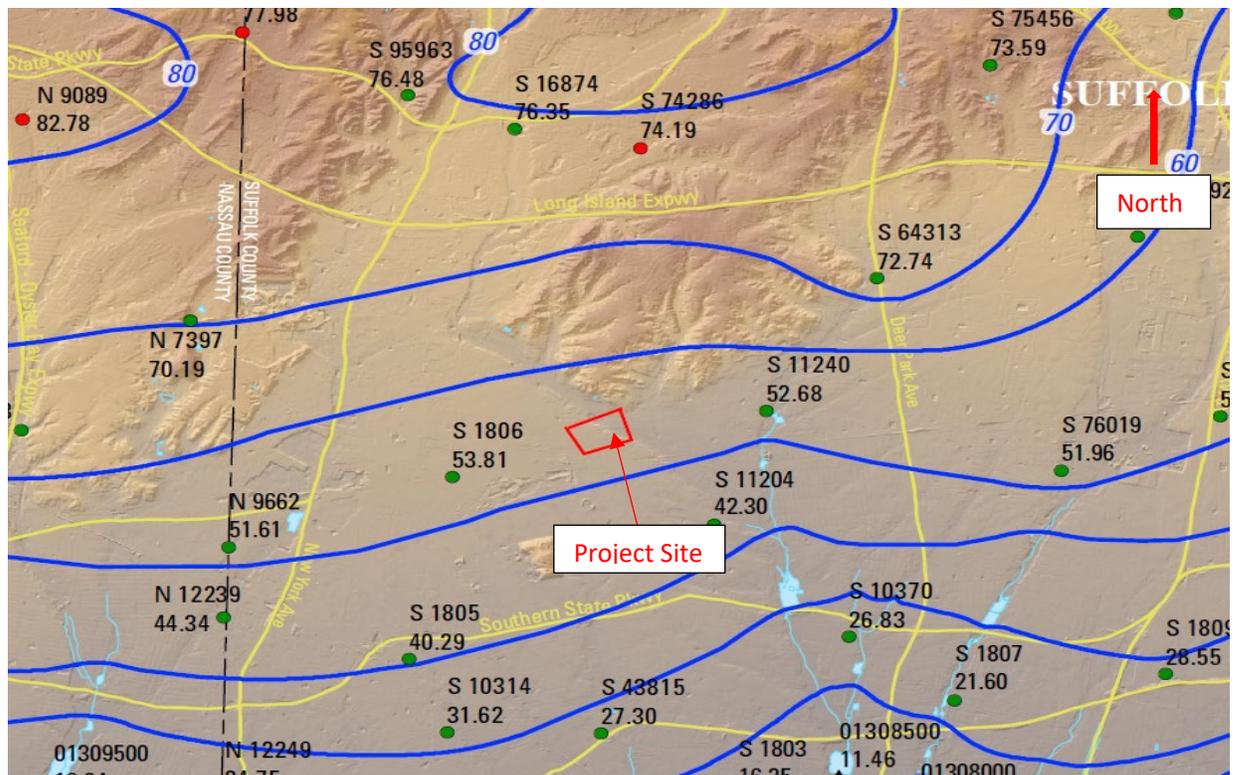
The parcel is bordered by a park and residences to the north. The east side of the property is bordered by N 28th Street. All the parcels on the east side of N 28th Street appear to be developed with residential

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houses. Long Island Avenue abuts the south side of the property and the properties on the south side of the road also appear to have residential houses. The west property line is bordered by Little East Neck Road. The Franz Lin Grave site is located on the west side of Little East Neck Road.

The existing grade elevations on the property from northwest to southeast corner of the varies within approximately 20 ft. between high and low points. The groundwater elevation in the vicinity of the site is +/-53.8 ft. above MSL based upon USGS Groundwater Table Map as shown in Figure 2 below. The direction of groundwater flow is toward south/southeast. A Phase I Environmental Site Assessment prepared by Nelson Pope & Voorhis dated February 5, 2021, indicated that depth to groundwater ranges from 7 ft. at the project site to 27 ft. below grade throughout the property which is yet to be determined more precisely.

