



**Preliminary Feasibility Study for Sewage Treatment and Disposal**

**RONKONKOMA HUB PROJECT  
TOWN OF BROOKHAVEN, NEW YORK**

**PRELIMINARY FEASIBILITY STUDY  
FOR  
SEWAGE TREATMENT AND DISPOSAL**

**PREPARED FOR**

**TOWN BOARD  
TOWN OF BROOKHAVEN  
1 INDEPENDENCE HILL  
BROOKHAVEN, NEW YORK 11738**

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**AUGUST 2010**

## **FOREWARD**

This Preliminary Report has been prepared in compliance with the requirements of *Appendix B - Standards For Approval and Construction of Sewage Collection Systems and Treatment Works* (issued by Suffolk County Department of Health Services (SCDHS)), requirements of Suffolk County Department of Public Works (SCDPW) and in general follows the outline of Chapter 10 of the *Recommended Standards For Wastewater Facilities* (Ten State Standards).

This Preliminary Report has been prepared to address sewage treatment and disposal for the proposed Ronkonkoma HUB development.

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Note: All drawings are located at the end of the report

## SECTION I

### GENERAL INFORMATION

**Project Name:** Ronkonkoma HUB

**Applicant:** Town Board  
Town of Brookhaven  
Town Hall  
1 Independence Hill  
Farmingville, NY 11738

**Project Description:** The applicant proposes to form a new sewer district to service a proposed HUB redevelopment. A new sewage treatment plant will service the proposed district.

**Project Location:** The site is located in the Town of Brookhaven. The overall site is 54 acres.

**Consulting Engineer:** Michael P Chiarelli Engineer, P. C.  
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**SECTION II**  
**INTRODUCTION**

**General**

This Preliminary Report has been prepared for the Town Board of the Town of Brookhaven, New York. The proposed Ronkonkoma HUB area is generally located south of Union Avenue, north of the Ronkonkoma Long Island Railroad station, east of Ronkonkoma Avenue, and west of Village Plaza Drive in the Town of Brookhaven, New York.

The project area considered for rezoning and development is approximately 54 acres and is located in Groundwater Management Zone I. In this zone, the maximum allowable sewage flow is 600 gallons per acre per day without formal sewage treatment with nitrogen removal. The projected build-out of the HUB is greater than the 32,400 gpd allowable flow for this area if on-site sanitary systems are used. Therefore, formal sewage treatment including nitrogen removal will be required for the proposed district.

**Project Site**

The Ronkonkoma HUB area is relatively flat, with grade elevations within a reasonable vicinity of 100 feet above mean sea level. The STP will be located in the southeast corner of the HUB area.

There are no public water supply wells within 1,500 Ft. of the HUB area. The nearest public water supply wells are:

- Lincoln Avenue Well Field                      1,700 ft ± to the Southeast
- Easton Street Well Field                        1,800 ft ± to the Southwest

The groundwater flow direction in the area is generally to the south based on Suffolk County Department of Health Services (SCDHS 1997) Water Contour Maps. Groundwater elevation in the vicinity of the proposed district is 45± feet above MSL.

Six-inch, eight-inch, and 12-inch public water mains owned by Suffolk County Water Authority serve the Ronkonkoma HUB area.

### **SECTION III**

#### **PROPOSED TREATMENT PLANT CAPACITY**

The average daily design flow is the average of the daily volumes to be received for a continuous 12 month period. The average daily design flow of the proposed STP for the HUB area is derived as shown in Appendix A of this report.

The Theoretical Full Build Plan – attached as Drawing No. 1 at the end of this report – depicts the boundary of the proposed sewer district, as envisioned in the Ronkonkoma HUB Transit-Oriented Land Use and Implementation Plan prepared by VHB Engineering, Surveying, and Landscape Architecture, P.C. This plan shows theoretical development of the HUB area, including the construction of a sewage treatment plant (STP) within the boundaries of the HUB area. If this proposed plan is followed, the design average daily flow required will be approximately 169,000 GPD, inclusive of existing properties to remain.

