3.2.3 Proposed Mitigation

As there are no significant adverse socioeconomic impacts associated with the proposed action, no mitigation measures are required.

3.3 Community Facilities and Services

3.3.1 Existing Conditions

Fire Protection

The subject property is serviced by three fire districts – Manorville, Wading River, and Riverhead. The majority of the subject property is situated within the service boundary of the Manorville Fire District (approximately 1,744 acres). Portions of the subject property are within the Wading River and Town of Riverhead Fire Districts. Specifically, as depicted on Figure 12, the service boundary of the Wading River Fire Department consists of the northern 198± acres of the subject property running parallel to Middle Country Road. The service area of the Town of Riverhead Fire District is situated on the southeastern portion of the subject property (approximately 383 acres), primarily east of Calverton (see Figure 12).

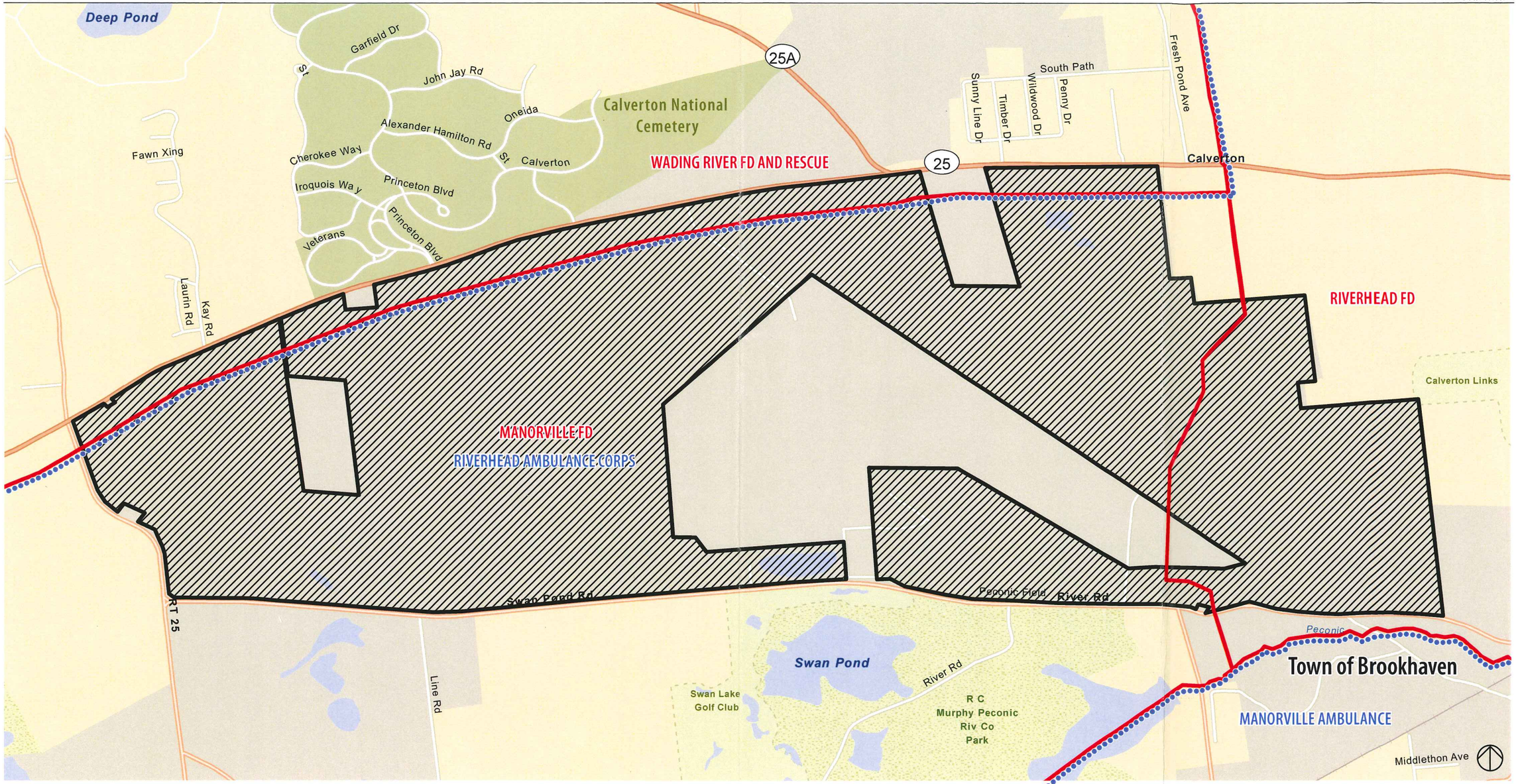
The headquarters of the Manorville Fire District is located at 16 Silas Carter Road in the hamlet of Manorville, approximately three miles south of the subject property. Based on a telephone consultation with the Manorville Fire District on October 27, 2011 (see Appendix J), the Manorville Fire District operates two substations, including:

1. Substation One – 170 Cranford Boulevard in Mastic (approximately five miles southwest of the subject property)
2. Substation Two – 40 Halsey Manor Road in Manorville (approximately three miles south of the subject property).[31]

In addition to telephone consultations, correspondence was also sent to the Manorville Fire District (Chief Zapparrata) on January 31, 2014, and again on March 14, 2014, to request information on existing services, operations, and equipment with respect to fire protection and emergency medical services and to inform the Manorville Fire District of the proposal for the subject property (see Appendix J). A response from the Manorville Fire District is pending.

[31] Pursuant to a telephone conversation between VHB and personnel from the Manorville Fire District on October 27, 2011.

Date: 07.00.14



LEGEND

- EPCAL Property
- Fire District Boundaries
- Ambulance District Boundaries

Source: Town of Riverhead GIS

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Emergency Service Providers

Figure **12**

According to its website,[32] the Manorville Fire Department serves approximately 15,000 people living within a 62 square mile area. There are approximately 80 active volunteers. The services provided by the Manorville Fire Department include: firefighting, hazardous materials response, search and rescue, support and vehicle rescue (extrication).

The Wading River Fire District is headquartered at 1503 North Country Road, in the hamlet of Manorville, approximately three miles north of the subject property. According to telephone consultation with the Wading River Fire District, the Wading River Fire District operates one substation at Hulse Landing Road and 20th Street in Wading River (approximately two miles north of the subject property).[33]

Correspondence was sent to the Wading River Fire District (Chief Evans) on January 31, 2014, and again on March 14, 2014, to request information and to inform the district of the current plans for the subject property (see Appendix J). A response from the Wading River Fire District is pending.

The headquarters of the Town of Riverhead Fire District is located at 540 Roanoke Avenue, in the Town of Riverhead, approximately five miles east of the subject property. The Town of Riverhead Fire District contains three substations, as follows:

1. Substation One – 323 Hamilton Avenue in Riverhead (approximately four and a half miles east of the subject property)

2. Substation Two – 303 Hubbard Avenue in Riverhead (approximately six and a half miles east of the subject property)

3. Substation Three – Twomey Avenue in Calverton (approximately two miles northeast of the subject property).

Correspondence was sent to the Town of Riverhead Fire District (Chief Raynor) on January 31, 2014, and again on March 14, 2014, to request information on existing services, operations, and equipment with respect to fire protection and emergency medical services and to inform the Town of Riverhead Fire District of the current proposal for the subject property (see Appendix J). A response from Robert Zaweski, Secretary/Treasurer for the Riverhead Fire District, dated March 25, 2014, confirmed the locations of the stations, and indicated that the response time to the EPCAL Property is approximately seven to eight minutes. The Riverhead Fire Department responded to 1,127 fire alarms in 2013, and does not provide ambulance service.

[32] (http://www.firehouse.com/group/10580549/manorville-fire-dept

[33] Per a telephone conversation between VHB personnel and personnel from the Wading River Fire District on October 27, 2011.

The Riverhead Volunteer Fire Department consists of six companies, including the Redbird Hook & Ladder Co. 1, Fire Police Patrol Co. 1, Reliable Engine Co. 1, Washington Engine Co. 2, Ever-Ready Engine Co. 3 and Eagle Hose Co. 4. There is also a Water Rescue Team and Rapid Intervention Team.[34]

Ambulance/Emergency Medical Services

Emergency medical services (EMS) are provided to the subject property by the ambulance company associated with the Riverhead Volunteer Ambulance Corps, Inc. (RVAC).[35] In addition, the Wading River Fire Department provides EMS services.[16] The RVAC services almost the entire EPCAL Property with the exception of approximately 197 acres in the northern portion of the property, located within 500 feet of Route 25, west of Fresh Pond Road (see Figure 12).

RVAC is headquartered at 1111 Osborne Avenue in Riverhead, which is approximately 4.8± miles east of the subject property. Correspondence was sent to RVAC on January 31, 2014 and again on March 14, 2014 requesting information on existing services and operations, and to inform the Corps of the current plans for the property (see Appendix J). Assistant Chief Lisa Corwin responded to the correspondence in a letter dated April 15, 2014 (see Appendix J). This letter indicates that the RVAC provides 911 ambulance service for the Town of Riverhead, excluding that portion that is located within the Wading River Fire District, which also provides EMS services (see discussion below). Thus, the majority of the EPCAL Property is served by RVAC. The Assistant Chief noted that there have been discussions to adjust the fire district line in response to the EPCAL development, but nothing has been decided to date.

RVAC operates four ambulances and two first response vehicles out of two stations. All the vehicles are equipped to provide advanced life support. There are currently 94 volunteers who respond to ambulance calls. They are supplemented with additional paid providers from midnight to 6:00 p.m. RVAC provides pre-hospital emergency medical care at the Basic and Advanced Life Support Levels. Patients are primarily transported to Peconic Bay Medical Center and to Stony Brook University Hospital. Occasionally patients are transported to other area hospitals.

[34] According to http://www.riverheadfd.org/

[35] Pursuant to Suffolk IMAP, published by the Suffolk County Department of Information Technology – GIS Division, October 2011.

Services are provided from two locations – the main station on Osborne Avenue, and a substation at Manor Lane in Jamesport. RVAC responded to over 3,200 calls in 2013. Call volume has been increasing each year and is expected to continue increasing even without the future development of the EPCAL Property.

The RVAC indicated that response time to the EPCAL Property typically would be from its main station on Osborn Avenue. The estimated response time is 10+ minutes in good weather and light traffic. Response times could increase by 50 percent or more due to traffic congestion on the Route 25/58 corridor during bad weather. Response from the Jamesport station would take in excess of 25 minutes in ideal traffic and weather conditions.

Correspondence was also sent to the Wading River Fire Department on January 31, 2014, and again on March 14, 2014, requesting information on EMS services and to inform the department about the current proposal for the subject property (see Section 3.3.1, above). A response is pending.

While the Manorville Community Ambulance Company is headquartered at 184 South Street in Manorville, which is approximately 3.4 miles south of the subject property, it does not service the EPCAL Property. In telephone communication with Chief Joseph Kukral of Manorville Ambulance on March 3, 2014, the Chief indicated that while Manorville Ambulance is located proximate to the subject property, the EPCAL property is actually not within its service jurisdiction. However, Chief Kukral noted that Manorville Ambulance does have a mutual aid agreement with Riverhead Ambulance, to provide service when either Riverhead cannot provide service (due to response to other emergencies) or when an emergency situation is too large for one ambulance provider to respond to alone (see Appendix J).

Hospitals

The nearest receiving hospital to the subject property is the Peconic Bay Medical Center (PBMC), which is affiliated with Stony Brook University Hospital, located at 1300 Roanoke Avenue in the Town of Riverhead, approximately eight miles east of the subject property. PMBC is a not-for-profit medical center with approximately 200 beds, serving approximately 200,000 residents of the East End of Long Island, from Wading River to Mattituck on the North Fork and from Moriches to Hampton Bays on the South Fork since 1951. With 1,200 employees and a 260-member medical staff, PBMC provides comprehensive healthcare services on the East End. Each year PMBC discharges over 7,000 adult, pediatric and newborn patients and their emergency department treats some 26,000 patients.[36]

[36] http://www.peconicbaymedicalcenter.org/z-about/

In addition, there are five other hospitals within a 25-mile radius of the subject property, as follows:

- John T. Mather Memorial Hospital (248 beds)[37] – 16 miles to the northwest of the subject property
- Brookhaven Memorial Hospital Medical Center (306 beds) – 18 miles to the southwest of the subject property
- Stony Brook University Medical Center (597 beds[38]) – 22 miles to the northwest of the subject property
- St. Catherine of Siena (318 beds) – 22 miles to the west of the subject property
- Southampton Hospital (125 beds) – 25 miles to the southeast of the subject property.

Based upon the foregoing, there are approximately 1,800 hospital beds located within 25 miles of the EPCAL Property. In addition, Eastern Long Island Hospital, which is a 90-bed full-service community hospital, is located in Greenport, approximately 30 miles east of the EPCAL Property.

Police Protection

The subject property is located within the jurisdiction of the Riverhead Town Police Department (Riverhead Police), which is headquartered at 210 Howell Avenue in the Town of Riverhead. According to its website,[39] the Riverhead Town Police has several divisions, including: patrol, communications, detective and juvenile bureau, as well as several specialized units, (e.g., neighborhood watch).

Correspondence was sent to the Chief of Police, David Hegermiller, on January 31, 2014, and again on March 14, 2014, requesting information on existing services, operations and equipment of the Riverhead Police and to inform the Riverhead Police about the current proposal for the subject property (see Appendix J). A response from the Riverhead Police Department is pending.

[37] Bed information for all hospitals listed herein is from the following website: http://hospitals.nyhealth.gov/browse_search.php?form=COUNTY&rt=suffolk

[38] Approximately 88 percent occupancy rate. Occupancy rates for the other hospitals were not available.

[39] http://www.townofriverheadny.gov/pView.aspx?id=16988&catid=118

Solid Waste (Collection and Disposal)

The Town of Riverhead Sanitation Department contracts with a private garbage company to collect and dispose of solid waste, recyclables, and yard waste from single-family dwellings within the Town of Riverhead.[40] These wastes are disposed of at licensed solid waste facilities. Solid waste generated at other facilities, such as commercial and industrial properties and multi-family developments, are collected by licensed private carters and disposed of at a licensed facility.

Currently, the subject property contains several uses that generate solid waste -- the community center, Grumman Memorial Park and Veteran's Memorial Park. Solid waste generation at the site is currently minimal.

Educational Facilities

The subject property is located within the Riverhead Central School District (CSD), which is comprised of four K-4 elementary schools (Roanoke Avenue, Riley Avenue, Phillips Avenue, and Aquebogue Avenue schools), one school accommodating grades five and six (Pulaski Street School), the Riverhead Middle School, and the Riverhead High School (see Table 21 and Figure 13).[41] The table below indicates the distance of the aforementioned school properties to the subject site, as well as their latest available enrollment from the New York State Education Department (NYSED).[42] While individual school data is only available through 2011-2012, estimated enrollment data for the overall school district is available for 2012-2013 and 2013-2014. Thus, based on data from the NYSED website, the school enrollment within the overall Riverhead CSD for the 2012-2013 school year was 5,234, and for the 2013-14 school year enrollment is estimated at 5,015 children. Information from the NYSED Property Tax Report Card for the 2013-14 school year, reports that the per pupil expenditure in the Riverhead CSD is projected to be $23,450±.

[40] http://www.riverheadli.com/household.pu.info.pdf
[41] http://www.riverhead.net/HTML/ourschools.html
[42] www.nysed.gov

Table 21 – Schools within the Riverhead CSD

Riverhead Central School District School	Approximate Distance to Subject Site (in Miles)	Enrollment (2011-2012)
Roanoke Avenue Elementary School (549 Roanoke Avenue, Riverhead, NY 11901)	5.1±	390
Riley Avenue Elementary School (374 Riley Avenue, Calverton, NY 11933)	1.8±	640
Phillips Avenue Elementary School (141 Phillips Avenue, Riverhead, NY 11901)	5.6±	560
Aquebogue Elementary School (P.O. Box 1200, 499 Main Road Aquebogue, NY 11931)	7.3±	464
Pulaski Street School (300 Pulaski Street, Riverhead, NY 11901)	4.6±	713
Riverhead Middle School (600 Harrison Avenue, Riverhead, NY 11901)	4.6±	718
Riverhead High School (700 Harrison Avenue, Riverhead, NY 11901)	4.4±	1,525
Total Riverhead CSD	--	5,010

Sources: Riverhead CSD Website (http://www.riverhead.net/HTML/ourschools.html); Town of Riverhead GIS, www.nysed.gov

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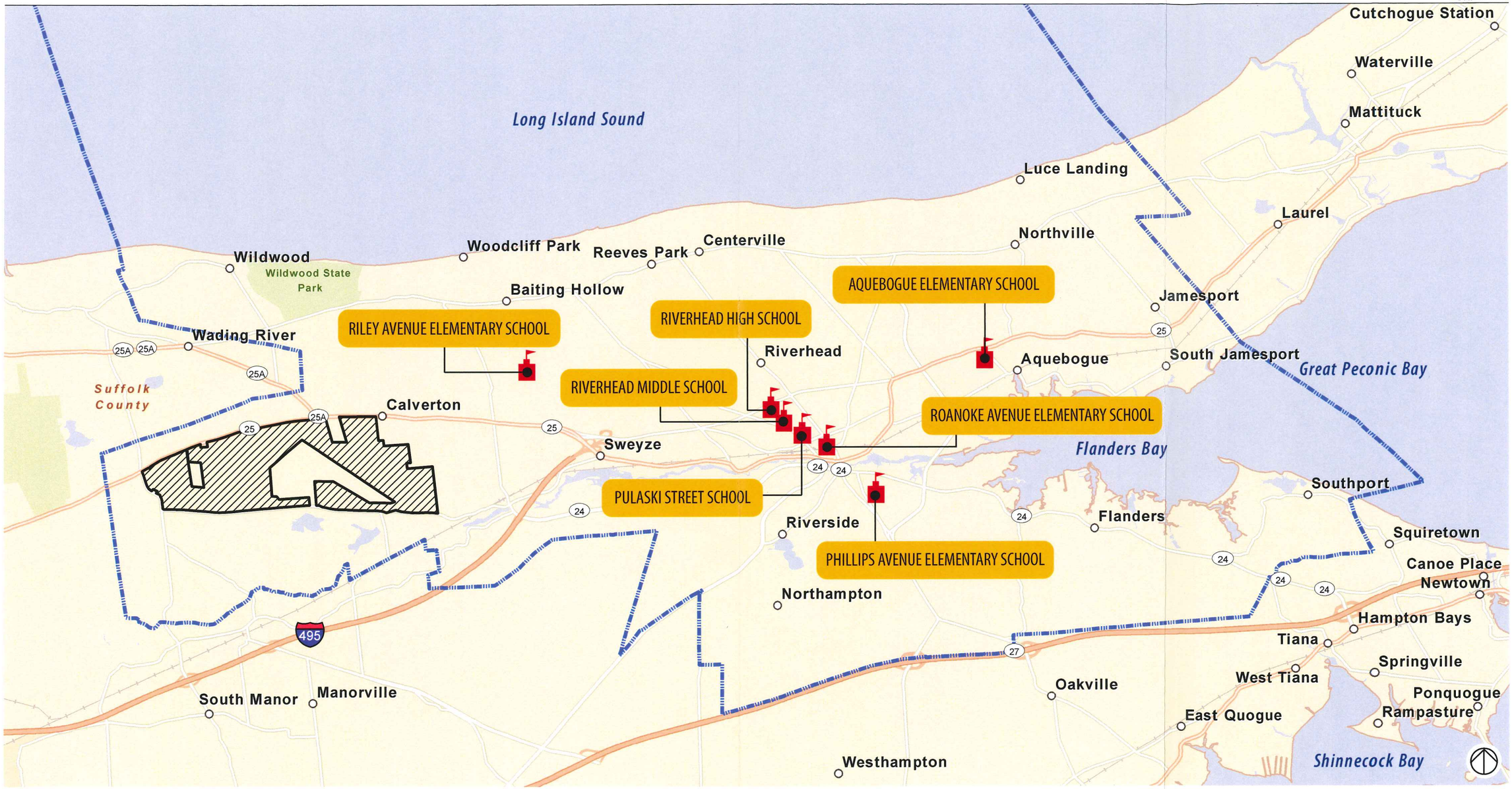

LEGEND

- EPCAL Property
- Riverhead CSD Boundary
- Riverhead CSD School Property

Source: Town of Riverhead GIS; Riverhead CSD Website

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Riverhead CSD School Map

Figure **13**

It should also be noted that there are several private and parochial schools that serve school-aged children in the Riverhead area (e.g., Bishop McGann Mercy High School, St. Isidore School, Riverhead Charter School).

The subject property currently does not contain residential uses. Therefore, it does not generate any school-aged children.

Correspondence was sent to Superintendent Nancy Carney on January 31, 2014, and again on March 14, 2014, requesting information regarding the Riverhead CSD and to inform the School District about the current proposal for the subject property (see Appendix J). A response from the Riverhead CSD is pending.

3.3.2 Potential Impacts

Fire Protection and Ambulance Service

As discussed in Section 3.3.1, three fire departments and two ambulance/EMS departments provide service to the EPCAL Property. Responses to correspondence are pending from all of the fire and ambulance/EMS service providers, with the exception of the Riverhead Fire District and the RVAC.

It has been proposed that a joint resolution of Boards of Fire Commissioners of the three fire departments serving the EPCAL Property approving alteration of adjoining Fire Districts be undertaken. At this time, no agreement has been reached regarding such boundary alteration. Therefore, the EPCAL Property will remain in three separate fire districts, if, and until such time a boundary alteration is approved. The Subdivision Map (see Figure 7) shows the fire district boundaries and how they are situated on the EPCAL Property. There are no development lots proposed within the Riverhead Fire District, which is located in the eastern/southeastern portion of the EPCAL Property. The majority of the proposed development lots are situated within the jurisdiction of the Manorville Fire District, while the proposed development lots along Route 25 (Lots 1 through 9 and 17 through 22) fall within the jurisdiction of the Wading River Fire Department (which also provides ambulance service). It should be noted that while most of the area within Lots 1 through 9 and 17 through 22 is within the Wading River Fire Department jurisdiction, the southern portion of these lots are located within the Manorville Fire District.

As the site plan design progresses, consultations will continue with the Fire Districts regarding access, fire hydrants and internal roadway design and turning radii for emergency vehicles. In furtherance of fire protection, the EPCAL Property will not be gated, and there would be multiple access points for entry into the site should emergency situations arise.

In addition, all of the buildings constructed as part of the EPCAL development would be built in accordance with the current New York State Building and Fire Codes, thereby incorporating the latest techniques and technology for optimizing fire protection.

While the number of calls cannot be estimated, since the type of tenants on the site can vary widely, the proposed action will increase the number of emergency calls to the EPCAL Property, since currently there are only a limited number of uses/activities that occur on the site. However, as noted in the 1997 EIS, the plan envisions project components (e.g., industrial, office, energy park) that would usually provide for their own internal safety and security operations (including fire protection). In fact, according to the Urban Land Institute's Development Impact Assessment Handbook (ULI, 1994), much of the increase in need to additional fire protection personnel and equipment can generally be attributed to residential development as opposed to non-residential development. Since the majority of the development on the site would be comprised of non-residential rather than residential development, the requirements for personnel and equipment are not expected to be significant

.

Moreover, in order to help meet the demand for fire protection services, the EPCAL Property, which currently does not generate any property taxes for the three fire districts, would be put back on the tax rolls. Once the properties are redeveloped and placed onto the tax rolls, a portion of the newly-generated property taxes would be paid to the three fire districts that serve the site. In providing an assessment for the proposed development, the Town Assessor used the Manorville Fire District as the "default" district for the purpose of analysis, since it is the district serving the largest portion of the property. Taking this into account, and based upon the information from the Assessor, the Manorville Fire District, at ultimate build-out, would receive close to $336,000 per year in property tax revenue. This revenue could be used to offset costs associated with increased demand for service.

As the EPCAL Property is located within three fire districts. The property taxes for each of the fire districts, based upon the assessed value of $51,255,500, would be distributed proportionately, based upon the specific tax rates of each fire district – Manorville ($6.55 per $1,000 of assessed value); Wading River ($6.44 per $1,000 of assessed value); and Riverhead ($7.42 per $1,000 of assessed value) and the proportion of the development within such districts.

At this time, the Board of Assessors has advised that it cannot determine the exact portion of property taxes that would be paid to each district. However, once development occurs within the subdivision, specific property taxes will be apportioned.

In addition to property tax revenue generated by the projected development, it should be noted that any new residential units that are developed at EPCAL would expand the pool of potential volunteer firefighters for the fire districts, thus, in part, addressing the need for additional firefighters.

With respect to ambulance/EMS services, RVAC indicated that there is little margin to accommodate an increase in call volume. The stations have insufficient space and facilities to meet current staffing and call volume. According to Assistant Chief Corwin, any significant increase in call volume, especially in the western half of the Ambulance District would require the addition of a substation in that area, at least one additional ambulance and one additional first response vehicle (see Appendix J).

In addition, RVAC noted that, while the type of residential development is not known at this time, senior citizen communities (in general) generate more emergency calls than communities with a broad range of age groups. Similarly, the impact created by non-residential development would depend on what types of industrial, retail, office and other businesses are introduced. Medical offices and retail stores generate more types of calls than other businesses. Therefore, without knowing the exact population and mix of businesses at EPCAL it is difficult to project the size of the impact on the EMS. The correspondence indicates that RVAC can accommodate any of the proposed option as long as it is provided with additional resources required to handle the call types and volumes they generate.

Based upon the tax analysis included in Section 3.2.2 of this DSGEIS, the RVAC is expected to receive approximately $99,000 per year in property taxes from the EPCAL development, whereas it currently receives no property tax revenue from this site. In addition, Lot 21, as shown on the Subdivision Map (see Figure 7), which is approximately 10 acres in size, would, in the future, contain the existing one-acre Grumman Memorial Park. Due to the size of the overall parcel (approximately 10 acres), it would also be available to community service providers (e.g., ambulance, fire, police) for establishment of satellite facilities.

Police Protection

As noted in Section 3.3.2, police protection is provided by the Town of Riverhead Police Department. With the construction of new buildings on the site, which brings with it both permanent employment (25,562 at ultimate build-out) and permanent on-site population (approximately 650 at ultimate build-out), there will be an increase in the number of calls to the Riverhead Police Department.

As indicated above, and as noted in the 1997 EIS, it is anticipated that future tenants (e.g., industrial, office, energy park) would usually provide for their own internal safety and security operations. This may assist in reducing the number of calls to the

Riverhead Police Department. In fact, according to the Urban Land Institute's Development Impact Assessment Handbook (ULI, 1994), much of the increase in need to additional police protection personnel and equipment can generally be attributed to residential development as opposed to non-residential development. Since the majority of the development on the site would be comprised of non-residential rather than residential development, the requirements for police personnel and equipment are not expected to be significant.

While the EPCAL Property is currently not generating any property taxes, the site and surrounding area are currently patrolled by the Town of Riverhead Police Department. Upon redevelopment, the property will be placed back onto the tax rolls and future tenants will be generating property taxes to the Town of Riverhead General Fund, approximately 50 percent of which (almost $1.0 million, annually at 2025 and almost $5.0 million, annually, at full development) will go to the Riverhead Police Department, according to the Office of the Receiver of Taxes. This will help to address the potential increase in service demand.

Educational Facilities

The Town contemplates that future residential units would support the non-residential development that would take place at EPCAL. As the project is in the environmental analysis stage and no specific development is proposed, the residential units have not been designed. Accordingly, in order to project the school-aged children that could potentially be generated, consultations were undertaken with the Town. Townhouse-type units (single-family attached), containing two bedrooms, were used for purposes of analysis in this DSGEIS. Since the value of the townhouses cannot be determined at this time, the "all values" factor from the Rutgers University, Center for Urban Policy Research *Residential Demographic Multipliers – Estimates of the Occupants of New Housing* (June 2006) (hereinafter *"the Rutgers Study"*) was used to determine the potential number of public school-aged children that could be generated.

Based on the aforesaid assumptions and the factors in the *Rutgers Study*, such residences would be expected to generate 0.22 school-aged children per unit. Therefore, for 2025, the 150 residential units would be expected to generate approximately 33 school-aged children. The additional 150 units at ultimate build-out would also generate approximately 33 school-aged children, for a total of 66 school-aged children at full build-out in 2035.

Based on data provided by NYSED, the school enrollment within the Riverhead CSD for the 2013-14 school year is estimated at 5,015 children. Therefore, the additional 66 school-aged children at full build-out would represent a 1.3± percent increase in total enrollment over the 2013-14 enrollment (5,015) within the Riverhead CSD. However,

the increase in school-aged children is not expected to occur all at once, based upon development program. Only 33 school-aged children are expected to be generated by 2025, based upon the theoretical mixed-use development program. Another 33 school-aged children would be expected to be generated by 2035, when full build-out is anticipated to occur.

Based on data in the NYSED *Property Tax Report Card* for the 2013-14 school year, the per pupil expenditure in the Riverhead CSD is projected to be $23,450±. Therefore, while the total cost to the Riverhead CSD for the ultimate build-out total of 66 additional children would be $1,547,700 (based upon current expenditure per pupil), development in 2035 (ultimate build-out) could generate over $25.7 million in annual property taxes to the school district, based upon the analysis provided by the Riverhead Tax Assessor's Office (see Section 3.2.2 of this DSGEIS). Therefore, there would be a substantial annual net fiscal benefit to the Riverhead CSD. Accordingly, as there would be far more non-residential development at EPCAL than residential development, the impact to the Riverhead CSD is not expected to be significant, and the increased tax revenue would be expected to exceed the cost of education of students that may be generated at EPCAL.

With respect to the enrollment, capacity, availability of busing in the area, etc., correspondence was transmitted to Ms. Nancy Carney, Superintendent of the Riverhead CSD (see Appendix J). No response from the Riverhead CSD has been received to date.

Overall, based upon the enrollment and property tax information described above, it is not expected that the proposed action would result in significant adverse impacts to the Riverhead CSD. In fact, the District would be expected to receive a significant annual revenue benefit, especially from the projected non-residential development that would more than offset the cost of educating additional projected students.

Solid Waste (Collection and Disposal)

The estimated quantities of solid waste that would be generated by 2025 and by the ultimate build-out, based upon the theoretical mixed-use development program, has been calculated using factors from *Environmental Engineering* by Salvato, et al. (John Wiley & Sons, Inc., 2003).

Table 22 provides estimates of solid waste by type of proposed use for both time horizons.

Table 22 – Solid Waste Generation Estimates

Land Use	Square Feet / No. of Units	Generation Factor (Per Day)	Projected Solid Waste (Pounds Per Day)
Theoretical Mixed Use Development Program – 2025			
Industrial/Research and Development (R&D) / Flex Space	289,606± Square Feet	7 pounds per employee per day	4,054[1]
Office/Medical Office/Flex or Institutional Space	1,330,305± Square Feet	1 pound per 100 square feet per day	13,303
Commercial/Retail Space	358,785± Square Feet	13 pounds per 1,000 square feet per day	4,664
Residential Units	150 Units	3.5 pounds per capita per day	1,134[2]
Total (pounds per day)			23,156
Total (tons per month)			352
Theoretical Mixed Use Development Program – Ultimate Build Out			
Industrial/Research and Development (R&D) / Flex Space	6,886,836± Square Feet	7 pounds per employee per day	96,416[1]
Office/Flex	2,927,232± Square Feet	1 pound per 100 square feet per day	29,272
Medical Office	740,520± Square Feet	1 pound per 100 square feet per day	7,405
Commercial/Retail Space	805,860± Square Feet	13 pounds per 1,000 square feet per day	10,476
Residential Units	300 Units	3.5 pounds per capita per day	2,268[2]
Total (pounds per day)			145,837
Total (tons per month)			2,218

Source: Salvato, Joseph A., et al., *Environmental Engineering* (John Wiley & Sons, Inc., 2003)
Notes: [1]Based on an industrial job generation factor of 1 job per 500 square feet of industrial space (ULI, 1994)
[2]Total capita (i.e., persons) was calculated by using a residential demographic multiplier of 2.16, for 2 Bedrooms, Attached (All Values) – Residential Demographic Multipliers - Estimates of the Occupants of New Housing (Rutgers University, Center for Urban Policy Research)

Based upon this analysis, by 2025, the theoretical mixed-use development program would generate approximately 23,156 pounds of solid was per day (352 tons per month), while at ultimate build-out, development would generate a total of approximately 145,837 pounds of solid waste per day (2,218 tons per month).

The collection and disposal of all solid waste generated by the future development would be in conformance with Chapter 103, Solid Waste Management Law of the Town of Riverhead, of the Town of Riverhead Town Code. The collection and disposal of solid waste generated by non-residential properties (which would include the industrial, office, medical, commercial, and flex space uses) would be performed by licensed, private carters. Also, the collection and disposal of solid waste from private, multi-family residential developments would also be performed

by licensed, private carters. Thus, the ultimate disposal locations are at the discretion of the carter, pursuant to its disposal agreements, and, thus, would not be expected to result in significant adverse impacts to the Town's waste management facilities, practices or plans.

Recycling at EPCAL would also be in conformance with §§ 103-10 and 103-14 of the Town Code. In addition, all private, industrial, institutional, or commercial establishments shall provide suitable recycling containers dependent on their specific needs.

Hospitals

As indicated in Section 3.3.5, there are multiple hospitals (with approximately 1,800 beds) and other health care facilities located within 25 miles of the subject property that would be available to employees, residents, and visitors to the EPCAL property. As noted, the closest facility is the PBMC, (affiliated with Stony Brook University Medical Center), which is located eight miles east of the EPCAL property.

According to the *1997 EIS*, demand projections for medical/surgical and pediatric unit hospital are declining, based largely on the trends of shorter hospital stays. This trend has continued to occur through 2010, as indicated by the Center for Disease Control.

While the projected permanent population is low, the number of employees is expected to be close to 5,700 by 2025 and over 25,000 by 2035, the ultimate build-out. Although this is a sizable increase of people at the site, the kinds of health services needed for employees would differ from permanent population, and would focus more on emergency/trauma. The advent of walk-in emergency/ urgent care facilities has replaced some of the traditional hospital emergency room functions. Therefore, these facilities, several of which have opened in the area in the last few years, may be more suitable for the types of medical care required by employees working at the EPCAL Property. While there will be a need for hospital beds to serve the permanent population, as residential development would be a relatively small portion of overall development at EPCAL, the need is not expected to be great. Based upon the foregoing, it is not anticipated that the proposed development would adversely impact health care services in the area.

3.3.3 Mitigation

Based upon the analyses provided herein several potential impacts to community services have been identified. The following measures would assist in the provision of community services:

- The EPCAL property would be put back onto the tax rolls. Overall property taxes anticipated to be generated by the future development of the EPCAL Property, as shown in Table 19 and Table 20 of Section 3.2.2, are estimated to be $8.6± million by 2025 and $42.7± million at ultimate build-out. These property taxes would be distributed to the relevant taxing jurisdictions, including the Riverhead School District, the Riverhead Town Police Department, and several fire and ambulance districts, among others for their use in addressing increased service demands. These property taxes would assist in minimizing the fiscal impacts to community service providers.

- With respect to educational facilities, the annual property taxes to be paid to the Riverhead CSD would more than off-set the cost to educate the students projected at ultimate build-out.

- With respect to fire protection, future development would include the following: state-of-the-art building construction in accordance with the latest fire and building code regulations (which would incorporate the latest techniques and technology for optimizing fire protection); proper hydrant and standpipe placement; installation of fire control panels; and proper internal roadway design to accommodate emergency vehicles).

- It is likely that many of the future tenants would provide private security, thus minimizing the impact on the Riverhead Police Department.

- With regard to solid waste management, recycling would be encouraged and provision would be made for appropriate recycling containers.

3.4 Transportation

A Traffic Impact Study (TIS) has been prepared to evaluate the potential traffic impacts associated with the proposed action. The methodology employed, the study intersections and road segments, and the existing traffic conditions, as well as the potential traffic impacts due to the proposed project and an evaluation of proposed mitigation measures are summarized below. The figures for this section can be found in Appendix K-1 of this DSGEIS, and the TIS is included in its entirety in Appendix K-2.

The methodology that was employed in developing the TIS is discussed in Appendix K-2.

3.4.1 Existing Conditions

Roadways and Intersections Conditions

The principal roadways and intersections in the project area are described below. The descriptions of the roadways and key intersections include the geometric conditions and traffic control characteristics.

Roadways

Middle Country Road (NY 25) is a major east-west arterial under the jurisdiction of New York State Department of Transportation (NYSDOT) that extends from Queens to Orient Point. The roadway is designated Middle Country Road in the vicinity of the project site. It runs along the north side of the project site and provides one travel lane in each direction with additional turn lanes at some intersections. According to 2011 NYSDOT estimates the Average Annual Daily Traffic (AADT) on this section of Middle Country Road west of NY 25A is approximately 8,000 vehicles per day and east of NY 25A the estimates are approximately 14,600 vehicles per day. The posted speed limit on Middle Country Road in the vicinity of the project site is 50 miles per hour (mph).

Wading River Manor Road is a north-south collector roadway under the jurisdiction of the Towns of Riverhead and Brookhaven. It runs south from North Country Road in Wading River to Railroad Avenue in Center Moriches. Sections of this roadway are also called Schultz Road and Wading River Road. Wading River Manor Road runs along the west side of the project site and provides one travel lane in each direction with additional turn lanes at major intersections. The posted speed limit along Wading River Manor Road is 45 mph.

Edwards Avenue is a north-south collector roadway under the jurisdiction of the Town of Riverhead. It runs south from the Long Island Sound to River Road. South of River Road, the roadway transitions to County Road 24. Edwards Avenue provides one travel lane in each direction. According to 2011 NYSDOT estimates the AADT on this section of Edwards Avenue is approximately 8,750 vehicles per day. The posted speed limit along Edwards Avenue north of River Road is 45 mph.

Grumman Boulevard is east west local roadway under the jurisdiction of the Town of Riverhead. It runs east from Wading River Road approximately 2-1/2 miles along the south side of project site to River Road. Grumman Boulevard provides one travel lane in each direction. According to 2011 NYSDOT estimates the AADT on this section of Grumman Boulevard is approximately 1,625 vehicles per day. The posted speed on Grumman Boulevard is 40 mph.

River Road is a local roadway under the jurisdiction the Town of Riverhead and runs north from David Terry Road to Grumman Boulevard where it turns east, bordering the balance of the project site's southerly frontage. From this point River Road continues east to West Main Street (NY Route 25). River Road provides one travel lane in each direction. According to 2011 NYSDOT estimates the AADT on River Road west of Edwards Avenue is approximately 850 vehicles per day. The posted speed limit on River Road is 30 mph.

Burman Boulevard is an internal roadway within the Calverton Camelot industrial subdivision, formerly part of the Calverton NWIRP property, maintained by the Town of Riverhead that runs from north to south through the project site. Burman Boulevard is signalized at its intersection with Middle Country Road and provides for one travel lane in each direction with additional turn lanes at major intersections. There is no speed limit posted on the roadway.

Study Area Intersections

To determine the potential traffic impacts of the proposed project, five signalized intersections and six unsignalized intersections were analyzed under Existing, No-Build, and Build Conditions, as required by the Final Scope. These intersections are listed below, presented in Figure 2 in Appendix K-1, and described in detail in Appendix K-2.

Signalized Intersections

- Middle Country Road and Wading River Manor Road
- Middle Country Road and Burman Boulevard
- Middle Country Road and NY Route 25A
- Middle Country Road and Edwards Avenue
- Middle Country Road and Splish Splash Drive/Manor Road

Unsignalized Intersections

- Edwards Avenue and River Road
- Grumman Boulevard and Burman Boulevard
- Wading River Manor Road and Grumman Boulevard
- Wading River Road/Schultz Road and North Street
- Wading River Road and LIE North Service Road
- Wading River Road and LIE South Service Road.

Existing Traffic Volume Data

Intersection turning movement counts were manually collected at the key intersections previously described during a typical weekday morning from 7:00 a.m. to 9:00 a.m., on a typical weekday evening from 4:00 p.m. to 6:00 p.m., and on a typical Saturday from 10:00 a.m. to 2:00 p.m. These times reflect the heaviest traffic flows coinciding with commuter and shopping activities.

In order to understand the traffic patterns on Middle Country Road in the vicinity of the site as well as well as traffic on Burman Boulevard, Automatic Traffic Recorders (ATRs) were installed at the following locations:

- On Middle Country Road east of Burman Boulevard
- On Middle Country Road west of Burman Boulevard
- On Burman Boulevard south of Middle Country Road
- On Burman Boulevard north of Grumman Boulevard.

Summaries of the turning movement counts and the ATR data are provided in Attachment A to the TIS, in Appendix K-2.

The existing traffic volumes for the weekday a.m. peak, p.m. peak and Saturday midday peak hours are presented in Figures 3, 4 and 5, respectively, in Appendix K-1.

The site of the proposed subdivision is located near the east end of Long Island in an area that is subject to seasonal traffic variations. This is in large part due to the level of agricultural activity and recreational opportunities that exist in the Town of Riverhead and points east on the North Fork.

While there are increases in traffic volumes on area roadways due to seasonal activities, it must be understood that the proposed project will generate peak levels of site traffic during specific time periods. The nature of the proposed uses in the subdivision (e.g., industrial, office, commercial) are such that peak traffic to and from the site will occur during the normal weekday a.m. and p.m. commuting hours due to the employment-centric nature of the trips that will occur. Outside of these distinct peak periods, and particularly on weekends when the seasonal variations are most acute, the proposed subdivision will generate significantly lower levels of traffic.

Therefore, it is concluded that the normal weekday commuting hours in combination with the peak hour site traffic is the critical condition with regard to the determination of traffic impacts and the development of appropriate mitigation.

Accident History

Accident data from the NYSDOT Accident Location information System (ALIS) records for the most recent available three-year period was requested. Accident Verbal Description Reports for the period of March 1, 2010 through February 28, 2013 were obtained for the following roadway segments within the specified limits. These data include the terminal and intermediate intersections:

- Middle Country Road – From Wading River Manor Road to Splish Splash Drive
- Grumman Boulevard – From Wading River Manor Road to River Road
- River Road – From Grumman Boulevard to Edwards Avenue
- Edwards Avenue – From Middle Country Road to River Road
- Wading River Manor Road – From Middle Country Road to LIE South Service Road.

Table 23 provides a summary of the accident data. Detailed accident analyses are included in the TIS text and the Accident VDRs are included in Attachment B of the TIS, in Appendix K-2.

Table 23 – Accident Data Summary

Location	Accident Severity				Total	Accident Type												
Study Intersections	Fatality	Injury	Property Damage Only	Non-Reportable		Rear End	Overtaking	Right Angle	Left Turn	Right Turn	Fixed Object	Head On	Side-Swipe	Pedestrian	Parked Vehicle	Run Off The Road	Animal's Action	Other/ Unknown
Middle Country Road & Wading River Manor Road	-	8	3	4	**15**	6	-	4	-	-	2	-	-	-	-	-	2	1
Middle Country Road & NY 25A	1	3	14	3	**21**	5	2	2	4	1	2	-	-	-	-	1	4	
Middle Country Road & Edwards Avenue	-	22	16	3	**41**	17	3	7	7	1	1	2	1	-	-	-	-	2
Middle Country Road & Manor Road/Splish Splash Drive	-	7	8	-	**15**	10	-	1	2	-	1	-	-	-	-	-	1	-
Wading River Manor Road & North Street	-	2	3	-	**5**	1	-	-	1	-	1	-	-	-	-	-	2	-
Wading River Road & LIE NSR	-	1	1	-	**2**	1	-	-	-	-	1	-	-	-	-	-	-	-
Wading River Road & LIE SSR	-	1	3	-	**4**	1	-	-	-	-	2	-	-	-	-	-	1	-
Edwards Avenue & River Road	-	1	2	-	**3**	-	-	2	-	-	1	-	-	-	-	-	-	-
Roadway Segments (excludes intersection accidents)																		
Middle Country Road - Between Wading River Manor Road & NY 25A	1	10	21	3	**35**	7	1	-	2	2	5	-	-	-	1	-	14	3
Middle Country Road - Between NY 25A & Splish Splash Drive	2	51	26	5	**84**	24	3	4	8	0	24	4	5	1	2	0	6	3
Edwards Avenue Between Middle Country Road & River Road		1		1	**2**		1		1									
Wading River Manor Road Between Middle Country Road & Grumman Boulevard			1		**1**			1										
Wading River Manor Road Between Grumman Boulevard & North Street		10	2	1	**13**	1	1			1	8					1		1
Wading River Manor Road Between North Street & LIE		8	5		**13**			7	4	1					1			
Grumman Boulevard Between Wading River Manor Road & Burman Boulevard			2		**2**						1							1
River Road Between Burman Boulevard & Edwards Avenue		1	2		**3**						1						2	

3.4.2 Potential Impacts

The TIS (see Appendix K-2) evaluates the future traffic conditions of the surrounding roadway network, and assesses the potential impacts of the proposed action upon same. Additionally, the proposed site access is evaluated. Further, future parking conditions are discussed. The salient portions of the TIS are summarized below.