Figure 2 – Groundwater Table Map (USGS 2017)



The following figures show depth to the groundwater table at the project site, the existing manhole at the intersection of Straight Path and Long Island Avenue, and the manhole in Conklin Street (Figure – 2a, 2b, & 2c.).

Figure 2a – Depth to Groundwater

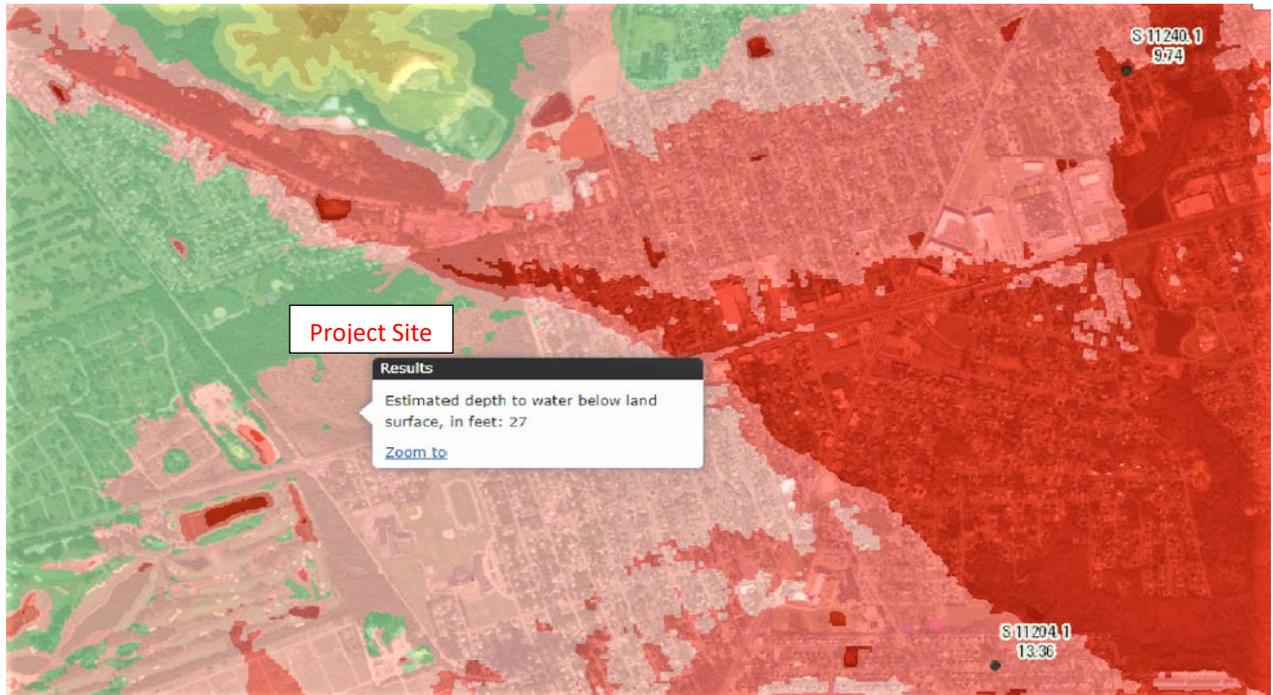


Figure 2b – Depth to Groundwater

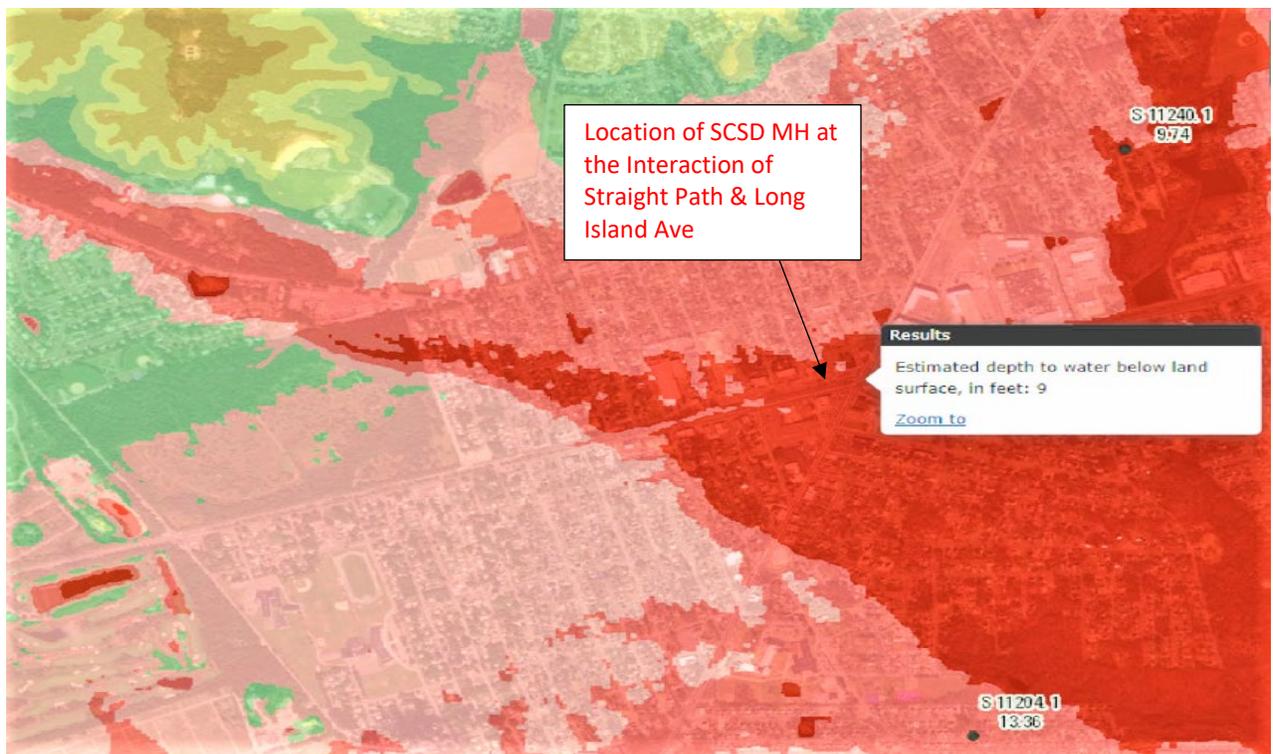
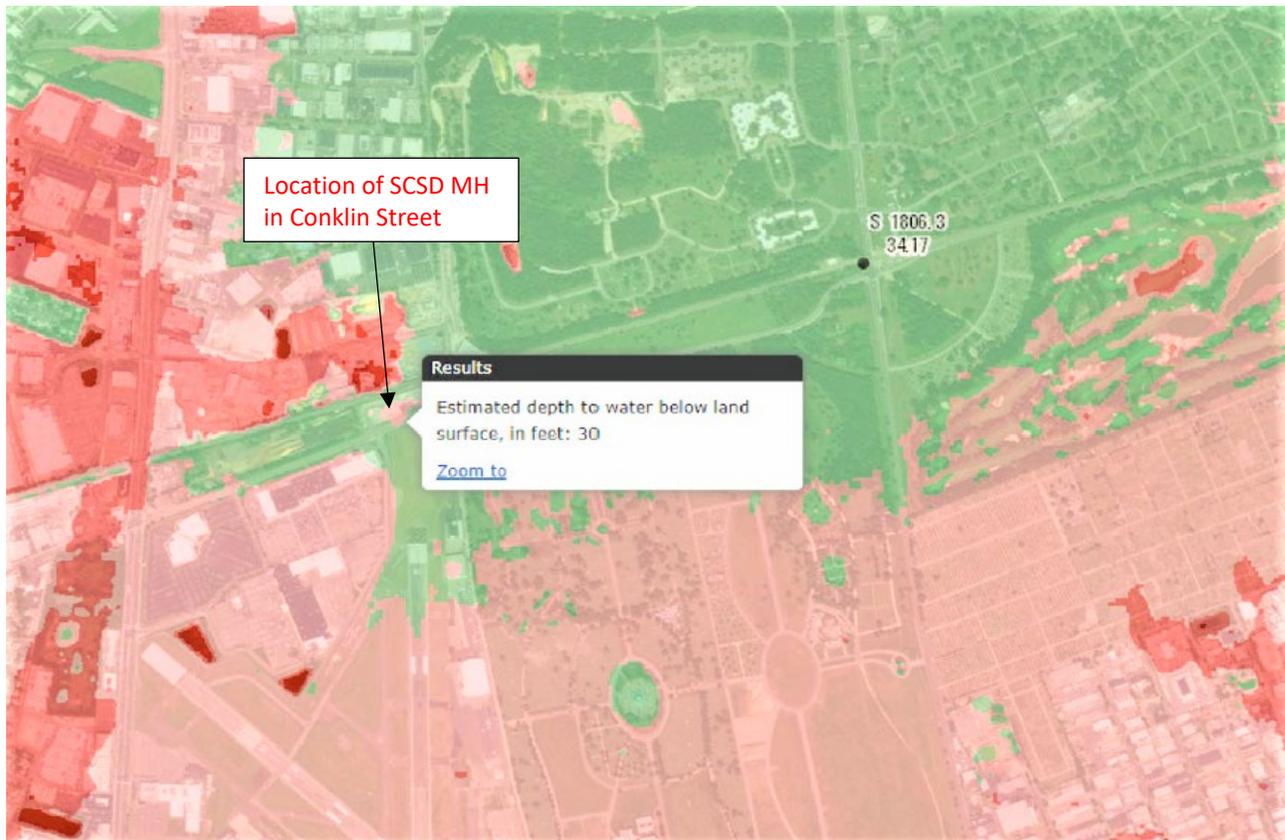