The Theoretical Max Build Plan – attached as Drawing No. 2 at the end of this report – also depicts the boundary of the proposed sewer district, as envisioned in the Ronkonkoma HUB Transit-Oriented Land Use and Implementation Plan prepared by VHB Engineering, Surveying, and Landscape Architecture, P.C. This plan shows theoretical development of the district, including the construction of the STP outside the boundaries of the 54 acre HUB area, in the Town of Islip, and a contribution to the flow from a property that is also outside the boundaries of the ±54 acre HUB area, in the Town of Islip. Under this scenario, the area to be redeveloped would be expanded to ±106 acres to include the area utilized by the STP and the LIRR Station parking lot. If this proposed plan is followed, the design average daily flow required will be approximately 213,000 GPD, inclusive of existing properties to remain.

Since future development density of this area cannot be precisely determined, the proposed STP capacity will be 275,000 GPD. This will allow for changes in the land use and implementation plan, as well as offer excess capacity for future expansion of the district.



In accordance with “Figure 1”, page 10-5 of the Ten State Standards, the peak hourly flow for a population of approximately 3,667 ( $275,000 \text{ gpd} \div 75 \text{ gpd per person}$ ) is 3.37. Peak hourly flow is therefore calculated to be  $275,000 \text{ gpd} \times 3.37 = 926,750 \text{ gpd}$  (643.6 gpm).

**SECTION IV**  
**INFLUENT SEWAGE CHARACTERISTICS**

The influent raw sewage characteristics used for the purpose of designing the proposed HUB area STP, as required by SCDHS are as follows:

BOD <sub>5</sub> :	272 mg/l
SS:	320 mg/l
TKN:	65 mg/l
Alkalinity:	250 mg/l

Based on the above influent sewage characteristics and influent flow of 275,000 gallons per day, the influent loads are expected to be as follows:

Lbs. of pollutants = mg/ l pollutant x 8.34 lb./gal. X flow in MGD

$$272 \text{ mg/l} \times 8.34 \text{ lb./gal.} \times 275,000 \text{ gpd} \times 10^{-6} = 623.8 \text{ lb. BOD}_5/\text{day}$$

$$320 \text{ mg/l} \times 8.34 \text{ lb./gal.} \times 275,000 \text{ gpd} \times 10^{-6} = 733.9 \text{ lb. S.S./day}$$

$$65 \text{ mg/l} \times 8.34 \text{ lb./gal.} \times 275,000 \text{ gpd} \times 10^{-6} = 149.1 \text{ lb. TKN/day}$$

$$250 \text{ mg/l} \times 8.34 \text{ lb./gal.} \times 275,000 \text{ gpd} \times 10^{-6} = 573.4 \text{ lb. Alk./day}$$

**SECTION V**  
**EFFLUENT REQUIREMENTS**

The treated effluent from the proposed STP will be recharged to the ground via subsurface leaching pools. Consequently, we expect the State Pollutant Discharge Elimination System (SPDES) permit will require a daily maximum total nitrogen concentration of 10 mg/l as the limiting value and a pH limit of 5.5 to 8.5 SU. The 30-day arithmetic average flow limit will be the design flow of 275,000 gpd.

The following effluent quality is anticipated:

BOD <sub>5</sub>	< 10 mg/l
TSS	< 10 mg/l
Total N	< 10 mg/l
pH	5.5 to 8.5 SU

The effluent quality is expected to meet or do better than the effluent requirements.

**SECTION VI**  
**TREATMENT OPTIONS**

Based on density restrictions, formal sewage treatment must be provided for the proposed project. Generally, two options are available:

- Off-Site Treatment and
- On-Site Treatment.