Future Traffic Conditions

The analysis of future conditions, with and without the proposed project ("Build" and "No-Build" conditions, respectively), was performed to evaluate the effect of the proposed project on future traffic conditions in the study area. The No-Build condition represents the future traffic conditions that can be expected to occur, were the proposed project not constructed. The No-Build condition serves to provide a basis of comparison to the Build condition, which represents expected future traffic conditions resulting from both project and non-project generated traffic. For purposes of this analysis, a Theoretical Mixed-use Development Program occurring over two time horizons is evaluated: 1) a near-term build-out in 2025; and 2) the full build-out in 2035.

No Build Condition

To account for increases in general population and background growth not related to the proposed project or specifically identified other planned developments, an annual growth factor was applied to existing traffic volumes. Based on the NYSDOT Long Island Transportation Plan (LITP) 2000 model, the growth rate anticipated for the Town of Riverhead in Suffolk County is 1.7% per year. Therefore, for Build 2025, a growth rate of 1.7% per year was applied for twelve years (2013 to 2025) for a total of 20.4% (1.7% x 12 years).

For the Full Build 2035 the growth rate was applied for 22 years (2013 to 2035) for a total of 37.4% (1.7% x 22 years).

The Town of Riverhead Planning Department was contacted to determine whether there existed any other planned, approved or developments under consideration, that were significant enough to have the potential to influence traffic conditions in the study area. The other planned developments in the vicinity of the project site that were identified were *Hamlet Centre*, a mixed-use retail and residential development and *Calverton Camelot*, an existing industrial subdivision that is surrounded by the subject property. *Hamlet Centre* is estimated to generate 42 trips (Entering 14 & Exiting 28) during weekday a.m. peak hour, 76 trips (Entering 43 & Exiting 33) during weekday p.m. peak hour and 90 trips (Entering 48 & Exiting 42) during Saturday midday peak hour. When the remaining portion of *Calverton Camelot* is completed by 2025, the

development is estimated to generate an additional 410 trips (Entering 356 & Exiting 54) during weekday a.m. peak hour and 394 trips (Entering 91 & Exiting 303) during the weekday p.m. peak hour. Available documentation for Calverton Camelot did not include an evaluation or trip generation estimate for the Saturday peak hour.

To obtain the 2025 No-Build traffic volumes at the study intersections, the trips anticipated to be generated by the other planned developments in the area were added to the existing traffic volumes plus background traffic growth. The No-Build traffic volumes for the weekday a.m., p.m. and Saturday midday peak hours are presented in Figures 6, 7 and 8, respectively of the TIS, in Appendix K-1.

The intersection of Middle Country Road and Edwards Avenue is currently over capacity and imparts significant delays on motorists during peak periods. With growth in traffic volumes over time, these conditions will continue to worsen. In the No-Build 2025 condition these conditions are such that the SYNCHRO software which is used to evaluate conditions will not produce accurate results. Therefore, in order to model the roadway network in the vicinity of the site it was necessary to improve the No-Build conditions to allow the model to function. The following measures were assumed to be in place for the 2025 No-Build condition at Middle Country Road and Edwards Avenue:

- Eastbound: From an existing single lane approach to an exclusive left-turn lane, a second through lane and an exclusive right-turn lane.
- Westbound: From an existing single lane approach to an exclusive left-turn lane, and a shared through/ right-turn lane.
- Northbound: From an existing single lane approach to an exclusive left-turn lane and a shared through/right-turn lane.
- Southbound: From an existing single lane approach to an exclusive left-turn lane, a through lane and an exclusive right-turn lane.

It is noted that the construction of these improvements at this location will require additional roadway right-of-way beyond that currently available. Table 2 in the TIS (see Appendix K-2) presents the results of the 2025 No Build improvements at Middle Country Road and Edwards Avenue.

Build Condition

To estimate the traffic impacts of the proposed project, it is necessary to determine the traffic volumes expected to be generated by the proposed project. As noted previously, two build years during the anticipated build-out of the parcels were chosen for evaluation -- 2025 and 2035.

Projected Development in 2025

As previously described, the following interim Theoretical Mixed Use Development Program with a horizon year of 2025 is being analyzed in this DSGEIS. The development program for 2025 is as follows:

- 289,606 SF of industrial/research and development (R&D)/flex space
- 1,330,305 SF of office/medical office/flex or institutional space
- 358,785 SF of commercial/retail space
- 150 Residential Units (supportive of commercial/industrial development at the EPCAL Property).

Potential Maximum Development Full Build-Out

In order to ensure comprehensive environmental review in accordance with SEQRA and its implementing regulations at 6 NYCRR Part 617, a theoretical mixed-use, full build-out development program has been identified, which reflects the potential ultimate development of the subject property in accordance with the Reuse and Redevelopment Plan, the proposed PD District and the Subdivision Map. The 2035 Theoretical Mixed Use Development Program would occur on Lots 1 through 42 and would consist of the following components:

- 6,886,836 SF of industrial/research and development (R&D)/flex space
- 2,927,232 SF of office/flex and 740,520 SF of medical office space (3,667,752 SF total)
- 805,860 SF commercial/retail space
- 300 Residential Units (supportive of commercial/industrial development at the EPCAL Property).

Trip Generation

To estimate the project-generated traffic for the proposed development, a review was undertaken of available trip generation data sources, including the reference published by the Institute of Transportation Engineers (ITE), *Trip Generation*, 9th Edition. This widely utilized reference source contains trip generation rates for numerous land uses, including "Office Park" (Land Use Code #750), "Industrial Park" (Land Use Code #130) and "Residential Condos" (Land Use Code #230).

Table 24 summarizes the resulting peak hour trip generation for Build 2025 and Table 25 summarizes the trip generation for Full Build 2035.

Table 24 – Trip Generation – Build 2025

Project Component	Component Size	AM Peak Hour		PM Peak Hour		Saturday Midday	
OFFICE PARK ITE # 750 Park/Campus Like Development	1,689,090 SF	T=1.37(X)+124.36		T=1.22 (X)+95.83		Rate =	0.14
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		89%	11%	14%	86%	74%	26%
		2,170	268	302	1,855	175	61
		Total =	**2438**	Total =	**2157**	Total =	**236**
INDUSTRIAL PARK ITE # 130	289,606 SF	Rate =	0.82	Rate =	0.85	Rate =	0.35
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		82%	18%	21%	79%	32%	68%
		194	43	52	194	32	69
		Total =	**237**	Total =	**246**	Total =	**101**
RESIDENTIAL ITE # 230 Condos/Townhouses	150 Units	Rate =	0.44	Rate =	0.52	Rate =	0.47
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		17%	83%	67%	33%	54%	46%
		11	55	52	26	38	33
		Total =	**66**	Total =	**78**	Total =	**71**
TOTALS		**AM Peak Hour Trips**		**PM Peak Hour Trips**		**Saturday Midday Trips**	
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		2,375	366	406	2,075	245	163
		2,741		**2,481**		**408**	

Table 24 reveals that by 2025 the project would be expected to generate 2,741 trips (2,375 entering and 366 exiting) during the weekday a.m. peak hour, 2,481 trips (406 entering and 2,075 exiting) during the weekday p.m. peak hour and 408 trips (245 entering and 163 exiting) during Saturday midday peak hour.

Table 25 – Trip Generation – Full Build 2035

Project Component	Component Size	AM Peak Hour		PM Peak Hour		Saturday Midday	
OFFICE PARK ITE # 750 Park/Campus Like Development	**4,473,612 SF**	T=1.37(X)+124.36		T=1.22 (X)+95.83		Rate =	0.14
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		89%	11%	14%	86%	74%	26%
		5,565	688	778	4,776	463	163
		Total =	**6,253**	Total =	**5,554**	Total =	**626**
INDUSTRIAL PARK ITE # 130	**6,886,836 SF**	Rate =	0.82	Rate =	0.85	Rate =	0.35
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		82%	18%	21%	79%	32%	68%
		4,631	1,016	1,229	4,625	771	1,639
		Total =	**5,647**	Total =	**5,854**	Total =	**2,410**
RESIDENTIAL ITE # 230 Condos/Townhouses	**300 Units**	Rate =	0.44	Rate =	0.52	Rate =	0.47
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		17%	83%	67%	33%	54%	46%
		22	110	105	51	76	65
		Total =	**132**	Total =	**156**	Total =	**141**
TOTALS		**AM Peak Hour Trips**		**PM Peak Hour Trips**		**Saturday Midday Trips**	
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		10,218	1,814	2,112	9,452	1,310	1,867
		12,032		**11,564**		**3,177**	

Table 25 reveals that by 2035 the project would generate 12,032 trips (10,218 entering and 1,814 exiting) during the weekday a.m. peak hour, 11,564 trips (2,112 entering and 9,452 exiting) during the weekday p.m. peak hour and 3,177 trips (1,310 entering and 1,867 exiting) during the Saturday midday peak hour.

However, through the course of the analysis it was determined that the existing roadway network in the study area cannot support the level of traffic projected with the Theoretical Mixed Use Development Program Full Build-Out in 2035, even with the implementation of all roadway mitigations that, at this time, are reasonable to implement given the configuration of the area roadways, available rights-of-way, and other factors (such as Pine Barrens Core Preservation Area land). There are a limited number of routes to and from the site, and these routes have limits on the extent of potential improvements able to be implemented. Geometric and environmental considerations limit the extent of improvements that could be made to the roadway system and construction of additional, new roadways is not necessarily feasible at this time. Through an iterative analysis process, the level of traffic that can be mitigated was established as 5,000 total trips (combined entering and exiting) during the critical weekday a.m. peak hour.

It must be understood that no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. Therefore, the trip generation could vary significantly based upon the actual uses established at the site. For example, if a significant portion of the site is developed for warehouse uses, minimal traffic would result. Moreover, if a significant area was used as a solar field, virtually no traffic would result from that area. Accordingly, the maximum development limit will be a function of the actual trip generation associated with the uses developed. The Mitigation Phasing Section of this study provides the various levels of trip generation and the mitigation required to be in place for each level of trip generation. The following is one example of a development mix possible that the roadway network could support when reasonable mitigation is considered:

Potential Program Mix for Full Build 2035 Mitigated Traffic Level:

- Office/Institutional Space - 2,474,367 square feet
- Retail Uses - 667,340 square feet
- Industrial Park - 538,667 square feet
- Residential Condos - 300 units

Table 26 summarizes the Trip Generation for the above development mix.

Table 26 – Trip Generation – Full Build 2035 Mitigated Traffic Levels

Project Component	Component Size	AM Peak Hour		PM Peak Hour		Saturday Midday	
OFFICE PARK ITE # 750 Park/Campus Like Development	3,141,707 SF	T=1.37(X)+124.36		T=1.22 (X)+95.83		Rate =	0.14
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		89%	11%	14%	86%	74%	26%
		3,941	487	550	3,379	326	114
		Total =	**4,428**	Total =	**3,929**	Total =	**440**
INDUSTRIAL PARK ITE # 130	538,667 SF	Rate =	0.82	Rate =	0.85	Rate =	0.35
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		82%	18%	21%	79%	32%	68%
		362	80	96	362	60	129
		Total =	**442**	Total =	**458**	Total =	**189**
RESIDENTIAL ITE # 230 Condos/Townhouses	300 Units	Rate =	0.44	Rate =	0.52	Rate =	0.47
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		17%	83%	67%	33%	54%	46%
		22	110	105	51	76	65
		Total =	**132**	Total =	**156**	Total =	**141**
TOTALS		**AM Peak Hour Trips**		**PM Peak Hour Trips**		**Saturday Midday Trips**	
		Entering	Exiting	Entering	Exiting	Entering	Exiting
		4,325	677	751	3,792	462	308
		5,002		**4,543**		**770**	

Table 26 presents the peak hour trip generation which could be expected with the development of the trip-limited Full Build 2035 development mix above. As can be seen from this table, this mix would result in 5,002 trips (4,325 entering and 677 exiting) during the weekday a.m. peak hour, 4,543 trips (751 entering and 3,543 exiting) during the weekday p.m. peak hour and 770 trips (462 entering and 308 exiting) during the Saturday midday peak hour. The Saturday peak hour of site traffic is not the limiting case in developing a "ceiling" on trip generation. Rather it is the a.m. and p.m. peak commuting hours where the issue occurs.

It should be noted again that the exact mix of uses in Table 26 is not as important as the resulting trip generation that would enter and exit to the surrounding roadway network. Different mixes of uses at different sizes could be mitigated as long as the corresponding trip generation does not exceed the total trip levels in this table.

Trip Distribution and Assignment

The net trips generated by the proposed development were distributed to the adjacent roadways based on location of the access points, area demographics and the characteristics of the roadway system in the vicinity of the site. The trip distribution percentages depicted in Figure 9 (see Appendix K-1) were applied to

the site-generated volumes and the resulting volumes were then assigned to the local roadway network.

The resulting Build 2025 site generated traffic volumes for the weekday a.m., p.m. and Saturday midday peak hours are presented in Figures 10, 11 and 12, respectively, in Appendix K-1. To determine the 2025 Build traffic volumes, the trips generated by the site in 2025 were added to the No-Build traffic volumes at the key intersections. The resulting 2025 Build traffic volumes for the weekday a.m. peak, p.m. peak and Saturday midday peak hours are presented in Figures 13, 14 and 15, respectively, in Appendix K-1.

The 2035 site-generated traffic volumes were determined by applying the trip distribution percentages in Figure 9 (see Appendix K-1) to the trip generation presented in Table 5. The resulting site-generated traffic volumes for the weekday a.m., p.m. and Saturday midday peak hours are presented in Figures 16, 17 and 18, respectively, in Appendix K-1. To determine the Full Build 2035 volumes, the 2035 site-generated volumes were then combined with the No-Build 2035 volumes. The resulting 2035 Build traffic volumes for the weekday a.m. peak, p.m. peak and Saturday midday peak hours are presented in Figures 19, 20 and 21, respectively, in Appendix K-1.

New Site Access Points

The proposed Subdivision Map for the property includes the development of a number of new access points on Middle Country Road and Grumman Boulevard. Currently, Burman Boulevard extends from Grumman Boulevard to the south through the site to Middle Country Road on the north. The intersection of Burman Boulevard with Middle Country Road is signalized. This roadway provides access to the existing uses in the Calverton Camelot industrial subdivision and would also provide access to the future subdivided parcels.

Two additional access points are proposed on Middle Country Road. A westerly access would be located across from the Calverton National Cemetery access and would be signalized. A new easterly access would be located opposite the signalized intersection of NY 25A with Middle Country Road. This arrangement results in three signalized access points to the site on Middle Country Road.

On Grumman Boulevard a new unsignalized site access is proposed west of Burman Boulevard, at the entry to a new small subdivided area.

Traffic Operations Analysis

Measuring existing traffic volumes and projecting future traffic volumes enables traffic flow within the study area to be quantified. To assess the quality of traffic flow, roadway capacity analyses were conducted with respect to the Existing, No-Build and both Build conditions. These capacity analyses provide an indication of the adequacy of the roadway facilities to serve the anticipated traffic demands.

Level of Service and Delay Criteria

The evaluation criteria used to analyze area intersections in this traffic study are based on the 2000 and 2010 *Highway Capacity Manual* (HCM). The term "level of service" (LOS) is used to denote the different operating conditions that occur at an intersection under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay and freedom to maneuver. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of Service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. The LOS definitions for both the signalized and unsignalized intersections can be found in Attachment C of Appendix K-2.

In addition to LOS, vehicle delay time (expressed in seconds per vehicle) is typically used to quantify the traffic operations at intersections. For example, a delay of 15 seconds for a particular vehicular movement or approach indicates that vehicles on the movement or approach will experience an average additional travel time of 15 seconds. It should be noted that delay time has a range of values for a given LOS letter designation. Therefore, when evaluating intersection capacity results, in addition to the LOS, vehicle delay time should also be considered.

The LOS designations, which are based on delay, are reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of all traffic entering the intersection and the LOS designation is for overall conditions at the intersection. For unsignalized intersections, however, the analysis assumes that traffic on the mainline is not affected by traffic on the side streets. Thus the LOS designation is for the critical movement exiting the side street, which is generally the left turn out of the side street or side driveway.

LOS analyses were conducted for the Existing, 2025 No-Build and 2025 Build conditions for each of the key intersections.

Software

The capacity analyses were done using the traffic analysis software Synchro, *version 8,* a computer program developed by Trafficware Ltd. Synchro is a complete software package for modeling and optimizing traffic signal timing. Synchro adheres to and implements the guidelines and methods set forth in the 2000 and 2010 *Highway Capacity Manual.* This analysis methodology was used to evaluate the ability of an intersection or roadway to efficiently handle the number of vehicles using the facility. Synchro was used to model and analyze the Existing, No-Build and both Build conditions at the key intersections.

Level of Service Analysis 2025

LOS analyses were conducted for the Existing, 2025 No-Build and 2025 Build conditions for each of the key intersections. The results of the capacity analyses at six existing and proposed signalized study intersections, for the weekday a.m., p.m. and Saturday midday peak periods, are summarized in Tables 27, 28 and 29, respectively. The results of the capacity analyses for the six existing unsignalized study intersections for weekday a.m., p.m. and Saturday midday peak periods, are summarized in Tables 30, 31 and 32, respectively.

Detailed capacity analysis worksheets are contained in Attachment D of the TIS, in Appendix K-2.

Table 27 – Signalized Intersection LOS – AM Peak Hour

Intersection	Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	7.5	A	7.1	A	7.5	A
		T	10.0	A	13.4	B	57.5	E
		R	2.4	A	1.9	A	2.2	A
		Approach	8.3	A	11.2	B	49.3	D
	WB	L	7.3	A	8.1	A	109.8	F
		T	8.0	A	7.8	A	8.6	A
		R	0.0	A	0.0	A	2.1	A
		Approach	7.7	A	7.6	A	25.4	C
	NB	LT	22.9	C	34.7	C	530.4	F
		R	4.5	A	6.4	A	33.8	C
		Approach	19.9	B	30.2	C	211.7	F
	SB	LT	20.4	C	32.4	C	287.6	F
		R	6.3	A	7.3	A	15.9	B
		Approach	12.0	B	18.5	B	200.2	F
	Overall		**10.5**	**B**	**14.0**	**B**	**103.0**	**F**
NY 25 & Calverton National Cemetery / West Site Access	EB	L					8.4	A
		T					102.1	F
		R					2.0	A
		Approach					85.2	F
	WB	L					103.1	F
		T					3.9	A
		R					0.0	A
		Approach					45.5	D
	NB	L					36.4	D
		T					29.0	C
		R					11.0	B
		Approach					22.8	C
	SB	L					34.2	C
		TR / R					23.2	C
		Approach					28.3	C
	Overall						**70.4**	**E**
NY 25 & Burman Boulevard	EB	T	5.2	A	9.4	A	18.5	B
		R	2.5	A	1.4	A	2.9	A
		Approach	5.1	A	6.8	A	11.5	B
	WB	L	5.4	A	10.6	B	1047.7	F
		T	4.9	A	8.3	A	17.6	B
		Approach	5.0	A	9.1	A	484.0	F
	NB	L	25.3	C	28.3	C	34.4	C
		R	12.4	B	9.9	A	7.9	A
		Approach	14.6	B	19.6	B	21.5	C
	Overall		**5.3**	**A**	**8.4**	**A**	**221.1**	**F**

Table 27 – Signalized Intersection LOS – AM Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	LT / L	22.6	C	23.5	C	21.4	C
		T					124.6	F
		R					5.4	A
		Approach	22.6	C	23.5	C	83.8	F
	WB	L					244.4	F
		T	16.2	B	16.4	B	233.2	F
		R	0.2	A	0.2	A	3.6	A
		Approach	9.0	A	9.8	A	197.3	F
	NB	L					31.7	C
		T					35.4	D
		R					0.8	A
		Approach					20.1	C
	SB	L	25.2	C	45.4	D	76.3	E
		T					36.9	D
		R	6.7	A	6.8	A	7.8	A
		Approach	24.2	C	41.9	D	55.5	E
	Overall		**19.2**	**B**	**25.9**	**C**	**120.0**	**F**
NY 25 & Edwards Avenue	EB	LTR / L	41.6	D	10.6	B	15.4	B
		T			65.9	E	103.2	F
		R			17.8	B	18.0	B
		Approach	41.6	D	53.3	D	81.6	F
	WB	LT / L	11.6	B	16.3	B	16.5	B
		R / TR	3.4	A	17.0	B	28.1	C
		Approach	10.8	B	16.9	B	27.7	C
	NB	LTR / L	64.4	E	64.7	E	183.2	F
		TR			36.0	D	36.0	D
		Approach	64.4	E	49.5	D	120.4	F
	SB	LTR / L	62.0	E	24.4	C	24.4	C
		TR / T			78.4	E	208.5	F
		Approach	62.0	E	69.8	E	186.8	F
	Overall		**41.1**	**D**	**48.0**	**D**	**86.1**	**F**
NY 25 & Manor Road / Splish Splash Drive	EB	L	8.0	A	7.6	A	13.6	B
		TR	13.3	B	15.8	B	19.2	B
		Approach	13.0	B	15.2	B	18.8	B
	WB	L	4.4	A	4.2	A	4.6	A
		T	7.2	A	7.2	A	23.6	C
		R / TR	2.2	A	1.9	A	2.6	A
		Approach	6.8	A	6.8	A	22.7	C
	NB	LT	23.5	C	29.0	C	30.0	C
		R	24.0	C	29.0	C	30.0	C
		Approach	23.7	C	29.0	C	30.0	C
	SB	LTR	21.0	C	31.4	C	34.3	C
		Approach	21.0	C	31.4	C	34.3	C
	Overall		**11.7**	**B**	**14.0**	**B**	**22.0**	**C**

Table 28 – Signalized Intersection LOS – PM Peak Hour

Intersection	Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	12.1	B	24.4	C	402.6	F
		T	10.1	B	10.2	B	9.6	A
		R	2.8	A	2.0	A	1.7	A
		Approach	9.4	A	12.4	B	95.2	F
	WB	L	8.4	A	7.6	A	14.6	B
		T	12.2	B	15.4	B	28.6	C
		R	3.0	A	2.1	A	1.8	A
		Approach	11.0	B	13.6	B	21.0	C
	NB	LT	25.2	C	41.7	D	68.9	E
		R	3.6	A	6.4	A	7.9	A
		Approach	23.2	C	38.1	D	56.2	E
	SB	LT	18.2	B	27.4	C	69.3	E
		R	5.4	A	6.4	A	15.4	B
		Approach	10.8	B	15.4	B	42.3	D
	Overall		**12.4**	**B**	**17.1**	**B**	**45.3**	**D**
NY 25 & Calverton National Cemetery / West Site Access	EB	L					10.0	A
		T					12.4	B
		R					0.1	A
		Approach					11.5	B
	WB	L					37.4	D
		T					36.0	D
		R					0.0	A
		Approach					35.9	D
	NB	L					55.9	E
		T					26.0	C
		R					12.6	B
		Approach					32.3	C
	SB	L					32.4	C
		TR / R					22.3	C
		Approach					27.0	C
	Overall						**28.8**	**C**
NY 25 & Burman Boulevard	EB	T	8.3	A	12.3	B	26.1	C
		R	3.7	A	2.7	A	2.9	A
		Approach	8.2	A	11.2	B	22.9	C
	WB	L	7.0	A	9.7	A	108.2	F
		T	8.8	A	13.3	B	26.9	C
		Approach	8.7	A	13.0	B	37.2	D
	NB	L	28.3	C	41.0	D	307.8	F
		R	7.5	A	5.4	A	110.9	F
		Approach	17.5	B	27.4	C	217.2	F
	Overall		**9.9**	**A**	**16.9**	**B**	**112.2**	**F**

Table 28 – Signalized Intersection LOS – PM Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	LT / L	14.2	B	21.3	C	223.2	F
		T					349.5	F
		R					0.2	A
		Approach	14.2	B	21.3	C	319.3	F
	WB	L					20.2	C
		T	13.8	B	15.5	B	115.7	F
		R	0.6	A	0.8	A	7.5	A
		Approach	6.4	A	7.4	A	58.8	E
	NB	L					32.4	C
		T					43.0	D
		R					16.5	B
		Approach					28.2	C
	SB	L	28.7	C	37.1	D	27.4	C
		T					30.8	C
		R	9.1	A	8.6	A	0.7	A
		Approach	26.6	C	33.8	C	23.4	C
	Overall		**11.9**	**B**	**15.7**	**B**	**144.6**	**F**
NY 25 & Edwards Avenue	EB	LTR / L	103.4	F	14.7	B	76.7	E
		T			38.8	D	284.5	F
		R			17.5	B	18.5	B
		Approach	103.4	F	33.2	C	227.2	F
	WB	LT / L	22.8	C	13.1	B	13.5	B
		R / TR	4.4	A	23.1	C	29.6	C
		Approach	21.5	C	22.7	C	29.2	C
	NB	LTR / L	94.8	F	44.3	D	48.9	D
		TR			38.9	D	37.7	D
		Approach	94.8	F	41.6	D	43.5	D
	SB	LTR / L	36.2	D	23.1	C	22.5	C
		TR / T			51.2	D	52.3	D
		Approach	36.2	D	46.8	D	48.0	D
	Overall		**64.2**	**E**	**31.8**	**C**	**131.4**	**F**
NY 25 & Manor Road/Splish Splash Drive	EB	L	8.9	A	12.6	B	18.9	B
		TR	11.5	B	13.9	B	60.0	E
		Approach	11.2	B	13.8	B	56.0	E
	WB	L	3.5	A	3.5	A	3.0	A
		T	10.2	B	14.3	B	12.4	B
		R / TR	2.5	A	2.4	A	2.2	A
		Approach	9.6	A	13.5	B	11.7	B
	NB	LT	21.2	C	28.2	C	33.2	C
		R	21.2	C	28.6	C	33.7	C
		Approach	21.2	C	28.5	C	33.5	C
	SB	LTR	13.1	B	19.3	B	24.0	C
		Approach	13.1	B	19.3	B	24.0	C
	Overall		**10.7**	**B**	**14.2**	**B**	**36.7**	**D**

Table 29 - Signalized Intersection LOS – Saturday Midday Peak Hour

Intersection		Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
				Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road		EB	L	9.5	A	11.7	B	12.3	B
			T	9.8	A	10.9	B	11.5	B
			R	2.8	A	2.6	A	2.4	A
			Approach	8.8	A	10.0	B	10.6	B
		WB	L	7.8	A	8.5	A	9.3	A
			T	10.2	B	11.6	B	12.0	B
			R	2.8	A	2.6	A	2.3	A
			Approach	9.0	A	10.1	B	10.3	B
		NB	LT	21.9	C	25.8	C	27.0	C
			R	6.8	A	7.0	A	6.8	A
			Approach	18.7	B	21.8	C	21.2	C
		SB	LT	19.9	B	23.0	C	27.4	C
			R	5.8	A	5.9	A	6.1	A
			Approach	12.7	B	14.4	B	17.5	B
		Overall		**11.0**	**B**	**12.5**	**B**	**13.3**	**B**
NY 25 & Calverton National Cemetery / West Site Access		EB	L					6.0	A
			T					6.1	A
			R					0.0	A
			Approach					5.8	A
		WB	L					34.8	C
			T					2.5	A
			R					0.0	A
			Approach					4.6	A
		NB	L					33.9	C
			T					26.0	C
			R					6.5	A
			Approach					19.0	B
		SB	L					32.0	C
			TR / R					21.8	C
			Approach					26.5	C
		Overall						**6.0**	**A**
NY 25 & Burman Boulevard		EB	T	6.8	A	8.8	A	9.3	A
			R	3.5	A	3.2	A	2.1	A
			Approach	6.7	A	8.7	A	8.6	A
		WB	L	6.7	A	6.9	A	7.8	A
			T	6.5	A	8.3	A	8.8	A
			Approach	6.5	A	8.3	A	8.7	A
		NB	L	26.6	C	27.4	C	28.7	C
			R	10.0	B	9.5	A	8.0	A
			Approach	18.1	B	18.3	B	18.3	B
		Overall		**7.6**	**A**	**9.3**	**A**	**9.8**	**A**

Table 29 – Signalized Intersection LOS – Saturday Midday Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	Existing 2013		No Build 2025		Build 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A	EB	LT / L	22.5	C	23.9	C	14.5	B
		T					27.9	C
		R					0.1	A
		Approach	22.5	C	23.9	C	25.3	C
	WB	L					13.1	B
		T	17.4	B	17.0	B	29.8	C
		R	0.3	A	0.4	A	1.5	A
		Approach	8.7	A	8.6	A	16.3	B
	NB	L					35.8	D
		T					35.4	D
		R					0.2	A
		Approach					22.0	C
	SB	L	25.9	C	44.9	D	118.4	F
		T					20.2	C
		R	7.1	A	8.1	A	0.2	A
		Approach	24.8	C	42.9	D	107.7	F
	Overall		17.6	B	23.5	C	45.4	D
NY 25 & Edwards Avenue	EB	LTR / L	19.6	B	10.0	A	10.3	B
		T			30.5	C	33.9	C
		R			14.4	B	14.4	B
		Approach	19.6	B	27.2	C	30.0	C
	WB	LT / L	11.5	B	10.8	B	11.5	B
		R / TR	4.3	A	16.0	B	16.6	B
		Approach	10.6	B	15.8	B	16.3	B
	NB	LTR / L	44.3	D	28.8	C	30.8	C
		TR			61.0	E	61.0	E
		Approach	44.3	D	52.9	D	53.1	D
	SB	LTR / L	48.1	D	26.6	C	26.6	C
		TR / T			45.6	D	48.0	D
		R						
		Approach	48.1	D	41.3	D	43.4	D
	Overall		24.9	C	29.8	C	31.1	C
NY 25 & Manor Road / Splish Splash Drive	EB	L	8.1	A	7.5	A	7.7	A
		TR	11.7	B	13.2	B	12.8	B
		Approach	11.5	B	12.8	B	12.5	B
	WB	L	3.5	A	3.0	A	3.0	A
		T	8.5	A	9.8	A	9.8	A
		R / TR	2.2	A	2.1	A	2.1	A
		Approach	8.1	A	9.3	A	9.3	A
	NB	LT	20.5	C	27.5	C	28.5	C
		R	21.0	C	28.0	C	29.0	C
		Approach	20.7	C	27.7	C	28.7	C
	SB	LTR	12.5	B	16.7	B	17.3	B
		Approach	12.5	B	16.7	B	17.3	B
	Overall		10.0	B	11.5	B	11.4	B

Table 27 through Table 29 reveal that of the six signalized intersections, only Middle Country Road and Manor Road/Splish Splash Drive is operating satisfactorily with an overall LOS D or better in the Build 2025 condition. The others were found to be operating poorly during one or more of the time periods analyzed. The five poorly performing intersections were re-analyzed with capacity and signal timing improvements. The results of the analysis with mitigation are presented in the Mitigation portion of this Section.

Table 30 - Unsignalized Intersection LOS – AM Peak Hour

Intersection	Critical Approach/ Movement	Existing 2013		No Build 2025		Build 2025	
		Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	12.4	B	14.3	B	18.6	C
	WB	19.4	C	32.6	D	278.9	F
	NB L	8.4	A	8.9	A	10.4	B
Grumman Boulevard & Burman Boulevard	SB	10.2	B	12.5	B	75.2	F
	EB L	7.5	A	7.9	A	10.1	B
Wading River Manor Road & Grumman Boulevard	WB L	11.0	B	11.9	B	19.7	C
	WB R	9.1	A	9.3	A	11.3	B
Wading River Road & North Street (All-way Stop)	EB	8.7	A	9.3	A	13.1	B
	WB	8.3	A	8.9	A	10.8	B
	NB	8.8	A	10.8	B	56.6	F
	SB	8.6	A	9.5	A	14.2	B
	Overall	8.7	A	10.1	B	47.1	E
Wading River Road & LIE North Service Road	WB	37.4	E	78.0	F	299.0	F
	NB L	8.6	A	9.2	A	9.3	A
Wading River Road & LIE South Service Road	EB	12.4	B	17.2	C	354.8	F
	SB L	8.7	A	9.2	A	10.0	B
Grumman Boulevard & West Site Access	EB L					7.8	A
	SB					13.1	B

Table 31 - Unsignalized Intersection LOS – PM Peak Hour

Intersection	Critical Approach/ Movement	Existing 2013		No Build 2025		Build 2025	
		Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	13.3	B	14.4	B	20.0	C
	WB	21.7	C	37.3	E	201.7	F
	NB L	8.2	A	8.5	A	9.0	A
Grumman Boulevard & Burman Boulevard	SB	10.9	B	15.3	C	213.2	F
	EB L	7.4	A	7.5	A	7.7	A
Wading River Manor Road & Grumman Boulevard	WB L	13.4	B	19.2	C	470.8	F
	WB R	10.3	B	10.9	B	11.3	B
Wading River Road & North Street (All-way Stop)	EB	8.4	A	9.0	A	10.6	B
	WB	8.4	A	9.1	A	10.6	B
	NB	8.6	A	9.7	A	13.0	B
	SB	9.3	A	11.7	B	54.2	F
	Overall	8.9	A	10.7	B	40.8	E
Wading River Road & LIE North Service Road	WB	24.5	C	56.5	F	126.5	F
	NB L	8.0	A	8.3	A	9.0	A
Wading River Road & LIE South Service Road	EB	19.0	C	35.7	E	83.1	F
	SB L	7.9	A	8.2	A	8.2	A
Grumman Boulevard & West Site Access	EB L					8.5	A
	SB					17.2	C

Table 32 – Unsignalized Intersection LOS – Saturday Midday Peak Hour

Intersection	Critical Approach/ Movement	Existing 2013		No Build 2025		Build 2025	
		Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	11.0	B	11.8	B	11.8	B
	WB	14.7	B	17.6	C	19.2	C
	NB L	7.8	A	8.0	A	8.1	A
Grumman Boulevard & Burman Boulevard	SB	9.2	A	9.4	A	10.0	B
	EB L	7.3	A	7.4	A	7.5	A
Wading River Manor Road & Grumman Boulevard	WB L	10.8	B	11.4	B	12.2	B
	WB R	9.4	A	9.6	A	9.8	A
Wading River Road & North Street (All-way Stop)	EB	8.2	A	8.5	A	9.1	A
	WB	8.3	A	8.7	A	9.1	A
	NB	8.5	A	9.1	A	10.1	B
	SB	8.5	A	9.1	A	9.9	A
	Overall	8.4	A	9.0	A	9.8	A
Wading River Road & LIE North Service Road	WB	20.4	C	32.1	D	38.1	E
	NB L	7.9	A	8.1	A	8.1	A
Wading River Road & LIE South Service Road	EB	11.2	B	12.3	B	12.9	B
	SB L	8.0	A	8.1	A	8.2	A
Grumman Boulevard & West Site Access	SB					9.1	A
	EB L					7.4	A

Table 30 through Table 32 reveal that during the Build 2025 condition only the newly- created site access operates satisfactorily with an overall LOS C or better. The other intersections were found to be operating poorly during one or more of the time periods analyzed. Therefore, the six unsignalized study intersections, Edwards Avenue and River Road, Grumman Boulevard and Burman Boulevard, Wading River Road and Grumman Boulevard, Wading River Road and North Street, Wading River Road and LIE North Service Road, Wading River Road and LIE South Service Road, were re-analyzed with capacity mitigation and/or signalization and the results are presented in the Mitigation portion of this section (see Section 3.4.3).

Level of Service Analysis No-Build 2035 & Full Build 2035

The No-Build 2035 was analyzed using the volumes obtained by combining the background growth for 10 years from 2025 to 2035, to the Build 2025 volumes.

Full Build 2035 was analyzed using the site generated volumes in 2035 presented earlier in the report in Table 26. Through the course of the analysis, it was determined that the existing roadway network in the study area cannot support the level of traffic projected in the Theoretical Mixed Use Development Program in 2035, even with the implementation of all roadway mitigation that, at this time, are reasonable to implement given the configuration of the area roadways, available rights-of-way, and other factors (such as Pine Barrens Core Preservation Area land). There are a limited number of routes to and from the site, and these routes have limits on the extent of potential improvements that are able to be implemented. Geometric and environmental considerations limit the extent of improvements that could be made to the roadway system and construction of additional, new roadways is not necessarily feasible at this time. Through an iterative analysis process, the level of traffic that can be mitigated was established as 5,000 total trips (combined entering and exiting) during the critical weekday a.m. peak hour.

As noted above, based upon actual future development on the site, a different use mix on the site could result in significantly different trip generation, as described above. Accordingly, the maximum development limit will be a function of the actual trip generation associated with the uses developed. The Mitigation Phasing discussion in this Section provides the various levels of trip generation and the mitigation required to be in place for each level of trip generation.

The level of the site-generated trip increase difference between 2025 (Table 24) and 2035 (Table 26) was added to the No-Build 2035 volume to obtain the Full Build 2035 volumes used in the analysis.

The results of the No-Build 2035 and Full Build 2035 capacity analyses at the twelve signalized study intersections, for weekday a.m., p.m. and Saturday midday peak periods, are summarized in Tables 33, 34 and 35, respectively. The results of the No-Build 2035 and Full Build 2035 capacity analyses at the unsignalized study intersection, for weekday a.m., p.m. and Saturday midday peak periods, are summarized in Tables 36, 37 and 38, respectively.

Detailed capacity analysis worksheets are contained in Attachment D of the TIS, in Appendix K-2.

Table 33 - Signalized Intersection LOS 2035 – AM Peak Hour

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	55.6	E	58.4	E
		T	35.0	D	180.0	F
		R	0.8	A	1.0	A
		Approach	33.1	C	159.9	F
	WB	L	55.0	E	66.7	E
		T	36.9	D	41.6	D
		R	5.6	A	7.4	A
		Approach	36.6	D	41.6	D
	NB	L	28.8	C	25.7	C
		T	51.9	D	43.0	D
		R	22.8	C	142.3	F
		Approach	30.4	C	113.9	F
	SB	L	44.7	D	130.1	F
		T	32.5	C	30.0	C
		R	6.6	A	6.0	A
		Approach	29.9	C	86.6	F
	Overall		**32.6**	**C**	**117.3**	**F**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	10.8	B	12.8	B
		T	19.0	B	202.1	F
		R	0.8	A	0.6	A
		Approach	15.9	B	160.1	F
	WB	L	19.6	B	35.3	D
		T	6.1	A	4.5	A
		R	0.5	A	0.2	A
		Approach	11.3	B	20.0	C
	NB	L	47.4	D	49.2	D
		LT	47.3	D	48.8	D
		R	7.4	A	10.2	B
		Approach	26.0	C	27.8	C
	SB	L	49.0	D	49.0	D
		TR	19.2	B	19.1	B
		Approach	33.8	C	33.8	C
	Overall		**15.3**	**B**	**110.2**	**F**
NY 25 & Burman Boulevard	EB	T	8.6	A	15.9	B
		R	6.9	A	40.6	D
		Approach	7.9	A	27.4	C
	WB	L	34.7	C	189.9	F
		T	7.6	A	12.3	B
		Approach	19.6	B	95.7	F
	NB	L	43.4	D	39.9	D
		R	16.0	B	14.9	B
		Approach	29.8	C	27.5	C
	Overall		**14.7**	**B**	**58.4**	**E**

Table 33 – Signalized Intersection LOS 2035 – AM Peak Hour... Continued 2 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	24.7	C	29.5	C
		T	39.7	D	53.4	D
		R	13.6	B	25.7	C
		Approach	31.7	C	41.6	D
	WB	L	49.0	D	67.8	E
		T	25.7	C	76.0	E
		R	7.0	A	9.1	A
		Approach	26.4	C	66.0	E
	NB	L	43.9	D	45.7	D
		T	40.4	D	41.2	D
		R	28.8	C	26.6	C
		Approach	37.2	D	37.2	D
	SB	L	49.2	D	53.0	D
		T	40.0	D	44.9	D
		R	5.7	A	14.9	B
		Approach	39.2	D	41.5	D
	Overall		**31.9**	**C**	**51.8**	**D**
NY 25 & Edwards Avenue	EB	L	17.3	B	19.1	B
		T	29.5	C	33.4	C
		R	24.6	C	25.4	C
		Approach	28.0	C	31.0	C
	WB	L	17.2	B	22.7	C
		TR	42.3	D	217.9	F
		Approach	41.5	D	213.7	F
	NB	L	42.4	D	60.8	E
		TR	31.6	C	31.0	C
		Approach	37.6	D	49.2	D
	SB	L	23.1	C	22.7	C
		T	59.9	E	54.5	D
		R	19.8	B	60.0	E
		Approach	38.8	D	53.9	D
	Overall		**35.3**	**D**	**106.7**	**F**
NY 25 & Splish Splash Drive	EB	L	6.4	A	14.5	B
		TR	11.9	B	23.9	C
		Approach	11.5	B	23.2	C
	WB	L	5.6	A	5.5	A
		TR	15.3	B	23.2	C
		Approach	15.2	B	23.0	C
	NB	LT	35.5	D	36.0	D
		R	33.1	C	33.4	C
		Approach	34.7	C	35.2	D
	SB	LTR	42.6	D	46.0	D
		Approach	42.6	D	46.0	D
	Overall		**16.5**	**B**	**25.3**	**C**

Table 33 – Signalized Intersection LOS 2035 – AM Peak Hour ... Continued 3 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	27.3	C	27.1	C
		R	11.2	B	11.2	B
		Approach	12.1	B	12.0	B
	WB	LTR	30.1	C	29.8	C
		Approach	30.1	C	29.8	C
	NB	L				
		LT	34.5	C	201.2	F
		R	1.7	A	1.8	A
		Approach	32.6	C	192.6	F
	SB	LTR	9.1	A	9.4	A
		Approach	9.1	A	9.4	A
	Overall		**21.6**	**C**	**109.5**	**F**
Grumman Boulevard & Burman Boulevard	EB	L	14.5	B	158.3	F
		T	3.7	A	4.2	A
		Approach	13.0	B	141.5	F
	WB	T / TR	2.0	A	3.7	A
		R				
		Approach	2.0	A	3.7	A
	SB	L	28.5	C	28.9	C
		R	10.5	B	9.9	A
		Approach	17.4	B	17.0	B
	Overall		**10.3**	**B**	**79.5**	**E**
Wading River Manor Road & Grumman Boulevard	WB	L	13.1	B	17.5	B
		R	6.1	A	8.0	A
		Approach	11.4	B	15.9	B
	NB	T	7.2	A	10.8	B
		R	0.9	A	2.1	A
		Approach	3.4	A	5.5	A
	SB	L	6.3	A	8.3	A
		T	6.7	A	7.2	A
		Approach	6.6	A	7.4	A
	Overall		**5.0**	**A**	**6.9**	**A**
Wading River Manor Road & North Street	EB	L / LTR	30.8	C	41.5	D
		TR				
		Approach	30.8	C	41.5	D
	WB	LTR	19.2	B	18.1	B
		Approach	19.2	B	18.1	B
	NB	LTR	16.3	B	166.1	F
		Approach	16.3	B	166.1	F
	SB	LTR	6.6	A	8.7	A
		Approach	6.6	A	8.7	A
	Overall		**15.5**	**B**	**117.9**	**F**

Table 33 – Signalized Intersection LOS 2035 – AM Peak Hour ... Continued 4 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	23.4	C	21.8	C
		R	0.4	A	0.3	A
		Approach	15.6	B	14.5	B
	NB	L	22.2	C	27.8	C
		T	14.6	B	22.4	C
		Approach	17.8	B	24.1	C
	SB	T	23.1	C	24.4	C
		R	4.5	A	4.6	A
		Approach	13.2	B	13.3	B
	Overall		**16.7**	**B**	**21.6**	**C**
Wading River Road & LIE South Service Road	EB	L	38.9	D	63.0	E
		LT	39.0	D	63.5	E
		R	5.7	A	5.1	A
		Approach	30.3	C	52.5	D
	NB	T	42.6	D	161.7	F
		R	6.6	A	8.5	A
		Approach	34.9	C	132.4	F
	SB	L	16.5	B	18.1	B
		T	29.8	C	32.6	C
		Approach	28.0	C	30.8	C
	Overall		**32.5**	**C**	**90.3**	**F**