Figure 2c – Depth to Groundwater



Section 3 – Proposed Conditions

The Suffolk Technology Center project proposes construction of nine (9) individual one-story buildings with an overall total tenant space is 1,617,849 sf. including 122, 200 sf. of office space. The proposed use of the buildings is warehouse. The “Due Diligence Report” prepared by Bohler Engineering indicates that the total wastewater to be generated by the development is estimated to be 67,157.6 gallons per day (gpd).

The property is in the Groundwater Management Zone (GWMZ) I in accordance with SCDHS zoning. The allowable density for the development is 65,538 gpd. The available methods of sewage disposal systems for the proposed development are as follows:

1. Option I – Gravity Sewer System connecting to SCSD Manhole located at the intersection of Long Island Avenue & Straight Path, 0.67 miles east of the project site.
2. Option II – Gravity Sewer System connecting to SCSD Manhole located on Conklin Street, west of New Highway, 1.94 miles west of the project site.

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3. Option III – Pump Station & Force Main connecting to the SCSD Manhole located at the intersection of Long Island Avenue & Straight Path, 0.67 miles east of the project site.
4. Option IV – Pump Station & Force Main connecting to SCSD manhole located on Conklin Street, west of New Highway, 1.94 miles west of the project site.
5. Option V – An on-site sewage treatment plant (STP).