**Off-Site Treatment**

Off-site treatment requires that there be an existing STP which:

- Is sufficiently close to the project site to allow for economical transfer of sanitary sewage flow from the project site to the host STP;
- Has sufficient uncommitted excess capacity for the expected proposed and future sanitary sewage flow for this project; and
- Is capable of treating the sewage to the required effluent quality.
- The Owner of a host STP must be amenable to accepting sewage from the proposed project.

The following three (3) STP's were investigated for the possibility of receiving sanitary sewage flows generated within the proposed district:

No.	Name	Permitted Flow	Distance to Proposed District	SPDES Permit No.
1	Browning Hotel	56,000 GPD	1,100 ft. ±	NY 0253162
2	Waverly Park Condominium	60,000 GPD	3.3 mi. ±	NY 0077381
3	Heatherwood House @ Lake Ronkonkoma	30,000 GPD	2.1 mi. ±	NY 0079375

Review of the above STPs indicates that no nearby STP has enough uncommitted excess capacity to treat an additional 275,000 gpd flow.

In addition, several STPs exist on the Islip side of the proposed district. These STPs also do not have enough uncommitted excess capacity to treat an additional 275,000 gpd flow.

Based upon the above, the off-site treatment option is not viable.

In addition to this analysis, the Suffolk County Department of Public Works (SCDPW) is planning to award Capital Project No. 8185, in which six (6) areas within Suffolk County are to be studied with respect to districting and combining contributing areas for the purpose of sewage treatment. One (1) of those six (6) areas is a similar area to the proposed district being analyzed here.

### **On-Site Treatment**

Many treatment plants have been constructed in Suffolk County using the extended aeration process followed by a deep bed Denitrification filter. Some treatment plants use rotating biological contactors (RBCs) followed by a deep bed Denitrification filter. Other STPs use Sequencing Batch Reactors (SBR) and the Biologically Engineered Single Sludge Treatment (BESST) process.

The BESST process was selected for this project because of its process stability and ability to constantly achieve design goals.

### **B. Description of Selected BESST Treatment Process:**

The BESST Process is a continuous flow modified extended aeration process. Sewage enters first into the anoxic chamber where it mixes with return activated sludge (RAS) from the clarifier. The nitrogen removal process is completed here as nitrite (NO<sub>2</sub>-N) and Nitrate (NO<sub>3</sub>-N) produced in the aeration zone are converted to Nitrogen gas (N<sub>2</sub>). Some of the

influent BOD<sub>5</sub> is consumed in this denitrification process. The dissolved oxygen (DO) level is maintained below 0.2 mg/l, and submerged mixers keep MLSS in suspension.

The mixed liquor is transferred by gravity from the anoxic chamber to the far end of the aeration chamber through a submerged transfer pipe. BOD<sub>5</sub> removal and nitrification take place here as the mixed liquor is aerated by fine bubble air diffusers. The aerated mixed liquor then flows into the bottom of the clarifier by means of a uniquely designed baffle.

In the clarifier, solids settle to the bottom as the supernatant flows over the overflow weir and is gravity fed to the micro screen drum filters. Unfiltered sludge and backwash waste are returned to the sludge holding tank. Clean filtered effluent flows by gravity to the effluent leaching pools.

**SECTION VII**  
**STP SITING**

There are two (2) possible locations for the proposed STP:

1. For the Theoretical Full Build Plan, the STP will be sited in the southeast corner of the HUB area (the “primary site”) in the Town of Brookhaven. This parcel is a 5.47± acre site, which will accommodate at least the 275,000 GPD capacity STP being proposed, pending analysis of soil characteristics and potential hydrogeological effects of effluent on drinking water supplies. The soil type for this site is Plymouth loamy sand, 0 to 3 percent slopes (PIA), which is a rapidly permeable soil. This is an ideal type of soil for disposing of sewage treatment plant effluent, because it allows for recharge beyond the minimum leaching rate required by the SCDHS for the disposal of effluent. The site is relatively flat, with little concern for grading issues. The site is generally clear, and would require minimal removal of trees to complete the construction of the STP building and the effluent leaching pools. The proposed primary STP site is within the proposed district.
  