Table 34 - Signalized Intersection LOS 2035 – PM Peak Hour

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	56.3	E	56.3	E
		T	26.5	C	34.4	C
		R	0.5	A	0.7	A
		Approach	29.6	C	34.7	C
	WB	L	64.2	E	62.1	E
		T	21.5	C	34.2	C
		R	3.3	A	9.1	A
		Approach	25.0	C	34.2	C
	NB	L	39.1	D	38.6	D
		T	47.5	D	51.5	D
		R	0.9	A	1.7	A
		Approach	35.2	D	34.1	C
	SB	L	33.4	C	39.9	D
		T	43.9	D	43.4	D
		R	10.2	B	10.0	A
		Approach	24.4	C	26.8	C
	Overall		**27.3**	**C**	**33.5**	**C**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	10.2	B	32.3	C
		T	9.1	A	14.8	B
		R	0.8	A	2.7	A
		Approach	8.6	A	14.2	B
	WB	L	52.7	D	55.8	E
		T	16.7	B	38.5	D
		R	0.4	A	0.0	A
		Approach	17.7	B	38.9	D
	NB	L	51.3	D	57.7	E
		LT	51.6	D	58.1	E
		R	15.3	B	19.7	B
		Approach	31.8	C	37.1	D
	SB	L	48.9	D	42.0	D
		TR	18.5	B	21.1	C
		Approach	33.4	C	31.3	C
	Overall		**18.3**	**B**	**32.8**	**C**
NY 25 & Burman Boulevard	EB	T	39.1	D	76.1	E
		R	0.3	A	0.5	A
		Approach	34.0	C	65.2	E
	WB	L	26.1	C	23.6	C
		T	27.1	C	27.3	C
		Approach	27.0	C	26.8	C
	NB	L	40.2	D	100.7	F
		R	20.3	C	23.8	C
		Approach	31.1	C	64.2	E
	Overall		**30.8**	**C**	**54.8**	**D**

Table 34 – Signalized Intersection LOS 2035 – PM Peak Hour ... Continued 2 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	29.1	C	84.5	F
		T	46.2	D	220.0	F
		R	0.1	A	0.5	A
		Approach	42.3	D	190.5	F
	WB	L	45.5	D	49.2	D
		T	34.6	C	48.7	D
		R	15.7	B	37.7	D
		Approach	25.4	C	43.6	D
	NB	L	38.3	D	36.4	D
		T	50.5	D	55.8	E
		R	7.8	A	20.7	C
		Approach	28.5	C	34.0	C
	SB	L	56.5	E	56.5	E
		T	38.0	D	41.2	F
		R	0.7	A	1.1	A
		Approach	47.3	D	45.5	D
	Overall		**34.5**	**C**	**99.2**	**F**
NY 25 & Edwards Avenue	EB	L	41.4	D	76.5	E
		T	31.2	C	103.8	F
		R	18.5	B	19.3	B
		Approach	30.8	C	91.0	F
	WB	L	16.8	B	19.1	B
		TR	37.9	D	74.6	E
		Approach	37.3	D	73.0	E
	NB	L	56.8	E	61.1	E
		TR	45.9	D	45.9	D
		Approach	51.5	D	53.8	D
	SB	L	23.9	C	23.9	C
		T	50.8	D	50.8	D
		R	1.3	A	3.2	A
		Approach	36.5	D	34.9	C
	Overall		**35.7**	**D**	**78.1**	**E**
NY 25 & Splish Splash Drive	EB	L	8.7	A	9.6	A
		TR	18.8	B	26.5	C
		Approach	17.8	B	24.9	C
	WB	L	4.0	A	4.7	A
		TR	13.5	B	16.0	B
		Approach	13.5	B	16.0	B
	NB	LT	44.3	D	44.5	D
		R	40.5	D	40.3	D
		Approach	42.7	D	42.7	D
	SB	LTR	33.3	C	33.0	C
		Approach	33.3	C	33.0	C
	Overall		**17.3**	**B**	**22.3**	**C**

Table 34 – Signalized Intersection LOS 2035 – PM Peak Hour ...Continued 3 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	27.1	C	25.3	C
		R	9.8	A	17.5	B
		Approach	11.1	B	17.9	B
	WB	LTR	31.5	C	27.8	C
		Approach	31.5	C	27.8	C
	NB	L				
		LT	6.8	A	10.2	B
		R	1.0	A	1.3	A
		Approach	6.5	A	9.8	A
	SB	LTR	8.1	A	10.1	B
		Approach	8.1	A	10.1	B
	Overall		**9.2**	**A**	**12.7**	**B**
Grumman Boulevard & Burman Boulevard	EB	L	9.7	A	12.0	B
		T	16.7	B	21.2	C
		Approach	15.5	B	19.4	B
	WB	T / TR	6.0	A	6.5	A
		R				
		Approach	6.0	A	6.5	A
	SB	L	19.7	B	24.9	C
		R	6.4	A	8.0	A
		Approach	10.7	B	13.5	B
	Overall		**12.4**	**B**	**15.2**	**B**
Wading River Manor Road & Grumman Boulevard	WB	L	17.5	B	28.2	C
		R	4.8	A	4.7	A
		Approach	15.6	B	25.8	C
	NB	T	12.9	B	14.6	B
		R	0.1	A	0.1	A
		Approach	10.4	B	10.9	B
	SB	L	9.0	A	10.2	B
		T	16.7	B	29.0	C
		Approach	16.4	B	28.4	C
	Overall		**14.3**	**B**	**22.8**	**C**
Wading River Manor Road & North Street	EB	L / LTR	21.8	C	26.8	C
		TR				
		Approach	21.8	C	26.8	C
	WB	LTR	20.0	C	21.5	C
		Approach	20.0	C	21.5	C
	NB	LTR	3.7	A	4.6	A
		Approach	3.7	A	4.6	A
	SB	LTR	7.6	A	34.3	C
		Approach	7.6	A	34.3	C
	Overall		**7.9**	**A**	**27.3**	**C**

Table 34 – Signalized Intersection LOS 2035 – PM Peak Hour ...Continued 4 of 4

Intersection	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	29.7	C	28.8	C
		R	0.3	A	0.2	A
		Approach	26.5	C	25.7	C
	NB	L	21.6	C	43.4	D
		T	13.9	B	15.0	B
		Approach	17.1	B	25.5	C
	SB	T	24.3	C	34.7	C
		R	4.9	A	15.8	B
		Approach	13.3	B	23.3	C
	Overall		**16.8**	**B**	**24.2**	**C**
Wading River Road & LIE South Service Road	EB	L	21.8	C	22.5	C
		LT	21.9	C	22.5	C
		R	46.7	D	51.3	D
		Approach	40.6	D	42.7	D
	NB	T	18.6	B	19.6	B
		R	3.1	A	3.1	A
		Approach	14.2	B	15.1	B
	SB	L	12.3	B	14.1	B
		T	59.2	E	148.9	F
		Approach	55.4	E	139.7	F
	Overall		**38.4**	**D**	**72.6**	**E**

Table 35 – Signalized Intersection LOS 2035 – Saturday Midday Peak Hour

	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	45.5	D	45.5	D
		T	18.4	B	19.0	B
		R	0.3	A	0.3	A
		Approach	21.7	C	22.0	C
	WB	L	50.3	D	51.1	D
		T	14.9	B	16.3	B
		R	0.9	A	1.5	A
		Approach	17.1	B	18.6	B
	NB	L	28.2	C	28.2	C
		T	43.6	D	43.6	D
		R	1.1	A	1.5	A
		Approach	27.7	C	26.0	C
	SB	L	27.8	C	30.4	C
		T	44.1	D	44.1	D
		R	6.9	A	6.9	A
		Approach	23.5	C	24.4	C
	Overall		**21.3**	**C**	**21.8**	**C**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	14.4	B	16.8	B
		T	19.3	B	24.5	C
		R	0.4	A	1.3	A
		Approach	18.3	B	22.6	C
	WB	L	44.7	D	46.9	D
		T	7.8	A	9.7	A
		R	0.0	A	0.2	A
		Approach	9.5	A	12.9	B
	NB	L	40.6	D	41.1	D
		LT	40.2	D	41.2	D
		R	3.6	A	5.6	A
		Approach	20.7	C	22.0	C
	SB	L	42.4	D	43.0	D
		TR	17.5	B	17.5	B
		Approach	29.8	C	30.1	C
	Overall		**15.2**	**B**	**18.9**	**B**
NY 25 & Burman Boulevard	EB	T	9.6	A	14.1	B
		R	2.6	A	2.9	A
		Approach	9.0	A	12.6	B
	WB	L	26.6	C	24.3	C
		T	7.6	A	6.7	A
		Approach	9.7	A	9.4	A
	NB	L	40.4	D	40.9	D
		R	26.9	C	25.5	C
		Approach	33.6	C	33.1	C
	Overall		**12.3**	**B**	**14.3**	**B**

Table 35 – Signalized Intersection LOS 2035 – Saturday Midday Peak Hour
Continued 2 of 4

	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	9.9	A	14.6	B
		T	14.4	B	20.3	C
		R	0.0	A	0.4	A
		Approach	13.4	B	18.5	B
	WB	L	40.4	A	41.7	D
		T	19.3	B	23.2	C
		R	1.6	A	1.9	A
		Approach	11.6	B	14.9	B
	NB	L	39.9	D	40.2	D
		T	37.0	D	37.6	D
		R	0.2	A	0.3	A
		Approach	23.9	C	23.7	C
	SB	L	47.1	D	47.9	D
		T	28.9	C	27.9	C
		R	0.3	A	0.4	A
		Approach	43.4	D	43.1	D
	Overall		**21.6**	**C**	**24.0**	**C**
NY 25 & Edwards Avenue	EB	L	11.2	B	11.6	B
		T	19.5	B	19.8	B
		R	16.3	B	16.3	B
		Approach	18.5	B	18.8	B
	WB	L	8.7	A	10.0	A
		TR	14.7	B	16.4	B
		Approach	14.4	B	16.1	B
	NB	L	26.2	C	26.7	C
		TR	60.2	E	60.2	E
		Approach	51.4	D	51.3	D
	SB	L	29.6	C	29.6	C
		T	39.8	D	39.8	D
		R	3.6	A	4.7	A
		Approach	27.7	C	27.2	C
	Overall		**23.5**	**C**	**23.8**	**C**
NY 25 & Splish Splash Drive	EB	L	2.0	A	2.3	A
		TR	5.6	A	6.1	A
		Approach	5.3	A	5.8	A
	WB	L	3.0	A	3.0	A
		TR	9.2	A	9.5	A
		Approach	9.2	A	9.5	A
	NB	LT	35.0	D	35.0	D
		R	35.0	D	35.0	D
		Approach	35.0	D	35.0	D
	SB	LTR	23.0	C	22.8	C
		Approach	23.0	C	22.8	C
	Overall		**8.3**	**A**	**8.7**	**A**

Table 35 – Signalized Intersection LOS 2035 – Saturday Midday Peak Hour Continued 3 of 4

	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	25.0	C	24.9	C
		R	9.9	A	10.0	A
		Approach	12.8	B	12.4	B
	WB	LTR	26.6	C	27.2	C
		Approach	26.6	C	27.2	C
	NB	L				
		LT	6.1	A	7.0	A
		R	1.3	A	1.3	A
		Approach	5.7	A	6.5	A
	SB	LTR	5.3	A	5.8	A
		Approach	5.3	A	5.8	A
	Overall		**7.4**	**A**	**8.0**	**A**
Grumman Boulevard & Burman Boulevard	EB	L	7.1	A	7.6	A
		T	6.5	A	6.6	A
		Approach	6.8	A	7.3	A
	WB	T / TR	5.0	A	4.8	A
		R				
		Approach	5.0	A	4.8	A
	SB	L	9.2	A	9.4	A
		R	3.6	A	3.7	A
		Approach	6.1	A	6.1	A
	Overall		**6.1**	**A**	**6.1**	**A**
Wading River Manor Road & Grumman Boulevard	WB	L	11.2	B	11.1	B
		R	5.2	A	5.1	A
		Approach	8.5	A	9.0	A
	NB	T	5.1	A	6.3	A
		R	0.0	A	0.1	A
		Approach	4.2	A	4.8	A
	SB	L	5.1	A	5.4	A
		T	5.0	A	6.1	A
		Approach	5.0	A	6.0	A
	Overall		**5.1**	**A**	**5.9**	**A**
Wading River Manor Road & North Street	EB	L / LTR	8.8	A	11.6	B
		TR				
		Approach	8.8	A	11.6	B
	WB	LTR	8.6	A	11.1	B
		Approach	8.6	A	11.1	B
	NB	LTR	5.0	A	6.7	A
		Approach	5.0	A	6.7	A
	SB	LTR	4.8	A	6.2	A
		Approach	4.8	A	6.2	A
	Overall		**5.8**	**A**	**7.5**	**A**

Table 35 – Signalized Intersection LOS 2035 – Saturday Midday Peak Hour
Continued 4 of 4

	Movement	Lane Group	No Build 2035		Full Build 2035	
			Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	32.8	C	32.8	C
		R	0.3	A	0.3	A
		Approach	29.1	C	29.1	C
	NB	L	10.5	B	10.4	B
		T	12.2	B	12.1	B
		Approach	11.3	B	11.3	B
	SB	T	16.8	B	17.0	B
		R	4.5	A	4.4	A
		Approach	11.5	B	11.2	B
	Overall		**15.2**	**B**	**14.8**	**B**
Wading River Road & LIE South Service Road	EB	L	22.9	C	23.8	C
		LT	23.0	C	23.9	C
		R	6.8	A	6.8	A
		Approach	12.0	B	13.2	B
	NB	T	13.0	B	13.2	B
		R	2.8	A	2.8	A
		Approach	9.7	A	9.9	A
	SB	L	8.7	A	9.1	A
		T	22.7	C	23.3	C
		Approach	21.7	C	22.3	C
	Overall		**13.2**	**B**	**13.8**	**B**

Table 36 - Unsignalized Intersection LOS 2035 – AM Peak Hour

Intersection	Critical Approach/ Movement	No Build 2035		Full Build 2035	
		Delay	LOS	Delay	LOS
Grumman Boulevard & West Site Access	EB L	7.8	A	8.4	A
	SB	13.4	B	23.2	C

Table 37 - Unsignalized Intersection LOS 2035 – PM Peak Hour

Intersection	Critical Approach/ Movement	No Build 2035		Full Build 2035	
		Delay	LOS	Delay	LOS
Grumman Boulevard & West Site Access	EB L	8.5	A	9.3	A
	SB	17.2	C	49.9	E

Table 38 – Unsignalized Intersection LOS 2035 – Saturday Midday Peak Hour

Intersection	Critical Approach/ Movement	No Build 2035		Full Build 2035	
		Delay	LOS	Delay	LOS
Grumman Boulevard & West Site Access	EB L	7.4	A	7.5	A
	SB	9.2	A	9.4	A

As revealed in Table 33 through Table 38, almost all the study intersections were found to be operating poorly during one or more of the time periods analyzed. Therefore, the twelve signalized and one unsignalized intersections were re-analyzed with capacity mitigation and/or signal improvements, and the results are presented in the Mitigation discussion in this Section.

Middle Country Road and William Floyd Parkway Interchange

The NYSDOT has expressed concern that the development of the subdivision may result in traffic volumes at the interchange of Middle Country Road and William Floyd Parkway (CR 46) that could adversely impact the operation of the interchange. Therefore, to forecast and evaluate future operations with the development of the proposed subdivision, existing volumes were obtained for key ramps and mainline segments at the interchange. To these existing volumes, the anticipated traffic increases due to other developments and normal background growth were added. Finally, the anticipated increases that would be seen as a result of the proposed subdivision were added, resulting in Build Condition volumes (2025 and 2035) at the interchange. These volumes were evaluated on a qualitative basis as discussed below.

Peak hour ramp and segment traffic volume data was obtained from ATRs installed in 2011, supplemented with NYSDOT published count data from 2010. These volumes were expanded to the year 2013, established previously as the base (existing) year for this study. The Existing 2013 peak hour traffic volumes at the interchange are presented in Figure WFP-1 in Attachment E of the TIS, in Appendix K-2. The anticipated background growth to 2025 and the traffic likely to be generated by the other planned developments were combined with the Existing 2013 volumes to obtain the No-Build 2025 volumes, which are presented in Figure WFP-2. The anticipated trip distribution of site-generated traffic at the Middle Country Road -William Floyd Parkway interchange is presented in Figure WFP-3. The trip distribution percentages were then applied to the site-generated traffic to forecast site traffic that is anticipated to traverse the interchange on each ramp and segment. These were then combined with the No-Build 2025 volumes to obtain the Build 2025 volumes and are presented in Figure WFP-4. The anticipated background growth for the period of 2025 through 2035 and the additional traffic likely to be generated by the project site during the

same period were combined with Build 2025 volumes to obtain the Full Build 2035 Volumes.

William Floyd Parkway is a high speed, limited access freeway facility in the vicinity of the interchange which consists of two through lanes in each direction. An auxiliary weaving lane is provided in both the northbound and southbound directions between the inner loop ramps to and from Middle Country Road. Acceleration and deceleration lanes are provided at the terminus of all outer ramps with both Middle Country Road and William Floyd Parkway. Middle Country Road also provides two through lanes in each direction in through the area of its interchange with CR 46. An auxiliary weaving lane is provided in both the eastbound and westbound directions on Middle Country Road between the inner loop ramps to and from CR 46.

A review of the anticipated interchange volumes indicates that even in the 2035 Build condition, ramp volumes within the interchange are not expected to approach levels which would cause the interchange to function poorly. The maximum peak hour ramp volume is expected to occur in 2035 during the weekday p.m. peak hour on the northwest inner-loop ramp at 727 vehicles per hour. This volume is lower than other ramp volumes experienced at other interchanges in the area. The balance of the ramp volumes do not exceed 500 vehicles per hour.

The volume figures and the base ATR data are contained in Attachment E of the TIS, in Appendix K-2.

Site Access and Circulation

The proposed subdivision has been designed with multiple points of access and an internal roadway system appropriate to accommodate the needs of the future occupants of the site.

Three access points would be provided on Middle Country Road -- one existing and two newly developed. The westerly site access will be signalized and located opposite the existing access to Calverton National Cemetery. The central access will use the existing Burman Boulevard, a signalized T-intersection. The easterly access will be aligned opposite NY 25A, forming the fourth leg of a currently signalized T-intersection. Thus, three signalized access points will be provided on Middle Country Road along the site frontage.

Two access points would be provided on Grumman Boulevard and River Road, along the south of the site. One of these will be the existing Burman Boulevard T-intersection with River Road, which would be signalized. A second access point would be developed to the west of Burman Boulevard, forming a new T-intersection with Grumman Boulevard which would be signalized by 2035.

The access points proposed for the subdivision have been designed to serve the proposed uses on the site and have been found through the analysis performed herein to provide adequate ingress and egress to and from the adjacent roadway system.

The Subdivision Map includes a system of internal roadways designed to provide connections from the external access point to the proposed lots. These proposed internal roadways, with the exception of some of the roadways leading to the access points, provide a paved width of 37 feet and a 55-foot right-of-way. In addition, the existing Burman Boulevard, which bisects the site between Middle Country Road and River Road, will remain to serve the proposed development. These internal roadways will remain under the jurisdiction and maintenance of the Town of Riverhead. It is recommended that STOP control be installed on the minor legs of the internal intersections initially. As the subdivision occupancy increases, some of the internal intersections may be candidates for signalization. This situation should be monitored and traffic signals considered if and when they become appropriate.

Potential Interim Access to Middle Country Road

While it is the intention of the Town to minimize the number of access points on the State highway, based on the capital costs and time-frame associated with the development of the internal roadway system within the subdivision, it may be necessary to provide interim access to some of the subdivided lots from Middle Country Road. This interim access would exist until such time that the internal roadway system, or portion of the roadway system can be put in place. As with the development of the proposed access roadways to Middle Country Road, the process of approval of any access point to Middle Country Road would be subject to the review and approval of NYSDOT.

To minimize the number of potential access points to the State highway, any interim access should be provided along a common property line with cross-access agreements sought from adjacent lots so the access points can be combined. Once the internal roadway system is developed to the extent necessary to serve the lot(s) in question, this roadway can be removed and the cross-access agreement extinguished.

Development of any interim access points to Middle Country Road may require that improvements be made to facilitate safe and efficient traffic movements into and out of the site. This could include the development of turning lanes on Middle Country Road. The specific traffic generating characteristics that are associated with a specific use of a lot will need to be examined to determine the access needs of that proposed use. The NYSDOT may require that a traffic study be performed to evaluate the effect of the proposed access point on the highway as part of the highway work permit process. No access point may be developed

without the issuance of a NYSDOT highway work permit for construction within the state highway right-of-way.

Public Transportation

The project area is served by public bus through Suffolk County Transit (SCT). SCT Route S58 travels weekdays and weekends between East Northport (Huntington Square Mall) and Riverhead County Center. The eastbound service runs on the following route: East Northport, Commack, Smithtown, St. James, Lake Grove (Smith Haven Mall), Centereach, Selden, Coram, Middle Island, Calverton, Riverhead Tanger Outlets and Riverhead County Center, with connections to other Suffolk County Bus routes from various locations en-route. In the vicinity of the project site Route S58 runs along Middle Country Road - NY 25.

The Long Island Railroad (LIRR) provides service to the Riverhead area via the Riverhead station on the Ronkonkoma Branch. The existing service provided along this portion of the branch is limited however. The Riverhead LIRR station is located at Osborne Avenue and Railroad Street, just north of West Main Street (NY 25) in Riverhead, approximately 8 miles east of the project site.

While no credit was taken for the use of public transportation in this study, it is anticipated that some employees and patrons of the proposed development will take advantage of the presence of this option. The policy of SCT regarding additional or modified bus service is that as demand for the bus service expands or changes, they will consider changes to its existing service to meet that demand. For instance, should the demand for additional or modified bus service to meet the needs of employees and visitors to the project site develop, SCT may revise the bus routing to include buses entering the site of the subdivision, modify other routes to serve the site or add more frequent service.

The bus schedules and maps for the above mentioned route are included in Attachment F of the TIS (see Appendix K-2 of this DSGEIS).

Walkability and Bicycle Considerations

Significant infrastructure will be provided within the proposed subdivision dedicated to pedestrians and bicyclists. The entire former Calverton NWIRP is ringed by a perimeter path which exists just inside the existing fence. As part of the proposed action, this path will be relocated within the perimeter subdivided parcels to be outside the setback distance prescribed in the proposed zoning for the subdivision. In other isolated areas, the segments of the path that are not present will be established to provide a continuous ring. This alignment will then serve as a multi-use trail for pedestrians and bicyclists that circles the entire property for a length of approximately ten and one-half miles. The presence of

this trail will provide recreational and fitness opportunities for the occupants of and visitors to the subdivision and for the public in general.
The roadway system around the proposed subdivision is currently limited in pedestrian and bicycle facilities. In terms of bicycles, Middle Country Road provides wide safety shoulders within the study area. While improvements have been identified for Middle Country Road in this study, which includes widening of Middle Country Road, this widening must be performed to the requirements of the NYSDOT. It is anticipated that any widening of Middle Country Road will include safety shoulder and will likely include a dedicated bicycle lane and sidewalks in areas with any significant roadside development.

Rail Freight Opportunities

As noted previously, the subject property is a portion of a larger property formerly known as the Calverton NWIRP. When that plant was in operation, it was served by a rail spur, which extended from the Ronkonkoma Branch south of the site near Connecticut Avenue north into the plant. This spur was utilized to move bulk materials and large items from points west to the plant for use in their manufacturing operations. This spur, long in a state of disrepair, was reconstructed and modernized in 2011 and returned to freight operations. It is utilized by some of the existing industrial uses that occupy the Calverton Camelot industrial subdivision, which is located adjacent to the proposed subdivision.

The presence of the rail spur provides an opportunity for its use by future occupants of the EPCAL subdivision and the potential to reduce truck traffic to and from the site. However, no credit for its use was taken in this study.

Construction Impacts

The proposed subdivision of the EPCAL property would result in construction of improvements to the subdivision lots over a period of many years. This study identified two analysis years, 2025 and 2035, as representative forecast years for which to evaluate potential impacts. Given the extended build-out anticipated, the exact duration and nature of construction on specific lots cannot be known at this time. However, specific steps should be taken to ensure that impacts due to construction are minimized.

Based on the scale of the development, the Town should require a construction traffic management and logistics plan be developed and filed with each site plan application. This plan should indicate the following:

- Days/Hours of proposed construction activity
- A description of the construction vehicles to be used on-site and in delivering/removing material to the site
- Designated routes of heavy vehicles to and from the site

- Parking areas for workers and heavy vehicles on each lot on which construction is to occur, so as not to result in parking along the adjacent or internal roadways
- Construction vehicle and materials staging areas.

It shall be made clear through the approval process that heavy vehicles shall arrive and depart the subdivision via major roadways only and avoid secondary minor streets.

Parking

The proposed subdivision and proposed PD District envision a range of potential land uses from light industrial to energy park to multi-family housing, and includes uses such as office and retail. As such, there may be a wide range of parking needs within the subdivision. Table 30 presents the proposed minimum number of parking spaces which will be required for various uses within the subdivision.

Table 39 - Proposed Parking Schedule

Parking Use	Number of Minimum Spaces
Multiple dwellings	1.5 per unit
Hotels, motels, tourist homes, cabins, lodging, rooming, and boarding houses	1 per guest sleeping room or suite
Hospitals	1 per bed + 1 per each employee on max. shift
Medical or Dental Office	1 per 150 sq ft of floor area
Theaters, Auditoriums, or any public assembly area with fixed seats including churches, schools above elementary levels, colleges, and universities	1 per 3 seats
Any public assembly area without fixed seats	1 per 100 sq ft of floor area
Office buildings	1 per 200 sq ft of floor area
Restaurants	1 per 2 seats or 1 per 3 persons legally accommodated, whichever is greater
Retail Stores	1 per 200 sf GFA
Industrial or Manufacturing Establishments	1 per 2 employees during peak employment but at least 1 per 400 sq ft of floor area
Any commercial or business use not otherwise expressly provided for	1 per 300 sq ft of floor area
Warehouse	1.5 per 1000 sf GFA
Golf driving range	1 per driving tee
Golf course	2 per hole
Professional service buildings	1 per 150 sq ft of floor area
Solar Farm	Min. 800 sf paved or gravel area off-street

3.4.3 Mitigation

Mitigation 2025

The analysis of 2025 Build conditions discussed above reveals that mitigation is necessary at various key intersections to restore good levels of traffic service. The future roadway conditions were simulated and the roadway segments/study intersections that require mitigation were identified. These measures of mitigation are necessary to ensure that the roadway network operates well with the volumes anticipated during the Build 2025 condition as a result of increases due to the proposed project, other developments and normal background growth. The identified mitigation includes roadway widening to increase capacity as well as changes to traffic control. The analysis performed with mitigation is detailed in this section of the report.

The mitigation measures utilized at each location are described in Table 12. In addition, the proposed layout of the site access intersections are also included in the table.

Table 40 - Table of Mitigation 2025... 1 of 4

Location		Capacity Improvements		Signal Improvements	
		Existing Conditions	**Proposed in 2025**	**Existing Conditions**	**Proposed in 2025**
1	**NY 25 & Wading River Manor Road**	Eastbound – One exclusive left turn lane, one through lane and shoulder being used as a right turn lane Westbound – One exclusive left turn lane, one through lane and shoulder being used as a right turn lane Northbound - One shared left turn and through lane and one exclusive right turn lane Southbound - One shared left turn and through lane and one exclusive right turn lane	Eastbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Westbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Northbound - One exclusive left turn lane, one through lane and one exclusive right turn lane Southbound - One exclusive left turn lane, one through lane and one exclusive right turn lane	Two-phase semi-actuated signal with permitted left turns 80 Second cycle all time periods	Multi-phase Actuated-Coordinated signal East-West left turns fully protected North-South left turns protected/permitted AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
2	**NY 25 & Burman Boulevard (Site Access)**	Eastbound – One through lane and one exclusive right turn lane Westbound – One exclusive left turn lane and one through lane Northbound - One exclusive left turn lane and one exclusive right turn lane	Eastbound – Two through lanes and one exclusive right turn lane Westbound – Two exclusive left turn lanes and two through lanes Northbound - Two exclusive left turn lanes and two exclusive right turn lanes	Two-phase semi-actuated signal with permitted left turns 95 Second cycle all time periods	Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected EB right turn overlaps NBL NB right turn overlaps WBL AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
3	**NY 25 & NY 25A / East Site Access**	Eastbound – One shared left turn and through lane Westbound – One through lane and one channelized right turn lane Southbound - One exclusive left turn lane and one channelized right turn lane	Eastbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Westbound - Two exclusive left turn lanes, two through lanes and one channelized right turn lane Northbound - Two exclusive left turn lanes, one through and one exclusive right turn lane Southbound - Two exclusive left turn lanes, one through and one channelized right turn lane	Two-phase semi-actuated signal with permitted left turns 95 Second cycle all time periods	Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected Northbound Lefts turns fully protected Other left turns protected/permitted WB right turn overlaps SBL NB right turn overlaps WBL AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals

Table 40 – Table of Mitigation 2025... Continued 2 of 4

Location		Capacity		Signal Improvements	
		Existing Conditions	**Proposed in 2025**	**Existing Conditions**	**Proposed in 2025**
4	**NY 25 & Edwards Avenue**	Eastbound – Single shared left turn/ through and right turn lane Westbound – Single shared left turn/ through and right turn lane (shoulder being used to go around turning vehicles and to make a right turn) Northbound - Single shared left turn/ through and right turn lane Southbound - Single shared left turn/ through and right turn lane	Eastbound – One exclusive left turn lane, two through lanes and an exclusive right turn lane Westbound – One exclusive left turn lane, one through lane and a shared through/right turn lane Northbound - One exclusive left turn lane, one shared through /right turn lane Southbound - One exclusive left turn lane, one through lane and one exclusive right turn lane	Two-phase semi-actuated signal with permitted left turns 90 Second cycle all time periods	Multi-phase Actuated-Coordinated signal All left turns protected/permitted AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
5	**NY 25 & Manor Road/ Splish Splash Drive**	Eastbound – One exclusive left turn lane, a shared through / right turn lane Westbound – One exclusive left turn lane, one through, and an exclusive right turn lane Northbound - One shared left turn/ through lane and the approach flares to provide a right turn lane Southbound - Single shared left turn/ through and right turn lane	Eastbound – One exclusive left turn lane, one through lane and shared through/right turn lane Westbound – One exclusive left turn lane, one through lane and a shared through/right turn lane Northbound - No Change Proposed Southbound - No Change Proposed	Semi-actuated signal with protected permitted westbound left turns 115 Second cycle all time periods	Multi-phase Actuated-Coordinated signal AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
6	**NY 25 & Calverton National Cemetery/ West Site Access**	Eastbound – One exclusive left turn lane, and one through lane Westbound – One through lane and one exclusive right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane	Eastbound – One exclusive left turn lane, two through lanes and an exclusive right turn lane Westbound – Two exclusive left turn lanes and two through lanes and one exclusive right turn lane Northbound - One exclusive left turn lane, a shared left turn / though lane and one exclusive right turn lane Southbound - No change proposed	Unsignalized T-intersection Southbound Approach Stop Controlled	Signalize Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected Eastbound left turns protected/permitted North-south split phasing AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals

Table 40 – Table of Mitigation 2025... Continued 3 of 4

Location		Capacity		Signal Improvements	
		Existing Conditions	**Proposed in 2025**	**Existing Conditions**	**Proposed in 2025**
7	**Edwards Avenue & River Road**	Eastbound – One shared left turn / through lane, and the approach flares to provide a right turn lane Westbound – Single shared left turn/ through and right turn lane Northbound - One shared left turn / through lane and one channelized right turn lane Southbound - Single shared left turn/ through / right turn lane	No Change Proposed	Unsignalized Intersection Eastbound & Westbound approaches stop controlled	Signalize Two-phase semi-actuated signal with permitted left turns Northbound approach leading AM/PM Cycle length: 80seconds Saturday Cycle length : 70 Seconds Optimize phase splits, vary with time period to correlate to future volumes
8	**Grumman Boulevard & Burman Boulevard (Site Access)**	Eastbound – Single shared left turn / through lane Westbound – Single shared through / right turn lane Southbound - Single shared left turn/ right turn lane	Eastbound – One exclusive left turn lane and one through lane Westbound – Single shared through / right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane	Unsignalized Intersection Southbound Approach Stop Controlled	Signalize Two-phase semi-actuated signal with permitted left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes
9	**New Intersection Grumman Boulevard & West Site Access**		Eastbound – – One exclusive left turn lane, one through lane Westbound – Single shared through / right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane		Unsignalized Intersection Southbound Approach Stop Controlled
10	**Wading River Manor Road & Grumman Boulevard**	Westbound – One exclusive left turn lane and one exclusive right turn lane Northbound - Single shared through / right turn lane Southbound - Single shared left turn / through lane	Westbound – Two exclusive left turn lanes and one free channelized right turn lane Northbound - One through lane and a free channelized right turn lane Southbound - One exclusive left turn lane and a through lane	Unsignalized Intersection Westbound Approach Stop Controlled	Signalize Two-phase semi-actuated signal with permitted Southbound left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes

Table 40 – Table of Mitigation 2025... Continued 4 of 4

Location		Capacity		Signal Improvements	
		Existing Conditions	**Proposed in 2025**	**Existing Conditions**	**Proposed in 2025**
11	**Wading River Manor Road & North Street**	Eastbound – One shared left turn / through lane, and the approach flares to provide a right turn lane Westbound – Single shared left turn/ through and right turn lane Northbound - Single shared left turn/ through and right turn lane Southbound - Single shared left turn/ through and right turn lane	Eastbound – Single shared left turn/ through and right turn lane Westbound – No change proposed Northbound - No change proposed Southbound - No change proposed	All-way Stop	Signalize Two-phase semi-actuated signal with permitted left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes
12	**Wading River Manor Road & LIE North Service Road**	Westbound – Stop Controlled with One shared left turn / through lane, and one right turn lane Northbound - One exclusive left turn lane and one through lane Southbound - One through lane and a channelized right turn lane	Westbound – No change proposed Northbound - One exclusive left turn lane and two through lanes Southbound - No change proposed	Unsignalized Intersection Westbound Approach Stop Controlled	Signalize Two-phase semi-actuated signal with protected/permitted Northbound left turns AM/PM Cycle length: 80seconds Saturday Cycle length : 70 Seconds Optimize phase splits, vary with time period to correlate to future volumes
13	**Wading River Manor Road & LIE South Service Road**	Unsignalized Eastbound – Stop Controlled with One shared left turn / through lane, and one right turn lane Northbound - One through lane and a channelized right turn lane Southbound - One exclusive left turn lane and one through lane	Signalized Eastbound – One exclusive left turn lane, one shared left turn / through lane, and one right turn lane Northbound - No change proposed Southbound - No change proposed	Unsignalized Intersection Eastbound Approach Stop Controlled	Signalize Two-phase semi-actuated signal with protected/permitted Southbound left turns AM/PM Cycle length: 80seconds Saturday Cycle length : 70 Seconds Optimize phase splits, vary with time period to correlate to future volumes

The network was reanalyzed with the mitigation in order to measure the effectiveness of the proposed improvements at the various intersections. Tables 41, 42 and 43 present the results of this analysis for the signalized intersections for weekday a.m., p.m. and Saturday midday peak periods, respectively. The results of the analysis for the site accesses on Middle Country Road at Burman Boulevard and Calverton National Cemetery, and Grumman at Burman Boulevard are presented in the Site Access section of this report. For ease of comparison, the table also includes the corresponding No-Build and Build condition results.

The analysis results of unsignalized intersections that were signalized as part of the mitigation are presented in Table 44 for weekday a.m., p.m. and Saturday midday peak periods.

Table 41 - Mitigation Analysis - AM Peak

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	7.1	A	7.5	A	54.2	D
		T	13.4	B	57.5	E	31.4	C
		R	1.9	A	2.2	A	0.4	A
		Approach	11.2	B	49.3	D	30.0	C
	WB	L	8.1	A	109.8	F	54.0	D
		T	7.8	A	8.6	A	35.7	D
		R	0.0	A	2.1	A	5.1	A
		Approach	7.6	A	25.4	C	35.4	D
	NB	LT / L	34.7	C	530.4	F	28.0	C
		T					50.5	D
		R	6.4	A	33.8	C	22.0	C
		Approach	30.2	C	211.7	F	28.9	C
	SB	LT / L	32.4	C	287.6	F	44.2	D
		T					32.5	C
		R	7.3	A	15.9	B	6.7	A
		Approach	18.5	B	200.2	F	30.4	C
	Overall		14.0	B	103.0	F	30.8	C
NY 25 & NY 25A / East Site Access	EB	LT / L	23.5	C	21.4	C	23.8	C
		T			124.6	F	38.8	D
		R			5.4	A	13.2	B
		Approach	23.5	C	83.8	F	30.4	C
	WB	L			244.4	F	49.0	D
		T	16.4	B	233.2	F	25.0	C
		R	0.2	A	3.6	A	6.8	A
		Approach	9.8	A	197.3	F	26.4	C
	NB	L			31.7	C	43.9	D
		T			35.4	D	40.4	D
		R			0.8	A	28.8	C
		Approach			20.1	C	37.1	D
	SB	L	45.4	D	76.3	E	43.9	D
		T			36.9	D	40.3	D
		R	6.8	A	7.8	A	5.4	A
		Approach	41.9	D	55.5	E	35.0	D
	Overall		25.9	C	120.0	F	30.3	C

Table 41 – Mitigation Analysis - AM Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Edwards Avenue	EB	LTR / L	10.6	B	15.4	B	16.8	B
		T	65.9	E	103.2	F	25.7	C
		R	17.8	B	18.0	B	22.8	C
		Approach	53.5	D	81.6	F	24.6	C
	WB	LT / L	16.3	B	16.5	B	13.9	B
		R / TR	17.0	B	28.1	C	31.6	C
		Approach	16.9	B	27.7	C	31.1	C
	NB	LTR / L	64.7	E	183.2	F	35.4	D
		TR	36.0	D	36.0	D	31.6	C
		Approach	49.5	D	120.4	F	33.8	C
	SB	LTR / L	24.4	C	24.4	C	22.8	C
		TR / T	78.4	E	208.5	F	54.8	D
		R					17.7	B
		Approach	69.8	E	186.8	F	34.9	C
	Overall		**48.0**	**D**	**86.1**	**F**	**29.5**	**C**
NY 25 & Splish Splash Drive	EB	L	7.6	A	13.6	B	3.9	A
		TR	15.8	B	19.2	B	8.8	A
		Approach	15.2	B	18.8	B	8.5	A
	WB	L	4.2	A	4.6	A	5.0	A
		T	7.2	A	23.6	C		
		R / TR	1.9	A	2.6	A	13.4	B
		Approach	6.8	A	22.7	C	13.3	B
	NB	LT	29.0	C	30.0	C	37.5	D
		R	29.0	C	30.0	C	34.7	C
		Approach	29.0	C	30.0	C	36.6	D
	SB	LTR	31.4	C	34.3	C	41.0	D
		Approach	31.4	C	34.3	C	41.0	D
	Overall		**14.0**	**B**	**22.0**	**C**	**14.3**	**B**

Table 42 - Mitigation Analysis - PM Peak Hour

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	24.4	C	402.6	F	54.0	D
		T	10.2	B	9.6	A	25.2	C
		R	2.0	A	1.8	A	0.4	A
		Approach	12.4	B	95.2	F	28.2	C
	WB	L	7.6	A	14.6	B	61.7	E
		T	15.4	B	28.6	C	17.9	B
		R	2.1	A	1.8	A	2.2	A
		Approach	13.6	B	21.0	C	22.2	C
	NB	LT / L	41.7	D	68.9	E	37.8	D
		T					46.9	D
		R	6.4	A	7.9	A	0.9	A
		Approach	38.1	D	56.2	E	34.0	C
	SB	LT / L	27.4	C	69.3	E	33.2	C
		T					43.9	D
		R	6.4	A	15.4	B	8.2	A
		Approach	15.4	B	42.3	D	23.5	C
	Overall		**17.1**	**B**	**45.3**	**D**	**25.2**	**C**
NY 25 & NY 25A / East Site Access	EB	LT / L	21.3	C	223.2	F	26.5	C
		T			349.5	F	42.5	D
		R			0.2	A	0.1	A
		Approach	21.3	C	319.3	F	38.7	D
	WB	L			20.2	C	45.5	D
		T	15.5	B	115.7	F	32.1	C
		R	0.8	A	7.5	A	10.4	B
		Approach	7.4	A	58.8	E	21.7	C
	NB	L			32.4	C	38.3	D
		T			43.0	D	50.5	D
		R			16.5	B	7.8	A
		Approach			28.2	C	28.5	C
	SB	L	37.1	D	27.4	C	50.2	D
		T			30.8	C	38.0	D
		R	8.6	A	0.7	A	0.7	A
		Approach	33.8	C	23.4	C	41.8	D
	Overall		**15.7**	**B**	**144.6**	**F**	**31.3**	**C**

Table 42 – Mitigation Analysis - PM Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Edwards Avenue	EB	LTR / L	14.7	B	76.7	E	38.3	D
		T	38.8	D	284.5	F	26.3	C
		R	17.5	B	18.5	B	17.3	B
		Approach	33.2	C	227.2	F	26.7	C
	WB	LT / L	13.1	B	13.5	B	12.3	B
		R / TR	23.1	C	29.6	C	25.6	C
		Approach	22.7	C	29.2	C	25.2	C
	NB	LTR / L	44.3	D	48.9	D	44.5	D
		TR	38.9	D	37.7	D	41.1	D
		Approach	41.6	D	43.5	D	42.9	D
	SB	LTR / L	23.1	C	22.5	C	24.1	C
		TR / T	51.2	D	52.3	D	49.7	D
		R					1.4	A
		Approach	46.8	D	48.0	D	35.3	D
	Overall		**31.8**	**C**	**131.4**	**F**	**28.7**	**C**
NY 25 & Splish Splash Drive	EB	L	12.6	B	18.9	B	4.9	A
		TR	13.9	B	60.0	E	12.7	B
		Approach	13.8	B	56.0	E	11.9	B
	WB	L	3.5	A	3.0	A	3.5	A
		T	14.3	B	12.4	B		
		R / TR	2.4	A	2.2	A	11.0	B
		Approach	13.5	B	11.7	B	11.0	B
	NB	LT	28.2	C	33.2	C	46.0	D
		R	28.6	C	33.7	C	41.3	D
		Approach	28.5	C	33.5	C	44.1	D
	SB	LTR	19.3	B	24.0	C	31.7	C
		Approach	19.3	B	24.0	C	31.7	C
	Overall		**14.2**	**B**	**36.7**	**D**	**13.2**	**B**

Table 43 – Mitigation Analysis - Saturday Midday Peak Hour

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	11.7	B	12.3	B	45.4	D
		T	10.9	B	11.5	B	16.8	B
		R	2.6	A	2.4	A	0.2	A
		Approach	10.0	B	10.6	B	20.6	C
	WB	L	8.5	A	9.3	A	52.4	D
		T	11.6	B	12.0	B	12.5	B
		R	2.6	A	2.3	A	0.7	A
		Approach	10.1	B	10.3	B	15.5	B
	NB	LT / L	25.8	C	27.0	C	28.3	C
		T					44.2	D
		R	7.0	A	6.8	A	1.1	A
		Approach	21.8	C	21.2	C	27.6	C
	SB	LT / L	23.0	C	27.4	C	28.6	C
		T					44.5	D
		R	5.9	A	6.1	A	5.3	A
		Approach	14.4	B	17.5	B	23.0	C
	Overall		**12.5**	**B**	**13.3**	**B**	**20.3**	**C**
NY 25 & NY 25A / East Site Access	EB	LT / L	23.9	C	14.5	B	7.5	A
		T			27.9	C	11.6	B
		R			0.1	A	0.0	X
		Approach	23.9	C	25.3	C	10.7	B
	WB	L			13.1	B	40.4	D
		T	17.0	B	29.8	C	18.7	B
		R	0.4	A	1.5	A	1.5	A
		Approach	8.6	A	16.3	B	11.4	B
	NB	L			35.8	D	39.9	D
		T			35.4	D	36.9	D
		R			0.2	A	0.2	A
		Approach			22.0	C	23.9	C
	SB	L	44.9	D	118.4	F	41.7	D
		T			20.2	C	28.9	C
		R	8.1	A	0.2	A	0.3	A
		Approach	42.9	D	107.7	F	38.4	D
	Overall		**23.5**	**C**	**45.4**	**D**	**19.3**	**B**

Table 43 – Mitigation Analysis - Saturday Midday Peak Hour ... Continued 2 of 2

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Edwards Avenue	EB	LTR / L	10.0	A	10.3	B	10.5	B
		T	30.5	C	33.9	C	18.0	B
		R	14.4	B	14.4	B	16.0	B
		Approach	27.2	C	30.0	C	17.2	B
	WB	LT / L	10.8	B	11.5	B	7.8	A
		R / TR	16.0	B	16.6	B	12.8	B
		Approach	15.8	B	16.3	B	12.5	B
	NB	LTR / L	28.8	C	30.8	C	25.4	C
		TR	61.0	E	61.0	E	53.2	D
		Approach	52.9	D	53.1	D	45.9	D
	SB	LTR / L	26.6	C	26.6	C	26.6	C
		TR / T	45.6	D	48.0	D	39.0	D
		R					2.8	A
		Approach	41.3	D	43.4	D	26.3	C
	Overall		**29.8**	**C**	**31.1**	**C**	**21.3**	**C**
NY 25 & Splish Splash Drive	EB	L	7.5	A	7.7	A	1.5	A
		TR	13.2	B	12.8	B	4.7	A
		Approach	12.8	B	12.5	B	4.5	A
	WB	L	3.0	A	3.0	A	3.0	A
		T	9.8	A	9.8	A		
		R / TR	2.1	A	2.1	A	8.4	A
		Approach	9.3	A	9.3	A	8.4	A
	NB	LT	27.5	C	28.5	C	35.5	D
		R	28.0	C	29.0	C	35.0	D
		Approach	27.7	C	28.7	C	35.3	D
	SB	LTR	16.7	B	17.3	B	22.9	C
		Approach	16.7	B	17.3	B	22.9	C
	Overall		**11.5**	**B**	**11.4**	**B**	**7.5**	**A**

Review of Table 41 through Table 43 reveals that the mitigation measures identified result in an improvement in the overall intersection operating delay and LOS at the study intersections where mitigation was deemed necessary. The intersection LOS has been restored to the No-Build condition and, in a few cases, improved.