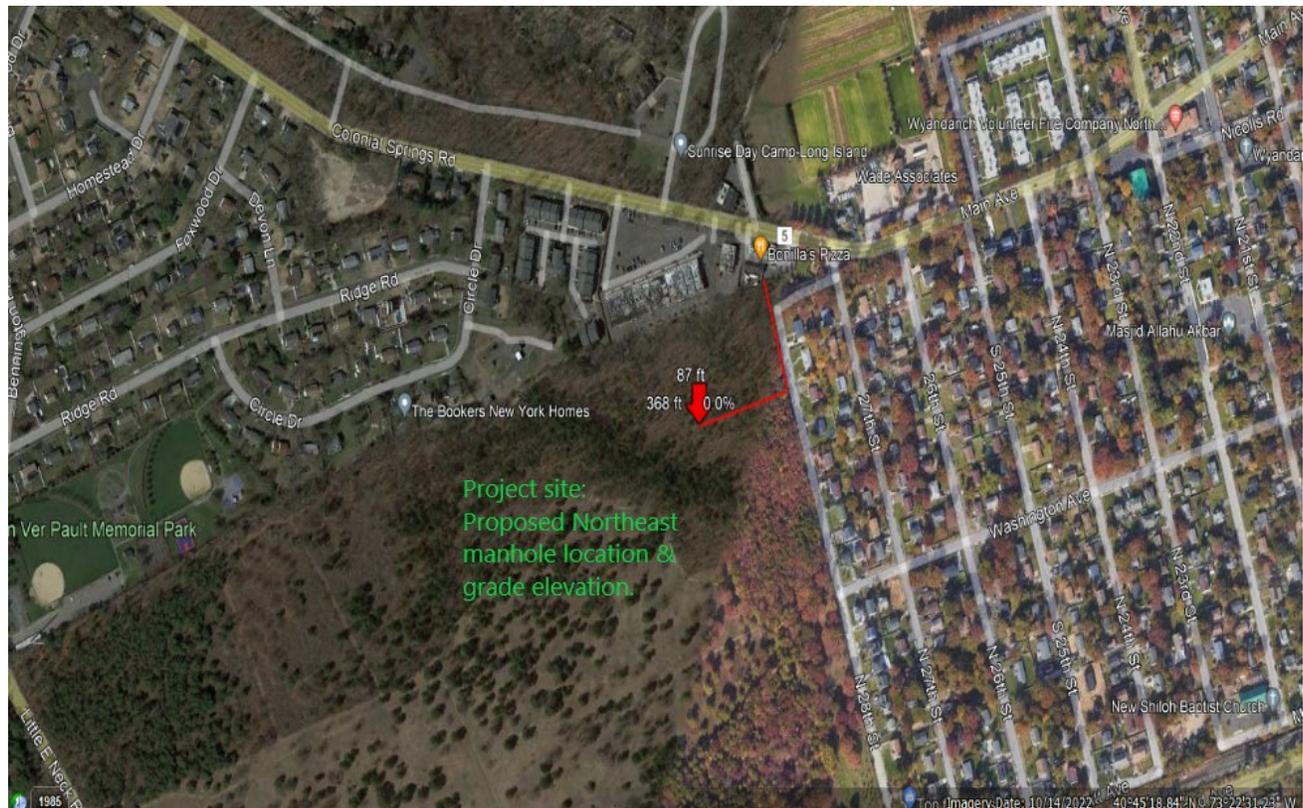
N+P evaluated the site and the area surrounding the above mentioned SCSD manholes based upon the information provided in the “Due Diligence Report” prepared by Bohler Engineering and from web search of various pertinent documents for determining the feasibility of providing an appropriate sewage disposal system for the development. The facts and findings are discussed in the proceeding sections.