2. For the Theoretical Max Build Plan, the STP would be sited outside the proposed HUB area, just south of the railroad (the “alternative site”) in the Town of Islip. Alternatively, this parcel, and the parcel containing the parking garage and shops on the Islip side may be included in the HUB redevelopment area, which would obviously expand the district and sewage flow. This parcel is a 9.00± acre site, which will accommodate at least the 275,000 GPD capacity STP being proposed, pending analysis of soil characteristics and potential hydrogeological effects off effluent on drinking water supplies. The soil types for this site are Plymouth loamy sand, 3 to 8 percent slopes (PIB) and Riverhead sandy loam, 0 to 3 percent slopes (RdA). These are ideal types of soils for disposing of sewage treatment plant effluent, because they allow for recharge beyond the minimum leaching rate required by the SCDHS for the disposal of effluent. The site is relatively flat, with little concern for grading issues. The site is generally wooded, and would require clearing of the existing trees to allow for the construction of the STP building as well as

placement of the subsurface leaching pools. The proposed alternative STP site is located outside of the proposed district, or would require an expansion of the proposed district. The proposed alternative STP site lies within the boundary of the Town of Islip.

In comparing the two (2) alternatives, both sites are generally similar. The basic differences include the size of each parcel (5.47± Ac. vs. 9.00± Ac.) and the existing terrain of each parcel (generally cleared vs. generally wooded). The primary site is within the HUB area, and the alternative site would either be outside the HUB area or would require an expanded HUB area. The alternative site is significantly larger than the primary site, offering greater opportunity for expansion of the STP in the future to accommodate, for example, a theoretical expansion of the district, if desired, in the future. Depending on the needs of the Town of Brookhaven, and the vision for this project, the primary site would be preferable if the desire was to keep the project entirely in the Town of Brookhaven, and to keep the district smaller. The alternative site would be preferable if the desire was to offer greater expansion opportunity. Ultimately, the decision is one which is beyond the scope of this report.



**APPENDIX A**  
**PRELIMINARY FLOW CALCULATIONS**

Ronkonkoma HUB Project  
 Sewage Treatment Design Calculations  
 Existing to Remain  
 July 8, 2010

Description	Gross Floor Area (sq.ft.)	Design Category	Design Flow	Design Units	Total Flow (GPD)
<b>Hawkins Ave</b>					
Vacant Auto-Repair	2,876	Gen. Ind.	0.04	GPD/sq.ft.	115.04
Residential 1		Residential	300	GPD/unit	300.00
Residential 2		Residential	300	GPD/unit	300.00
A-1 Car Care	2,186	Gen. Ind.	0.04	GPD/sq.ft.	87.44
<b>Union Ave</b>					
Lawn Mower Service	1,261	Gen. Ind.	0.04	GPD/sq.ft.	50.44
Residential 3		Residential	300	GPD/unit	300.00
Spring & Wheel Alignment, Inc.	3,552	Gen. Ind.	0.04	GPD/sq.ft.	142.08
Tom's Auto Services	5,603	Gen. Ind.	0.04	GPD/sq.ft.	224.12
<b>Carroll Ave</b>					
Islandwide Food Service	8,752	Dry Store	0.03	GPD/sq.ft.	262.56
Residential 4		Residential	300	GPD/unit	300.00
Auto Pro Automotive	2,412	Gen. Ind.	0.04	GPD/sq.ft.	96.48
Tutor Time	10,613	School	7.5	GPD/capita	3,979.88
Abco Electric Corp.	1,062	Gen. Ind.	0.04	GPD/sq.ft.	42.48
Residential 5		Residential	300	GPD/unit	300.00
Residential 6		Residential	300	GPD/unit	300.00
Residential 7		Residential	300	GPD/unit	300.00
<b>Elm St.</b>					
Residential 8		Residential	300	GPD/unit	300.00
Residential 9		Residential	300	GPD/unit	300.00
<b>TOTAL</b>					<b>7,700.52</b>