Table 44 - Mitigation Analysis - Newly Signalized Intersections

Intersection	Movement	Lane Group	Build Mitigation 2025					
			AM Peak		PM Peak		Saturday Midday Peak	
			Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	27.4	C	27.1	C	25.1	C
		R	11.4	B	9.9	A	9.2	A
		Approach	12.3	B	11.1	B	12.3	B
	WB	LTR	29.2	C	30.4	C	26.4	C
		Approach	29.2	C	30.4	C	26.4	C
	NB	LT	19.9	B	5.9	A	5.6	A
		R	1.4	A	0.8	A	0.9	A
		Approach	19.0	B	5.7	A	5.2	A
	SB	LTR	8.1	A	8.0	A	5.0	A
		Approach	8.1	A	8.0	A	5.0	A
	Overall		14.7	B	8.8	A	7.1	A
Grumman Boulevard & Burman Boulevard	EB	L	13.2	B	9.7	A	6.9	A
		T	3.6	A	15.3	B	6.4	A
		Approach	11.9	B	14.3	B	6.7	A
	WB	TR	1.9	A	5.9	A	4.8	A
		Approach	1.9	A	5.9	A	4.8	A
	SB	L	27.5	C	18.2	B	9.3	A
		R	10.2	B	6.2	A	3.7	A
		Approach	16.8	B	10.1	B	6.1	A
	Overall		9.6	A	11.5	B	6.0	A
Wading River Manor Road & Grumman Boulevard	WB	L	12.9	B	16.4	B	11.4	B
		R	6.2	A	4.8	A	5.5	A
		Approach	11.3	B	14.9	B	8.9	A
	NB	T	7.0	A	12.2	B	4.9	A
		R	0.8	A	0.1	A	0.0	A
		Approach	3.3	A	9.7	A	4.0	A
	SB	L	6.1	A	8.8	A	4.9	A
		T	6.4	A	15.9	B	4.8	A
		Approach	6.4	A	15.6	B	4.8	A
	Overall		4.8	A	13.6	B	5.0	A
Wading River Manor Road & North Street	EB	LTR	30.0	C	21.1	C	8.3	A
		Approach	30.0	C	21.1	C	8.3	A
	WB	LTR	18.9	B	19.5	B	8.3	A
		Approach	18.9	B	19.5	B	8.3	A
	NB	LTR	14.9	B	3.6	A	4.9	A
		Approach	14.9	B	3.6	A	4.9	A
	SB	LTR	6.3	A	7.0	A	4.7	A
		Approach	6.3	A	7.0	A	4.7	A
	Overall		14.7	B	7.4	A	5.6	A

Table 44 – Mitigation Analysis - Newly Signalized Intersections...Continued 2 of 2

Intersection	Movement	Lane Group	Build Mitigation 2025					
			AM Peak		PM Peak		Saturday Midday Peak	
			Delay	LOS	Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	23.1	C	31.4	C	33.0	C
		R	0.4	A	0.3	A	0.3	A
		Approach	15.1	B	27.9	C	29.4	C
	NB	L	16.6	B	13.6	B	8.1	A
		T	14.1	B	11.4	B	10.0	B
		Approach	15.1	B	12.2	B	9.0	A
	SB	T	21.7	C	21.3	C	15.3	B
		R	4.4	A	3.7	A	3.6	A
		Approach	12.4	B	11.1	B	10.2	B
	Overall		14.6	B	14.2	B	13.6	B
Wading River Road & LIE South Service Road	EB	L	38.2	D	22.7	C	24.0	C
		LT	38.3	D	22.8	C	24.0	C
		R	5.7	A	34.1	C	7.2	A
		Approach	30.4	C	31.2	C	12.9	B
	NB	T	30.0	C	15.4	B	11.4	B
		R	5.9	A	3.1	A	2.7	A
		Approach	25.0	C	11.9	B	8.6	A
	SB	L	16.5	B	11.4	B	7.5	A
		T	27.2	C	34.0	C	19.5	B
		Approach	25.7	C	32.1	C	18.6	B
	Overall		27.0	C	26.1	C	12.2	B

Review of Table 44 reveals that signalizing of the six intersections has improved their operation to a LOS C or better.

Site Access

The mitigation analysis results of the three signalized site accesses are presented in Table 45, 46 and 47, for weekday a.m., p.m. and Saturday midday peak periods, respectively.

Table 45 - Site Access Mitigation Analysis - AM Peak Hour

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Burman Boulevard	EB	T	9.4	A	18.5	B	7.6	A
		R	1.4	A	2.9	A	6.4	A
		Approach	6.8	A	11.5	B	7.1	A
	WB	L	10.6	B	1047.7	F	34.1	C
		T	8.3	A	17.6	B	7.2	A
		Approach	9.1	A	484.0	F	19.4	B
	NB	L	28.3	C	34.4	C	43.8	D
		R	9.9	A	7.9	A	16.1	B
		Approach	19.6	B	21.5	C	30.2	C
	Overall		**8.4**	**A**	**221.1**	**F**	**14.3**	**B**
NY 25 & West Site Access / Calverton National Cemetery	EB	L			8.4	A	11.0	B
		T			102.1	F	19.2	B
		R			2.0	A	1.0	A
		Approach			85.2	F	16.1	B
	WB	L			103.1	F	20.8	C
		T			3.9	A	5.3	A
		R			0.0	A	0.4	A
		Approach			45.5	D	11.4	B
	NB	L			36.4	D	47.4	D
		T			29.0	C	47.3	D
		R			11.0	B	7.4	A
		Approach			22.8	C	26.0	C
	SB	L			34.2	C	49.0	D
		TR / R			23.2	C	19.2	B
		Approach			28.3	C	33.8	C
	Overall				**70.4**	**E**	**15.4**	**B**
Grumman Boulevard & Burman Boulevard	EB	L					13.2	B
		T					3.6	A
		Approach					11.9	B
	WB	TR					1.9	A
		Approach					1.9	A
	SB	L					27.5	C
		R					10.2	B
		Approach					16.8	B
	Overall						**9.6**	**A**

Table 46 - Site Access Mitigation Analysis - PM Peak Hour

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Burman Boulevard	EB	T	12.3	B	26.1	C	38.4	D
		R	2.7	A	2.9	A	0.3	A
		Approach	11.2	B	22.9	C	33.1	C
	WB	L	9.7	A	108.2	F	27.5	C
		T	13.3	B	26.9	C	26.2	C
		Approach	13.0	B	37.2	D	26.3	C
	NB	L	41.0	D	307.8	F	39.9	D
		R	5.4	A	110.9	F	20.5	C
		Approach	27.4	C	217.2	F	31.0	C
	Overall		**16.9**	**B**	**112.2**	**F**	**30.3**	**C**
NY 25 & West Site Access / Calverton National Cemetery	EB	L			10.0	A	4.4	A
		T			12.4	B	7.8	A
		R			0.1	A	0.5	A
		Approach			11.5	B	7.3	A
	WB	L			37.4	D	51.2	D
		T			36.0	D	14.2	B
		R			0.0	A	0.0	A
		Approach			35.9	D	15.6	B
	NB	L			55.9	E	51.3	D
		T			26.0	C	51.6	D
		R			12.6	B	15.4	B
		Approach			32.3	C	31.8	C
	SB	L			32.4	C	45.8	D
		TR / R			22.3	C	28.7	C
		Approach			27.0	C	36.6	D
	Overall				**28.8**	**C**	**16.8**	**B**
Grumman Boulevard & Burman Boulevard	EB	L					9.7	A
		T					15.3	B
		Approach					14.3	B
	WB	TR					5.9	A
		Approach					5.9	A
	SB	L					18.2	B
		R					6.2	A
		Approach					10.1	B
	Overall						**11.5**	**B**

Table 47 – Site Access Mitigation Analysis – Saturday Midday Peak Hour

Intersection	Movement	Lane Group	No Build 2025		Build 2025		Build Mitigation 2025	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Burman Boulevard	EB	T	8.8	A	9.3	A	8.8	A
		R	3.2	A	2.1	A	2.4	A
		Approach	8.7	A	8.6	A	8.2	A
	WB	L	6.9	A	7.8	A	24.6	C
		T	8.3	A	8.8	A	7.2	A
		Approach	8.3	A	8.7	A	9.3	A
	NB	L	27.4	C	28.7	C	40.3	D
		R	9.5	A	8.0	A	26.8	C
		Approach	18.3	B	18.3	B	33.5	C
	Overall		**9.3**	**A**	**9.8**	**A**	**11.8**	**B**
NY 25 & West Site Access / Calverton National Cemetery	EB	L			6.0	A	11.2	B
		T			6.1	A	16.3	B
		R			0.0	A	0.1	A
		Approach			5.8	A	15.4	B
	WB	L			34.8	C	45.7	D
		T			2.5	A	6.7	A
		R			0.0	A	0.0	A
		Approach			4.6	A	8.8	A
	NB	L			33.9	C	40.6	D
		T			26.0	C	40.2	D
		R			6.5	A	3.6	A
		Approach			19.0	B	20.7	C
	SB	L			32.0	C	42.4	D
		TR / R			21.8	C	17.5	B
		Approach			26.5	C	29.8	C
	Overall				**6.0**	**A**	**13.5**	**B**
Grumman Boulevard & Burman Boulevard	EB	L					6.9	A
		T					6.4	A
		Approach					6.7	A
	WB	TR					4.8	A
		Approach					4.8	A
	SB	L					9.3	A
		R					3.7	A
		Approach					6.1	A
	Overall						**6.0**	**A**

The tables above reveal that the three signalized site accesses operate satisfactorily with the mitigation in place for the Build 2025 condition, with a LOS C or better during the three time periods analyzed.

Non-Intersection Improvements 2025

The mitigation details presented in Table 40, above indicate the improvements identified for the study intersections where traffic conditions as a result of the project, other developments and background growth would result in poor operating conditions without improvement. In addition to the intersection treatments, given the levels of traffic anticipated, it will be necessary to provide roadway segment improvements, specifically to Middle Country Road. Based on the through volumes anticipated, Middle Country Road should be improved to provide additional capacity between CR 46 (William Floyd Parkway) and the existing four lane section near the LIE. This is a total length of approximately seven and one-half miles and includes the approximately three and one-quarter mile section that abuts the subject property.

As previously noted, it must be understood that no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. A different use mix on the site could result in significantly different trip generation, as described above. Accordingly, the point in time when various mitigation elements are required will be a function of the actual trip generation associated with the uses developed. The Mitigation Phasing Section of this study provides the various levels of trip generation and the mitigation required to be in place for each level of trip generation.

Based on the anticipated volumes, Middle Country Road should be reconstructed to a five-lane section over this distance. This pavement section includes two through lanes in each direction, safety shoulders and a median which could serve as an area for left-turn lanes (either dedicated or two-way left-turn lanes) in appropriate areas. It is recommended that the posted speed limit on this section of the roadway be set to 45 mph.

This improvement represents a significant roadway project. However, existing volumes are already high, and with 2025 No-Build volumes on sections of Middle Country Road exceeding 1,000 vehicles per hour per direction without the proposed project, the improvement of Middle Country Road as noted herein should be considered even without the proposed subdivision.

Mitigation 2035

The Full Build 2035 analysis reveals that mitigation is necessary at the various key intersections in order to accommodate the volumes generated by the scaled down program mix. Therefore, various measures of mitigation were applied to the network and study intersections. These are capacity mitigations and/or signal improvements. The analysis with mitigation is detailed herein.

The mitigation measures utilized at each location are described in Table 48. In addition, the additional changes proposed to the layout of the site access intersections are also included. The changes/mitigation proposed in 2025 are also included in the table for easy comparison and to understand the additional proposals.

Table 48 - Table of Mitigation 2035... 1 of 4

Location		Capacity		Signal Improvements	
		Proposed in 2025	**Additional Changes Proposed in 2035**	**Proposed in 2025**	**Additional Changes Proposed in 2035**
1	**NY 25 & Wading River Manor Road**	Eastbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Westbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Northbound - One exclusive left turn lane, one through lane and one exclusive right turn lane Southbound - One exclusive left turn lane, one through lane and one exclusive right turn lane	Eastbound – No Change Proposed Westbound – Two exclusive left turn lanes, two through lanes and one exclusive right turn lane Northbound - One exclusive left turn lane, one through lane and two exclusive right turn lane Southbound - Two exclusive left turn lanes, one through lane and one exclusive right turn lane	Multi-phase Actuated-Coordinated signal East-West Lefts turns fully protected North-South Left turns protected/permitted AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds SB right turn overlaps EBL NB right turn overlaps WBL Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
2	**NY 25 & Burman Boulevard (Site Access)**	Eastbound – Two through lanes and one exclusive right turn lane Westbound – Two exclusive left turn lanes and two through lanes Northbound - Two exclusive left turn lanes and two exclusive right turn lanes	Eastbound – Two through lanes and two exclusive right turn lane Westbound – No Change Proposed Northbound - No Change Proposed	Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected EB right turn overlaps NBL NB right turn overlaps WBL AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
3	**NY 25 & NY 25A / East Site Access**	Eastbound – One exclusive left turn lane, two through lanes and one exclusive right turn lane Westbound - Two exclusive left turn lanes, two through lanes and one channelized right turn lane Northbound - Two exclusive left turn lanes, one through and one exclusive right turn lane Southbound - Two exclusive left turn lanes, one through and one channelized right turn lane	Eastbound – No Change Proposed Westbound - No Change Proposed Northbound - Two exclusive left turn lanes, one through and two exclusive right turn lanes Southbound - No Change Proposed	Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected Northbound Lefts turns fully protected Other left turns protected/permitted WB right turn overlaps SBL NB right turn overlaps WBL AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals

Table 48 – Table of Mitigation 2035... Continued 2 of 4

Location		Capacity		Signal Improvements	
		Proposed in 2025	**Additional Changes Proposed in 2035**	**Proposed in 2025**	**Additional Changes Proposed in 2035**
4	**NY 25 & Edwards Avenue**	Eastbound – One exclusive left turn lane, two through lanes and an exclusive right turn lane Westbound – One exclusive left turn lane, one through lane and a shared through/right turn lane Northbound - One exclusive left turn lane, one shared through /right turn lane Southbound - One exclusive left turn lane, one through lane and one exclusive right turn lane	No change proposed	Multi-phase Actuated-Coordinated signal All left turns protected/permitted AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds SB right turn overlaps EBL Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
5	**NY 25 & Manor Road/Splish Splash Drive**	Eastbound – One exclusive left turn lane, one through lane and shared through/right turn lane Westbound – One exclusive left turn lane, one through lane and a shared through/right turn lane Northbound - No Change Proposed Southbound - No Change Proposed		Multi-phase Actuated-Coordinated signal AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals
6	**NY 25 & Calverton National Cemetery/Site Access**	Eastbound – One exclusive left turn lane, two through lanes and an exclusive right turn lane Westbound – Two exclusive left turn lanes and two through lanes and one exclusive right turn lane Northbound - One exclusive left turn lane, a shared left turn / though lane and one exclusive right turn lane Southbound - No change proposed	Eastbound – No change proposed Westbound – No change proposed Northbound - One exclusive left turn lane, a shared left turn / though lane and two exclusive right turn lanes Southbound - No change proposed	Signalize Multi-phase Actuated-Coordinated signal Westbound Lefts turns fully protected Eastbound left turns protected/permitted North-south Split phasing AM/PM Cycle length: 100 seconds Saturday Cycle length : 90 Seconds Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals	AM/PM Cycle length: 120 seconds Saturday Cycle length : 100 Seconds NB right turn overlaps WBL EB right turn overlaps NBL Optimize phase splits to correlate to future volumes. Optimize offsets to the adjacent signals

Table 48– Table of Mitigation 2035... Continued 3 of 4

Location		Capacity		Signal Improvements	
		Proposed in 2025	Additional Changes Proposed in 2035	Proposed in 2025	Additional Changes Proposed in 2035
7	**Edwards Avenue & River Road**	No Change Proposed	Eastbound – No change proposed Westbound – No change proposed Northbound - One exclusive left turn lane, a shared left turn / through lane and one channelized right turn lane Southbound - No change proposed	Signalize Two-phase semi-actuated signal with permitted left turns Northbound approach leading 80 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes	North-south split phasing EB right turn overlaps NBL 90 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes
8	**Grumman Boulevard & Burman Boulevard (Site Access)**	Eastbound – One exclusive left turn lane and one through lane Westbound – Single shared through / right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane	Eastbound – Two exclusive left turn lanes and one through lane Westbound – No change proposed Southbound - No change proposed	Signalize Two-phase semi-actuated signal with permitted left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes	80 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes
9	**New Intersection Grumman Boulevard & West Site Access**	Eastbound – One exclusive left turn lane, one through lane Westbound – Single shared through / right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane	Eastbound – One exclusive left turn lane, one through lane Westbound – One through lane and an exclusive right turn lane Southbound - One exclusive left turn lane and one exclusive right turn lane	Unsignalized Intersection Southbound Approach Stop Controlled	Signalize Two-phase semi-actuated signal with permitted Southbound left turns 80 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes
10	**Wading River Manor Road & Grumman Boulevard**	Westbound – Two exclusive left turn lanes and one free channelized right turn lane Northbound - One through lane and a free channelized right turn lane Southbound - One exclusive left turn lane and a through lane	No change proposed	Signalize Two-phase semi-actuated signal with permitted Southbound left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes	Optimize phase splits, vary with time period to correlate to future volumes

Table 48 – Table of Mitigation 2035... Continued 4 of 4

Location		Capacity		Signal Improvements	
		Proposed in 2025	Additional Changes Proposed in 2035	Proposed in 2025	Additional Changes Proposed in 2035
11	**Wading River Manor Road & North Street**	Eastbound – Single shared left turn/ through and right turn lane Westbound – No change proposed Northbound - No change proposed Southbound - No change proposed	Eastbound – One exclusive left turn lane and a shared through and right turn lane Westbound – No change proposed Northbound - No change proposed Southbound - No change proposed	Signalize Two-phase semi-actuated signal with permitted left turns 70 Second cycle all time periods Optimize phase splits, vary with time period to correlate to future volumes	EB left turn protected/permitted AM/PM Cycle length: 100 seconds Saturday Cycle length : 80 Seconds Optimize phase splits, vary with time period to correlate to future volumes
12	**Wading River Manor Road & LIE North Service Road**	Westbound – No change proposed Northbound - One exclusive left turn lane and two through lanes Southbound - No change proposed	No change proposed	Signalize Two-phase semi-actuated signal with protected/permitted Northbound left turns AM/PM Cycle length: 80seconds Saturday Cycle length : 70 Seconds Optimize phase splits, vary with time period to correlate to future volumes	No Change Proposed
13	**Wading River Manor Road & LIE South Service Road**	Signalized Eastbound – One exclusive left turn lane, one shared left turn / through lane, and one right turn lane Northbound - No change proposed Southbound - No change proposed	No change proposed	Signalize Two-phase semi-actuated signal with protected/permitted Southbound left turns AM/PM Cycle length: 80seconds Saturday Cycle length : 70 Seconds Optimize phase splits, vary with time period to correlate to future volumes	No Change Proposed

The network was re-analyzed with the identified mitigation in order to measure the effectiveness of the proposed improvements at the various intersections. Tables 49, 50 and 51 present the results of this analysis for the signalized intersections for weekday a.m., p.m. and Saturday midday peak periods, respectively. For ease of comparison, the tables also include the corresponding No-Build and Build condition results.

Table 49 - Full Build 2035 Mitigation – AM Midday Peak Hour

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	55.6	E	58.4	E	15.5	B
		T	35.0	D	180.0	F	48.4	D
		R	0.8	A	1.0	A	0.8	A
		Approach	33.1	C	159.9	F	42.9	D
	WB	L	55.0	E	66.7	E	19.4	B
		T	36.9	D	41.6	D	11.5	B
		R	5.6	A	7.4	A	0.6	A
		Approach	36.6	D	41.6	D	11.5	B
	NB	L	28.8	C	25.7	C	29.2	C
		T	51.9	D	43.0	D	69.5	E
		R	22.8	C	142.3	F	51.5	D
		Approach	30.4	C	113.9	F	52.0	D
	SB	L	44.7	D	130.1	F	54.8	D
		T	32.5	C	30.0	C	37.8	D
		R	6.6	A	6.0	A	4.3	A
		Approach	29.9	C	86.6	F	39.8	D
	Overall		**32.6**	**C**	**117.3**	**F**	**38.7**	**D**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	10.8	B	12.8	B	14.2	B
		T	19.0	B	202.1	F	54.3	D
		R	0.8	A	0.6	A	5.2	A
		Approach	15.9	B	160.1	F	44.1	D
	WB	L	19.6	B	35.3	D	52.1	D
		T	6.1	A	4.5	A	8.2	A
		R	0.5	A	0.2	A	1.2	A
		Approach	11.3	B	20.0	C	30.2	C
	NB	L	47.4	D	49.2	D	61.9	E
		LT	47.3	D	48.8	D	61.8	E
		R	7.4	A	10.2	B	23.9	C
		Approach	26.0	C	27.8	C	41.2	D
	SB	L	49.0	D	49.0	D	68.1	E
		TR	19.2	B	19.1	B	26.2	C
		Approach	33.8	C	33.8	C	46.8	D
	Overall		**15.3**	**B**	**110.2**	**F**	**39.8**	**D**
NY 25 & Burman Boulevard	EB	T	8.6	A	15.9	B	13.8	B
		R	6.9	A	40.6	D	5.3	A
		Approach	7.9	A	27.4	C	9.8	A
	WB	L	34.7	C	189.9	F	31.3	C
		T	7.6	A	12.3	B	2.0	A
		Approach	19.6	B	95.7	F	15.8	B
	NB	L	43.4	D	39.9	D	55.3	E
		R	16.0	B	14.9	B	16.2	B
		Approach	29.8	C	27.5	C	35.8	D
	Overall		**14.7**	**B**	**58.4**	**E**	**14.3**	**B**

Table 49– Full Build 2035 Mitigation – AM Midday Peak Hour ...Continued 2 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	24.7	C	29.5	C	25.5	C
		T	39.7	D	53.4	D	15.3	B
		R	13.6	B	25.7	C	3.6	A
		Approach	31.7	C	41.6	D	11.3	B
	WB	L	49.0	D	67.8	E	48.4	D
		T	25.7	C	76.0	E	25.5	C
		R	7.0	A	9.1	A	5.4	A
		Approach	26.4	C	66.0	E	28.0	C
	NB	L	43.9	D	45.7	D	52.8	D
		T	40.4	D	41.2	D	56.7	E
		R	28.8	C	26.6	C	29.5	C
		Approach	37.2	D	37.2	D	44.2	D
	SB	L	49.2	D	53.0	D	53.4	D
		T	40.0	D	44.9	D	60.2	E
		R	5.7	A	14.9	B	20.9	C
		Approach	39.2	D	41.5	D	46.4	D
	Overall		**31.9**	**C**	**51.8**	**D**	**28.7**	**C**
NY 25 & Edwards Avenue	EB	L	17.3	B	19.1	B	41.7	D
		T	29.5	C	33.4	C	15.7	B
		R	24.6	C	25.4	C	14.3	B
		Approach	28.0	C	31.0	C	16.9	B
	WB	L	17.2	B	22.7	C	15.3	B
		TR	42.3	D	217.9	F	52.3	D
		Approach	41.5	D	213.7	F	51.4	D
	NB	L	42.4	D	60.8	E	67.3	E
		TR	31.6	C	31.0	C	42.6	D
		Approach	37.6	D	49.2	D	57.8	E
	SB	L	23.1	C	22.7	C	30.7	C
		T	59.9	E	54.5	D	71.0	E
		R	19.8	B	60.0	E	47.5	D
		Approach	38.8	D	53.9	D	54.9	D
	Overall		**35.3**	**D**	**106.7**	**F**	**40.0**	**D**
NY 25 & Splish Splash Drive	EB	L	6.4	A	14.5	B	18.3	B
		TR	11.9	B	23.9	C	22.4	C
		Approach	11.5	B	23.2	C	22.1	C
	WB	L	5.6	A	5.5	A	6.2	A
		TR	15.3	B	23.2	C	20.8	C
		Approach	15.2	B	23.0	C	20.7	C
	NB	LT	35.5	D	36.0	D	42.1	D
		R	33.1	C	33.4	C	39.2	D
		Approach	34.7	C	35.2	D	41.1	D
	SB	LTR	42.6	D	46.0	D	51.2	D
		Approach	42.6	D	46.0	D	51.2	D
	Overall		**16.5**	**B**	**25.3**	**C**	**24.3**	**C**

Table 49 – Full Build 2035 Mitigation – AM Midday Peak Hour ... Continued 3 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	27.3	C	27.1	C	32.5	C
		R	11.2	B	11.2	B	6.1	A
		Approach	12.1	B	12.0	B	7.5	A
	WB	LTR	30.1	C	29.8	C	33.1	C
		Approach	30.1	C	29.8	C	33.1	C
	NB	L					27.2	C
		LT	34.5	C	201.2	F	29.8	C
		R	1.7	A	1.8	A	0.7	A
		Approach	32.6	C	192.6	F	27.4	C
	SB	LTR	9.1	A	9.4	A	36.4	D
		Approach	9.1	A	9.4	A	36.4	D
	Overall		**21.6**	**C**	**109.5**	**F**	**28.9**	**C**
Grumman Boulevard & Burman Boulevard	EB	L	14.5	B	158.3	F	16.7	B
		T	3.7	A	4.2	A	3.6	A
		Approach	13.0	B	141.5	F	15.3	B
	WB	T / TR	2.0	A	3.7	A	21.7	C
		R					6.8	A
		Approach	2.0	A	3.7	A	11.6	B
	SB	L	28.5	C	28.9	C	24.3	C
		R	10.5	B	9.9	A	2.0	A
		Approach	17.4	B	17.0	B	9.4	A
	Overall		**10.3**	**B**	**79.5**	**E**	**13.3**	**B**
Wading River Manor Road & Grumman Boulevard	WB	L	13.1	B	17.5	B	16.6	B
		R	6.1	A	8.0	A	8.1	A
		Approach	11.4	B	15.9	B	15.2	B
	NB	T	7.2	A	10.8	B	8.0	A
		R	0.9	A	2.1	A	1.3	A
		Approach	3.4	A	5.5	A	4.0	A
	SB	L	6.3	A	8.3	A	6.4	A
		T	6.7	A	7.2	A	6.0	A
		Approach	6.6	A	7.4	A	6.1	A
	Overall		**5.0**	**A**	**6.9**	**A**	**5.3**	**A**
Wading River Manor Road & North Street	EB	L / LTR	30.8	C	41.5	D	49.3	D
		TR					19.4	B
		Approach	30.8	C	41.5	D	46.3	D
	WB	LTR	19.2	B	18.1	B	45.7	D
		Approach	19.2	B	18.1	B	45.7	D
	NB	LTR	16.3	B	166.1	F	49.0	D
		Approach	16.3	B	166.1	F	49.0	D
	SB	LTR	6.6	A	8.7	A	6.8	A
		Approach	6.6	A	8.7	A	6.8	A
	Overall		**15.5**	**B**	**117.9**	**F**	**40.0**	**D**

Table 49 – Full Build 2035 Mitigation – AM Midday Peak Hour ... Continued 4 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	23.4	C	21.8	C	17.9	B
		R	0.4	A	0.3	A	0.2	A
		Approach	15.6	B	14.5	B	11.9	B
	NB	L	22.2	C	27.8	C	45.1	D
		T	14.6	B	22.4	C	28.7	C
		Approach	17.8	B	24.1	C	34.1	C
	SB	T	23.1	C	24.4	C	28.6	C
		R	4.5	A	4.6	A	5.8	A
		Approach	13.2	B	13.3	B	15.7	B
	Overall		**16.7**	**B**	**21.6**	**C**	**29.9**	**C**
Wading River Road & LIE South Service Road	EB	L	38.9	D	63.0	E	40.1	D
		LT	39.0	D	63.5	E	40.3	D
		R	5.7	A	5.1	A	4.3	A
		Approach	30.3	C	52.5	D	33.5	C
	NB	T	42.6	D	161.7	F	22.4	C
		R	6.6	A	8.5	A	4.7	A
		Approach	34.9	C	132.4	F	18.9	B
	SB	L	16.5	B	18.1	B	29.8	C
		T	29.8	C	32.6	C	57.1	E
		Approach	28.0	C	30.8	C	53.5	D
	Overall		**32.5**	**C**	**90.3**	**F**	**28.4**	**C**
Grumman Boulevard & West Site Access	EB	L					4.6	A
		T					6.7	A
		Approach					6.2	A
	WB	T					10.8	B
		R					3.3	A
		Approach					6.8	A
	SB	L					19.4	B
		R					9.4	A
		Approach					13.2	B
	Overall						**6.6**	**A**

Table 50 - Full Build 2035 Mitigation – PM Midday Peak Hour

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	56.3	E	56.3	E	40.5	D
		T	26.5	C	34.4	C	29.0	C
		R	0.5	A	0.7	A	0.4	A
		Approach	29.6	C	34.7	C	27.7	C
	WB	L	64.2	E	62.1	E	54.9	D
		T	21.5	C	34.2	C	29.6	C
		R	3.3	A	9.1	A	13.8	B
		Approach	25.0	C	34.2	C	31.2	C
	NB	L	39.1	D	38.6	D	38.1	D
		T	47.5	D	51.5	D	62.2	E
		R	0.9	A	1.7	A	22.7	C
		Approach	35.2	D	34.1	C	43.7	D
	SB	L	33.4	C	39.9	D	57.5	E
		T	43.9	D	43.4	D	50.1	D
		R	10.2	B	10.0	A	13.1	B
		Approach	24.4	C	26.8	C	34.8	C
	Overall		**27.3**	**C**	**33.5**	**C**	**32.3**	**C**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	10.2	B	32.3	C	40.5	D
		T	9.1	A	14.8	B	15.6	B
		R	0.8	A	2.7	A	0.7	A
		Approach	8.6	A	14.2	B	15.0	B
	WB	L	52.7	D	55.8	E	49.1	D
		T	16.7	B	38.5	D	32.0	C
		R	0.4	A	0.0	A	0.5	A
		Approach	17.7	B	38.9	D	32.5	C
	NB	L	51.3	D	57.7	E	60.0	E
		LT	51.6	D	58.1	E	60.0	E
		R	15.3	B	19.7	B	32.1	C
		Approach	31.8	C	37.1	D	44.8	D
	SB	L	48.9	D	42.0	D	64.9	E
		TR	18.5	B	21.1	C	22.6	C
		Approach	33.4	C	31.3	C	43.4	D
	Overall		**18.3**	**B**	**32.8**	**C**	**31.8**	**C**
NY 25 & Burman Boulevard	EB	T	39.1	D	76.1	E	37.2	D
		R	0.3	A	0.5	A	3.4	A
		Approach	34.0	C	65.2	E	32.3	C
	WB	L	26.1	C	23.6	C	47.1	D
		T	27.1	C	27.3	C	16.6	B
		Approach	27.0	C	26.8	C	20.8	C
	NB	L	40.2	D	100.7	F	44.3	D
		R	20.3	C	23.8	C	24.8	C
		Approach	31.1	C	64.2	E	35.0	D
	Overall		**30.8**	**C**	**54.8**	**D**	**29.9**	**C**

Table 50 – Full Build 2035 Mitigation – PM Midday Peak Hour ... Continued 2 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	29.1	C	84.5	F	58.1	E
		T	46.2	D	220.0	F	51.6	D
		R	0.1	A	0.5	A	1.2	A
		Approach	42.3	D	190.5	F	50.3	D
	WB	L	45.5	D	49.2	D	65.7	E
		T	34.6	C	48.7	D	23.8	C
		R	15.7	B	37.7	D	37.2	D
		Approach	25.4	C	43.6	D	32.2	C
	NB	L	38.3	D	36.4	D	45.5	D
		T	50.5	D	55.8	E	74.6	E
		R	7.8	A	20.7	C	41.7	D
		Approach	28.5	C	34.0	C	49.8	D
	SB	L	56.5	E	56.5	E	52.5	D
		T	38.0	D	41.2	F	46.5	D
		R	0.7	A	1.1	A	1.4	A
		Approach	47.3	D	45.5	D	42.8	D
	Overall		**34.5**	**C**	**99.2**	**F**	**43.2**	**D**
NY 25 & Edwards Avenue	EB	L	41.4	D	76.5	E	59.6	E
		T	31.2	C	103.8	F	26.8	C
		R	18.5	B	19.3	B	4.7	A
		Approach	30.8	C	91.0	F	28.6	C
	WB	L	16.8	B	19.1	B	19.9	B
		TR	37.9	D	74.6	E	43.0	D
		Approach	37.3	D	73.0	E	42.3	D
	NB	L	56.8	E	61.1	E	54.6	D
		TR	45.9	D	45.9	D	48.7	D
		Approach	51.5	D	53.8	D	51.7	D
	SB	L	23.9	C	23.9	C	29.2	C
		T	50.8	D	50.8	D	64.6	E
		R	1.3	A	3.2	A	6.9	A
		Approach	36.5	D	34.9	C	45.0	D
	Overall		**35.7**	**D**	**78.1**	**E**	**36.6**	**D**
NY 25 & Splish Splash Drive	EB	L	8.7	A	9.6	A	7.1	A
		TR	18.8	B	26.5	C	8.2	A
		Approach	17.8	B	24.9	C	8.1	A
	WB	L	4.0	A	4.7	A	4.0	A
		TR	13.5	B	16.0	B	13.2	B
		Approach	13.5	B	16.0	B	13.2	B
	NB	LT	44.3	D	44.5	D	58.7	E
		R	40.5	D	40.3	D	49.8	D
		Approach	42.7	D	42.7	D	54.9	D
	SB	LTR	33.3	C	33.0	C	43.1	D
		Approach	33.3	C	33.0	C	43.1	D
	Overall		**17.3**	**B**	**22.3**	**C**	**12.9**	**B**

Table 50 – Full Build 2035 Mitigation – PM Midday Peak Hour ... Continued 3 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	27.1	C	25.3	C	29.7	C
		R	9.8	A	17.5	B	10.2	B
		Approach	11.1	B	17.9	B	11.1	B
	WB	LTR	31.5	C	27.8	C	32.5	C
		Approach	31.5	C	27.8	C	32.5	C
	NB	L					18.8	B
		LT	6.8	A	10.2	B	33.5	C
		R	1.0	A	1.3	A	0.1	A
		Approach	6.5	A	9.8	A	29.2	C
	SB	LTR	8.1	A	10.1	B	32.0	C
		Approach	8.1	A	10.1	B	32.0	C
	Overall		**9.2**	**A**	**12.7**	**B**	**25.8**	**C**
Grumman Boulevard & Burman Boulevard	EB	L	9.7	A	12.0	B	21.5	C
		T	16.7	B	21.2	C	14.8	B
		Approach	15.5	B	19.4	B	16.1	B
	WB	T / TR	6.0	A	6.5	A	20.5	C
		R					7.6	A
		Approach	6.0	A	6.5	A	14.8	B
	SB	L	19.7	B	24.9	C	22.7	C
		R	6.4	A	8.0	A	7.0	A
		Approach	10.7	B	13.5	B	12.2	B
	Overall		**12.4**	**B**	**15.2**	**B**	**14.0**	**B**
Wading River Manor Road & Grumman Boulevard	WB	L	17.5	B	28.2	C	19.4	B
		R	4.8	A	4.7	A	3.8	A
		Approach	15.6	B	25.8	C	17.9	B
	NB	T	12.9	B	14.6	B	15.2	B
		R	0.1	A	0.1	A	0.1	A
		Approach	10.4	B	10.9	B	11.4	B
	SB	L	9.0	A	10.2	B	11.1	B
		T	16.7	B	29.0	C	26.1	C
		Approach	16.4	B	28.4	C	25.6	C
	Overall		**14.3**	**B**	**22.8**	**C**	**18.6**	**B**
Wading River Manor Road & North Street	EB	L / LTR	21.8	C	26.8	C	37.0	D
		TR					23.1	C
		Approach	21.8	C	26.8	C	31.0	C
	WB	LTR	20.0	C	21.5	C	39.4	D
		Approach	20.0	C	21.5	C	39.4	D
	NB	LTR	3.7	A	4.6	A	5.5	A
		Approach	3.7	A	4.6	A	5.5	A
	SB	LTR	7.6	A	34.3	C	38.1	D
		Approach	7.6	A	34.3	C	38.1	D
	Overall		**7.9**	**A**	**27.3**	**C**	**30.6**	**C**

Table 50 – Full Build 2035 Mitigation – PM Midday Peak Hour ... Continued 4 of 4

Intersection	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	29.7	C	28.8	C	41.5	D
		R	0.3	A	0.2	A	0.3	A
		Approach	26.5	C	25.7	C	37.0	D
	NB	L	21.6	C	43.4	D	15.2	B
		T	13.9	B	15.0	B	8.6	A
		Approach	17.1	B	25.5	C	11.1	B
	SB	T	24.3	C	34.7	C	22.8	C
		R	4.9	A	15.8	B	8.1	A
		Approach	13.3	B	23.3	C	13.8	B
	Overall		**16.8**	**B**	**24.2**	**C**	**16.2**	**B**
Wading River Road & LIE South Service Road	EB	L	21.8	C	22.5	C	27.7	C
		LT	21.9	C	22.5	C	27.7	C
		R	46.7	D	51.3	D	40.6	D
		Approach	40.6	D	42.7	D	36.8	D
	NB	T	18.6	B	19.6	B	10.5	B
		R	3.1	A	3.1	A	2.4	A
		Approach	14.2	B	15.1	B	8.2	A
	SB	L	12.3	B	14.1	B	10.0	A
		T	59.2	E	148.9	F	39.2	D
		Approach	55.4	E	139.7	F	37.1	D
	Overall		**38.4**	**D**	**72.6**	**E**	**28.7**	**C**
Grumman Boulevard & West Site Access	EB	L					5.3	A
		T					8.9	A
		Approach					8.7	A
	WB	T					17.3	B
		R					4.2	A
		Approach					16.8	B
	SB	L					27.4	C
		R					8.3	A
		Approach					15.5	B
	Overall						**13.4**	**B**

Table 51 - Full Build 2035 Mitigation – Saturday Midday Peak Hour

	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & Wading River Manor Road	EB	L	45.5	D	45.5	D	11.0	B
		T	18.4	B	19.0	B	18.5	B
		R	0.3	A	0.3	A	0.7	A
		Approach	21.7	C	22.0	C	14.9	B
	WB	L	50.3	D	51.1	D	46.6	D
		T	14.9	B	16.3	B	21.0	C
		R	0.9	A	1.5	A	4.4	A
		Approach	17.1	B	18.6	B	21.8	C
	NB	L	28.2	C	28.2	C	27.9	C
		T	43.6	D	43.6	D	49.9	D
		R	1.1	A	1.5	A	25.8	C
		Approach	27.7	C	26.0	C	36.5	D
	SB	L	27.8	C	30.4	C	46.3	D
		T	44.1	D	44.1	D	49.5	D
		R	6.9	A	6.9	A	4.7	A
		Approach	23.5	C	24.4	C	28.7	C
	Overall		**21.3**	**C**	**21.8**	**C**	**22.8**	**C**
NY 25 & West Site Access / Calverton National Cemetery	EB	L	14.4	B	16.8	B	8.2	A
		T	19.3	B	24.5	C	7.0	A
		R	0.4	A	1.3	A	0.3	A
		Approach	18.3	B	22.6	C	6.6	A
	WB	L	44.7	D	46.9	D	46.2	D
		T	7.8	A	9.7	A	3.7	A
		R	0.0	A	0.2	A	0.3	A
		Approach	9.5	A	12.9	B	7.8	A
	NB	L	40.6	D	41.1	D	46.6	D
		LT	40.2	D	41.2	D	46.8	D
		R	3.6	A	5.6	A	24.6	C
		Approach	20.7	C	22.0	C	34.9	C
	SB	L	42.4	D	43.0	D	48.5	D
		TR	17.5	B	17.5	B	19.6	B
		Approach	29.8	C	30.1	C	33.8	C
	Overall		**15.2**	**B**	**18.9**	**B**	**9.6**	**A**
NY 25 & Burman Boulevard	EB	T	9.6	A	14.1	B	4.5	A
		R	2.6	A	2.9	A	0.6	A
		Approach	9.0	A	12.6	B	4.0	A
	WB	L	26.6	C	24.3	C	50.3	D
		T	7.6	A	6.7	A	1.3	A
		Approach	9.7	A	9.4	A	8.9	A
	NB	L	40.4	D	40.9	D	45.8	D
		R	26.9	C	25.5	C	30.3	C
		Approach	33.6	C	33.1	C	38.0	D
	Overall		**12.3**	**B**	**14.3**	**B**	**9.9**	**A**

Table 51 – Full Build 2035 – Saturday Midday Peak Hour ...Continued 2 of 4

	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
NY 25 & NY 25A / East Site Access	EB	L	9.9	A	14.6	B	11.6	B
		T	14.4	B	20.3	C	23.7	C
		R	0.0	A	0.4	A	0.6	A
		Approach	13.4	B	18.5	B	21.0	C
	WB	L	40.4	A	41.7	D	53.0	D
		T	19.3	B	23.2	C	19.1	B
		R	1.6	A	1.9	A	4.3	A
		Approach	11.6	B	14.9	B	14.1	B
	NB	L	39.9	D	40.2	D	42.3	D
		T	37.0	D	37.6	D	40.1	D
		R	0.2	A	0.3	A	31.6	C
		Approach	23.9	C	23.7	C	37.6	D
	SB	L	47.1	D	47.9	D	48.0	D
		T	28.9	C	27.9	C	32.5	C
		R	0.3	A	0.4	A	0.7	A
		Approach	43.4	D	43.1	D	43.3	D
	Overall		**21.6**	**C**	**24.0**	**C**	**24.9**	**C**
NY 25 & Edwards Avenue	EB	L	11.2	B	11.6	B	16.4	B
		T	19.5	B	19.8	B	22.4	C
		R	16.3	B	16.3	B	16.6	B
		Approach	18.5	B	18.8	B	21.3	C
	WB	L	8.7	A	10.0	B	7.5	A
		TR	14.7	B	16.4	B	17.0	B
		Approach	14.4	B	16.1	B	16.6	B
	NB	L	26.2	C	26.7	C	26.9	C
		TR	60.2	E	60.2	E	47.7	D
		Approach	51.4	D	51.3	D	42.1	D
	SB	L	29.6	C	29.6	C	28.0	C
		T	39.8	D	39.8	D	39.8	D
		R	3.6	A	4.7	A	5.4	A
		Approach	27.7	C	27.2	C	27.1	C
	Overall		**23.5**	**C**	**23.8**	**C**	**23.5**	**C**
NY 25 & Splish Splash Drive	EB	L	2.0	A	2.3	A	1.8	A
		TR	5.6	A	6.1	A	3.9	A
		Approach	5.3	A	5.8	A	3.7	A
	WB	L	3.0	A	3.0	A	2.8	A
		TR	9.2	A	9.5	A	8.3	A
		Approach	9.2	A	9.5	A	8.3	A
	NB	LT	35.0	D	35.0	D	51.1	D
		R	35.0	D	35.0	D	45.2	D
		Approach	35.0	D	35.0	D	48.6	D
	SB	LTR	23.0	C	22.8	C	27.2	C
		Approach	23.0	C	22.8	C	27.2	C
	Overall		**8.3**	**A**	**8.7**	**A**	**8.5**	**A**

Table 51 – Full Build 2035 – Saturday Midday Peak Hour ...Continued 3 of 4

	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Edwards Avenue & River Road	EB	LT	25.0	C	24.9	C	26.6	C
		R	9.9	A	10.0	B	2.5	A
		Approach	12.8	B	12.4	B	6.3	A
	WB	LTR	26.6	C	27.2	C	25.0	C
		Approach	26.6	C	27.2	C	25.0	C
	NB	L					14.6	B
		LT	6.1	A	7.0	A	21.0	C
		R	1.3	A	1.3	A	1.6	A
		Approach	5.7	A	6.5	A	18.4	B
	SB	LTR	5.3	A	5.8	A	22.6	C
		Approach	5.3	A	5.8	A	22.6	C
	Overall		**7.4**	**A**	**8.0**	**A**	**19.3**	**B**
Grumman Boulevard & Burman Boulevard	EB	L	7.1	A	7.6	A	12.4	B
		T	6.5	A	6.6	A	3.8	A
		Approach	6.8	A	7.3	A	9.4	A
	WB	T / TR	5.0	A	4.8	A	11.9	B
		R					6.4	A
		Approach	5.0	A	4.8	A	9.6	A
	SB	L	9.2	A	9.4	A	12.9	B
		R	3.6	A	3.7	A	5.7	A
		Approach	6.1	A	6.1	A	8.7	A
	Overall		**6.1**	**A**	**6.1**	**A**	**9.1**	**A**
Wading River Manor Road & Grumman Boulevard	WB	L	11.2	B	11.1	B	11.2	B
		R	5.2	A	5.1	A	5.3	A
		Approach	8.5	A	9.0	A	9.1	A
	NB	T	5.1	A	6.3	A	5.3	A
		R	0.0	A	0.1	A	0.1	A
		Approach	4.2	A	4.8	A	4.1	A
	SB	L	5.1	A	5.4	A	5.2	A
		T	5.0	A	6.1	A	5.1	A
		Approach	5.0	A	6.0	A	5.1	A
	Overall		**5.1**	**A**	**5.9**	**A**	**5.2**	**A**
Wading River Manor Road & North Street	EB	L / LTR	8.8	A	11.6	B	30.8	C
		TR					19.2	B
		Approach	8.8	A	11.6	B	24.6	C
	WB	LTR	8.6	A	11.1	B	44.8	D
		Approach	8.6	A	11.1	B	44.8	D
	NB	LTR	5.0	A	6.7	A	6.5	A
		Approach	5.0	A	6.7	A	6.5	A
	SB	LTR	4.8	A	6.2	A	6.3	A
		Approach	4.8	A	6.2	A	6.3	A
	Overall		**5.8**	**A**	**7.5**	**A**	**11.6**	**B**

Table 51 – Full Build 2035 – Saturday Midday Peak Hour ...Continued 4 of 4

	Movement	Lane Group	No Build 2035		Build 2035		Build Mitigation 2035	
			Delay	LOS	Delay	LOS	Delay	LOS
Wading River Road & LIE North Service Road	WB	LT	32.8	C	32.8	C	39.2	D
		R	0.3	A	0.3	A	0.2	A
		Approach	29.1	C	29.1	C	34.8	C
	NB	L	10.5	B	10.4	B	5.3	A
		T	12.2	B	12.1	B	6.2	A
		Approach	11.3	B	11.3	B	5.8	A
	SB	T	16.8	B	17.0	B	13.4	B
		R	4.5	A	4.4	A	1.5	A
		Approach	11.5	B	11.2	B	7.8	A
	Overall		**15.2**	**B**	**14.8**	**B**	**11.7**	**B**
Wading River Road & LIE South Service Road	EB	L	22.9	C	23.8	C	30.7	C
		LT	23.0	C	23.9	C	30.8	C
		R	6.8	A	6.8	A	8.5	A
		Approach	12.0	B	13.2	B	16.9	B
	NB	T	13.0	B	13.2	B	7.9	A
		R	2.8	A	2.8	A	2.3	A
		Approach	9.7	A	9.9	A	6.1	A
	SB	L	8.7	A	9.1	A	3.9	A
		T	22.7	C	23.3	C	13.9	B
		Approach	21.7	C	22.3	C	13.2	B
	Overall		**13.2**	**B**	**13.8**	**B**	**11.2**	**B**
Grumman Boulevard & West Site Access	EB	L					2.6	A
		T					2.0	A
		Approach					2.1	A
	WB	T					5.0	A
		R					4.4	A
		Approach					4.9	A
	SB	L					11.2	B
		R					7.1	A
		Approach					8.6	A
	Overall						**3.9**	**A**

Review of the tables above reveals that the mitigation measures identified result in an improvement in the overall intersection operating delay and LOS at all the study intersections including the site accesses where mitigation was deemed necessary. The intersection LOS has been restored to the No-Build condition and in a few cases, improved.