Section 4 – Methods of Sewage Disposal System

The “Pine Lawn Business Park Site Plan Rendering (Final)” layout has been used to sketch a preliminary layout of the collection system inside the property. The sketch has been used to determine a tentative location of the final manhole and/or pump station before the collection system exits the property. This layout is helpful in determining the estimated burial depth of the sewer main at the property line, eliminating the potential elevation problem at the time of connecting the proposed buildings as well as predicting the elevation of the main at the manhole connection point as realistically as possible. A ten (10)-inch gravity sewer main has been considered for the on-site collection system with the following assumptions:

- The starting point of the pipe is assumed to be at a proposed manhole located near the northeasterly property line at an elevation of 6 ft. below grade where the grade elevation is 87 ft. Refer to Figure 3 below.
- The end point of the pipe is assumed to be approximately at the midpoint of the westerly property line abutting Little E. Neck Road.
- All the pipes have a pitch of 0.4%.
- The grade elevation along the sewer trunk varies from 87 ft. at the proposed northeasterly manhole location to 80 ft. near the midpoint of the westerly property line where the proposed final manhole and/or pump station will be located.

Figure 3 – Proposed Northeast Manhole Location



Based upon the calculations, the invert elevation of the gravity line is expected to be no lower than 63 ft. Appendix A depicts the layout of the on-site collection system.

1. Option I

N+P considered the SCSD manhole located at the intersection of Long Island Avenue & Straight Path which would be 1.25 miles east of the proposed manhole on the project site. It appears that the grade elevation from the westerly property line varies from 80 ft. to 57 ft. at the location of the SCSD manhole. The pipe would run in the direction of the slope of the existing grade throughout its entire pathway maintaining the required pitch on the pipe. The following two scenarios have been studied:

- a. A ten (10) inch sewer trunk for providing out-of-district sewer service to the project site – Refer to Figure – 4 for the routing of the gravity line. Based on the calculations, it appears that a portion of the pipe will be submerged in groundwater before connecting to the existing manhole as the groundwater table in the SCSD manhole area is only 7 ft. below grade and the pipe would be 20 – 25 ft. below grade throughout its route. Figure -5 shows the groundwater elevation at several locations along the gravity sewer line route from which it can be predicted that approximately 1900 ft. of the pipe upstream of the existing sewer district manhole will be in groundwater.

Figure 4 – 10" Gravity Pipe Routing to connect to existing SCSD manhole at the intersection of Straight Path and Long Island Avenue



Figure 5 – Groundwater Elevation at Various Locations



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Cost Estimation:

The cost of the gravity collection system to connect the project site from the manhole near the westerly property line to the SSCSD manhole is based upon a 1.25 mile (6,600 ft.) of sewer pipe including manholes every maximum 400 ft.

Cost of pipe per foot located above groundwater: \$250.00

Cost of pipe per foot submerged in groundwater: \$500.00 (at a minimum)

Total gravity sewer line cost: (4,700 ft. X \$250.00 /ft.) + (1,900 ft. X \$500.00 /ft.) = \$2,125,000.00 ~ \$2.15 M

- b. A Twelve (12) inch sewer trunk for potential future connection of properties in the color coded zone as shown on Figure 3-7, "SCSD 3 – Service Area Expansion Sub Areas by Tier" map and indicated on the June 16, 2022 email from Mr. Peter Scully. The required slope to be maintained on the sewer trunk is 0.22%, less than that for a ten (10) inch pipe; however, a portion of the pipe before connecting to the SCSD manhole will still be submerged in groundwater. The above cost estimation calculations for a twelve (12) inch gravity sewer line are shown below:

Cost of pipe per foot located above groundwater: \$275.00

Cost of pipe per foot submerged in groundwater: \$500.00 (at least)

Total gravity sewer line cost: (4,700 ft. X \$275.00 /ft.) + (1,900 ft. X \$500.00 /ft.) = \$2,243,000.00 ~ \$2.45 M

2. Option II

As an option, N+P evaluated connecting the site to SCSD Manhole located on Conklin Street, 1.94 miles west of the proposed manhole on the project site, via a gravity sewer collection system. The natural grade elevation across the area from the site to the manhole location is almost same, refer to Figure 6. Based upon calculations, the final elevation of the pipe at the manhole (approximately 40 ft. below grade) is found to be too deep into the ground to make the connection feasible because of the slope required to be maintained throughout the entire length of the collection line for adequate movement of the sewage. A ten (10) inch collection pipe is considered.