Ronkonkoma HUB Project  
 Sewage Treatment Design Calculations  
 Full Build-out  
 July 8, 2010

Site 1

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	123 units	225 GPD/unit	27,675 GPD

Site 2

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	60 units	225 GPD/unit	13,500 GPD
Retail	38,375 sq.ft.		
1/2 Dry Store	19,188 sq.ft.	0.03 GPD/sq.ft.	576 GPD
1/2 Wet Store	19,188 sq.ft.	0.10 GPD/sq.ft.	1,919 GPD
Office	24,375 sq.ft.		
1/2 Medical	12,188 sq.ft.	0.10 GPD/sq.ft.	1,219 GPD
1/2 Non-medical	12,188 sq.ft.	0.06 GPD/sq.ft.	731 GPD
Subtotal			17,944 GPD

Site 3

Description	Count	Unit Flow	Total Flow
Health Club	30,000 sq.ft.	0.30 GPD/sq.ft.	9,000 GPD
Retail	22,500 sq.ft.		
1/2 Dry Store	11,250 sq.ft.	0.03 GPD/sq.ft.	338 GPD
1/2 Wet Store	11,250 sq.ft.	0.10 GPD/sq.ft.	1,125 GPD
Office	25,000 sq.ft.		
1/2 Medical	12,500 sq.ft.	0.10 GPD/sq.ft.	1,250 GPD
1/2 Non-medical	12,500 sq.ft.	0.06 GPD/sq.ft.	750 GPD
Housing Unit (601-1200 sq.ft.)	66 units	225 GPD/unit	14,850 GPD
Subtotal			27,313 GPD

Site 4

Description	Count	Unit Flow	Total Flow
Restaurant	100 seats	30 GPD/seat	3,000 GPD

Site 5

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	196 units	225 GPD/unit	44,100 GPD

Site 6

Description	Count	Unit Flow	Total Flow
Restaurant	100 seats	30 GPD/seat	3,000 GPD

Site 7

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	125 units	225 GPD/unit	28,125 GPD

Site 8

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	45 units	225 GPD/unit	10,125 GPD

Totals	
Site 1	27,675
Site 2	17,944
Site 3	27,313
Site 4	3,000
Site 5	44,100
Site 6	3,000
Site 7	28,125
Site 8	10,125
Existing to Remain	7,701
<b>TOTAL</b>	<b>168,983</b>

Ronkonkoma HUB Project  
 Sewage Treatment Design Calculations  
 Max Build-out  
 July 8, 2010

Site 1

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	123 units	225 GPD/unit	27,675 GPD

Site 2

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	60 units	225 GPD/unit	13,500 GPD
Retail	38,375 sq.ft.		
1/2 Dry Store	19,188 sq.ft.	0.03 GPD/sq.ft.	576 GPD
1/2 Wet Store	19,188 sq.ft.	0.10 GPD/sq.ft.	1,919 GPD
Office	24,375 sq.ft.		
1/2 Medical	12,188 sq.ft.	0.10 GPD/sq.ft.	1,219 GPD
1/2 Non-medical	12,188 sq.ft.	0.06 GPD/sq.ft.	731 GPD
Subtotal			17,944 GPD

Site 3

Description	Count	Unit Flow	Total Flow
Health Club	30,000 sq.ft.	0.30 GPD/sq.ft.	9,000 GPD
Retail	22,500 sq.ft.		
1/2 Dry Store	11,250 sq.ft.	0.03 GPD/sq.ft.	338 GPD
1/2 Wet Store	11,250 sq.ft.	0.10 GPD/sq.ft.	1,125 GPD
Office	25,000 sq.ft.		
1/2 Medical	12,500 sq.ft.	0.10 GPD/sq.ft.	1,250 GPD
1/2 Non-medical	12,500 sq.ft.	0.06 GPD/sq.ft.	750 GPD
Housing Unit (601-1200 sq.ft.)	66 units	225 GPD/unit	14,850 GPD
Subtotal			27,313 GPD