Right-of-Way Considerations

When developing the roadway mitigation plan for the proposed subdivision, consideration was given to developing improvements, to the extent possible, which could be put in place without the need for acquisition of private property. This includes the use of public property in the form of existing highway right-of-way and property that is part of the subject property that would be dedicated for that purpose.

However, the results of the analysis performed indicate that there are a number of locations where right-of-way will be required to construct the identified roadway improvements. Based on review of available record plans and tax map information, it is anticipated that the identified roadway mitigation will require the acquisition of private property for highway purposes in the following areas:

- Middle Country Road from east of CR 46 to Wading River Manor Road
- Middle Country Road from east of NY 25A to east of Manor Road/Splish Splash Drive
- Wading River Manor Road north of Middle Country Road (intersection approach widening)
- Edwards Avenue north of Middle Country Road (intersection approach widening)
- Edwards Avenue south of Middle Country Road (intersection approach widening)
- Edwards Avenue north of River Road (intersection approach widening)
- Edwards Avenue south of River Road (intersection approach widening).

Mitigation Phasing

The impact analysis performed for the proposed subdivision focused on two build years, 2025 and 2035, to gauge the potential impacts of the project and develop reasonable improvements to the roadway system to maintain good traffic service in the study area. However, the site will be developed over many years and not in the discrete increments evaluated in the two build years used in this study. Given the long-term nature anticipated for the development of the site, and the fact that the identified roadway improvements are significant and capital intensive, it is unrealistic to expect that the mitigation program would be implemented in one or two phases, but would be conducted in smaller increments over the course of the development of the parcels within the subdivision, dependent upon the nature of the actual uses established on-site and their associated trip generation.

While it is considered elsewhere in this study that there may be the need for short-term interim access points to Middle Country Road for some lots that are developed

early in the life of the project, in general, the subdivision access points and internal roadway system should be constructed as early as possible. The intersection configurations for locations 2, 3, 6, 8 and 9 (as indicated in Table 40) should be constructed as described in Table 40.

The following discussion focuses on the off-site mitigation phasing, and identifies trip generation thresholds at which certain mitigation must be in place. It is noted that these thresholds are based on the trip generation associated with the lots within the subdivision. It should be noted that the trip generation estimates presented earlier in this report are based on development of the lots to the maximum degree that the proposed PD District will allow. In reality, the total amount of square footage of the various types of uses within the subdivision may be significantly less than the maximum yield. As previously indicated, no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. For example, if a significant portion of the site is developed for warehouse uses, minimal traffic would result. Moreover, if a significant area was used as a solar field, virtually no traffic would result from that area. Accordingly, as lots are developed, traffic counts must be collected to determine actual traffic being generated to ensure that the mitigation set forth below is in place when the specific level of traffic generation set forth for each of the mitigation levels below are reached. As counting of the subdivision access points to the external road network would capture traffic not associated with the subdivided lots, these counts should be performed at the individual lot access points. These counts should capture the weekday a.m. peak period of activity as this has been determined to be the critical time period.

Initial Construction (Mitigation Level One) – Prior to the occupancy of any significant developed space within the subdivision, the proposed access roadways should be constructed. The intersection configurations for locations 2, 3, 6, 8 and 9 (as indicated in Table 40) should be constructed as described in Table 40. In addition, given the conditions expected to prevail at the intersection of Middle Country Road and Edwards Avenue, the improvements detailed in Table 40 for location 4 should be in place. It is noted that this improvement requires additional right-of-way. However, this location is currently the worst performing location in the study area currently and will deteriorate further by 2025.

Mitigation Level Two – Prior to occupancy of buildings in the subdivision that increase trip generation of the development during the weekday a.m. peak period above 750 vehicles per hour (combined entering and exiting), the mitigation detailed in Table 40 for locations 1, 5, 7, 10, 12 and 13 shall be completed.

Mitigation Level Three - Prior to occupancy of buildings in the subdivision that increase trip generation of the development during the weekday a.m. peak period above 1,500 vehicles per hour (combined entering and exiting), the mitigation detailed in Table 40 for location 11 shall be completed.

Mitigation Level Four - Prior to occupancy of buildings in the subdivision that increase trip generation of the development during the weekday a.m. peak period above 2,000 vehicles per hour (combined entering and exiting), Middle Country Road should be improved to a five lane section from just east of CR 46 (William Floyd Parkway) through just east of Manor Road /Splish Splash Drive.

Mitigation Level Five – Prior to occupancy of buildings in the subdivision that increase trip generation of the development during the weekday a.m. peak period above 3,000 vehicles per hour (combined entering and exiting), the mitigation detailed in Table 48 for locations 1, 3, 4, 6, 7 and 8 shall be completed.

Mitigation Level Six – Prior to occupancy of buildings in the subdivision that increase trip generation of the development during the weekday a.m. peak period above 4,000 vehicles per hour (combined entering and exiting), the mitigation detailed in Table 48 for locations 2, 5, 9, 10 and 11 shall be completed.

Conclusions

Based on the results of the analyses conducted for the purpose of this report, VHB has arrived at the following conclusions:

- The proposed subdivision and redevelopment of the EPCAL property will generate a significant level of new traffic on the adjacent roadway system. A total of thirteen intersections were evaluated for operation and potential impacts. This includes five access points; two existing and three proposed.

- The potential impacts were evaluated at two Build years, 2025 and 2035, to present relevant "snap-shots" of the sites development.

- Through the course of the analysis it was determined that the existing roadway network in the study area cannot support the level of traffic projected with the full build-out of the Theoretical Mixed-Use Development Program in 2035, even with the implementation of all roadway mitigation that, at this time, are reasonable to implement given the configuration of the area roadways, available rights-of-way, and other factors (such as Pine Barrens Core Preservation Area land).

- In order to ensure that the traffic generated by the permitted development can be adequately mitigated, as each use is approved, constructed and occupied, traffic counts must be taken to document the total number of trips actually being generated. Once the total number of trips generated reaches 5,000 trips per hour (combined entering and exiting) during the critical weekday a.m. peak hour, no further development can be approved unless additional evaluation and mitigation (as necessary based on the evaluation) is conducted.

- Below the level of 5,000 trips per hour (combined entering and exiting) during the critical weekday a.m. peak hour, the impacted intersections can be mitigated with physical changes such as widening, additional lanes and changes to lane designations, changes in signal timing parameters, such as cycle, phase-splits and signal progression. Recommendations to this effect have been included in the report.

- Mitigation phasing has been developed, and identifies trip generation thresholds at which certain mitigation must be in place. It is noted that these thresholds are based on the trip generation associated with the development lots within the subdivision.

- It must be understood that no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. For example, if a significant portion of the site is developed for warehouse uses, minimal traffic would result. Moreover, if a significant area was used as a solar field, virtually no traffic would result from that area. Therefore, trip generation associated with the actual mix of uses developed on the site could vary widely.

- As lots are developed, traffic counts must be collected to determine actual traffic being generated to ensure that the mitigation is in place when the specific level of traffic generation set forth for each of the mitigation levels described in this study are reached.

- The proposed access plan contains five points of access which will allow traffic to and from the subdivision to enter and exit at various locations, reducing the additional traffic at any one point. The access plan proposed is more than adequate to serve the subdivision and will provide good traffic service.

- All access points to the adjacent roadway network are proposed to be signalized, in accordance with the mitigation phasing schedule set forth in this study.

- The traffic generated by the development can be accommodated by the adjacent roadway network with the recommended mitigation measures in place.

- The traffic generated by the development is not expected to unduly affect the accident rates on the adjacent roadways.

- The proposed number of parking spaces on each subdivided lot shall be in accordance with the proposed minimum parking requirements set forth in this study.

- While no credit was taken for the use of public transportation in this study, it is anticipated that some employees and patrons of the proposed development will take advantage of the presence of this option.

- The presence of the rail spur provides an opportunity for its use by future occupants of the subdivision and the potential to reduce truck traffic to and from the site.

- The proposed subdivision of the EPCAL property would result in construction of improvements to the subdivision lots over a period of many years. Specific steps, identified in this study, should be taken to ensure that impacts due to construction are minimized.

- The analysis performed in this study concludes that the development of the proposed subdivision can be accommodated by the surrounding roadway network given the implementation of the identified roadway mitigation and the limiting of the critical site trip generation during the weekday a.m. peak hour to 5,000 trips (combined entering and exiting).

3.5 Air Quality

3.5.1 Existing Conditions

The purpose of the air quality study is to assess whether the proposed development of the EPCAL Property complies with the state and federal air quality requirements, and whether it complies with the 1990 Clean Air Act Amendments (CAAA) following the NYSDEC, the NYSDOT, and the United States Environmental Protection Agency (USEPA) policies and procedures.

The air quality study includes mobile and stationary source analyses to determine the potential change in air quality from the proposed development. The air quality study includes, among other things, a microscale analysis of carbon monoxide (CO), a regional assessment of the mobile and stationary source greenhouse gas (GHG) impacts, and a qualitative assessment of mobile source air toxics. This section of the DSGEIS presents background information and existing air quality conditions. Appendix L of this DSGEIS contains supplemental air quality data.

Background

Six principal air pollutants have been designated by the USEPA as "criteria" pollutants that are proven detriments to public health. These air pollutants include sulfur dioxide (SO_2), carbon monoxide (CO), ozone (photochemical oxidants), particulate matter less than 10 micrometers (PM_{10}) and less than 2.5 micrometers ($PM_{2.5}$), nitrogen dioxide (NO_2) and lead (Pb). National Ambient Air Quality Standards (NAAQS) have been established for these pollutants.

The 1990 U.S. Clean Air Act Amendments resulted in states being divided into attainment and non-attainment areas, with classifications based upon the severity of their air quality problems. Air quality control regions are classified and divided into one of three categories: attainment, unclassified, or non-attainment depending upon air quality data and ambient concentrations of pollutants. Attainment areas are regions where ambient concentrations of a pollutant are below the respective NAAQS; non-attainment areas are those where concentrations exceed the NAAQS. An unclassified area is a region where data are insufficient to make a determination. An unclassified area is generally considered as an attainment area for administrative purposes, and a single area can be in attainment of the standards for some pollutants while being in non-attainment for others.

Suffolk County is a "Previous Nonattainment Area" for ozone, and is no longer subject to the one-hour ozone standard as of June 15, 2005. As far as the eight-hour

ozone standard, Suffolk County is designated as a non-attainment area. Suffolk County is also in non-attainment for $PM_{2.5}$ (for the 2007 standard) as of June 7, 2010. Suffolk County is in "attainment" for all of the remaining criteria pollutants (PM_{10}, lead, nitrogen dioxide, and sulfur dioxide) for ambient (outdoor) air.

Air Quality Standards

The USEPA has established NAAQS that set limits on air pollutants considered harmful to public health. The State of New York has adopted similar standards as those set by the USEPA, with the exception of lead, total suspended particulates (TSP), particulate matter (PM_{10}, $PM_{2.5}$), and hydrocarbons. The respective Federal and State standards are summarized in Table 52. There are no specific local air quality standards for the Town of Riverhead and, therefore, the NAAQS are established as the criteria that the project will need to adhere to.

Table 52 – National (Federal) and State of New York Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Times	Level	Averaging Times
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour(1)	None	
	35 ppm (40 mg/m^3)	1-hour(1)		
Lead	0.15µg/m3(2)	Rolling 3-month Average	Same as Primary	
Nitrogen Dioxide	53 ppb	Annual (Arithmetic Mean)	Same as Primary	
	100 ppb	1-hour(3)	None	
Particulate Matter (PM10)	150µg/m3	24-hour(4)	Same as Primary	
Particulate Matter (PM2.5)	12.0µg/m3	Annual(5) (Arith. Mean)	Same as Primary	
	35µg/m3	24-hour(6)	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour(7)	Same as Primary	
	0.08 ppm (1997 std)	8-hour(8)	Same as Primary	
	0.12 ppm	1-hour(9) Not applicable in NYS	Same as Primary	
Sulfur Oxides	75 ppb	1-hour(10)	3-hour(1)	0.5 ppm (1300µg/m^3)

1 Not to be exceeded more than once per year.

2 Effective 1/12/2009, replaces the previous quarterly average value of 1.5µg/m^3.

3 To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

4 Not to be exceeded more than once per year on average over 3 years.

5 To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 12.0µg/m^3. Effective March 18, 2013.

6 To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35µg/m3 (effective December 17, 2006).

7 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

8 (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard-and the implementation rules for that standard-will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) USEPA is in the process of reconsidering these standards (set in March 2008).

9 (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.
(b) As of June 15, 2005 USEPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

10 Effective August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

The predominant sources of air pollution are emissions of CO, volatile organic compounds (VOCs), nitrogen oxides (NOX), PM_{10}, $PM_{2.5}$, and greenhouse gases (GHG).

CO is a product of incomplete combustion. It is a colorless and odorless gas that prevents the lungs from passing oxygen to the blood stream. Brief exposure to high levels of CO can also impair vision, physical coordination, and the perception of time. According to the USEPA, 60 percent of CO emissions result from motor vehicle exhaust, while other sources of CO emissions include industrial processes, non-transportation fuel combustion and natural sources (i.e., wildfires). In cities, as much as 95 percent of CO emissions result from mobile sources.[43]

VOCs and NO_X are important pollutants because of their role in forming ozone, which is also referred to as photochemical smog. Both of these pollutants are emitted from vehicular sources. VOCs are evaporative emissions from unburned fuel. NO_X, a brownish gas with a pungent odor, is a product of high temperature combustion. It is a pulmonary irritant and short exposure may increase susceptibility to acute respiratory disease.

Particulate matter (PM) is a term referring to particles found in the air. Some particles are large enough to be seen as dust, soot, or smoke, while others are too small to be visible. As previously discussed, PM_{10} refers to particulate matter that is 10 micrometers or smaller in size. Similarly, $PM_{2.5}$ refers to particulate matter that is 2.5 micrometers or smaller in size. Small particles can have adverse health effects because of their ability to reach the lower regions of the respiratory tract. Particulate matter comes from a variety of sources. Emissions from highway and non-road vehicles compose approximately 28 percent of total PM emissions.[43] Fuel combustion in power plants and industrial processes accounts for another five percent of PM. The largest direct source of PM is fugitive dust from paved and unpaved roads, agricultural and forestry activities, wind erosion, wildfires, and managed burning. PM is also formed indirectly in the atmosphere by the reaction of gaseous pollutants, such as NO_X.

Table 52, above, presents the NAAQS and New York State Standards for criteria pollutants.

[43] Environmental Protection Agency, *National Air Quality and Emissions Trends Report*, 1999, March 2001.

Site and Area Conditions

The NYSDEC maintains an air quality monitoring system that measures and records the concentrations of various air pollutants within the State. These monitoring data were used to assess the existing air quality levels, or background concentrations, in the area. Background concentrations are ambient pollution levels from other stationary, mobile, and area sources.

The subject property is located in NYSDEC Region 1. The background concentrations of criteria pollutants within the subject property area were determined using the monitoring data collected at receptor locations closest to the subject property within Region 1. For those pollutants not monitored in Region 1, their background concentrations were determined using the monitoring data collected at the closest receptor locations to the project site from Region 2 (New York City). Figure 14 identifies the relevant monitoring locations referenced herein. The following summarizes the relevant air quality monitoring data for the study area.

A review of the NYSDEC monitoring data indicates that the closest monitoring sites to the subject property that monitor CO is the Queens College (Region 2) monitor. The 1-hour and 8-hour (2012) CO background concentration is at 1.7 ppm and 1.1 ppm respectively.[44] This existing 1-hour background concentration of CO is approximately 5 percent of the maximum 1-hour levels of CO allowed by the NAAQS. This existing 8-hour background concentration of CO is approximately 12 percent of the maximum 8-hour levels of CO allowed by the NAAQS.

New York State Department of Transportation (NYSDOT) Environmental Procedures Manual (EPM)[45] provides background concentrations and persistence factors for CO for each region in the State of New York. Suffolk County, located in Region 10 under NYSDOT, has one-hour and eight-hour background concentrations of 3.1 ppm and 2.2 ppm respectively. These values are relatively consistent with the background concentrations recorded at the closest CO NYSDEC monitoring sites.

For Pb, the nearest monitoring site to the subject property is "Morrisania" in Region 2. At this receptor location, the maximum quarterly average background concentration over the most recent available three years (2010-2012) is 0.006 micrograms per cubic meter ($\mu g/m^3$). This background concentration level of Pb represents approximately one-twenty fifth of the maximum lead concentration allowed by the NAAQS, well below the standard.

[44] New York State Ambient Air Quality Reports (2007 through 2012), http://www.dec.ny.gov/chemical/8536.html

[45] *New York State Environmental Procedures Manual*, New York State Department of Transportation, Environmental Analysis Bureau, January 2001.

Date: 07.00.14

LEGEND

- EPCAL Property
- NYSDEC Air Monitoring Location

Source: Town of Riverhead GIS; NYSDEC (http://www.dec.ny.gov/chemical/8540.html)

PROPOSED SUBDIVISION OF EPCAL PROPERTY
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Calverton, New York

NYSDEC Air Monitoring Locations

Figure **14**

The nearest NO_2 monitoring site with complete data is Queens College 2 in Region 2. For NO_2, the maximum annual arithmetic mean background value is 0.0216 ppm (21.6 ppb) for the most recent three years (2010–2012). The existing background concentration level of NO_2 represents approximately 40 percent of the maximum annual concentration of NO_2 allowed by the NAAQS. The 1-hour NAAQS NO_2 standard, effective in January 2010, is based upon the average of the 98th percentile over the most recent three years. The average 1-hour NO_2 background value over the most recent three years of data (2010-2012) is 0.064 ppm (64 ppb) which is 64 percent of the NAAQS.

For PM_{10}, the closest monitoring site to the subject property is Queens College 2 (Region 2). The 24-hour background value for PM_{10} over the most recent two years (2011 and 2012) is 33 $\mu g/m^3$. This existing 24-hour background concentration of PM_{10} is approximately 22 percent of the maximum 24-hour levels of PM_{10} allowed by the NAAQS.

For $PM_{2.5}$, the closest monitoring site to the subject property is Babylon (Region 1). The 24-hour $PM_{2.5}$ NAAQS is based upon the average of the 98th percentile over the most recent three years. The average 24-hour $PM_{2.5}$ background value over the most recent three years of data (2010-2012) is 23.0 µg/m3. Similarly, the average annual arithmetic mean background value for $PM_{2.5}$ over the most recent three years is 8.4 µg/m3. The existing 24-hour background concentration level of $PM_{2.5}$ represents approximately 65 percent of the maximum 24-hour concentration of $PM_{2.5}$ allowed by the NAAQS. Similarly, the existing annual background concentration level of $PM_{2.5}$ is equivalent to approximately 70 percent of the maximum $PM_{2.5}$ concentration allowed by the NAAQS for a one year period.

For ozone, the closest monitoring site to the subject property in Region 1 is Riverhead. The 8-hour ozone NAAQS is based upon the average of the annual fourth-highest daily maximum 8-hour concentrations over the most recent three years. The average 8-hour ozone background value over the most recent three years of data (2010-2012) is 0.079 ppm, exceeding the NAAQS of 0.075 ppm for an 8-hour concentration period. This exceedance is consistent with the Suffolk County designation as a non-attainment area for the 8-hour ozone. Suffolk County is a "Previous Nonattainment Area" which is no longer subject to the 1-hour ozone standard as of June 15, 2005 and, therefore, the 1-hour value is not reported. The background concentrations for CO and ozone are summarized in Table 53.

For SO_2, the closest monitoring site to the subject property is Holtsville (Region 1).

The maximum annual arithmetic mean background value over the most recent three years (2010-2012) for SO_2 is 0.004 ppm. Similarly, the 3-year average of the 99th

percentile of the daily maximum 1-hour average for SO_2 is 17.3 ppb and the highest 3 hour block average for SO_2 is 13.5 ppb. These two levels of SO_2 represent approximately 23 percent and 3 percent of the maximum concentration levels of SO_2 allowed by the NAAQS during a 1-hour period and the 3-hour period State standard, respectively.

The background concentrations for all criteria air pollutants are summarized in the table below.

Table 53 – Existing Pollutant Concentrations

Pollutant	Averaging Time	Existing Pollutant Concentration	NAAQS (NYSDEC)
Carbon Monoxide (CO)	8-Hour	2.8 ppm	9 ppm
	1-Hour	3.4 ppm	35 ppm
Lead (Pb)	Quarterly Avg.	0.006 µg/m³	0.15 µg/m³
Nitrogen Dioxide (NO_2)	Annual	0.022 ppm	0.053 (0.05) ppm
	1-Hour	64 ppb	100 ppb
Particulate Matter (PM_{10})	24-Hour	33.0 µg/m³	150 µg/m³
Particulate Matter ($PM_{2.5}$)	Annual	8.4 µg/m³	12 µg/m³
	24-Hour	23.0 µg/m³	35 µg/m³
Ozone	8-Hour	0.079 ppm	0.075 (2008 std) ppm 0.08 (1997 std) ppm
	1-Hour	No longer applicable	
Sulfur Dioxide (SO_2)	Annual	0.004 ppm	Not Applicable
	24-Hour	0.014 ppm	-- (0.5) ppm
	3-Hour	0.017 ppm	75 ppb
	1-Hour	0.006 µg/m³	0.15 µg/m³

Source: 2009, 2008 and 2007 New York State Ambient Air Quality Reports for nearest monitoring station.
http://www.dec.ny.gov/docs/air_pdf)
Notes:
Highlighted item(s) represent those NAAQS/NY standards that have been exceeded.
ppm = parts per million
ppb = parts per billion
µg/m³= micrograms per cubic meter

Greenhouse Gas Emissions

The NYSDEC has issued a policy[46] for the assessment of greenhouse gas (GHG) emissions impacts, which sets forth guidance procedures for Department staff to utilize in reviewing EISs pursuant to SEQRA and its implementing regulations.

According to the NYSDEC policy, there are six main GHGs, including carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydroflourocarbons (HFCs), perflourocarbons (PFCs), and sulfur hexafluoride (SF_6). GHG emissions are produced by a variety of sources (e.g., fuel combustion, electricity distribution, refrigerant substitutes, municipal waste), with fuel combustion accounting for approximately 89 percent of total GHG emissions in New York State (as of 2007, expressed in CO_2 equivalents).[47]

GHGs are not considered by the USEPA to be "criteria pollutants," as previously discussed above, nor are there NAAQS established for same. Similarly, the NYSDEC does not establish impact thresholds of significance for GHG emissions for evaluating proposed actions in accordance with SEQRA. However, the NYSDEC's GHG policy provides guidance for reporting GHG emissions associated with a project, where applicable, thereby enabling decision-making agencies to assess GHG emissions impacts associated with a project and to make meaningful quantitative and/or qualitative comparisons of reasonable alternatives in considering a proposed action. The NYSDEC policy also provides a sample inventory of mitigation measures that may be considered for incorporation into a project's design in order to minimize GHG emissions to the maximum extent practicable. According to the NYSDEC's *The SEQR Handbook* (3rd Edition, 2010):

> *"[a]nalysis and comparison of energy demands, including means to reduce energy use, within an EIS will enable involved agencies to identify reasonable energy conservation measures in their SEQR findings; by doing so, individual project contributions to GHG emissions can be minimized."* (Page 121)

Existing Emissions Sources

The majority of the subject property is currently undeveloped, and, therefore, no significant emissions sources are operating at the subject property under existing conditions.

▼

[46] *Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements*. New York State Department of Environmental Conservation. Office of Air, Energy and Climate. July 15, 2009.
[47] *New York State Greenhouse Gas Emissions Inventory and Forecasts for the 2009 State Energy Plan*. New York State Energy Research and Development Authority. August 06, 2009.

The NYSDEC maintains an Environmental Facilities Navigator, which is an interactive online map utility that identifies various facilities of environmental interest, including air emissions sources.[48] According to a review of the Environmental Facilities Navigator (accessed October 2011), there are no air emissions sources identified at, or proximate to (i.e., within one-half-mile of) the subject property.

The USEPA also maintains a publicly-accessible electronic database of air emissions sources within its Envirofacts Data Warehouse system, known as the Air Facility System (AFS).[49] The AFS contains compliance and permit data for stationary air pollution sources regulated by the USEPA, State, and local agencies. Based upon a review of the AFS data (accessed October 2011), several catalogued air emissions sources are identified as being within the adjacent Calverton Camelot industrial subdivision or otherwise proximate to (i.e., within one-half-mile of) the subject property, including:

Facility Name	Address (Calverton, NY)
Bonsal American	931 Burman Boulevard
Calverton Enterprise Park	4062 Grumman Boulevard
Grumman Aerospace Corporation (Small Steam Generator)	Swan Pond Road
Hess #32623	One Edwards Avenue
Reilly Woodworks	4062-701 Grumman Boulevard
Tebbens Steel LLC	800 Burman Boulevard
Toms County Automotive	4670 Middle Country Road

As noted, under the existing conditions, the subject property is minimally occupied. Accordingly, there is minimal energy use at subject property, and no direct sources of GHG emissions are operating at the site.

3.5.2 Potential Impacts

This section evaluates mobile source hotspot, air toxics, stationary source GHG, and construction emissions from the proposed action.

[48] Available at: http://www.dec.ny.gov/imsmaps/facilities/viewer.htm.

[49] Available at http://www.epa.gov/enviro/facts/topicsearch.html#air.

Microscale (Local) Analysis Methodology

The mobile source modeling followed the USEPA's hotspot modeling guidelines[50] and the NYSDOT's Project Environmental Guidelines[51]. The traffic data was evaluated and the intersections that are currently the most congested and expected to experience an increase in project-generated traffic were identified. Emission factors were obtained from NYSDOT and were combined with the traffic data in USEPA's mobile source models to calculate CO worst-case concentrations. The worst-case CO concentrations were added to the background levels to determine if the proposed project's concentrations complied with the NAAQS.

The microscale analysis calculates maximum 1-hour and 8-hour CO concentrations in the project area during the peak CO season (winter). The USEPA's computer model CAL3QHC Version 2[52] was used to predict CO concentrations for each intersection. Receptor locations were selected near the congested intersections based upon areas where the public has access. The intersection receptors were placed at the edge of the roadway, but not closer than 10 feet (3 meters) from the nearest travel lane, as required by USEPA. The results calculated at these receptor locations represent the highest concentrations at each intersection. Receptor locations farther away from the intersections will have lower concentrations because of the dispersion characteristics. The receptor locations that are along other roadways in the study area are also expected to have lower concentrations than the receptor locations at the intersection. The emission rates for vehicles traveling along these roadways are much lower than the emission rates for vehicles queuing at intersections.

The air quality study evaluates the air quality impacts of the vehicular traffic associated with the proposed Project on the environment. The vehicle traffic represents the worst-case conditions, which includes the increase in traffic volumes due to specific projects proposed for the study area, projected traffic growth over time, and future traffic associated with the redevelopment. The air quality study utilizes traffic and emissions data for future No-Build and Build Conditions. These data are incorporated into the USEPA air quality models to generate air pollutant concentrations that demonstrate whether or not the proposed development would have air quality impacts. The scenarios modeled include:

[50] *Guideline for Modeling Carbon Monoxide From Roadway Intersections*, US Environmental Protection Agency, Office of Air Quality Planning and Standards, Technical Support Division; Research Triangle Park, NC; EPA-454/ R-92-006 (Revised); September 1995

[51] Project Environmental Guidelines, New York State Department of Transportation dated January 2001 with Section 8 Air Quality Models updated in December 2012

[52] *User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections*, US Environmental Protection Agency, Office of Air Quality Planning and Standards, Technical Support Division; Research Triangle Park, NC; EPA-454/R-92-005; November 1992

- **Existing Conditions:** reflects existing traffic volumes in the traffic study area.
- **Design Year (2035) No-Build Condition:** reflects background growth associated with other planned projects and general background regional growth.
- **Design Year (2035) Build Conditions:** assuming the Design Year (2035) No-Build Condition background growth with the proposed project fully constructed and in operation.

The NYSDOT's guidelines require that the air quality study be completed for all No-Build and Build alternatives, which differ based on roadway geometry, traffic patterns or other factors affecting air quality in the area. These data are incorporated into the USEPA air quality models to generate emissions estimates that demonstrate whether or not the proposed Project will have air quality impacts.

Emission Rates

All the vehicle emission factors used in the microscale analysis were obtained using the USEPA's MOVES emissions model. MOVES calculates CO emission factors from motor vehicles for free-flow conditions in grams per vehicle-mile and for idling in grams per vehicle hour. The emission rates used in this study were developed with the assistance of NYSDOT. The emission factors for the microscale analysis were based upon a peak hour on a typical weekday in the winter for Suffolk County. The CO emission factors were calculated for idle and free-flow conditions based upon roadway travel speeds. An example of the CO emission factors are presented in the table below.

Table 54 – Carbon Monoxide Emission Factors (ppm)

Free-flow at	Year 2013	Year 2035
Idle	37.09	9.82
30	5.34	2.93
35	4.87	2.69
30	4.52	2.49
45	4.34	2.41
50	4.24	2.38
55	4.23	2.40

Traffic Data

The air quality study uses traffic data (volumes, delays, and speeds) developed for each analysis condition based upon the traffic analysis. The traffic volumes and level-of-service for the study area were evaluated and based on the ranking of the level-of-service and traffic volumes, four intersections were selected for analysis. These intersections included:

- Route 25 and Edwards Avenue
- Route 25 and Route 25A
- Route 25 and Burman Boulevard
- Route 25 and Wading River Manor Road.

Microscale Results

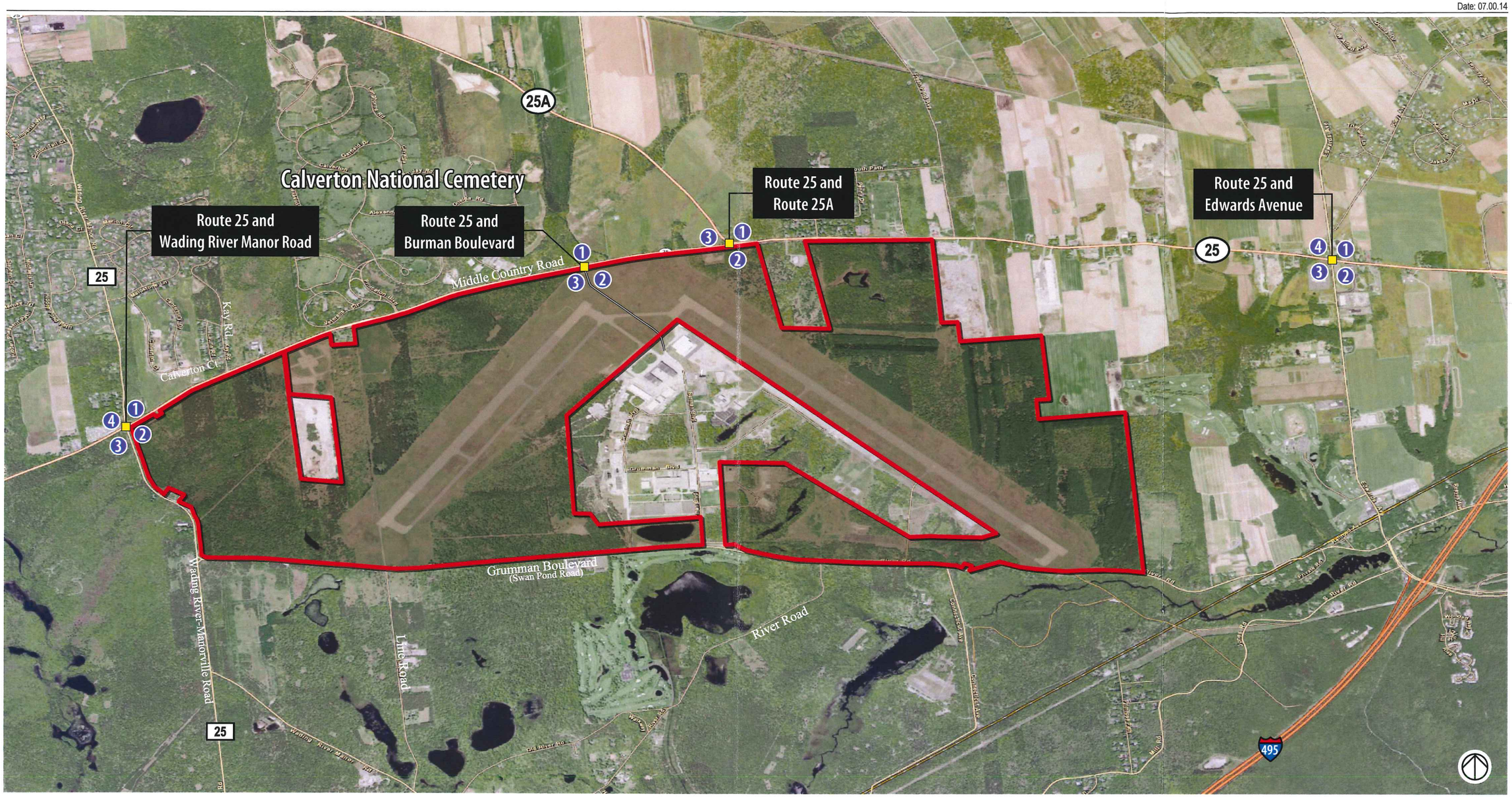
The microscale analysis utilizes the traffic (volumes and speeds) and emission factor data for the 2013 Existing and 2035 No-Build, Build Conditions and Build with Mitigation Conditions. These data were incorporated into air quality models to demonstrate that the proposed development will meet the CAAA and the New York State Implementation Plan (SIP) criteria. The CAAA require that a proposed projects not cause any new violation of the NAAQS for pollutants of concern, or increase the frequency or severity of any existing violations, or delay attainment of any NAAQS.

The objective of the microscale analysis was to evaluate the CO concentrations at congested intersections in the study area. The existing and new intersections in the study area were ranked based on traffic volumes and level of service under the Build Condition. Typically, only the most congested intersections are modeled for CO emissions. The intersections in the study area were ranked based on traffic volumes and level of service.

Four intersections including one site driveway were selected to be modeled for the microscale analysis based on their level of service and traffic volumes. It is assumed that if none of these intersections show an exceedance of the NAAQS, then none of the other intersections in the study area will show an exceedance either. This is based on the assumption that the lower traffic volumes and delays at the other intersections will have lower air quality impacts. Figure 15 presents the air quality study intersections and the corresponding receptor locations.

The microscale analysis calculates maximum 1-hour and 8-hour CO concentrations in the project area during the peak CO season (winter). The USEPA's computer model CAL3QHC Version 2 was used to predict concentrations for each intersection. CAL3QHC predicts concentrations from vehicles in travel lanes and queues at intersections based upon analysis contained in the traffic analysis.

Date: 07.00.14



LEGEND

EPCAL Property

Receptor Location

0 1,550 3,100 6,200 Feet

Source: Town of Riverhead GIS, VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Microscale Analysis Locations

Figure **15**

The CO concentrations were calculated directly using the USEPA computer model, with evening peak hour traffic and emission data. The one-hour CO concentration included a background concentration of 3.1 ppm, while the eight-hour CO concentrations included a background concentration of 2.2 ppm and a persistence factor of 0.70 that was applied to the one-hour CO concentrations. CO persistence factor was also obtained from the NYSDOT EPM's Table 8, CO Background and Persistence Factors for NYSDOT Regions (Region 10: Suffolk County). The results of the microscale analysis under the existing conditions are shown in Table 55.

Table 55 – Maximum 1-Hour and 8-Hour Carbon Monoxide Concentrations

Intersections	Receptor[2]		Existing Carbon Monoxide (CO)[1] (ppm)		2035 No-Build Carbon Monoxide (CO)[1] (ppm)		2035 Build Carbon Monoxide (CO)[1] (ppm)	
			1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Route 25/ Edwards Avenue	1	NE	3.5	2.5	3.4	2.4	3.5	2.5
	2	SE	3.5	2.5	3.4	2.4	3.5	2.5
	3	SW	3.6	2.6	3.3	2.3	3.6	2.6
	4	NW	3.6	2.6	3.3	2.3	3.5	2.5
Route 25/ Route 25A	1	NE	3.6	2.6	3.4	2.4	3.6	2.6
	2	S	3.5	2.5	3.4	2.4	3.6	2.6
	3	NW	3.5	2.5	3.4	2.4	3.5	2.5
Route 25/ Burman Boulevard	1	N	3.4	2.4	3.3	2.3	3.5	2.5
	2	SE	3.3	2.3	3.3	2.3	3.5	2.5
	3	SW	3.3	2.3	3.3	2.3	3.5	2.5
Route 25/ Wading River Manor Road	1	NE	3.5	2.5	3.4	2.4	3.6	2.6
	2	SE	3.6	2.6	3.3	2.3	3.5	2.5
	3	SW	3.5	2.5	3.3	2.3	3.5	2.5
	4	NW	3.6	2.6	3.4	2.4	3.6	2.6

1 One-hour CO concentration includes a 3.1 ppm background concentration. Eight-hour concentrations include a 2.2 ppm background concentration and a persistence factor of 0.7. The one-hour and eight-hour NAAQS for CO is 35 ppm and 9 ppm, respectively.

2 The concentrations are expressed in parts per million (ppm) by volume.

Mobile Source Air Toxics

The air quality evaluation is study also evaluates the potential for impacts due to air toxics. The Federal Highway Administration (FHWA) has developed guidance[53] on how to analyze mobile source air toxics (MSAT) for National Environmental Policy Act (NEPA) documents. The proposed project has been determined to generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special MSAT concerns. As such, the proposed Project does not result in changes in vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the proposed development from that of the No-Build alternative. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Controlling air toxic emissions became a national priority with the passage of the CAAA, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list in its latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System (IRIS) (http://www.epa.gov/ncea/iris/index.html). In addition, the USEPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1, 3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future USEPA rules.

The 2007 USEPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Based on an FHWA analysis using USEPA's MOVES2010b model, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

A quantitative MSAT analysis is not required for the proposed action because it is not a project of air quality concern and does not meet FHWA's criteria. The proposed development also would not create or significantly alter any major intermodal freight

[53] Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA, Federal Highway Administration, dated December 6, 2012.

facility; it does not create new or add significant capacity to any roadway with an average annual daily traffic (AADT) in the range of 140,000 to 150,000, or greater; and it is not located in a populated area with vulnerable populations. The proposed project does not meet any of the criteria for a quantitative analysis for MSAT. Table 56 provides a snapshot of the traffic volumes associated with the proposed project along the study area roadways. Under the 2035 Build Condition, MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels.

Table 56 – Traffic Volume Comparison (between No-Build and Build Conditions)

	2035 (Evening Peak Hour: VPH)[1]		
Intersections	No-Build	Build	Difference
Route 25 and Edwards Avenue	3,476	4,096	620
Route 25 and Wading River Manor Road	2,605	3,080	475
Route 25 and Burman Boulevard	2,714	3,787	1,073
Route 25 and Route 25A	3,536	4,609	1,073

[1] The Evening Peak hour was used to provide an example of the differences between No-Build and Build conditions. VPH= vehicles per hour.