Option I a. and Option I b. cost estimations do not include the cost for dewatering for the portion of the sewer main that would be installed in groundwater.

Figure 6 – 10" Gravity Pipe Routing to connect to existing SCSD manhole on Conklin Street



3. Option III

An onsite pump station with a capacity of 68,000 gallons per day (gpd) along with a force main, following the same route as the gravity sewer main depicted on Figure – 4, was considered for the project which will pump sewage to the SCSD manhole located at the intersection of Long Island Avenue & Straight Path, 1.25 miles east of the proposed manhole on the project site.

A six (6) inch diameter pipe is considered for the force main which would be 6,600 ft. long. The main would be located at least 4.5 ft. below grade but will likely be above groundwater throughout its run.

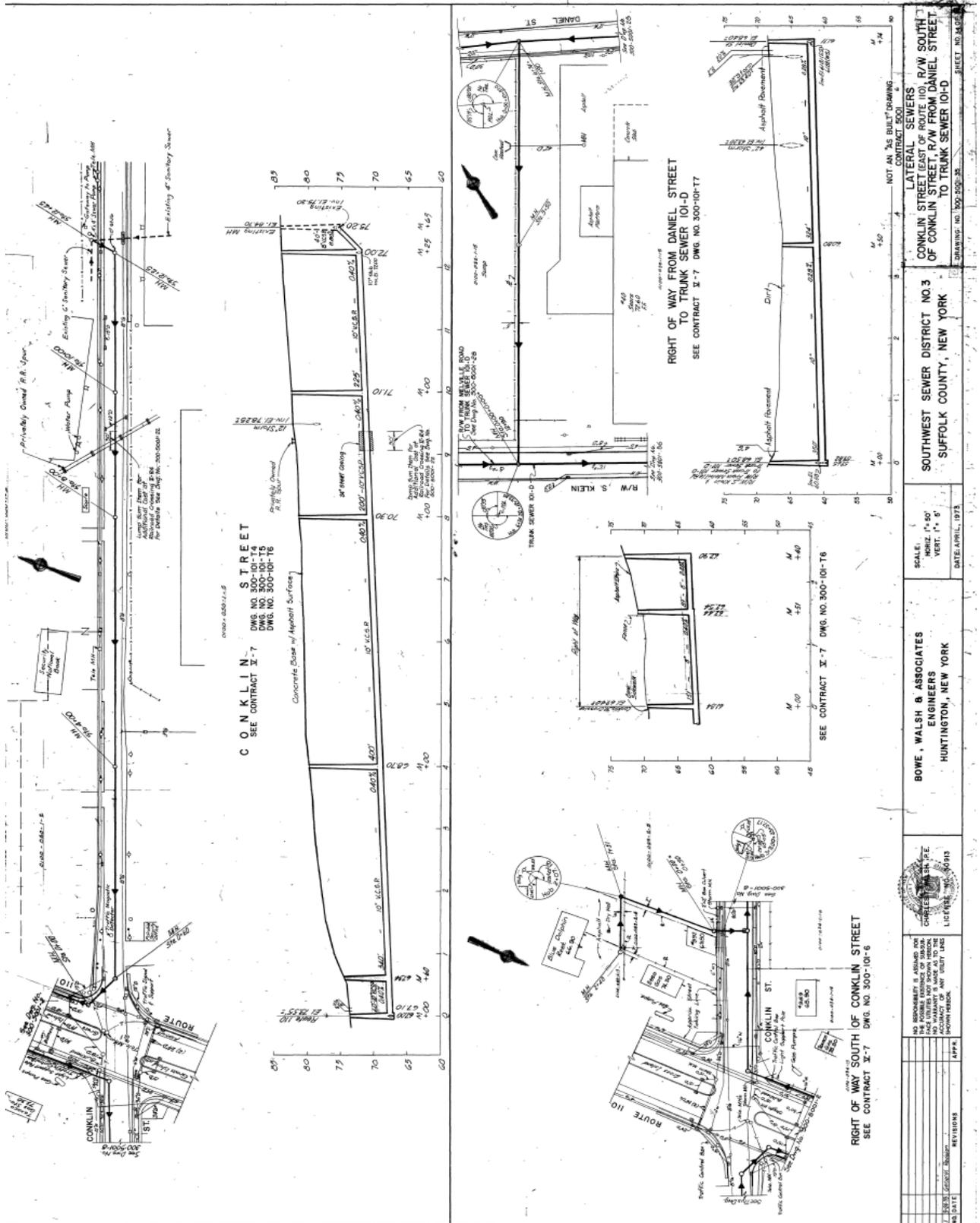
Cost Estimate:

Cost of the Pump Station: \$750,000.00

Cost of the force main: 6600 ft. X \$300.00 /ft. = \$1,980,000

Total Cost: \$750,000.00 + \$1,980,000 = \$2,730,000 ~ \$2.75 M

Figure 7 – “As-Built” Information Provided by SCDPW
 Showing location of the Conklin Street manhole



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4. Option IV

N+P evaluated another option for connecting the project site to SCSD via the manhole located on Conklin Street which is ± 1.94 miles west of the proposed manhole on the project site. As indicated under Option III above, an on-site pump station and force main with a capacity of 68,000 gallons per day will be designed to transfer the sewage to be generated by the proposed buildings. Refer to Figure 7 for the "As-Built" drawing of the lateral sewer and manhole locations in Conklin Street provided by SCDPW.

The force main will be 6 inch diameter pipe and 10,250 ft. long. The main will be located at least 4.5 ft. below grade but above groundwater throughout its run.

Cost Estimate:

Cost of the Pump Station: \$750,000.00

Cost of the force main: 10,250 ft. X \$300.00 /ft. = \$3,075,000.00

Total Cost: \$750,000.00 + \$3,075,000.00 = \$3,825,000.00 ~ \$3.83 M

5. Option V

N+P evaluated the option of constructing an on-site sewage treatment plant (STP) with a capacity of 68,000 gallons to serve the proposed buildings on the property. There are several treatment technologies currently available in Suffolk County. The cost of construction of an STP differs slightly based upon the technology and accessory equipment selected; however, an average \$/gallon may be used for cost estimation. In general, a pump station is an integral part of an STP to avoid designing treatment tanks deeper than 20 ft. For this project an average of \$130/gallon is considered for the following cost estimation.

Cost Estimate:

Cost of STP: 68,000 gallons X \$130/gallon = \$8,840,000.00

Total Cost: \$8,840,000.00 ~ \$8.5 M

Approximately 1- acre of land is required for locating an STP maintaining all the setback distances in accordance with SCDHS construction standards. An application with a proposal for construction of an STP requires longer review and approval processes by SCDHS as it may involve review and approval by several other agencies. Furthermore, the proposed development does not appear to have sufficient available space to locate an onsite STP and the construction cost is much higher than the other options described above. Therefore, this option may not be preferable.

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Suffolk County Sewer Agency (SCSA) confirmed that sufficient capacity is not currently available at the Wyandanch Pump Station for accommodating the proposed development. The district manhole at the intersection of Straight Path and Long Island Avenue is connected to the Wyandanch pump station, so Options I, II, & III are not feasible for the proposed project. Option V is not preferable because of the much higher expense involved in the STP construction. Further, adequate space for locating an on-site STP may not be available. Therefore, it appears that Option IV would be the only method of sewage disposal for the proposed project based upon the building layout plan.