Site 4

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	60 units	225 GPD/unit	13,500 GPD
Housing Unit (>1200 sq.ft.)	6 units	300 GPD/unit	1,800 GPD
Retail	16,400 sq.ft.		
1/2 Dry Store	8,200 sq.ft.	0.03 GPD/sq.ft.	246 GPD
1/2 Wet Store	8,200 sq.ft.	0.10 GPD/sq.ft.	820 GPD
Subtotal			16,366 GPD

Site 5

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	196 units	225 GPD/unit	44,100 GPD

Site 6

Description	Count	Unit Flow	Total Flow
Restaurant	100 seats	30 GPD/seat	3,000 GPD

Site 7

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	252 units	225 GPD/unit	56,700 GPD

Site 8

Description	Count	Unit Flow	Total Flow
Housing Unit (601-1200 sq.ft.)	45 units	225 GPD/unit	10,125 GPD

Site 10

Description	Count	Unit Flow	Total Flow
Retail	25,000 sq.ft.		
1/2 Dry Store	12,500 sq.ft.	0.03 GPD/sq.ft.	375 GPD
1/2 Wet Store	12,500 sq.ft.	0.10 GPD/sq.ft.	1,250 GPD
Subtotal			1,625 GPD

Totals	
Site 1	27,675
Site 2	17,944
Site 3	27,313
Site 4	16,366
Site 5	44,100
Site 6	3,000
Site 7	56,700
Site 8	10,125
Site 10	1,625
Existing to Remain	7,701
TOTAL	212,548

**DRAWING No. 1**  
**THEORETICAL FULL BUILD PLAN**



**Site 4 — ±3.76 acres**  
 Parking Deck and  
 Restaurant  
 Grade + 4 Levels · 1,465 Spaces  
 Restaurant · 100 Seats

**Site 3 — ±3.97 acres**  
 5 Story Mixed-Use  
 Health Club · 2 Stories · 30,000 SF  
 Retail · 1st Floor · 22,500 SF  
 Office · 25,000 SF (1 Floor)  
 Res. Apts · 66 Units (3 Floors)  
 Parking · 300 Spaces

**Site 2 — ±2.96 acres**  
 5 Story Mixed-Use  
 Retail · 1st Floor · 38,375 SF  
 Res. Apts · 60 Units · 1,000 SF/DU  
 Office · 24,375 SF  
 Parking · 252 Spaces

**Site 1 — ±4.40 acres**  
 3 to 4 Story Residential Over Grade Parking  
 123 Units · Avg Size: 1,000 SF  
 Parking · 164 Spaces

**Site 5 — ±6.28 acres**  
 3 Story Residential Over Grade Parking  
 196 Units · Avg Size: 1,000 SF  
 Parking · 261 Spaces  
 Amenity · Club with Pool

**Site 6 — ±1.8 acres**  
 Restaurant · 100 Seats  
 Parking · 33 Spaces

**Site 7 — ±3.00 acres**  
 4 Story Residential Over Grade Parking  
 125 Units · Avg Size: 1,000 SF  
 Parking · 166 Spaces

**Site 9 — ±5.47 acres**

**Site 8 — ±1.13 acres**  
 4 Story Residential Over Grade Parking  
 45 Units · Avg Size: 1,000 SF  
 Parking · 60 Spaces

**VHB** Engineering, Surveying and Landscape Architecture, P.C.

**Legend**  
 [Solid Line] Study Area  
 [Dashed Line] Long Island Rail Road

Note: Parking based on ITE parking generation rates as follows:

**Res:** 1.33 Spaces/Unit  
**Office:** 2.84 Spaces/Unit  
**Retail:** 2.65 Spaces/Unit  
**Restaurant:** 1 Space/3 Seats

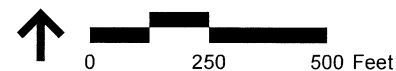
Note: Study Area totals are as follows...