Greenhouse Gas Emissions

Future development will be designed to be energy efficient and will meet or exceed the New York State Energy Conservation Construction Code, which requires the use of energy efficient products in all new and renovated construction. In addition to the stationary source mitigation measures that are anticipated to be introduced as part of the project, the mobile source mitigation measures discussed above in the microscale analysis and the Transportation section of this DSGEIS (Section 3.4.3) including operational and physical roadway improvements, will contribute to minimizing greenhouse emissions.

The design of the proposed project is in the early planning stages and the specific building greenhouse emissions have yet to be developed. During the proposed project's design phase, the following greenhouse gas mitigation measures will be considered:

- Use of highly-reflective (high albedo) roofing materials
- Use of green roofs
- Maximization of interior daylighting

- Glazing of windows
- Installation of high-efficiency heating, ventilation and air conditioning systems
- Incorporating additional insulation for the roves and walls
- Incorporating motion sensors and lighting and climate control
- Use of efficient, directed exterior lighting
- Reducing overall energy demand through appropriate design and sizing of systems
- Supplementation with self-generated energy (e.g., on-site renewable energy sources)
- Tracking of energy performance of building and developing a strategy to maintain efficiency.

As noted, the proposed project is in the early design phase. If any individual emissions sources would be established in the future, the source would be required to comply with relevant air permitting regulations to ensure that no significant adverse impact to air quality would occur.

Construction Air Quality Impacts

Construction activities associated with the proposed action could result in a temporary increase in air quality impacts. The primary source of potential emissions is from fugitive dust resulting from construction operations (e.g., clearing, grading). Fugitive dust consists of soil particles that become airborne when disturbed by heavy equipment operation or through wind erosion of exposed soil after groundcover (e.g., lawn, pavement) is removed. To minimize fugitive dust emissions, a water truck will be utilized (as needed) during construction activities where land surfaces would be disturbed. This construction–related air quality impacts (i.e. fugitive dust) would be of relatively short duration. Additional construction mitigation measures will include ensuring that construction vehicles and equipment will include and properly maintain their emission control equipment and, where appropriate, vehicles will reduce idling on-site.

Overall, air quality in the area of the EPCAL Property would not be expected to be substantially affected by redevelopment because of emission control procedures and the temporary nature of construction activities. Emissions from the operation of construction machinery (CO, NO_x, PM, VOCs, and GHGs) are short-term and not generally considered substantial. With the implementation of the various mitigation measures, described in Section 3.5.3, to minimize construction-related air quality impacts, no significant t adverse impacts would be expected.

Summary of Findings

The air quality evaluation demonstrated that the development of the proposed project would not result in adverse air quality impacts. The air quality analysis evaluates existing conditions, the local air quality impacts from the proposed action, construction activity, and air toxics.

The microscale analysis evaluated site-specific impacts from the vehicles traveling through congested intersections in the study area. This analysis demonstrates that all existing and future carbon monoxide concentrations are below the NAAQS. Specifically,

- All the one-hour CO concentrations ranged from 3.3 to 3.6 ppm and are well below the CO NAAQS of 35 ppm.
- All the eight-hour CO concentrations ranged from 2.3 to 2.6 ppm and are below the CO NAAQS of 9 ppm.

The air quality study demonstrates that the proposed project conforms to the CAAA and the SIP because:

- No violation of the NAAQS would be expected to be created.
- No increase in the frequency or severity of any existing violations (none of which are related to this development) would be anticipated to occur.
- No delay in attainment of any NAAQS would be expected to result due to the implementation of the proposed action.

Based upon the analysis presented herein and the conclusions summarized above, no significant adverse air quality impacts from the proposed development are anticipated.

3.5.3 Proposed Mitigation

The proposed mitigation with respect to air quality impacts during the construction period are as follows:

- During construction, emission controls for construction vehicles emissions will include, as appropriate, proper maintenance of all motor vehicles, machinery, and equipment associated with construction activities, such as, the maintenance of manufacturer's muffler equipment or other regulatory-required emissions control devices.

- Ensure that construction vehicles and equipment will include and properly maintain their emission control equipment and, where appropriate, vehicles will reduce idling on-site.

- Appropriate methods of dust control would be determined by the surfaces affected (i.e. roadways or disturbed areas) and would include, as necessary, the application of water, the use of stone in construction entrances and roads, and temporary and permanent vegetative cover.

The proposed project is being designed to minimize air quality impacts. The following measures will assist in minimizing such impacts.

- The incorporation of the proposed operational and physical roadway improvements, as detailed in Section 3.4.3 of this DSGEIS, will assist in reducing air quality impacts associated with mobile sources.

- Future development will be designed to meet or exceed the New York State Energy Conservation Construction Code, which requires the use of energy efficient products in all new and renovated construction.

- As indicated above, with respect to stationary sources, during the proposed project's design phase, the following greenhouse gas mitigation measures will be considered:
  - Use of highly-reflective (high albedo) roofing materials
  - Use of green roofs
  - Maximization of interior daylighting
  - Glazing of windows
  - Installation of high-efficiency heating, ventilation and air conditioning systems
  - Incorporating additional insulation for the roves and walls
  - Incorporating motion sensors and lighting and climate control
  - Use of efficient, directed exterior lighting
  - Reducing overall energy demand through appropriate design and sizing of systems
  - Supplementation with self-generated energy (e.g., on-site renewable energy sources)
  - Tracking of energy performance of building and developing a strategy to maintain efficiency.

3.6 Noise

3.6.1 Existing Conditions

Background

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, work, or recreation. The individual human response to noise is subject to considerable variability since there are many emotional and physical factors that contribute to the differences in reaction to noise.

Sound (noise) is described in terms of loudness, frequency, and duration. Loudness is the sound pressure level measured on a logarithmic scale in units of decibels (dB). For community noise impact assessment, sound level frequency characteristics are based upon human hearing, using an A-weighted [dB(A)] frequency filter. The A-weighted filter is used because it approximates the way humans hear sound. Table 57 presents a list of common outdoor and indoor sound levels. The duration characteristics of sound account for the time-varying nature of sound sources.

Sound level data can be presented in statistical terms to help describe the noise environment. A near infinite variation in sound levels (various intensities and temporal patterns) can be combined into the same value. The equivalent sound level, or L_{eq}, is used as the monitoring and modeled sound level descriptor. The L_{eq} averages the background sound levels with short-term transient sound levels and provides a uniform method for comparing sound levels that vary over time.

Table 57 – Common Outdoor and Indoor Sound Levels

Outdoor Sound Levels	Sound Pressure (μPa)*	Sound Level dB(A)**	Indoor Sound Levels
Jet Over-Flight at 300 m	6,324,555	110	Rock Band at 5 m
		105	
Gas Lawn Mower at 1 m	2,000,000	100	Inside New York Subway Train
		95	
Diesel Truck at 15 m	632,456	90	Food Blender at 1 m
		85	
Noisy Urban Area—Daytime	200,000	80	Garbage Disposal at 1 m
		75	Shouting at 1 m
Gas Lawn Mower at 30 m	63,246	70	Vacuum Cleaner at 3 m
		65	Normal Speech at 1 m
Suburban Commercial Area	20,000	60	
		55	Quiet Conversation at 1 m
Quiet Urban Area—Daytime	6,325	50	Dishwasher Next Room
		45	
Quiet Urban Area—Nighttime	2,000	40	Empty Theater or Library
		35	
Quiet Suburb—Nighttime	632	30	Quiet Bedroom at Night
		25	Empty Concert Hall
Quiet Rural Area—Nighttime	200	20	
		15	Broadcast and Recording Studios
Rustling Leaves	63	10	
		5	

Source: *Highway Noise Fundamentals.* Federal Highway Administration, September 1980.

* μPA – MicroPascals, which describe pressure. The pressure level is what sound level monitors measure.

** dB(A) – A-weighted decibels, which describe pressure logarithmically with respect to 20 μPa (the reference pressure level).

m=meters

The following general relationships exist between noise levels and human perception[54]:

- A one- or two-dB(A) increase is not perceptible to the average person
- A three-dB(A) increase is a doubling of acoustic energy, but is just barely perceptible to the human ear
- A 10-dB(A) increase is a tenfold increase in acoustic energy, but is perceived as a doubling in loudness to the average person

[54] Source: Highway Traffic Noise: Analysis and Abatement Guidance, June 2010 (Revised December 2011), U.S. Department of Transportation Federal Highway Administration.

FHWA and NYSDOT Impact Criteria

Implementation of the proposed action will result in both vehicular traffic and building operation noise sources. The vehicular traffic noise sources will be compared to the Federal Highway Administration (FHWA) and the NYSDOT noise impact criteria and the building's mechanical equipment and operations will be compared to the Town of Riverhead's noise control criteria.

Traffic noise can adversely affect human activities, such as communication. The FHWA has established Noise Abatement Criteria (NAC) to help protect the public health and welfare from excessive vehicular traffic noise. Recognizing that different areas are sensitive to noise in different ways, the NAC varies according to land use. The NAC are described in Table 58.

Table 58 – Noise Abatement Criteria: One-Hour, A-Weighted Sound Levels in Decibels

Activity Category	$L_{eq}(h)$*	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purposes.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise.
* $L_{eq}(h)$ is energy averaged, one-hour, A-weighted sound level in decibels, dB(A).

The NYSDOT has developed noise impact criteria that establish noise thresholds deemed to result in adverse impacts for transportation (motor vehicles) and non-highway projects (building mechanical equipment). It has also established technical procedures for evaluating sound levels and potential impacts from proposed projects. The NYSDOT guidelines, presented in Table 59, set forth appropriate sound levels based upon the contemplated land uses for the overall subject property.

Table 59 – NYSDOT Noise Impact Criteria

Activity Category	Noise Impact Criteria
Overall Sound Level	Approach within one decibel of NAC.
Transportation Projects	Project increases of six (6) or more decibels
Non-highway Projects	Project increases of three (3) or more decibels

Source: New York State Department of Transportation Environmental Procedure Manual, Chapter 3.1 August 1998.

The NYSDOT endorses the FHWA's procedures and considers adverse noise impacts to occur when existing or future sound levels approach (within one dB(A) or exceed the NAC, or when future sound levels exceed the highest existing sound levels by six dB(A) or more.[55] For non-highway projects (i.e. building mechanical equipment), adverse noise impacts are considered to occur when the future sound levels exceed the existing sound levels by three dB(A) or more.

Town of Riverhead Noise Control Code

The Town of Riverhead has adopted a noise control ordinance, which regulates noise levels from various sources. Chapter 81 of the Town Code states that:

> *"[n]o person shall cause, suffer, allow or permit the operation of any source of sound on a particular category of property or any public land or right-of-way in such a manner as to create a sound level that exceeds the particular sound level limits set forth in Table I when measured at or within the real property line of the receiving property, except those acts specifically prohibited in this Chapter for which no measurement of sound is required." (§81-4)*

The Town's maximum permissible sound pressure level is presented in Table 60, below:

[55] Source: Highway Traffic Noise: Analysis and Abatement Guidance, June 2010 (Revised December 2011), U.S. Department of Transportation Federal Highway Administration.

Table 60 – Town of Riverhead Noise Criteria: Maximum Permissible A-Weighted Sound Pressure Levels by Receiving Property Category, dB(A)

	Receiving Property Category					
	Another Apartment Within Multi-dwelling Building		Residential		Commercial	Industrial
Sound Source Property Category	7:00 AM to 8:00 PM	8:00 PM to 7:00 AM	7:00 AM to 8:00 PM	8:00 PM to 7:00 AM	All Times	All Times
Apartment within multi-dwelling building	50	45	65	50	65	75
Residential	--	--	65	50	65	75
Commercial or public lands or rights-of-way Industrial	--	--	65	50	65	75
Industrial	--	--	65	50	65	75

Source: Chapter 81, Table I of the Code of the Town of Riverhead

Existing Noise Levels

Currently, the 2,323.9±-acre subject property is mostly unoccupied; there are no noticeable noise sources associated with on-site operations. However, the subject property was developed with uses associated with former U.S. Navy and Grumman operation's, including runways, which high sound levels throughout the study area. If the site were maintained in the manner that it was originally developed, the study area would experience high sound levels from related airport operations and an active use of airport runways (see discussion of *Military Jet Noise Levels*, below).

The noise analysis evaluated the current existing noise levels based upon a noise monitoring program. The purpose of the noise monitoring was to help quantify the existing sound levels and to provide data to validate the Traffic Noise Model (TNM), which was used to calculate the existing sound levels at all the receptor locations.

Noise monitoring was conducted at three monitoring locations throughout the subject property, including:

- one location at the northern property boundary at the central portion of the site (ML-1)
- one location at the northern property boundary at the western portion of the site (ML-2)
- one location at the central portion of the site, west of the industrial subdivision (ML-3).

The monitoring locations are identified on Figure 16 Sound levels were measured on October 15, 2011 and October 17, 2011 using a Larson Davis 824 Type I Sound Level Meter (SLM) at each location during three peak sound level periods. The three peak sound level periods were chosen to coincide with peak roadway traffic hours (i.e., Weekday AM, Weekday PM, and Saturday Midday).

The existing sound levels at the ML-1, ML-2, and ML-3 monitoring locations, during each of the three study periods, are presented in Table 61. Measurements are presented in terms of the hourly average and maximum sound levels measured during each monitoring period.

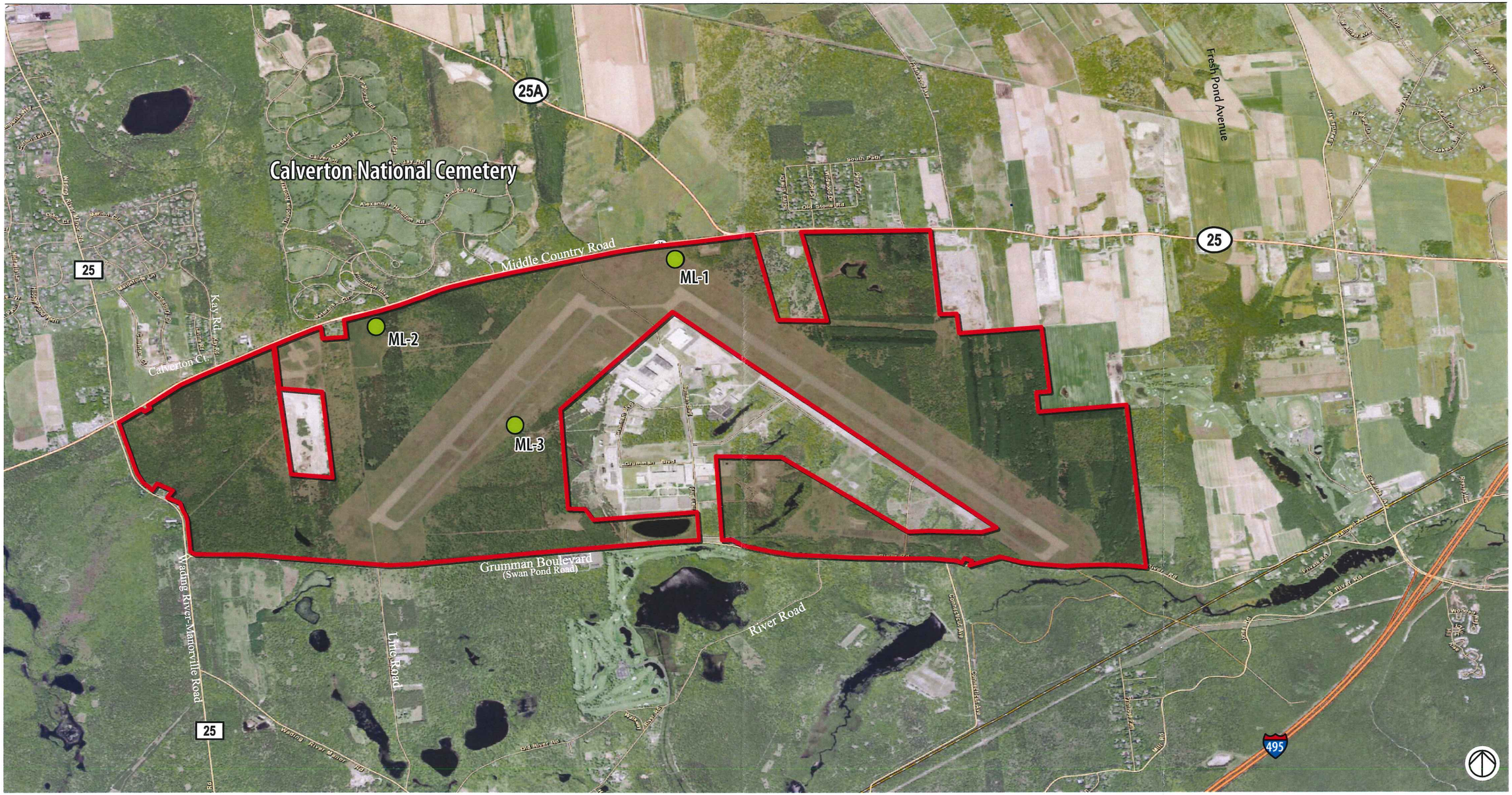
Table 61 – Measured Sound Levels, dB(A)

Location	Date	Time Start	L_{eq}	L_{max}
ML-1	11/11/11	7:00 AM – 8:00 AM	53	63
ML-1	11/11/11	4:00 PM – 5:00 PM	50	59
ML-1	11/5/11	12:00 Noon – 1:00 PM	55	76
ML-2	11/11/11	8:00 AM – 9:00 AM	54	61
ML-2	11/11/11	4:00 PM – 5:00 PM	55	61
ML-2	11/5/11	1:00 PM -2:00 PM	51	62
ML-3	11/11/11	8:00 AM – 9:00 AM	51	61
ML-3	11/11/11	3:00 PM -4:00 PM	47	72
ML-3	11/5/11	1:00 PM – 2:00 PM	46	66

L_{eq} – hourly average sound level.
L_{max} – maximum sound level.

As described in Table 61, the L_{eq} values at all monitoring locations, during all peak periods monitored, range between 46.3 dB(A) and 54.5 dB(A). The L_{eq} sound levels are below the lowest NAC threshold [57 dB(A)] established by the FHWA for sensitive land uses (e.g., Activity Category "A" in Table 58).

Date: 07.00.14



LEGEND

EPCAL Property

Noise Monitoring Location

Source: Town of Riverhead GIS, VHB Noise Monitoring Survey, October 15 and 17, 2011

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Noise Monitoring Locations

Figure **16**

Military Jet Noise Levels

While jet aircraft activity no longer occurs at the EPCAL Property, it is important to understand the sound levels that use to occur when military jets were operating. The *1997 FEIS* prepared by the US Navy evaluated jet sound levels. The FEIS presented the jet operation sound levels in Day-Night Average Sound Level (L_{dn}), which is currently the officially accepted metric of the Federal Aviation Administration (FAA). In general, residential land uses are not normally compatible with outdoor L_{dn} sound levels above 65 dB.

The L_{dn} sound level is the average of aircraft sound levels at a location over a complete 24-hour period. A ten-decibel "penalty" is added to those noise events which take place between 10:00 pm and 7:00 am (local time). This ten-decibel adjustment represents the added intrusiveness of sounds that occur during normal sleeping hours.

The flight tracks of the military jets operating that were developed in the FEIS analysis indicated that there were 242 flights per day that resulted in L_{dn} sound level contours that ranged from 65 dB through 85 dB over most of the EPCAL Property, as well as, a small area of approximately ten acres south of Grumman Boulevard. Based upon the noise monitoring data shown in Table 61, the elimination of the military jets operating at the subject property has resulted in a substantial reduction L_{dn} sound level contours that now range from 44 dB to 53 dB.

3.6.2 Potential Impacts

The noise study evaluated the mobile and stationary source sound levels associated with the proposed project to determine the potential change in sound levels at receptor locations on and in the vicinity of the EPCAL Property. The future sound levels included cumulative impacts from traffic growth over time and increases in traffic from the proposed project and other significant projects in the study area. The future sound levels were calculated following procedures and guidance of the FHWA and NYSDOT. The results, as provided below, demonstrate that the proposed project complies the NYSDOT's and Town of Riverhead's (Town's) noise policies. Supplemental noise analysis data are found in Appendix M of this DSGEIS.

Methodology

The noise analysis evaluated sound levels associated with vehicle traffic, building rooftop mechanical equipment, and building operation from the proposed action. The analysis included noise monitoring and modeling of existing sound levels and project-generated sound levels. The 2013 Existing and 2035 Build Conditions sound levels were modeled for each receptor location. The FHWA's Traffic Noise

Model (TNM) was used to model noise associated with vehicular traffic on both existing receptor locations and proposed sensitive receptor locations on the project site. The specifics of the building rooftop mechanical equipment and building operations are not known at this stage of the planning process. The sound levels associated with the building rooftop mechanical equipment and the building operations will be designed to meet the Town and NYSDOT noise impact criteria at the internal receptor locations.

Motor Vehicle Traffic Related Noise

The traffic noise sources were evaluated following the NYSDOT's and the FHWA's noise assessment procedures. These procedures require the use of the TNM model to evaluate vehicle traffic. The TNM model allows the user to calculate traffic sound levels at receptor locations by inputting peak hour traffic volumes, vehicle mix, vehicle speeds, buildings, and roadway and receptor geometry. Based on inputs provided, TNM is able to calculate sound levels emitted from various vehicles types, along different types of roadway conditions, and through changing terrain using the properties of sound propagation. The traffic study projected peak hour volumes based upon the development program.

The TNM noise model was used to calculate both existing and future (2035) sound levels at each of the receptor locations within the study area. These sound levels represent the loudest noise period, which generally occurs under traffic conditions that consist of high volume traveling at the speed limits. Travel speeds are lower during the peak hour periods. Therefore, the noise model assumed 80 percent of the peak hour traffic occurs during the loudest noise period. The results of the TNM modeling were compared to the NYSDOT impact criteria for highway projects. The TNM model also calculated a 66 dB(A) noise contour line on the project site to see if any project receptor locations would exceed the noise impact criteria.

Rooftop Mechanical Equipment Noise

The Town will require that rooftop mechanical equipment will be identified and appropriate mitigation measures incorporated (e.g., screening, setbacks) during the design process to ensure that the sound levels from such equipment will not exceed the Town's noise impact criteria. As the proposed project moves ahead in the design process, the rooftop mechanical equipment will be selected using the manufacturers' reference sound level data to calculate sound levels at the surrounding receptor locations. These sound level projections will be adjusted to incorporate all proposed mitigation measures deemed necessary to meet the Town and NYSDOT noise impact criteria.

Results

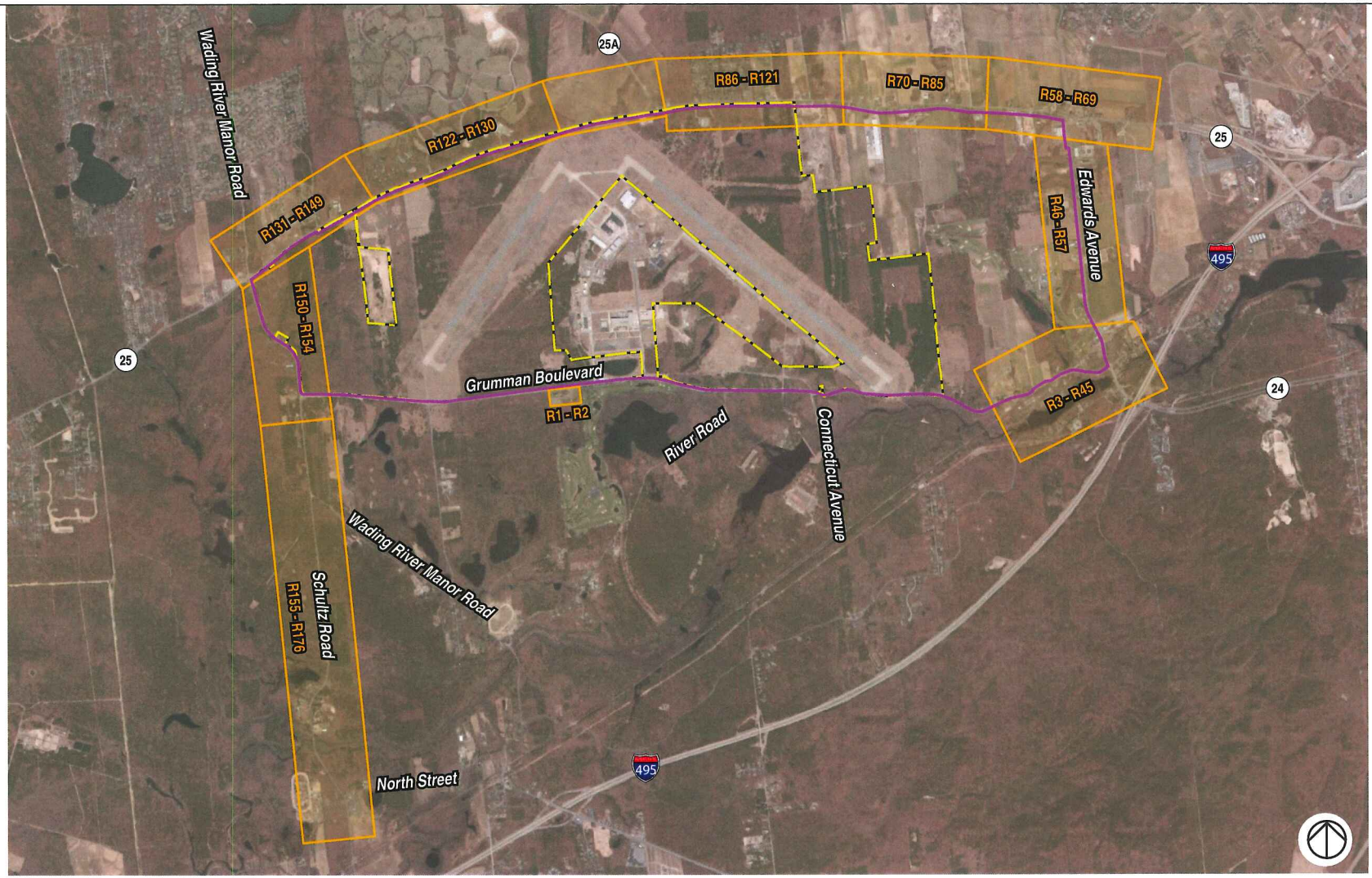
The noise analysis evaluated 176 receptor locations comprising residential and commercial development, a church, and a cemetery. Due to their proximity to the roadways, these receptor locations are expected to experience the greatest sound level increases associated with traffic along the major roadways within the study area. Receptor locations located further away will experience lower sound levels. Figure 17 through Figure 20 presents the receptor locations used for this noise analysis.

Under the 2013 Existing Condition, sound levels at the receptor locations during weekday daytime ranged from approximately 38 dB(A) to 71 dB(A). Under the existing conditions, 21 receptor locations currently experience sound levels that exceed or equal the NYSDOT highway Overall Sound Level criterion (see Table 59). Based upon the analysis performed, under the 2035 Build Condition, an additional eight receptor locations would be expected to exceed this criterion. The sound levels would range from 44 dB(A) to 74 dB(A) in the 2035 Build Condition.

In addition, 33 receptor locations would experience sound level increases exceeding the NYSDOT allowable increase of six dB(A) (see Table 59 under Transportation Projects), with the impacted receptor locations experiencing between a six decibel and seven decibel increase. There would be no increase of over seven decibels between the existing condition and the 2035 Build Condition.

It is important to understand, however, that this analysis includes the Theoretical Mixed-Use Development Program (described in Section 2.5 of this DSGEIS) with the uses identified therein. As explained in that section, it is not possible to determine the actual uses that will be developed or the specific magnitude of same. Accordingly, if less intensive uses are developed (and less traffic generated), there would be lesser noise impacts.

Date: 07.00.14



Source: VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Receptor Location (1)

Figure
17

Date: 07.00.14

LEGEND

- 66 dB(A) Noise Contour
- Property Boundary
- Receptor Area
- R# Receptor Location

0 300 600 Feet

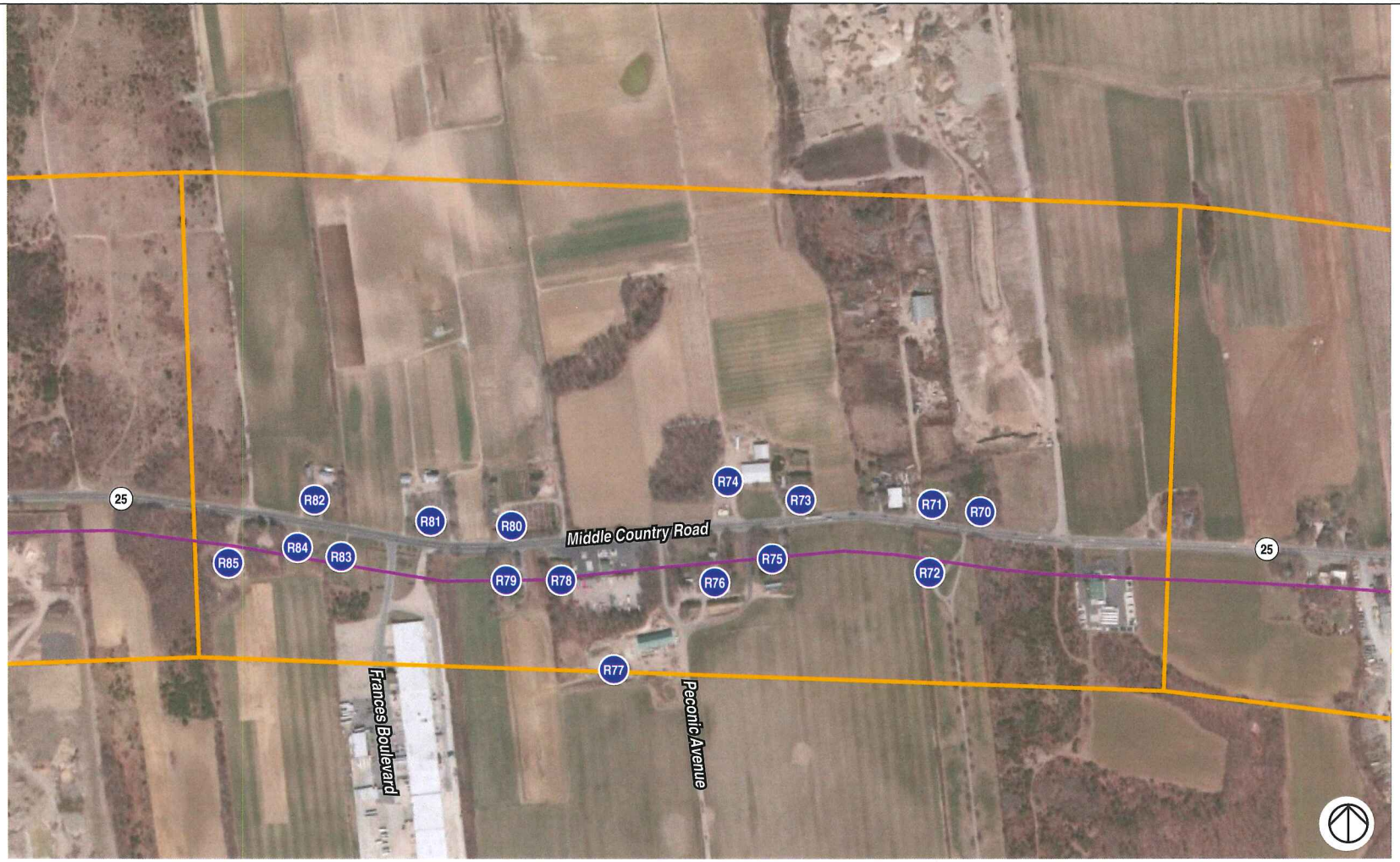
Source: VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Receptor Locations (2)

Figure **18**

Date: 07.00.14



LEGEND

- 66 dB(A) Noise Contour
- Property Boundary
- Receptor Area
- Receptor Location (R#)

0 300 600 Feet

Source: VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Receptor Locations (3)

Figure **19**

Date: 07.00.14

Source: VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Receptor Locations (4)

Figure
20

Mobile Sources

During the daytime, the dominant noise source under both 2013 Existing and 2035 Build Conditions is from vehicles traveling on the major roadways in the study area, such as NY 25, Wading River Manor Road, and Grumman Boulevard. The noise analysis results for mobile sources contained in Table 62 demonstrate that under 2013 Existing Condition, the receptor locations experience sound levels ranging from 38.3 dB(A) to 70.5 dB(A), which exceeds the NYSDOT noise impact criteria. All currently impacted receptor locations, a total of 21, are residential land uses.

Under 2035 Build Condition, the receptor locations will experience sound levels ranging from 43.9 dB(A) to 73.8 dB(A). An additional eight receptor locations will exceed the NYSDOT Overall Sound Level impact criterion in 2035. Four of these receptor locations are residential uses and the other four receptor locations are commercial uses. In addition, a total of 33 receptor locations will experience sound level increases above the NYSDOT impact criteria of six dB(A), with impacted receptor locations experiencing between six decibels and seven decibels.

As explained above and in Section 2.5 of this DSGEIS, the mix of uses set forth in the Theoretical Mixed-Use Development Program may not be the uses that are ultimately developed, since no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. The maximum development limit will be a function of the actual trip generation associated with the uses developed, as described in Section 3.4.2. Therefore, since noise impacts are affected by the amount of traffic, if less traffic is generated, there may be fewer receptors that would be impacted by traffic noise.

Table 62 – Traffic Noise Model Results

Receptor Location[1]	Land Use	2013 Existing	2035 Build	Change	NYSDOT Criteria	
					Sound Level	Change
Receptor 1	Commercial	53.0	59.1	**6.1**	71	+6
Receptor 2	Commercial	55.0	61.1	**6.1**	71	+6
Receptor 3	Residential	55.4	60.1	4.7	66	+6
Receptor 4	Residential	49.3	53.9	4.6	66	+6
Receptor 5	Residential	53.7	58.4	4.7	66	+6
Receptor 6	Residential	59.4	64.1	4.7	66	+6
Receptor 7	Residential	56.3	60.9	4.6	66	+6
Receptor 8	Residential	57.1	61.8	4.7	66	+6
Receptor 9	Residential	56.7	61.4	4.7	66	+6
Receptor 10	Residential	44.7	49.2	4.5	66	+6
Receptor 11	Residential	39.9	44.1	4.2	66	+6
Receptor 12	Residential	39.7	43.9	4.2	66	+6
Receptor 13	Residential	40.6	44.8	4.2	66	+6
Receptor 14	Residential	40.5	44.7	4.2	66	+6
Receptor 15	Residential	40.9	45.1	4.2	66	+6
Receptor 16	Residential	41.1	45.3	4.2	66	+6
Receptor 17	Residential	41.9	46.1	4.2	66	+6

Receptor Location[1]	Land Use	2013 Existing	2035 Build	Change	NYSDOT Criteria	
					Sound Level	Change
Receptor 18	Residential	42.0	46.2	4.2	66	+6
Receptor 19	Residential	48.2	52.6	4.4	66	+6
Receptor 20	Residential	44.7	49.0	4.3	66	+6
Receptor 21	Residential	56.6	61.3	4.7	66	+6
Receptor 22	Residential	52.7	57.3	4.6	66	+6
Receptor 24	Residential	52.4	57.0	4.6	66	+6
Receptor 25	Residential	55.1	59.7	4.6	66	+6
Receptor 26	Residential	48.1	52.2	4.1	66	+6
Receptor 27	Residential	57.4	62.0	4.6	66	+6
Receptor 28	Residential	57.7	62.1	4.4	66	+6
Receptor 29	Residential	57.0	61.3	4.3	66	+6
Receptor 30	Residential	52.0	55.5	3.5	66	+6
Receptor 31	Residential	57.9	61.2	3.3	66	+6
Receptor 32	Residential	54.3	57.6	3.3	66	+6
Receptor 33	Residential	57.0	60.2	3.2	66	+6
Receptor 34	Residential	53.7	56.2	2.5	66	+6
Receptor 35	Residential	50.6	52.9	2.3	66	+6
Receptor 36	Residential	51.7	53.7	2.0	66	+6
Receptor 23	Residential	52.2	53.9	1.7	66	+6
Receptor 38	Residential	48.1	50.0	1.9	66	+6
Receptor 37	Residential	48.3	50.3	2.0	66	+6
Receptor 39	Residential	51.7	53.7	2.0	66	+6
Receptor 40	Residential	51.0	52.9	1.9	66	+6
Receptor 41	Residential	51.3	53.3	2.0	66	+6
Receptor 42	Residential	51.0	53.1	2.1	66	+6
Receptor 43	Commercial	43.3	45.6	2.3	71	+6
Receptor 44	Commercial	52.8	54.6	1.8	71	+6
Receptor 45	Commercial	61.9	63.8	1.9	71	+6
Receptor 46	Residential	61.4	63.3	1.9	66	+6
Receptor 47	Residential	60.2	62.0	1.8	66	+6
Receptor 48	Residential	61.3	63.1	1.8	66	+6
Receptor 49	Residential	62.3	64.2	1.9	66	+6
Receptor 50	Commercial	47.1	49.0	1.9	71	+6
Receptor 51	Residential	52.5	54.3	1.8	66	+6
Receptor 52	Residential	61.8	63.6	1.8	66	+6
Receptor 53	Residential	58.1	59.9	1.8	66	+6
Receptor 54	Commercial	62.6	64.3	1.7	71	+6
Receptor 55	Residential	63.8	65.5	1.7	66	+6
Receptor 56	Commercial	51.3	53.4	2.1	71	+6
Receptor 57	Commercial	59.5	61.3	1.8	71	+6
Receptor 58	Commercial	67.3	70.7	3.4	71	+6
Receptor 59	Commercial	60.7	64.1	3.4	71	+6
Receptor 60	Commercial	59.7	63.1	3.4	71	+6
Receptor 61	Residential	61.7	65.1	3.4	66	+6
Receptor 62	Commercial	63.3	67.0	3.7	71	+6
Receptor 63	Commercial	70.5	**73.8**	3.3	71	+6
Receptor 64	Residential	**68.9**	**72.4**	3.5	66	+6
Receptor 65	Residential	**70.2**	**73.6**	3.4	66	+6
Receptor 66	Commercial	57.2	59.6	2.4	71	+6
Receptor 67	Commercial	68.6	**72.2**	3.6	71	+6
Receptor 68	Residential	64.7	**68.7**	4.0	66	+6
Receptor 69	Commercial	64.5	68.5	4.0	71	+6
Receptor 70	Residential	**69.1**	**72.7**	3.6	66	+6
Receptor 71	Residential	**67.1**	**70.7**	3.6	66	+6
Receptor 72	Residential	**66.1**	**70.2**	4.1	66	+6
Receptor 73	Residential	**68.0**	**71.6**	3.6	66	+6
Receptor 74	Commercial	58.7	62.4	3.7	71	+6
Receptor 75	Residential	**67.9**	**71.9**	4.0	66	+6

Receptor Location[1]	Land Use	2013 Existing	2035 Build	Change	NYSDOT Criteria Sound Level	NYSDOT Criteria Change
Receptor 76	Residential	64.4	**68.4**	4.0	66	+6
Receptor 77	Commercial	56.2	60.1	3.9	71	+6
Receptor 78	Residential	60.1	64.1	4.0	66	+6
Receptor 79	Residential	60.8	64.8	4.0	66	+6
Receptor 80	Residential	65.7	**69.3**	3.6	66	+6
Receptor 81	Residential	**67.0**	**70.6**	3.6	66	+6
Receptor 82	Residential	**68.1**	**71.8**	3.7	66	+6
Receptor 83	Residential	**68.8**	**72.9**	4.1	66	+6
Receptor 84	Residential	**68.3**	**72.3**	4.0	66	+6
Receptor 85	Residential	58.6	62.6	4.0	66	+6
Receptor 86	Commercial	66.2	69.8	3.6	71	+6
Receptor 87	Commercial	67.9	**71.6**	3.7	71	+6
Receptor 88	Commercial	58.7	62.5	3.8	71	+6
Receptor 89	Commercial	67.4	**71.0**	3.6	71	+6
Receptor 90	Commercial	67.0	70.6	3.6	71	+6
Receptor 91	Commercial	58.0	61.8	3.8	71	+6
Receptor 92	Residential	50.7	54.7	4.0	66	+6
Receptor 93	Residential	47.7	51.7	4.0	66	+6
Receptor 94	Residential	47.4	51.4	4.0	66	+6
Receptor 95	Residential	48.3	52.2	3.9	66	+6
Receptor 96	Residential	48.2	52.2	4.0	66	+6
Receptor 97	Residential	47.5	51.5	4.0	66	+6
Receptor 98	Residential	45.7	49.8	4.1	66	+6
Receptor 99	Residential	47.5	51.5	4.0	66	+6
Receptor 100	Residential	52.3	56.2	3.9	66	+6
Receptor 101	Residential	51.8	55.7	3.9	66	+6
Receptor 102	Residential	51.5	55.4	3.9	66	+6
Receptor 103	Residential	51.8	55.7	3.9	66	+6
Receptor 104	Residential	52.6	56.5	3.9	66	+6
Receptor 105	Residential	51.5	55.5	4.0	66	+6
Receptor 106	Residential	51.9	55.8	3.9	66	+6
Receptor 107	Residential	53.3	57.2	3.9	66	+6
Receptor 108	Residential	53.5	57.4	3.9	66	+6
Receptor 109	Residential	52.6	56.5	3.9	66	+6
Receptor 110	Residential	**68.1**	**71.8**	3.7	66	+6
Receptor 111	Residential	**67.1**	**70.7**	3.6	66	+6
Receptor 112	Residential	**67.2**	**70.8**	3.6	66	+6
Receptor 113	Residential	**67.8**	**71.5**	3.7	66	+6
Receptor 114	Residential	**68.0**	**71.7**	3.7	66	+6
Receptor 115	Residential	**67.3**	**71.0**	3.7	66	+6
Receptor 116	Residential	65.5	**69.1**	3.6	66	+6
Receptor 117	Residential	**67.0**	**70.7**	3.7	66	+6
Receptor 118	Residential	**67.2**	**70.8**	3.6	66	+6
Receptor 119	Residential	**68.0**	**71.7**	3.7	66	+6
Receptor 120	Residential	**67.2**	**70.8**	3.6	66	+6
Receptor 121	Commercial	63.5	67.3	3.8	71	+6
Receptor 122	Commercial	47.8	53.8	**6.0**	71	+6
Receptor 123	Cemetery	39.9	47.3	**7.4**	66	+6
Receptor 124	Residential	42.9	49.9	**7.0**	66	+6
Receptor 125	Residential	42.3	49.1	**6.8**	66	+6
Receptor 126	Residential	45.8	52.4	**6.6**	66	+6
Receptor 127	Residential	39.6	46.3	**6.7**	66	+6
Receptor 128	Residential	43.4	49.9	**6.5**	66	+6
Receptor 129	Residential	49.8	56.4	**6.6**	66	+6
Receptor 130	Residential	50.1	56.6	**6.5**	66	+6
Receptor 131	Residential	45.6	51.8	**6.2**	66	+6
Receptor 132	Residential	45.0	51.2	**6.2**	66	+6
Receptor 133	Residential	44.2	50.4	**6.2**	66	+6

Receptor Location[1]	Land Use	2013 Existing	2035 Build	Change	NYSDOT Criteria Sound Level	NYSDOT Criteria Change
Receptor 134	Residential	45.0	50.9	5.9	66	+6
Receptor 135	Residential	47.8	54.0	**6.2**	66	+6
Receptor 136	Residential	46.0	52.2	**6.2**	66	+6
Receptor 137	Residential	49.0	55.2	**6.2**	66	+6
Receptor 138	Residential	52.8	58.9	**6.1**	66	+6
Receptor 139	Residential	48.1	54.3	**6.2**	66	+6
Receptor 140	Residential	47.4	53.6	**6.2**	66	+6
Receptor 141	Residential	47.4	53.5	**6.1**	66	+6
Receptor 142	Residential	51.9	58.0	**6.1**	66	+6
Receptor 143	Residential	46.4	52.4	**6.0**	66	+6
Receptor 144	Residential	51.6	57.6	**6.0**	66	+6
Receptor 145	Residential	50.0	55.8	5.8	66	+6
Receptor 146	Residential	48.2	53.9	5.7	66	+6
Receptor 147	Residential	56.0	59.8	3.8	66	+6
Receptor 148	Residential	58.2	62.0	3.8	66	+6
Receptor 149	Residential	58.4	62.2	3.8	66	+6
Receptor 150	Residential	59.1	62.7	3.6	66	+6
Receptor 151	Residential	59.0	62.9	3.9	66	+6
Receptor 152	Residential	58.0	61.8	3.8	66	+6
Receptor 153	Commercial	58.7	62.1	3.4	71	+6
Receptor 154	Residential	57.3	61.8	4.5	66	+6
Receptor 155	Residential	52.5	58.3	5.8	66	+6
Receptor 156	Residential	51.0	57.2	**6.2**	66	+6
Receptor 157	Residential	47.6	53.7	**6.1**	66	+6
Receptor 158	Residential	44.7	50.7	**6.0**	66	+6
Receptor 159	Residential	44.4	50.4	**6.0**	66	+6
Receptor 160	Residential	53.4	59.6	**6.2**	66	+6
Receptor 161	Residential	51.3	57.1	5.8	66	+6
Receptor 162	Residential	55.0	60.7	5.7	66	+6
Receptor 163	Residential	42.7	48.6	5.9	66	+6
Receptor 164	Residential	38.3	44.2	5.9	66	+6
Receptor 165	Residential	50.3	56.1	5.8	66	+6
Receptor 166	Residential	52.9	59.1	**6.2**	66	+6
Receptor 167	Residential	41.8	47.7	5.9	66	+6
Receptor 168	Residential	51.5	57.3	5.8	66	+6
Receptor 169	Residential	52.7	59.0	**6.3**	66	+6
Receptor 170	Residential	38.7	44.6	5.9	66	+6
Receptor 171	Residential	52.2	58.4	**6.2**	66	+6
Receptor 172	Residential	52.1	58.0	5.9	66	+6
Receptor 173	Residential	56.2	61.8	5.6	66	+6
Receptor 174	Residential	43.8	49.5	5.7	66	+6
Receptor 175	Church	45.2	51.3	**6.1**	66	+6
Receptor 176	Residential	41.1	46.6	5.5	66	+6

Source: Vanasse Hangen Brustlin, Inc.
[1]Receptor locations are shown in Figure 2 through Figure 5.
Bold values exceed criteria.

The noise analysis also evaluated the potential noise impacts to the proposed sensitive receptor locations (residential land uses) on the EPCAL Property. FHWA's traffic noise model was used to assess the potential impacts associated with the changes in the roadway system surrounding the subject property. Based on the traffic conditions on each of the roadways adjacent to the subject site, TNM was used to develop the 66 dB(A) impact contour lines shown on Figure 17 through Figure 20.

The 66 dB(A) contour lines corresponds to NYSDOT's noise impact criteria for residential land uses. The following are distances from the center of each travel lane closest to the subject site:

- Approximately 125 feet from centerline of closest Middle Country Road (NYS 25) east bound lane
- Approximately 50 feet from centerline of Wading River/Manorville Road southbound lane
- Approximately 25 feet from centerline of Grumman Boulevard westbound lane.

Although no uses (including residential uses) have been located on the site, any proposed sensitive receptor locations, such as residential land uses, situated beyond the 66 dB(A) contour lines will not be impacted by traffic noise from the adjacent roadways.

3.6.2.1 Construction Noise

Impacts on community sound levels during construction of the proposed Project would include noise from construction equipment operating at the. The sound levels would vary widely, depending on the specific construction activities were being conducted and where the construction activities were occurring. Increased noise levels would be greatest during the early stages of each construction phase, although these periods would be of relatively short duration. The noise generated would be similar to other construction projects in the county and all phases of construction would comply with the restrictions specified in the local noise ordinance, such as time of day. Every reasonable attempt will be made to minimize construction noise impacts. Construction noise control can be accomplished by the use of equipment with their original noise controls and procedures.

3.6.3 Proposed Mitigation

As indicated in Section 3.6.2, there are a number of receptors that would be impacted by the noise associated with the future traffic on area roadways, assuming that the subject site is built out as set forth in Section 2.5 of this DSGEIS,. However, as previously explained, if the uses that are ultimately developed on the site are less noise intensive and/or generate less traffic, the number of receptor experiencing noise impacts would be reduced.

Since travel speed is a major factor associated with vehicular traffic, managing the travel speed along a roadway could reduce sound levels at nearby receptor locations. The analysis performed herein determined, which was based upon the Theoretical Mixed-Use Development Program, that a reduction of five miles per hour along Route 25 could reduce the number of impacted receptor locations. In the case of the

criterion associated with overall sound level approaching within one decibel of NAC (as noted in Table 59), the number of receptors impacted in 2035 would decrease from 29 to 27 with a decrease in the speed limit. Further, with respect to the those receptors experiencing an increase over six db(A), the number of impacted receptors in 2035 would be reduced from 33 to 18 with a five mile per hour decrease in the speed limit. Based upon this analysis, the five miles per hour reduction in speed limit could be employed, if necessary. However, the NYSDOT will make the final determination regarding the speed limit of the roadway.

In addition, as indicated in Sections 2.5 and 3.4.2 and noted above, the mix of uses set forth in the theoretical potential maximum build-out would result in significant increases in traffic traversing the roadway network serving the EPCAL Property. It must be understood, however, that no one can predict, over a multi-year development period, what specific uses would be developed and at what levels. For example, if a significant portion of the site is developed for warehouse uses, minimal traffic would result. Moreover, if a significant area was used as a solar field, virtually no traffic would result from that area. Accordingly, the maximum development limit will be a function of the actual trip generation associated with the uses developed, as described in Section 3.4.2. Therefore, should trip generation not reach the maximum level analyzed under the proposed action, the resultant sound levels, discussed herein, would also not be attained. Thus, by 2035 there may be fewer receptors that would be impacted by traffic noise due to the lower levels of traffic produced by less development than currently predicted.

Future development on the EPCAL Property will be designed to minimize its sound levels to the surrounding areas. Moreover, specific development would include the necessary mitigation measures, such as:

- For potential noise-generating equipment on the exterior of buildings, equipment meeting applicable acoustic standards would be required
- Acoustic enclosures and exhaust silencers would be required if equipment is expected to generate excessive noise
- Equipment to be located on the roof of a building would be situated away from residential areas or in a penthouse.

3.7 Infrastructure

3.7.1 Existing Conditions

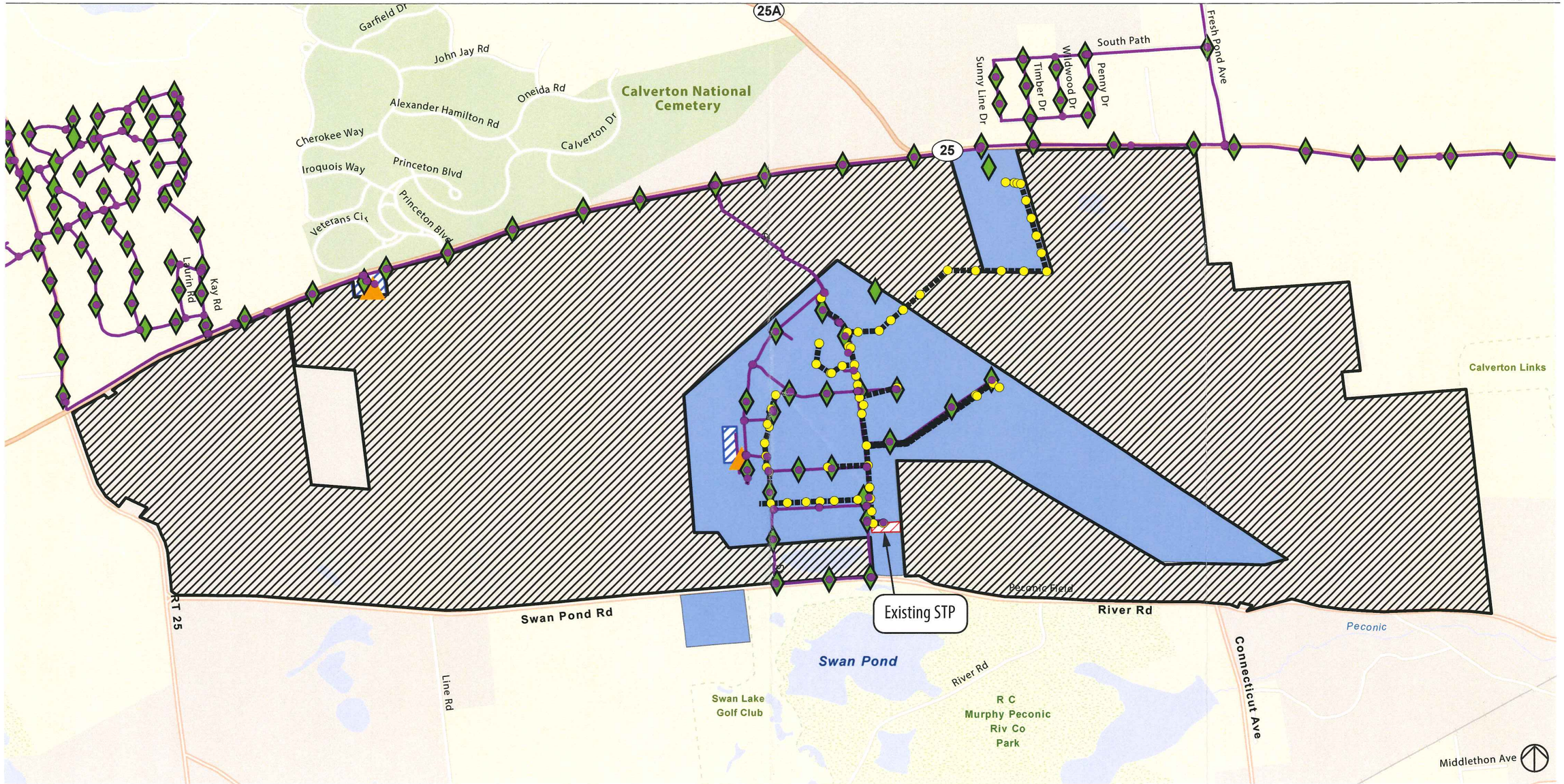
Introduction

The primary source of available utility information for the subject site is the "Infrastructure Evaluation" prepared by Parsons, Brinckerhoff, Quade & Douglas, Inc. (dated October 17, 1995) (hereinafter *"PB Infrastructure Evaluation"*) in conjunction with HR&A Opportunities and Constraints Analysis dated October 2005. This information has been supplemented with GIS data maintained by the Town, meetings and discussions with various parties involved in subsequent infrastructure improvements (e.g., Calverton Sewer District [Calverton SD], Riverhead Water District [RWD], and H2M [as consulting engineers to the Town of Riverhead Sewer and Water Districts]), and site visits to assess any visible changes to the site utilities that have taken place. As the industrial core of the property encompasses most of the original buildings and facilities, utilities are generally limited to what is now Calverton Camelot, except as noted herein. As discussed in Section 3.7.2, further development of the EPCAL property would include interconnection with many of these utilities, and may require easements to the Town or the various utility operators, including the RWD and the Calverton SD.

Sanitary Sewer System, including Sewage Treatment Plant

The existing network of gravity sewers, pump stations, and force mains has been supplemented in recent years in conjunction with the ongoing development of Calverton Camelot to include the extension of gravity sewers generally coincident with the Calverton Camelot roadways (see Figure 21). The two existing pump stations have been upgraded and a third completed to service existing lots within the subdivision, a fourth pump station location was identified to serve future development in the southeast portion of Calverton Camelot. In addition, a sewer connection has been provided for the Stony Brook University Business Incubator. Additional dry force mains (for future use) have been installed in anticipation of pumping effluent from the STP to the northeast corner of the EPCAL Property as part of future upgrades to the STP. Other than the connection to the Stony Brook University Business Incubator site and the dry force mains extended to the northeast, all of the existing sewers are contained within Calverton Camelot, which is not within the subject property.

Date: 07.00.14



LEGEND

- EPCAL Property
- Calverton Sewer District Service Areas
- Water Valve
- Sewer Manhole
- Riverhead Water District
- Sewer Main
- Water Main
- Public Well
- Fire Hydrant
- Existing Sewage Treatment Plant

Source: Town of Riverhead GIS

VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Existing Sewer and Water Infrastructure

Figure
21

The existing STP (which provides secondary treatment) consists of two aeration tanks, two settling tanks and a chlorine contact tank.[56] There are no flow limits on the Town of Riverhead permit. At time of Grumman there were three shifts each with 62,000 gallons per shift. The Town operates, as needed. Treated effluent from the STP is discharged to McKay Lake under the terms of an existing SPDES Permit held by the Calverton SD (#NY-002 5453, DEC # 1-4730-01057/0002). Presently, we do not generate any sludge and to the extent sludge will be generated it will be treated at the Riverhead Plant or the Bergan Pt Plant. When the property was transferred to the Town CDA, the Calverton SD "piggy-backed" onto the original SPDES permit, which has no flow restrictions. There are treatment restrictions. According to H2M, the NYSDEC recognizes that the STP cannot meet current standards because of the low current flows and the composition of the sewage (no food, so it cannot create and maintain biomass for treatment). Therefore, the development of the EPCAL property would alleviate this situation by increasing the flow and providing varied waste materials. However, the upgraded STP would require a new/revised SPDES permit.

The initial evaluation of the STP by H2M[57] was performed in 2000, and noted that the existing STP was approximately 30 years old at the time, but had been well-maintained and would be capable of treating wastewater for a number of additional years. The STP is currently treating approximately 25,000 gpd of wastewater generated mostly by the buildings within Calverton Camelot and the Stony Brook Incubator, which are not located on the subject property. The Henry Pfeiffer Community Center are not connected to system and instead have cesspools.

In recent years, numerous studies have been undertaken by Town consultants to determine the most cost-effective means of treating sewage from the subject property, upon redevelopment, including upgrading the existing facility and construction of a new advanced wastewater treatment facility. The facility will remain in present location the pumping beds will be relocated north of the groundwater divide. In order to meet the goal of reducing impacts to the Peconic Estuary, either scenario will require eliminating the effluent discharge to McKay Lake and directing the discharge to the northeast corner of the subject property, on the ~~other~~ north side of the groundwater divide from the Peconic Estuary. To date, there have been no improvements or upgrades to the STP other than routine maintenance. Based on information provided by the Calverton SD and H2M, the existing STP is adequate for the current activity at Calverton Camelot and on the EPCAL Property. However, the expansion and upgrade of the STP and relocation of the effluent discharge to north of the groundwater divide would be a necessary component of any further development on either property.

[56] Town of Riverhead/Calverton Sewer District/Facility Plan for the Calverton Advanced Wastewater Treatment Facility, H2M Group, dated May 2 or 3. 2003.
[57] H2M Group/Phase 1(B) Feasibility Study, June 2000.

See Section 3.7.2 for a discussion of the proposal to upgrade the existing STP and relocate the effluent discharge.

Water Supply

Introduction

The RWD currently provides public water to the "core area" of the NWIRP Calverton Property, including Calverton Camelot and the Stony Brook Incubator. In 1995, water mains were extended into the EPCAL property to replace the existing water supply system that was previously owned and operated by Grumman/U.S. Navy. This project was partially funded by a Federal EDA Grant given to the Town of Riverhead IDA and Riverhead Water District.

The previous water supply system was replaced with a 12-inch transmission main, which was installed along Route 25 and runs from the north side of the EPCAL property south to River Road.

Currently, none of the Grumman/U.S. Navy water mains are being utilized. All existing buildings were required to connect to the new RWD water mains.

The Riverhead Water District previously took ownership of the two public supply wells located within the EPCAL property (Well Nos. 12-1 and 12-2). However, they are no longer being used by the Water District, according to H2M.

Supply Wells and Treatment System

The RWD obtains its entire water supply from wells drilled into various underground formations at 10 sites by means of sixteen (16) wells and pumping stations, as detailed on Table 63. Treatment employed by the Water District includes lime (calcium hydroxide) for pH adjustment and calcium hypochlorite for disinfection. The total pumpage capacity of the existing 16 wells is 17,270 gallons per minute (gpm) or 24.87 million gallons per day (mgd).

Over the past several years, the District has constructed five new supply wells to increase the system capacity by 4,510 gpm (6.49 mgd).

Table 63 – RWD Existing Water Supply Wells

WELL NO.	NYSDEC WELL ID NO.	YEAR PLACED IN SERVICE	LOCATION	AQUIFER	ZONE	DEPTH OF WELL (ft.)[1]	AUTHORIZED CAPACITY	
							GPM[2]	MGD[3]
1(A)	S-108348	1959/1996	Pulaski	Glacial	Low	250	1,000	1.44
2	S-7261	1957	Pulaski	Glacial	Low	140	1,000	1.44
3(A)	S-111777	1950/1998	Pulaski	Glacial	Low	265	1,000	1.44
4-1	S-30271	1968	Osborne	Magothy	Low	721	1,000	1.44
4-2	S-34732	1970	Osborne	Magothy	Low	392	1,200	1.73
5-1	S-66685	1980	Doctors Path/ Middle Country	Glacial	Low	254	1,200	1.73
5-2(A)	S-124088	1991/2005	Doctors Path/ Middle Country	Glacial	Low	250	1,200	1.73
7-2	S-89133	1969/1988	Fresh Pond Road	Magothy	High	466	1,200	1.73
7-3	S-105439	1995	Fresh Pond Road	Magothy	High	520	1,200	17.3
11-1[4]	S-114622	2003	Calverton/Rte. 25	Magothy	High	260.6	1,380	1.99
11-2[4]	S-122918	2005	Calverton/Rte. 25	Magothy	High	263	1,380	
12-1	S-49605	OUT OF SERVICE						
12-2	S-35110	OUT OF SERVICE						
15-1[6]	S-129655	2010	Tuthills Lane	Magothy	Low	455	250	0.36
15-2[6]	S-129656	2010	Tuthills Lane	Magothy	Low	455	250	0.36
15-3	S-129657	2010	Tuthills Lane	Magothy	Low	369	250	0.36
16	S-129453	2010	Edwards Avenue	Glacial	High	377	2,380	3.43
17[5]	S-130317	2011	Northville Tpke. – Rte. 43	Magothy	Low	561	1,380	1.99
					Total System:		17,270	24.87

Notes:
[1] – Depth of well is measured from the ground surface at the well
[2] – GPM – Gallons Per Minute
[3] – MGD – Million Gallons Per Day
[4] – Well Nos. 11-1 and 11-2 have a shared approved capacity of 1,380 GPM
[5] – Well No. 17 has the option to supply the high or the low zone.
[6] – Well Nos. 15-1 and 15-2 are only authorized to operate as public water supply between April 1st and September 30th each year, and are limited to 5.4 million gallons total production per month.

Storage Facilities

Currently, the RWD maintains five water storage tanks with a total available storage capacity of 4,250,000 gallons. Two elevated storage tanks (Rte. 58 and Pulaski Street) are located in the Low Zone of the District with two standpipes positioned in the High Zone (Plant No. 8 -Baiting Hollow and Plant No. 9 – Wading River). A 1,500,000 gallon standpipe is positioned in the Low Zone at Plant No. 10.

Interconnections

The RWD currently maintains five interconnections with the Suffolk County Water Authority (SCWA) and Riverside Water District as listed below in the table below.

Table 64 – Interconnections with SCWA

Water Supplier/Location	Size	Comments
Riverside Water District (SCWA)/ Town of Southampton (Both Ways)	6″	Metered Interconnections West Main Street
Suffolk County Water Authority/ Town of Southold (Riverhead to SCWA)	8″	Metered Interconnections Peconic Bay Boulevard
Suffolk County Water Authority/ Town of Brookhaven (SCWA to Riverhead)	8″ 8" 12"	Metered Interconnections Dogwood Drive Meroke Trail Schultz Road

Stormwater Drainage

According to the *PB Infrastructure Evaluation*, the Town's GIS data, and recent field observations, the existing storm drainage systems consist of a combination of subsurface piping (with inlet structures) and open/natural swales approximately 10 different watersheds within and outside of Calverton Camelot. In general, the gravity piping systems are limited to the runways, taxiways, and Calverton Camelot (i.e., the area of the existing buildings). The remainder of runoff from the EPCAL Property is directed to open channels and swales.

All of the watersheds discharge to McKay Lake (under the current SPDES Permit [included in Appendix N])[58] or through localized swales that discharge off-site to the south toward Swan Pond, adjacent wetlands, and the Peconic River. The *Supplemental Environmental Assessment*[59] prepared for Calverton Camelot in 2002 indicated that individual lots are required to contain on-site runoff as they are developed, thereby reducing the contribution to the existing drainage systems. Based on field observation, this appears to be the case for the few recently-developed lots within Calverton Camelot.

[58] Based on the NYSDEC SPDES Application ID 1-4830-01057/00002, which permitted the operation of the existing wastewater treatment facility (formerly associated with Grumman) for municipal use, described with application detail as, "*the applicant proposed an existing discharge of approximately 11,000 gallons per day of treated sanitary wastewater and stormwater to McKay Lake, a class C water body tributary to the Peconic River, from an activated sludge treatment plant located in the Calverton Enterprise Park in Calverton, Town of Riverhead...*" This SPDES permit was renewed as of 02/01/2010, and is effective through 1/31/2015.

[59] Cameron Engineering Supplemental Environmental Assessment for Calverton Camelot Subdivision, March 2002.

The components of the existing overall drainage system remain in place and include a positive system that includes discharge to McKay Lake or discharge to drainage swales located throughout the site (see Figure 22).

Steam/Condensate

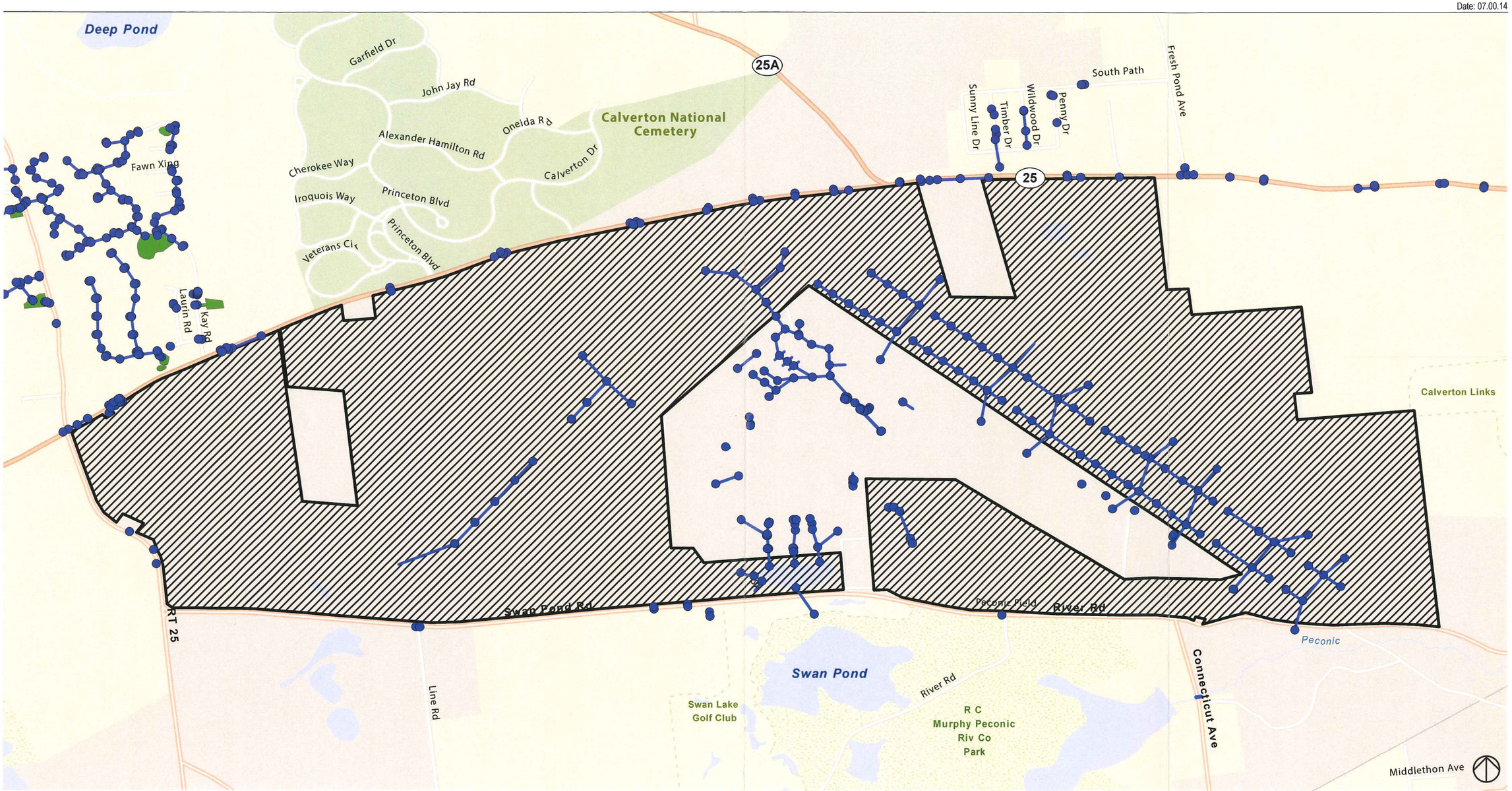
The *PB Infrastructure Evaluation* discusses existing steam and condensate lines that are still in use at some of the existing off-site facilities. These facilities (as well as the distribution system and steam plant) appear to be limited to a portion of Calverton Camelot,[60] which is not part of the study area of the proposed action.

Natural Gas

The *PB Infrastructure Evaluation* indicates that there was no gas service to the site in 1995, and the *1997 EIS* confirms that information. However, record drawings[61] from recent sewer and water supply improvements (and other utility drawings provided by the Town) indicate that a gas main was installed along Grumman Boulevard (Swan Pond Road), and the main extends north along Burman Road into Calverton Camelot.

[60] H2M Group – Riverhead Water District EXTENSION No. 75, Calverton Enterprise Park Record Map, Last revised May 5, 2008
[61] H2M Group – Riverhead Water District EXTENSION No. 75, Calverton Enterprise Park Record Map, Last revised May 5, 2008

Date: 07.00.14



LEGEND

- EPCAL Property
- Recharge Basin
- Drainage Pipe
- Drainage Structure

Source: Town of Riverhead GIS

VHB

PROPOSED SUBDIVISION OF EPCAL PROPERTY
DRAFT SUPPLEMENTAL GENERIC ENVIRONMENTAL IMPACT STATEMENT
Calverton, New York

Existing Drainage Infrastructure

Figure
22

Electricity

Utility mapping provided by the Town depicts an extensive electrical distribution network on the EPCAL Property, from Grumman Boulevard (Swan Pond Road) and Middle Country Road, supplying not only the existing buildings but also runway lighting and other facilities throughout the site. The *PB Infrastructure Evaluation* includes a detailed discussion of the on-site substation and primary and secondary distribution network, and notes that the system had been experiencing some failures and maintenance problems due to the age of the facilities. There are a number of easements dedicated to Long Island Power Authority (LIPA) throughout the site. There does not appear to be any other updated information available on the system. However, since the electrical network is extensive (reaching well outside the boundaries of the Calverton Camelot industrial subdivision), meetings and coordination between the Town and PSEG Long Island (formerly LIPA) are required as part of the development of any plan for the re-use and subdivision of the subject property.

3.7.2 Potential Impacts

Sanitary Sewer System, including Sewage Treatment Plant

Introduction

In December 2013, the Regional Economic Development Council awarded the Town of Riverhead a $1.34 million grant toward STP upgrades at the EPCAL property and $5.0 million state funding for current flow upgrade. The Town anticipates upgrades in increments of 250,000 gallon modules as development occurs on the subject property with total costs of such upgrades total cost of $22 million. The STP is proposed to be upgraded from a secondary to a tertiary treatment plant, which will support the future development that is proposed under Theoretical Mixed Use Development Programs for 2025 and the ultimate build-out.

The proposed upgrade and expansion of the existing Calverton SD sanitary collection, conveyance and treatment facilities will be phased to accommodate the amount and type of development anticipated by the Theoretical Mixed Use Development Program. Specifically, upgrade and expansion will be phased so that the STP will be able to achieve groundwater discharge standards at a design flow of at least matching the 2025 development flow (see below).

Current NYSDEC regulations require that an STP cannot exceed 95 percent of its design flow. Therefore, as the actual flow approaches 95 percent of the design flow, the second phase of the upgrade would begin. Careful inventory of the flow

associated with the development will be critical, so that sufficient time is allowed to design, bid and construct the modules associated with the second phase.

At this time, the second phase of the upgrade would be for the ultimate build-out. However, the approach being taken is that the STP expansion would occur in modules so that as additional flow is added, a corresponding module is added. In the future, a cost and benefit analysis will be required as development within the subdivision progresses in order to determine the exact phasing of the next modular expansion.

A discussion of the anticipated sewage generation is included below, followed by a description of the proposed upgrades.

Sewage Calculations

2025 Scenario

Preliminary sanitary flow projections for Theoretical Mixed Use Development program for 2025 are based on assumptions regarding the percent breakdown of these anticipated development square footages and associated Suffolk County Department of Health Services (SCDHS) design criteria. For purposes of this DSGEIS, the assumed area breakdowns have been distributed evenly based on the varying types of use identified (see Table 65).

In order to account for unknown changes in future development, a 15 percent contingency flow factor has also been added to the projected flows.

Table 65 – 2025 Sanitary Flow Projections

Total Area	Type of Use	SCDHS Design Criteria (assumed)	% Area (assumed)	Flow Projection
289,606 SF	Industrial	0.04 gpd/SF	33%	3,861 gpd
	R&D	0.04 gpd/SF	33%	3,861 gpd
	Flex Space	0.06 gpd/SF	33%	5,792 gpd
1,330,305 SF	Office	0.06 gpd/SF	25%	19,955 gpd
	Medical	0.10 gpd/SF	25%	33,258 gpd
	Flex	0.06 gpd/SF	25%	19,955 gpd
	Institutional	0.06 gpd/SF	25%	19,955 gpd
358,785 SF	Commercial	0.04 gpd/SF	50%	7,176 gpd
	Retail	0.10 gpd/SF	50%	17,939 gpd
150 units	Residential	225 gpd/unit	100%	33,750 gpd
Sub-Total Flow Projection:				165,502 gpd
15% contingency flow factor:				24,825 gpd
Total Flow Projection:				190,327 gpd
Total Flow Projection (rounded to the nearest 100,000 gpd):				200,000 gpd

However, since there is potential variation in the uses that could be developed with the ultimate build-out of the subject property, the flow density allotment has been increased to 2,000 gpd per acre of development in order to account for unknown variations associated with the assumed percent breakdowns and specific uses. Assuming that the 2,000 gpd per acre will be the restriction placed on the development of the lots, it is estimated that development at the year 2025 would generate approximately 252,000 gpd of sewage effluent, based upon the anticipated development of 126 acres of land within the subdivision, as noted above.

Ultimate Build-Out

Similar to the 2025 scenario, the preliminary sanitary flow projections for the ultimate build-out are also based on assumptions regarding the percent breakdown of the proposed development square footages and associated SCDHS design criteria. For purposes of this DSGEIS, the assumed area breakdowns have been distributed evenly based on the varying types of use identified. In order to account for unknown changes in future development, a 15 percent contingency flow factor has been added to the projected flows.

Table 66 – Ultimate Build-Out Sanitary Flow Projections

Total Area	Type of Use	SCDHS Design Criteria (assumed)	% Area (assumed)	Flow Projection
6,886,836 SF	Industrial	0.04 gpd/SF	33%	91,815 gpd
	R&D	0.04 gpd/SF	33%	91,815 gpd
	Flex Space	0.06 gpd/SF	33%	137,723 gpd
2,927,232 SF	Office	0.06 gpd/SF	33%	57,959 gpd
	Flex	0.06 gpd/SF	33%	57,959 gpd
	Institutional	0.06 gpd/SF	33%	57,959 gpd
740,520 SF	Medical	0.10 gpd/SF	100%	292,723 gpd
805,860 SF	Commercial	0.04 gpd/SF	50%	16,117 gpd
	Retail	0.10 gpd/SF	50%	40,293 gpd
300 units	Residential	225 gpd/unit	100%	67,500 gpd
Sub-Total Flow Projection:				911,865 gpd
15% contingency flow factor:				136,780 gpd
Total Flow Projection:				1,048,645 gpd
Total Flow Projection (rounded to the nearest 100,000 gpd):				1,100,000 gpd

Again, due to the potential wide variation in uses and assumed percentage breakdown, based upon a total of 568.5 acres, using the 2,000 gpd per acre calculation, ultimate development at the EPCAL Property would be expected to generate up to 1,137,000 gpd at full build-out.

As can be seen by the calculations presented above, the results of using the 2,000 gpd/acre figure are similar to those of the SCDHS sewage flow factors, and actually provide a more conservative flow estimate. The Calverton SD and its consultants have based their assessment of the STP's ability to serve future development on the EPCAL Property on the results of the 2,000 gpd/acre factor (252,000 gpd at 2025 and 1,137,000 gpd at ultimate build-out), as described in the *STP Infrastructure Upgrades* subsection, below.

STP Infrastructure Upgrades

2025 Scenario

As stated in Section 3.7.1, the existing Calverton SD consists of gravity sewers. There are three pumps the pumps are submerged however the pumping is above ground wastewater pumping stations, and a wastewater treatment facility that discharges treated effluent to surface waters of McKay Lake within the Peconic Estuary. The existing wastewater treatment facility is designed and operated to provide secondary levels of treatment. The current SPDES permit does not have an effluent limit on total nitrogen.

The United States Environmental Protection Agency (USEPA), the NYSDEC, and the SCDHS have long recognized that nutrient over enrichment and low dissolved oxygen levels within the Peconic Estuary are contributing to the ongoing degradation of the ecosystem. In an effort to minimize continued degradation, the NYSDEC began implementation of regulations limiting the total maximum daily load (TMDL)[62] of nitrogen from point sources to the contributing waters of the Peconic Estuary. The Town of Riverhead has embraced this regulatory effort and adopted a "No Net Nitrogen" policy, according to H2M. This policy prevents any increase of existing wastewater treatment plant discharge to waters contributing to the Peconic Estuary.

It should be noted that at this time, it is not a flow capacity issue that is driving the upgrade of the STP, it is the USEPA TMDL requirements to reduce total nitrogen loading to the Peconic Estuary. An increase in flow at this time would result in an increase in total nitrogen loading, thereby contravening the TMDL standards.

Since the existing infrastructure serving the Calverton SD does not provide nutrient removal and effluent wastewater is discharged directly to surface waters in the Peconic Estuary; any increases in future wastewater flow, prior to the STP upgrade would require the existing surface water outfall to be replaced with a groundwater discharge located outside of the Peconic Estuary watershed. The diversion of the discharge would take place as part of the project to upgrade the STP. The discharge location has to be moved as required by the USEPA 2007 TMDL Regulations, as noted above. Relocation of the outfall is intended to reduce nitrogen loading to the estuary and improve the environmental health of the area. The new groundwater discharge from the Calverton SD will be designed in compliance with Class GA groundwater discharge standards pursuant to Title 6, Chapter X, Parts 700-705 of the

[62] *Total Maximum Daily Load for Nitrogen in the Peconic Estuary Program Study Area, Including Waterbodies Currently Impaired Due to Low Dissolved Oxygen: the Lower Peconic River and Tidal Tributaries; Western Flanders Bay and Lower Sawmill Creek; and Meetinghouse Creek, Terrys Creek and Tributaries*, September 2007. Peconic Estuary Program, Suffolk County Department of Health Services, Office of Ecology, Yaphank, NY

New York State Codes, Rules and Regulations. This standard includes an effluent limitation of 10 mg/L total nitrogen.

As such, the upgraded treatment process will be based on achieving effluent total nitrogen concentrations of 10 mg/L or less. The technology selected for the upgrade is a Membrane Biological Reactor (MBR). The MBR is a suspended growth type activated sludge process used for nitrogen removal. MBR technology eliminates the need for secondary clarification and effluent filtration.
The best way to minimize costs associated with increasing the treatment capacity is to maximize the re-use of existing tankage. A preliminary evaluation of the existing treatment facility in conjunction with a review of current available technologies has determined that re-purposing the existing tankage with a MBR process will effectively treat the additional 0.2 to 0.26 million-gallon-per-day (MGD) flow generated by the 2025 scenario without needing to construct additional tankage and require additional property.

The upgrade of the treatment facility for 2025 would incorporate full usage of existing process tanks. The new process train will include fine screens, a pre-equalization tank, anoxic basins, pre-aeration basins, and MBR basins. Influent screenings and pre-equalization tanks will be sized to accommodate both peak and average daily flow loadings. The downstream process tanks will be sized and configured to meet the SCDHS redundancy requirements. Sludge generated by the process will be thickened using membrane thickening and held in an aerated storage tank(s) onsite prior to being hauled off-site to Suffolk County Sewer District No. 3 – Southwest for further processing at the Bergen Point Sewage Treatment Facility. Thickening the sludge will reduce the number of truckloads of waste sludge thereby reducing the carbon footprint. These tanks will be covered as a means of odor control. Thickening the sludge generated by the process will remove excess water from the solids thereby decreasing the total volume of sludge that needs to be hauled off-site, which will result in reduction to the sludge hauling costs for the district.

Ultimate Build-out

The expansion of the treatment facility will require the installation of additional influent screenings equipment, pre-equalization tank capacity, MBR process trains and sludge handling/storage capacity. This expansion will be modular in design and constructed to maintain the SCDHS redundancy requirements. The expansion tanks will be located on the site of the existing treatment facility. The design of the treatment facility for the 2025 scenario will consider the ultimate build-out plans and allocate space on the existing treatment facility site to be used for future treatment facility expansion. Ultimate expansion of the STP has not yet been determined at this time. However, according to the Town's sewer consultant, the facility would be able to add modules to accommodate full build-out of the EPCAL Property.

As noted in Section 3.7.1, the STP is operating under a SPDES Permit (#NY-002 5453, DEC # 1-4730-01057/0002). The Town's sewer consultant, will be preparing an update to this permit in conjunction with the plans for the proposed upgrades to the STP.

Subdivision Infrastructure

As the sewage collection system layout for the subdivision is developed (as part of the final Subdivision Map), topographic conditions will be evaluated in conjunction with H2M to determine whether additional pump stations will be required to serve the EPCAL subdivision. Should additional pump stations be required, H2M will be retained by the Town to design same.

Water Supply

The water use demand projections have been calculated based on SCDHS sanitary flow design criteria as shown on Table 67 and Table 68, below. In addition, very preliminary assumptions for irrigation use have been made, based on an irrigation rate of one-inch per week. The ultimate build-out has projected a landscaped and irrigated area of approximately 121 acres. It is assumed that 16.6 percent or 20 acres are to be included in 2025 scenario and the full 121 acres in the ultimate build-out.

It should be noted that the irrigation rate of one-inch per week was divided by a seven day week, then doubled to reflect an "every other day – odd/even irrigation restriction practice" issued by the RWD.

Table 67 – 2025 Scenario Water Use Projections

Total Area	ID	SCDHS Design Criteria (assumed)	% Area (assumed)	Flow Projection
289,606 SF	Industrial	0.04 gpd/SF	33%	3,861 gpd
	R&D	0.04 gpd/SF	33%	3,861 gpd
	Flex Space	0.06 gpd/SF	33%	5,792 gpd
1,330,305 SF	Office	0.06 gpd/SF	25%	19,955 gpd
	Medical	0.10 gpd/SF	25%	33,258 gpd
	Flex	0.06 gpd/SF	25%	19,955 gpd
	Institutional	0.06 gpd/SF	25%	19,955 gpd
358,785 SF	Commercial	0.04 gpd/SF	50%	7,176 gpd
	Retail	0.10 gpd/SF	50%	17,939 gpd
150 units	Residential	225 gpd/unit	100%	33,750 gpd
Sub-Total Water Use Projection:				165,502 gpd
15% contingency Flow Factor:				24,825 gpd
Total Interior Water Use Projection:				190,327 gpd
Assumption for Irrigation[(1)]:				155,157 gpd
Total Peak Water Use Projection (rounded to the nearest 10,000 gpd):				350,000 gpd 243 GPM

(1) – Irrigation Rate: 20 acres (at 2025) x 1"/week 7 days/week x 2 for every other day irrigation.

Table 68 – Ultimate Build-Out Water Use Projections

Total Area	ID	SCDHS Design Criteria (assumed)	% Area (assumed)	Flow Projection
6,886,836 SF	Industrial	0.04 gpd/SF	33%	91,815 gpd
	R&D	0.04 gpd/SF	33%	91,815 gpd
	Flex Space	0.06 gpd/SF	33%	137,723 gpd
2,927,232 SF	Office	0.06 gpd/SF	33%	57,959 gpd
	Flex	0.06 gpd/SF	33%	57,959 gpd
	Institutional	0.06 gpd/SF	33%	57,959 gpd
740,520 SF	Medical	0.10 gpd/SF	100%	292,723 gpd
805,860 SF	Commercial	0.04 gpd/SF	50%	16,117 gpd
	Retail	0.10 gpd/SF	50%	40,293 gpd
300 units	Residential	225 gpd/unit	100%	67,500 gpd
Sub-Total Water Use Projection:				911,865 gpd
15% contingency Flow Factor:				136,780 gpd
Total Interior Water Use Projection:				1,048,645 gpd
Assumption for Irrigation[1]:				939,000 gpd
Total Peak Water Use Projection (rounded to the nearest 10,000 gpd):				1,990,000 gpd 1,382 GPM

(1) – Irrigation Rate: 121 acres (at ultimate build-out) x 1"/week 7 days/week x 2 for every other day irrigation.

2025 Scenario

With an estimated peak water use of 350,000 gallons per day (243 GPM), the RWD should have sufficient supply well pumping capacity to meet the demands of the proposed development. However, since the Water District must be concerned with the increase in demand of all development throughout the District, the Water District will be proposing to construct an additional water supply well with an estimated capacity of 2.0 mgd or 1,380 GPM within the near future (next several years).

Ultimate Build-Out

With an estimated peak water use of 1,990,000 gpd (1,382 GPM), the RWD does not have sufficient excess capacity at this time to meet this demand. The District would need to construct one additional supply well somewhere in the District to meet this need. The District routinely evaluates the demand of the District and the proposed developments that will increase the demand to ensure that sufficient capacity is

available before the demand is in place. The District projects that the well needed for the ultimate build-out will be in addition to the well discussed under the 2025 scenario for District-wide growth.

Stormwater Drainage

Stormwater Runoff and Management during Construction Activities

The standards and specifications included in Chapter 110, Stormwater Management and Erosion and Sediment Control, of the Town Code, Stormwater the *New York Standards and Specifications for Erosion and Sediment Controls* provide criteria on minimizing erosion and sediment impacts from construction activity involving soil disturbance. An overall Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the subdivision incorporating measures to control erosion and sedimentation. Each individual lot (at the time of development) will be required to conform to the overall SWPPP and provide site-specific details regarding erosion and sedimentation control.

Implementation of the sequenced construction process, described above, and other best management practices (BMPs), as discussed in the above-referenced publication, and as shown on the SWPPP, would assist in ensuring that the proposed development would minimize the stormwater runoff impact to groundwater and surface water resources.

Post-Development Stormwater Runoff Management

Drainage patterns on the site would be altered as a result of grading and the installation of impervious surfaces and landscaping. Although the overland flow of stormwater runoff would change, it would be contained on the site through the use of drainage reserve areas and drywells. Therefore, this impact not expected to be significant.

More specifically, the process of collecting site runoff and disposing of it into the ground via the use of drywells and drainage reserve areas is a means of recharging Long Island's groundwater system through the underlying soils.

The intent of the stormwater management design is to create drainage reserve areas in topographically appropriate places throughout the subdivision for the purpose of providing storm drainage for the public road network. The roadway infrastructure will include a system of catch basins and piping designed to convey stormwater runoff to the drainage reserve areas. In addition to the major drainage reserve areas

originally shown on the Subdivision Map, it may be necessary to install some intermediate/smaller drainage reserve areas to serve areas that are topographically isolated from the main drainage areas. Where needed, these drainage reserve areas would be placed in easements. Overall, it is expected that the design would store the runoff from an eight-inch storm for the areas from which stormwater is collected.

The intent is for the stormwater from the public roadway right-of-way (with some practical allowance for front yards of the respective lots) to be handled by the drainage reserve areas. The individual lots will be required to collect and store all runoff created by those lots on site using drywells, on-site drainage reserve areas, etc., in accordance with current Town site plan regulations.

The integrated stormwater management system (i.e., the collection system and drainage reserve areas) on the property would contain and recharge all stormwater on-site and would also serve to reduce pollutants that can be transported by stormwater runoff, from leaving the site as well. The collection and disposal of runoff on-site prevents pollutants from leaving the site and reaching any downstream drainage systems and/or water bodies beyond the boundaries of the property. These types of stormwater recharge facilities have demonstrated the ability to remove nutrients, metals, and oil and grease.