**Brookhaven:** 53.73 Acres  
**Islip:** 52.16 Acres



**Ronkonkoma Hub Transit-Oriented  
 Land Use and Implementation Plan**

Theoretical Full Build Plan



Data sources:  
 Aerial Imagery — New York State Geographic Information Systems  
 Assessors Parcels, LIR Rail, Land Use and Zoning — Suffolk County GIS Basemap, Town of Brookhaven, Long Island, NY



**DRAWING No. 2**  
**THEORETICAL MAX BUILD PLAN**



**Site 4 — ±3.76 acres**  
**Parking and Mixed-Use**  
 Parking @ Grade · 131 Spaces  
 Townhouse · 6 Units  
 Residential · 60 Units  
 Retail · 16,400 SF

**Site 3 — ±3.97 acres**  
**5 Story Mixed-Use**  
 Health Club · 2 Stories · 30,000 SF  
 Retail · 1st Floor · 22,500 SF  
 Office · 25,000 SF (1 Floor)  
 Res. Apts · 66 Units (3 Floors)  
 Parking · 300 Spaces

**Site 2 — ±2.96 acres**  
**5 Story Mixed-Use**  
 Retail · 1st Floor · 38,375 SF  
 Res. Apts · 60 Units · 1,000 SF/DU  
 Office · 24,375 SF  
 Parking · 252 Spaces

**Site 1 — ±4.40 acres**  
**3 to 4 Story Residential Over Grade Parking**  
 123 Units · Avg Size: 1,000 SF  
 Parking · 164 Spaces

**Site 10 — ±7.25 acres**  
**Parking and Mixed-Use**  
 Parking: 1,683 Total Spaces  
 @ Grade · 675 Spaces  
 Level 1 · 276 Spaces  
 Level 2 · 366 Spaces  
 Level 3 · 366 Spaces  
 Ground Floor Retail · 25,000 SF  
  
**Solar Panel Array Canopy over Existing Surface Parking Areas**

**Site 5 — ±6.28 acres**  
**3 Story Residential Over Grade Parking**  
 196 Units · Avg Size: 1,000 SF  
 Parking · 261 Spaces  
 Amenity · Club with Pool

**Site 6 — ±1.8 acres**  
**Restaurant · 100 Seats**  
 Parking · 33 Spaces

**Site 7 — ±8.21 acres**  
**4 Story Residential Over Grade Parking**  
 252 Units · Avg Size: 1,000 SF  
 Parking · 335 Spaces

**Site 8 — ±1.13 acres**  
**4 Story Residential Over Grade Parking**  
 45 Units · Avg Size: 1,000 SF  
 Parking · 60 Spaces

**Site 9 — ±9.00 acres**

**Legend**

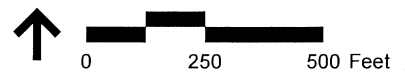
- Study Area
- Long Island Rail Road
- Solar Panel Array Canopy

Note: Parking based on ITE parking generation rates as follows:

- Res:** 1.33 Spaces/Unit
- Office:** 2.84 Spaces/Unit
- Retail:** 2.65 Spaces/Unit
- Restaurant:** 1 Space/3 Seats

Note: Study Area totals are as follows...

- Brookhaven:** 53.73 Acres
- Islip:** 52.16 Acres



Data sources:  
 Aerial Imagery – New York State Geographic Information Systems  
 Assessors Parcels, LIR Rail, Land Use and Zoning – Suffolk County GIS Basemap, Town of Brookhaven, Long Island, NY