During the construction activities, erosion and sedimentation control measures would be installed prior to any ground disturbances and would be maintained throughout the entire course of the project. Following the project's completion, disturbed areas would be completely restored. Vegetation would be fully re-established in all planned landscaping and lawn areas and all impervious areas, (e.g., pavement, walkways) would be permanently stabilized.

Overall, as the proposed stormwater management system includes various methods of drainage (i.e., drywells, drainage reserve areas) and all stormwater would be handled on-site and in accordance with Town of Riverhead requirements. Therefore, no significant adverse impacts are expected to result from the anticipated stormwater generation and runoff.

Steam/Condensate

As steam/condensate is no longer used at the property and would not be utilized in the future, there would be no impacts to or from such utility.

Natural Gas

There is a natural gas line that serves the site. Natural gas is provided to the area by National Grid. This agency was contacted via written correspondence on February

28, 2014 advising of the subdivision and future development and indicating that the requirement of confirmation (if appropriate) that gas service is or will be available for the proposed development. To date, no response has been received. As the individual lots are sold for development, the individual owners will be in contact with National Grid with respect to their specific natural gas load requirements.

Electricity

Electric service is currently provided to the site by PSEG Long Island. PSEG Long Island was contacted via written correspondence on February 28, 2014 advising of the subdivision and future development and indicating that the requirement of confirmation (if appropriate) that electric service is or will be available for the proposed development.

In correspondence dated March 26, 2014, PSEG Long Island responded that it will provide service to the proposed project in accordance with their filed tariff and schedules in effect at the time the service is required (see Appendix N). According to the letter "service to be provided via customer installed underground cable to pole line on South side of 25A. Detailed load information must be provided to finalize design."

Based upon the foregoing, as the individual lots are sold for development, the individual owners will be in contact with PSEG Long Island with respect to their specific electric load requirements.

3.7.3 Mitigation

Several mitigation measures have been incorporated into the design of the proposed infrastructure associated with the EPCAL Property. Such measures will minimize impact to groundwater and surface water. In addition, measures proposed to upgrade the sewer and water infrastructure proposed by their associated entities will also assist in protecting groundwater and surface water resources.

- Whereas currently sewage effluent generated by the STP is discharged into McKay Lake, in the future, such sewage effluent will be piped to an area north of the groundwater divide (Lot 43 on the Subdivision Map) and will be disposed of in an area that would not impact the Peconic Riverhead watershed to the south.

- The Calverton SD is in the process of preparing a plan to upgrade its STP and associated facilities. According to the Town's sewer consultant, the STP will be capable of treating the 2,000 gpd/acre of sewage effluent generated by development both at 2025 and at ultimate build-out.

- The RWD should have sufficient supply well pumping capacity to meet the demands of the proposed development at 2025. However, since the Water District must be concerned with the increase in demand of all development throughout the District, the Water District will be proposing to construct an additional water supply well with an estimated capacity of 2.0 mgd or 1,380 GPM within the next several years.

- The District projects that a water supply well will be needed for the ultimate build-out and will be in addition to the well discussed under the 2025 scenario for District-wide growth.

- Water conservation measures, which may include low-flow fixtures, low-flow toilets, and/or drip irrigation, will be implemented.

- There is little formal recharge currently occurring on the site, as runoff is directed to McKay Lake, and other areas collect within the runways or flow off-site to the south. The proposed drainage system, including the incorporation of drainage reserve areas (to handle runoff from the proposed subdivision infrastructure) and potential additional drainage reserve areas and drywells/leaching pools on individuals sites, will ensure that runoff from the developed is recharged on-site.

- The majority of the proposed drainage reserve areas will be restored to grassland, once reshaped, to contain the appropriate volume from an eight-inch runoff.

- As part of the proposed action, certain areas that are currently impervious (i.e., some portions of the existing runways) will be used to create new grassland, thus reducing the amount of runoff generated from these areas. Runoff from new impervious areas (created through the construction of interior roadways and the development of the lots) will be contained and recharged on-site.

3.8 Cultural Resources

3.8.1 Existing Conditions

As part of the environmental review in 1996, the U.S. Navy performed extensive historic and archaeological surveys of the NWIRP Calverton property in coordination with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) (hereinafter, also referred to as the "State Historic Preservation Office" or "SHPO"), and in compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended; Executive Order 11593; and NEPA.

An analysis of the prehistoric periods and historic period (1609 -1952), as well as the Grumman Era at Calverton (1952-1996) are included within the *1997 EIS*. Grumman was one of the largest employers on Long Island, and it had a significant impact on the rural Riverhead community. However, the economic recession that began in 1989, coupled with the decline of the defense industry had a visible impact on the local economy. Grumman was acquired by Northrop in 1994, and as a result of the completion of Grumman's major F-14 Tomcat contract in 1992 and delivery of E-2C Hawkeyes in 1995, NWIRP Calverton closed on February 15, 1996.

Historic Resources

An intensive-level historic resources survey was conducted as part of the environmental review. Documentary research was conducted on the history of NWIRP Calverton Property as the general history of naval aviation during the Cold War to provide a context for the site's history.

A review of the National Register files of OPRHP shows that no architectural or cultural resources within the NWIRP Calverton Property are listed in the national or state registers. No cultural resources determined eligible but not yet listed in the registers are located within the NWIRP Calverton Property.

Although less than 50 years old at the time, the site was identified as potentially historically significant in a Town-wide survey conducted in 1977 by the Society for the Preservation of Long Island Activities (SPLIA). Field studies were conducted and a Cultural Resources Form was completed for each building and structure that appeared to meet the Secretary of the Interior's Criteria for Evaluation.

As discussed in the *1997 FEIS* (page 3.8.1), three buildings on the NWIRP Calverton Property (the Anechoic Chamber, Plant 6 and Plant 7) individually appear to possess the requisite historic importance necessary to be eligible for listing under certain of the criteria for their exceptional significance in relation to the development of naval

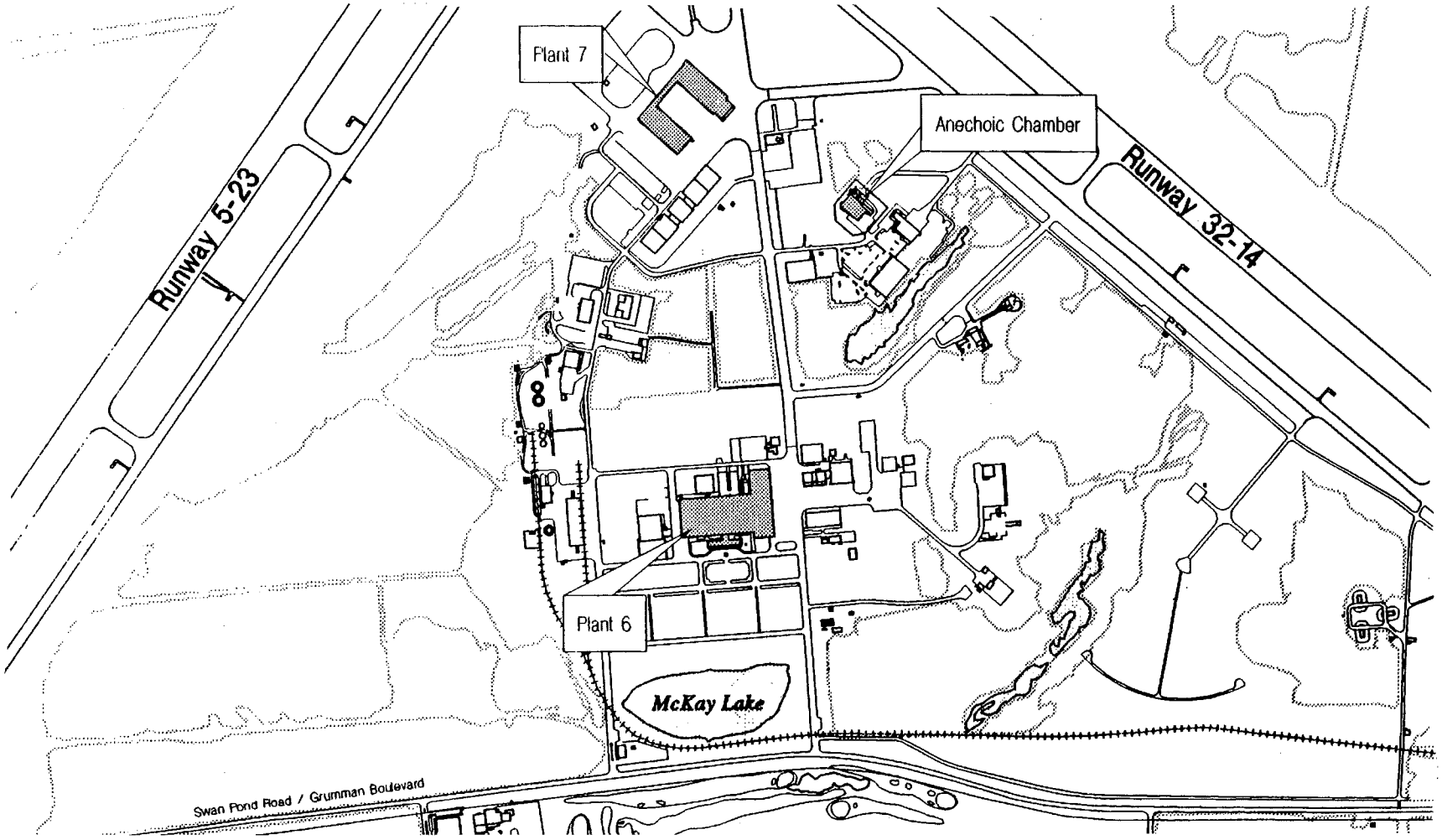
air power during the Cold War. However, none are located on the EPCAL Property (see Figure 23).

At the time of the historic resources survey, the U.S. Navy also evaluated the potential for the NWIRP Calverton Property to be identified as "historic" as part of an overall district. As part of this evaluation, the NWIRP Calverton Property was evaluated using National Park Service (NPS) criteria which state that historic districts must have "a significant concentration, linkage or continuity or sites, buildings, or objects united historically or aesthetically by plan or physical development (USDOI, 1991)" (Page 3.8-10). The *1997 FEIS* noted that the NWIRP Calverton property was not unique, in that there are numerous similar facilities and was not vital to the United States' operations during the Cold War. It was ultimately determined that while "these buildings are united historically by plan and physical development, they were not considered eligible for the National Register because, as simple ancillary and production buildings, they fail to meet the standard for exceptional significance" (Page 3.8-10). As indicated in the *1997 FEIS* (page 3.8-11), the U.S. Navy received concurrence from the SHPO with findings of non-eligibility for the potential historic district.

Archaeological Resources

A Phase IA Archeological Survey (hereinafter the "*Phase 1A*") was undertaken by TAMS as part of the *1997 FEIS* in order to identify the presence of potential archaeological sites within and proximate to the NWIRP Calverton Property as well as areas of archaeological sensitivity. The *Phase 1A* began with a review of records at the New York State Museum (NYSM) and the OPRHP offices, which identified 24 archeological sites within the vicinity of the subject property, 10 of which were within one-mile, and none being identified as existing on the subject property.

The *Phase 1A* included a field survey in identified areas of potentially high archaeological sensitivity at the subject property, which were delineated using an analysis model whereby "[f]lat or slightly sloping areas near modern or ancient water were considered of higher sensitivity than steep slopes areas or areas that were more than 328 ft (100m) distant from water sources (TAMS, 1996)" (Page 3.8-11). Based on this analysis model, approximately 300± acres of the subject property were identified as areas of potentially high archeological sensitivity. The remaining portions were classified as areas of potentially low-to-moderate sensitivity for archaeological resources (see Figure 24).



Source: 1997 U.S. Navy FEIS.

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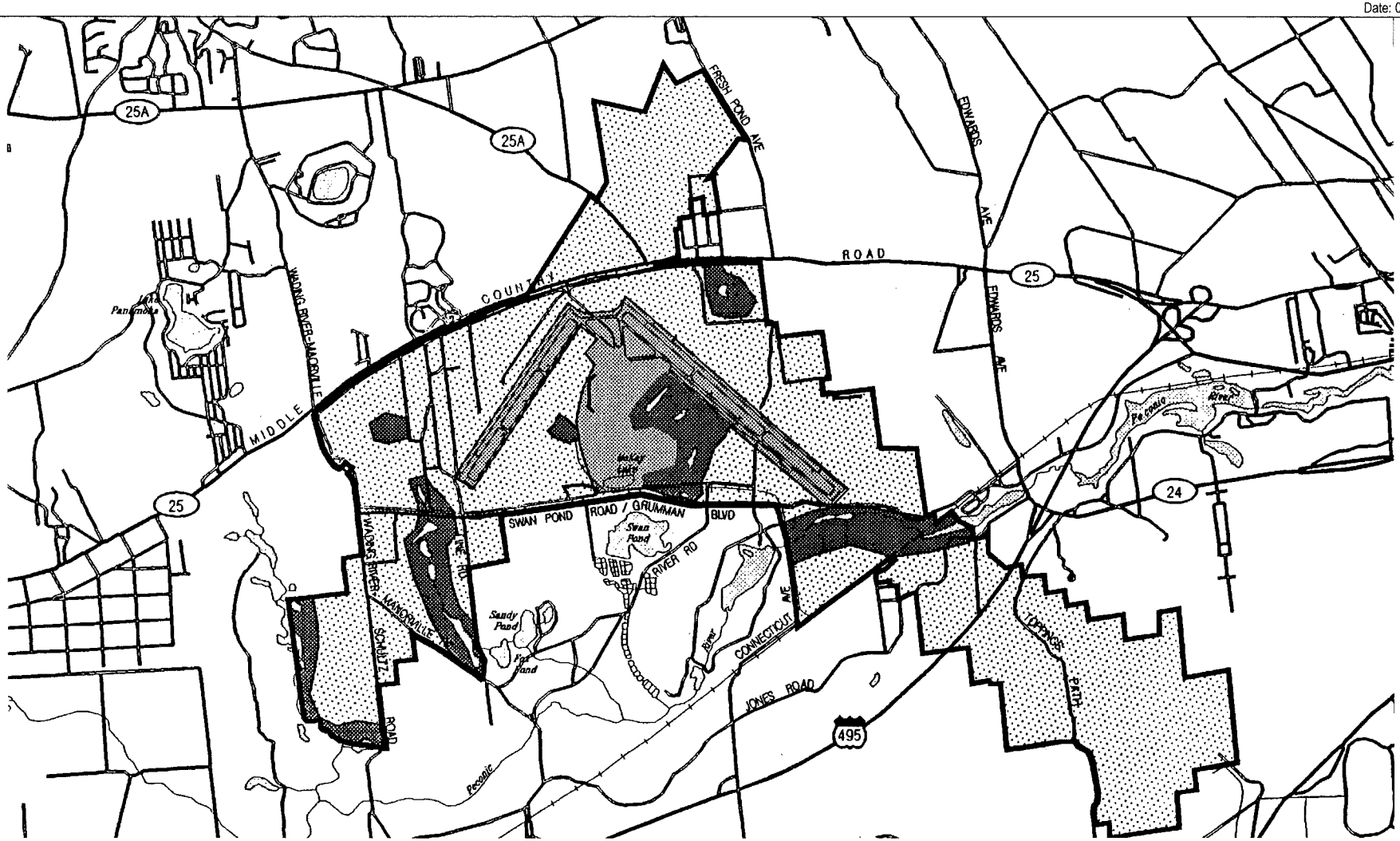
National Register Eligible Properties

Figure **23**



Source: 1997 U.S. Navy FEIS

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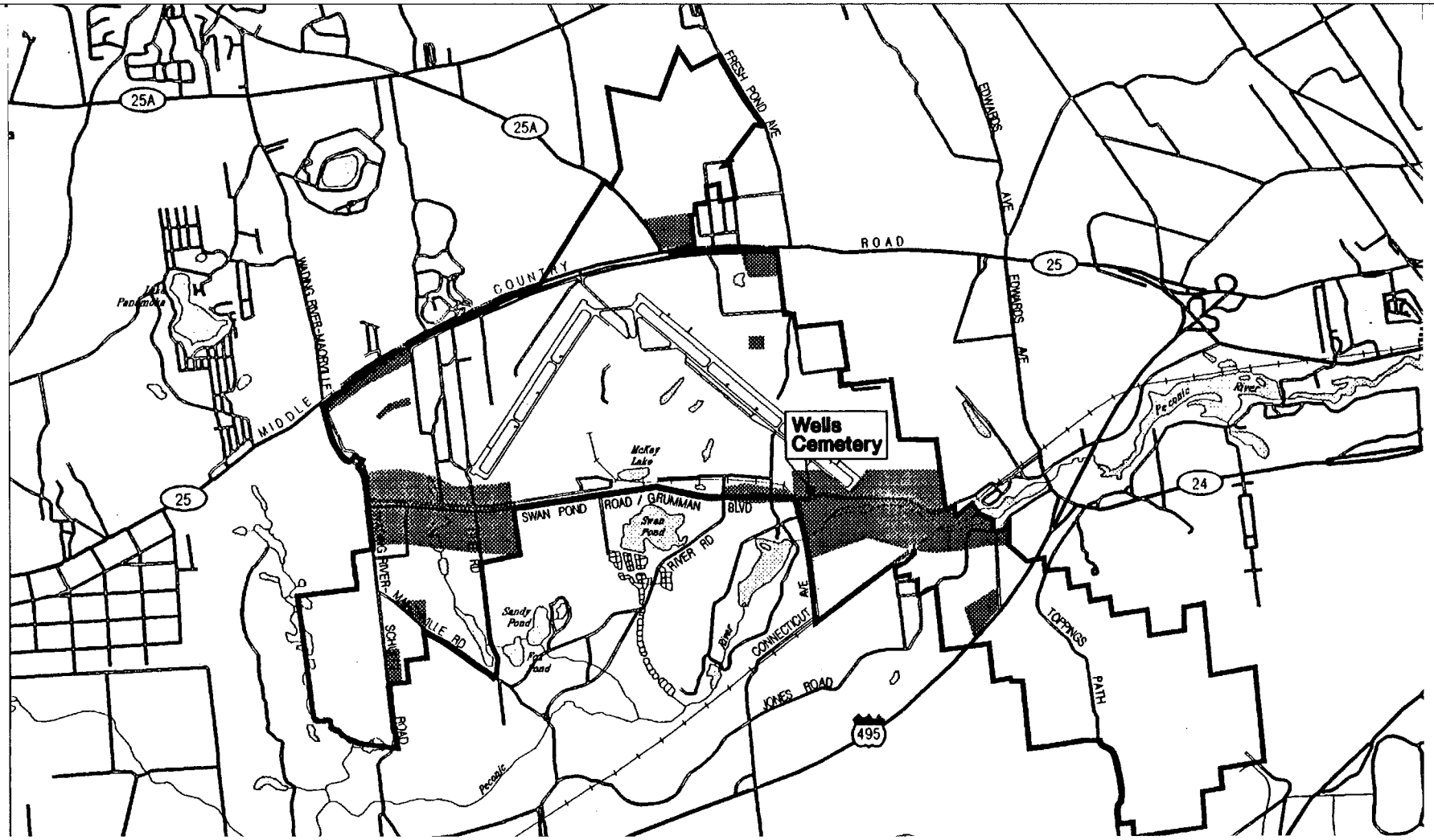
Prehistoric Sensitivity Areas

Figure **24**

As detailed in the *1997 FEIS*, 376 shovel test pits were conducted within the identified areas of potentially high archaeological sensitivity, and 356 shovel test pits were performed in areas classified as potentially low-to-moderate archaeological sensitivity. Shovel test pits in these potentially low-to-moderate sensitive areas yielded only one archeological resource. Within the potentially high sensitive areas, the shovel test pits yielded hundreds of resources, and, further, these test pits refined the total size of the highly sensitive areas to approximately 240± acres. Ultimately, based on the analyses undertaken in the *Phase IA*, approximately 100 acres were classified as having potentially high sensitivity for archeological sensitivity. These areas are situated in the western portion of the subject property, primarily in the Pine Barrens Core Preservation Area (see Figure 24). The remaining 140± acres were identified as areas of potentially high sensitivity for historic resources, and are located in the eastern and western corners of the subject property (see Figure 25). The remaining portions of the NWIRP Calverton property were either designated as "developed areas" (with no potential for historic or prehistoric resources), or areas of low-to-medium potential for prehistoric resources. Undisturbed areas where the slope of the land is less than 10 percent were identified as being of medium sensitivity. The U.S. Navy received the concurrence of SHPO with respect to these findings of archaeological sensitivity.

Subsequent to the completion of the *1997 FEIS*, the Phase IB Archaeological Survey (hereinafter the "*Phase 1B*") was released by the U.S. Navy. The *Phase IB* was also conducted by TAMS for the NWIRP Calverton Property and the 3,000+-acre area aviation buffer zoned, located outside of the fence. Since the *Phase IA* determined that approximately 240 acres of the NWIRP site is archaeologically sensitive, the *Phase IB* investigated the portion of the sensitive area that may be impacted by the Town's Comprehensive Reuse Plan that was analyzed in the *1997 FEIS*. The *Phase IB* addressed the specific cultural resource issues previously raised, specifically the prehistoric use of the site's wetland areas and the historic use of several areas adjacent to roadways. The *Phase IB* included site reconnaissance of the sensitive areas, topic-sensitive documentary research and over 1,100 shovel test pits and visual inspection of the entire site to determine the presence or absence of cultural resources.

Date: 07.00.14



Area of High Potential for Historic Sites

Property Boundary

4000 0 4000
Scale in Feet

1000 0 1000
Scale in Meters

N

VHB

Source: 1997 U.S. Navy FEIS.

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Historic Sensitivity Areas

Figure
25

As a result of the *Phase IB*, prehistoric resources with a high archaeological sensitivity were identified around two of the aircraft runway ponds. Historic resources with a high archaeological sensitivity were identified in the southeast corner of the NWIRP Calverton Property, along portions of Grumman Boulevard. Historic resources with a moderate archaeological sensitivity were identified in the northeastern corner of the NWIRP Calverton Property, adjacent to Middle Country Road. By establishing the absence of sensitive cultural resources in the remaining portions of the NWIRP Calverton Property, the area of archaeological sensitivity was reduced to approximately 50 acres. Future consultations between the Town CDA and SHPO are outlined in the Memorandum of Agreement (MOA) filed with the Town of Riverhead (see discussion below).

Agreement Between the Town CDA and SHPO

The U.S. Navy, SHPO and the Advisory Council on Historic Preservation (ACHP) agreed to a MOA for the protection of all National Register-eligible properties. Pursuant to the MOA, the conveyance document was to contain covenants to ensure the protection of such properties. This satisfied the requirements of 36 CFR 800.9[b] and mitigated the adverse effects on the transfer on the eligible historic properties.

Based upon the foregoing, upon conveyance of the subject property from the U.S. Navy to the Town CDA, an agreement between the Town CDA and SHPO was executed on August 27, 1998 to establish specific covenants on the subject property related to historic and archaeological resources, known as the *Agreement Between The Community Development Agency and Riverhead, New York and the New York State Historic Preservation Office Regarding Historic and Archaeological Resources at the Former Naval Weapons Industrial Reserve Plant, Calverton New York* (hereinafter the *"1998 Historic and Archaeological Covenants"*)(see Appendix O).

Pursuant to the *1998 Historic and Archaeological Covenants*, SHPO was granted "certain rights and responsibilities with respect to preservation and proposed future uses of the Property..." which included the following:

1) *If the Property is transferred to the CDA, the SHPO hereby expressly and irrevocably grants permission to the CDA and to all subsequent owners, operators, tenants or occupants of the Property for any and all disturbance of the ground surface in the areas of the Property identified as the Developed Area and in the areas of the Property identified as non-sensitive areas on the map prepared on behalf of the Navy entitled NWIRP Calverton Archeological Sensitivity dated June 5, 1998, a copy of which is attached to this Agreement as Exhibit 2 (The "Archeological Map").*

2) *The CDA and any subsequent owner, operator, tenant or occupant of the Property shall ensure that any proposed disturbance of the ground surface in any area described in Paragraph 1 whose boundaries are identified on the Archeological Map*

as determined through GPS surveys occurs only within such areas and shall keep appropriate records to document that fact.

3) *Prior to any proposed disturbance of the ground surface in any area described in Paragraph 1 whose boundaries are identified on the Archeological Map as not determined through GPS surveys, the CDA and any subsequent owner, operator, tenant or occupant of the Property shall confer with the SHPO for the sole purpose of confirming that such disturbance will take place wholly within the boundaries.*

4) *For areas of the Property described in the Archeological Map as areas of high sensitivity, areas of moderate/low sensitivity or pine barren core areas, the SHPO agrees that data from the Studies and from any subsequent archeological studies undertaken by or on behalf of the Navy may be relied upon by any person seeking permission for disturbance of the ground pursuant to the Covenants, although the SHPO reserves the right to require additional archeological investigations with respect to such areas.*

5) *In the areas of the Property described in Paragraph 4, the SHPO hereby expressly and irrevocably grants permission to the CDA and to all subsequent owners, operators, tenants or occupants of the Property for any and all disturbance of the ground surface associated with: (i) the planting of any plants, flowers, trees, bushes, shrubs or other living things for landscaping purposes; and (ii) repair or replacement of existing water, sewer, gas or other utility lines in existing utility trenches.*

6) *While the Property remains under the CDA's jurisdiction, the CDA shall ensure that the SHPO has the opportunity to review, comment upon and approve any undertaking involving disturbance of the ground, except those exempted by Paragraphs 1 and 5, before the undertaking is initiated.*

7) *Notwithstanding anything to the contrary in this Agreement, if any buried human remains are discovered during the course of any disturbance of the ground at the Property otherwise authorized by this Agreement, all such disturbance shall cease and the CDA or any subsequent owner, operator, tenant or occupant of the Property shall inform the SHPO of the discovery and shall not resume such activity without the consent of the SHPO.*

8) *The CDA shall ensure that if the historic buildings described in the Covenants (the "Historic Buildings") are vacant that they are maintained pursuant to the Secretary of the Interior's Standards for Rehabilitation and the Guidelines for Rehabilitating Historic Buildings and NAVFAC MO-913, Historic Structures Preservation Manual (collectively referred to as "standards") to minimize deterioration.*

9) *While any of the Historic Buildings remains under the CDA's jurisdiction, the CDA will ensure the SHPO has the opportunity to review, comment on and approve any*

undertaking affecting such building, except those exempted in Paragraph 9 [sic],[63] *before the undertaking is initiated.*

10) [Certain] *activities proposed by the CDA, or any subsequent owner, operator, tenant or occupant, are specifically exempt from review by the SHPO and do not require approval of the SHPO…*

11) *The CDA will be responsible for the recordation of any Historic Building prior to its demolition, alteration, or rehabilitation, which results in an adverse effect while the CDA continues to remain as the owner of the property. The CDA will also cause the recordation of the historic buildings prior to the transfer of such property except where the deed covenant in Attachment 1 is included in the conveyance. Provided that property is still under the jurisdiction of the CDA, the CDA shall consult with the State to determine what level of documentation is required to record the property to be affected.*

12) *The CDA may transfer parcels at NWIRP which contain historic and archeological resources as may be necessary or appropriate to meet its goals and objectives for the property. Transfers involving structures eligible for listing on the National Register of Historic Place or archeologically sensitive areas will include the appropriate covenant as set forth in Attachment 1.*

13) *This agreement may be amended by a writing signed by both parties.*

14) *EXECUTION of this Agreement and implementation of its terms evidence that the CDA has afforded the State an opportunity to comment on the treatment of historic and archaeological resources at the former Naval Weapons Industrial Reserve Plant Calverton, New York, and associated effects on historic and archaeological resources, and that the CDA has taken into account the effects of the undertaking on historic and archaeological resources.*

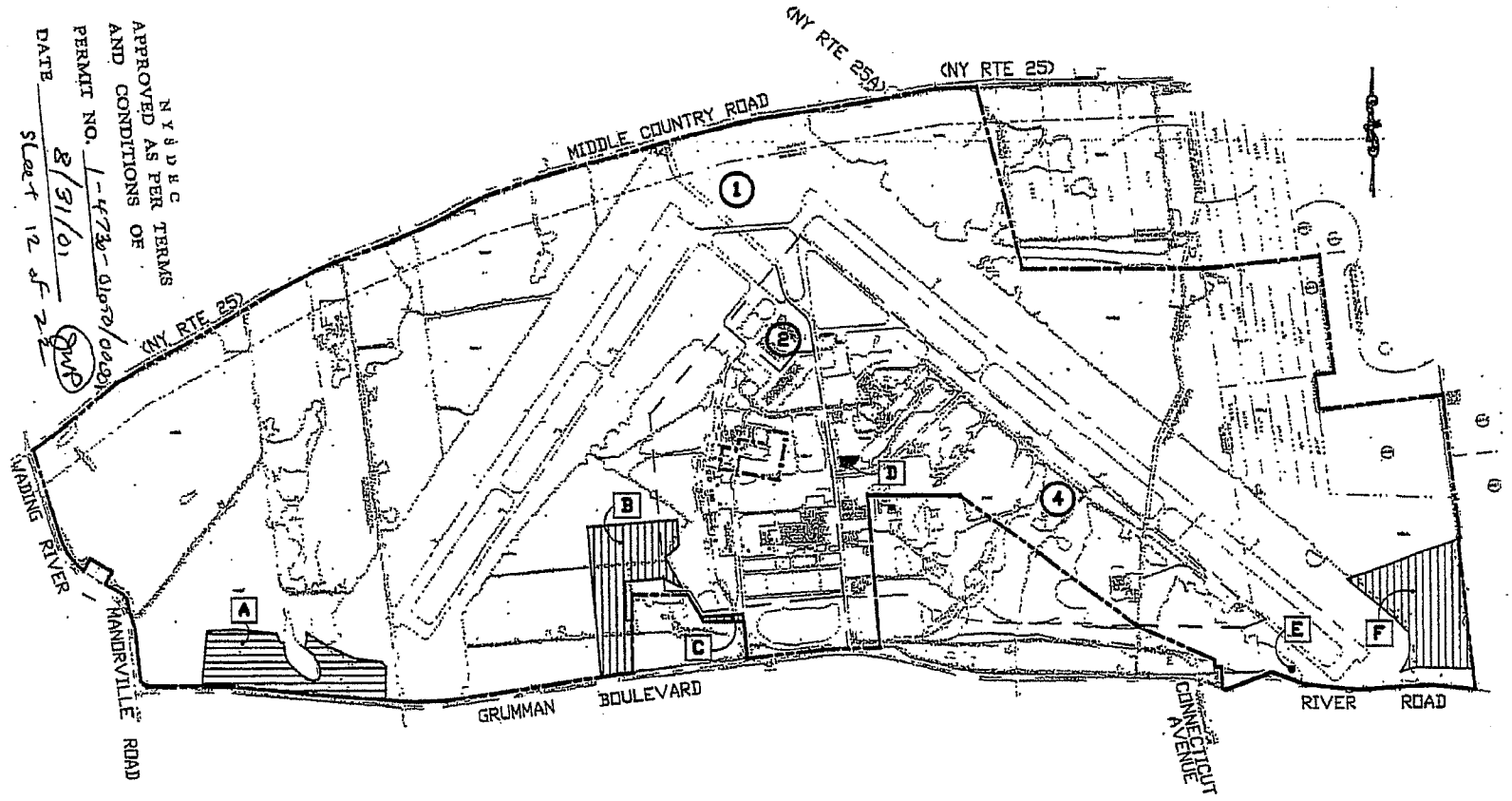
In addition, there are several covenants (labeled "Cultural Resources Areas") on the Subdivision Map. These areas, labeled "A" through "F," are recorded in Liber 12499, CP 148 of the deed. The covenants and restrictions related to cultural resources are associated with "Archaeologically Sensitive Areas") that were either designated as "Areas of Moderate/Low Sensitivity (not subsurface tested)" or "Areas of High Sensitivity (subsurface tested)." Cultural Resource Areas A, B, C, E and F, are located within the EPCAL Property (see Figure 26). According the covenants and restrictions:

[63] This should refer to Paragraph 10.

"activities proposed within these Archaeologically Sensitive Areas, as shown on Schedule 'C,' are subject to review and approval pursuant to the New York State Historic Preservation Act. Therefore, prior to the commencement of any activities proposed within these Archaeologically Sensitive Areas, including but not limited to clearing or cutting of vegetation, grubbing, excavation, grading, filling, construction, erection of any structures or any activity which would result in any disturbance to the existing ground surface or subsurface in these Archaeologically Sensitive Areas, the DECLARANT, its heirs, successors and assigns or any vendees, lessees, mortgagees, or other persons or entities acquiring an interest in whatever kind or nature in Premises containing Archaeologically Sensitive Areas, shall cause to be prepared a Stage 1B Cultural Resources Survey. Said Stage 1B Cultural Resource Survey shall be prepared by a qualified archaeologist in accordance with "Report Format for Cultural Resource Investigations" published by the New York State Department of Environmental Conservation and the professional standards set forth by the New York Archaeological Council (NYAC).

Copies of the Stage 1B Cultural Resource Survey shall be submitted to the NYSDEC and the State Historic Preservation Field Services Bureau of the New York State Office of Parks, Recreation and Historic Preservation. No activity shall occur on land shown on Schedule 'C' which would result in a disturbance to existing ground surfaces or subsurface in these archaeologically sensitive areas until both NYSDEC...and the Historic Preservation Field Services Bureau... have reviewed the Stage 1B Cultural Resources Survey and have certified in writing that such activities may proceed..."

The OPRHP can request additional information to determine if any proposed activities would have an impact on cultural resources, including the preparation of a Stage 2 or Stage 3 Cultural Resource Survey and "preservation of any extant cultural resources including their recovery, archiving and curation, or preservation in-situ."



Source: Supplemental Environmental Assessment, Map of Calverton Camelot at Enterprise Park at Calverton, prepared by Cameron Engineering and Associates, LLP, March 2002.

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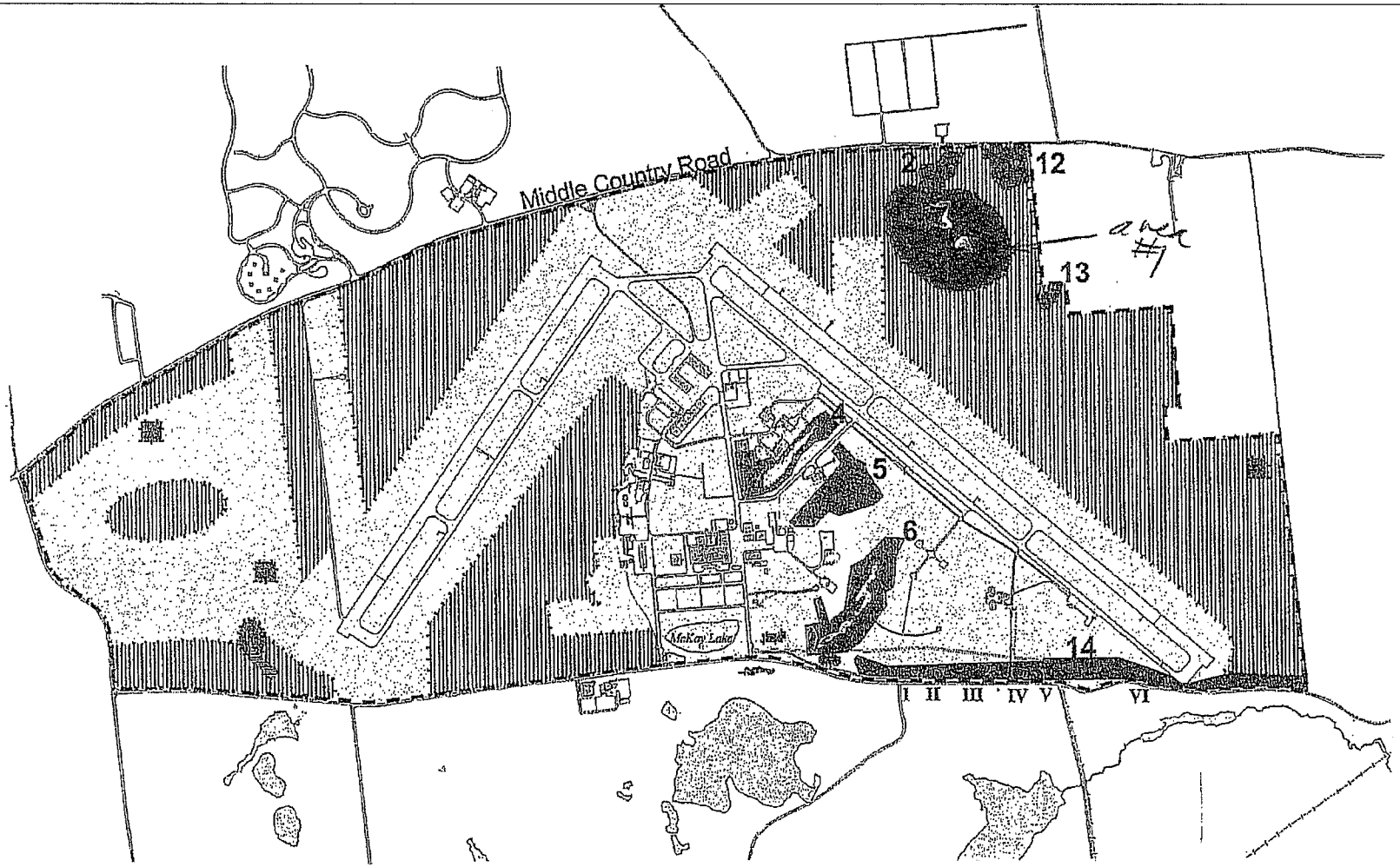
Cultural Resource Covenant Map

Figure **26**

Based upon the covenants, if in the future, the archaeological sensitivity map is revised such that the archaeologically sensitive areas are reduced in size due to the revision of boundaries of these areas, as authorized by the OPRHP, the provisions of the covenant will only apply to the reduced areas.

In a supplemental analysis prepared in 2002 by Cameron Engineering for Calverton Camelot, a map was developed that shows the areas of archaeological sensitivity (see Figure 27). There are several areas of the EPCAL Property that are either considered "developed" or within an "Area of Moderate/Low Sensitivity (not Subsurface Tested)." This map was considered the final map with respect to cultural resources. However, based upon correspondence between the Town of Riverhead Planning Department and the OPRHP in 2010 (see Appendix O), after the MOA was established, the NWIRP Calverton property had additional archaeological studies conducted to review several areas of the site. According to OPRHP, the majority of the NWIRP Calverton property, including the EPCAL Property, is not considered archaeologically sensitive. The only segment of the site that is still considered to be sensitive is located in the northeastern portion of the EPCAL Property and is marked as "#1" by OPRHP personnel (see Figure 27).



Note: GPS-surveyed areas of archaeological sensitivity have solid borders. Areas not surveyed have dotted line borders.

Source: Supplemental Environmental Assessment, Map of Calverton Camelot at Enterprise Park at Calverton, prepared by Cameron Engineering and Associates, LLP, March 2002.

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NWIRP Calverton Archaeological Sensitivity OPRHP-markup

Figure **27**

3.8.2 Potential Impacts

The proposed action will comply with covenants that were previously executed between the Town CDA and SHPO as part of the MOA (see Section 3.8.1 and Appendix O), and with the requirements of Section 106 of the National Historic Preservation Act of 1966 with respect to the potential impact of development of the subject property on historic resources.

It should be noted that the subject property, including the developable lots shown on the Subdivision Map, do not contain any buildings that are either on or eligible for inclusion on the National Register. Therefore, covenants related to historic buildings (as discussed in Section 3.8.1) are not applicable to the proposed action.

According to maps included in the *1997 EIS*, as well as those prepared subsequent to that document, none of the developable lots are located within portions of the site designated as prehistorically or historically sensitivity, based upon the 2010 correspondence from the OPRHP, discussed above.

As indicated above, based upon the various investigations conducted, the only segment of the EPCAL Property that is still within an area that has been identified as culturally sensitive is located in the northeastern portion of the EPCAL Property and is marked as "#1" by OPRHP personnel (see Figure 27). This area is located outside the developable lots, is proposed to be preserved as open space, and thus would not be adversely impacted by the proposed action.

Thus, based upon OPRHP's latest correspondence, there is no overlap between any areas proposed as development lots and areas of historic sensitivity or archaeological sensitivity. However, if cultural resources are encountered during demolition and/or construction, OPRHP will be notified in accordance with the MOA.

3.8.3 Proposed Mitigation

As no potential significant adverse impacts to cultural resources on the subject property have been identified, no mitigation, beyond adherence to the MOA and any remaining applicable restrictive covenants that were previously agreed upon by the Town CDA, are proposed.

Again, if any cultural resources are encountered during demolition and/or construction, OPRHP will be notified in accordance with the MOA, and mitigation, as identified by OPRHP and the Town based on the specific circumstance, will be employed.

3.9 Geology, Soils and Topography

3.9.1 Existing Conditions

Geology

As indicated in the 1997 EIS, the subject property is located in the Atlantic Coastal Plain Physiographic Provinces. As explained below, the land was created or altered by the activity of four major glacial stages. Most of the area north of Grumman Boulevard, (Swan Pond Road) is an outwash plain, and south of this road are remnants of the Ronkonkoma moraine.

The bedrock under Suffolk County varies in depth from 400 feet below sea level (bsl) at Lloyd Neck to 2,200 feet bsl in the south-central part of the County. The bedrock is overlain by Cretaceous sediment called the Raritan formation and the Magothy formation. The Raritan formation, which rests on the bedrock, is subdivided into the Lloyd Sand member and the clay member, the uppermost part. The Raritan formation is entirely bsl. The Magothy formation crops out at only a few locations on Long Island, and most of these are in Nassau County.

Part of the Magothy formation is overlain by Jameco gravel, which is believed to have been deposited by glaciers of the Kansan stage. These deep gravel deposits are mainly in the southwestern part of the County, and their extent is unknown. Elsewhere, the Magothy is overlain by a marine clay identified as Gardiners clay. This formation is thought to be an interglacial deposit, possibly of the Sangamon interglacial stage. In all other parts of the County, the Magothy is overlain directly by upper Pleistocene deposits.

The Pleistocene epoch is divided into four major glacial stages, the Nebraskan, Kansan, Illinoian, and Wisconsin. The youngest, the Wisconsin, produced Long Island Sound and most of the topographic features of Suffolk County.

During the earlier part of the Wisconsin stage, the ice sheet moved to about the middle of the County and stopped, leaving a central ridge or terminal moraine. This ice sheet was called the Ronkonkoma sheet and the moraine, which runs the entire length of the County from the Nassau County line to Montauk Point, was given the same name. The glacier retreated from this point back to the north of Long Island and then re-advanced. The last advance terminated along the north shore and a hilly terminal moraine was formed. This last advance of the ice was called the Harbor Hill sheet, and the moraine was called the Harbor Hill Moraine.

After the two ice sheets reached their southern limits in the County, the sheets began to melt. As they melted, melt-water streams flowed south from the glaciers and carried a large volume of sand and gravel. This sand and gravel was deposited in a flat plain, developing what is known as an outwash plain. Two outwash plains are in the County, one between the Ronkonkoma moraine and the Atlantic Ocean and the other between the Harbor Hill moraine and the Ronkonkoma moraine.

After the retreat of the glaciers, recent developments further shaped Suffolk County as it exists today. Rainfall has eroded some of the hills and redeposited the material. The barrier beach is likely of recent origin and tidal marshes of the south shore are a recent geologic development. The Fire Island lighthouse location exemplifies this recent geologic development. When the lighthouse was built in the late 1800s, it was built on what was then the western tip. The western tip of Fire Island is now about six miles west of that lighthouse. Other recent geologic changes consist of the joining of small nearby islands to the main island by sand bars which have risen above sea level. Examples of these connected islands are Lloyd Neck, Eatons Neck, Montauk Point, and North Haven.

Elevation in the County ranges from almost 400 feet at West Hills to sea level. The most prominent landforms in the County are the two morainic ridges with their uneven surfaces, the gently sloping outwash plains extending southward from the hills, the eroded head-lands along the northwestern shore line of the County, and the barrier beaches of the south shore and the tidal marshes. Fishers Island, Great Gull Island, Plum Island, Gardiners Island, Shelter Island, and Robins Island, all part of Suffolk County, have uneven landforms typical of the morainic deposits.

Review of the Groundwater Atlas of the United States – Segment 12 (United States Geological Survey, 1995) indicates that bedrock is estimated to be located approximately 1200± feet under the EPCAL property. There are no geologic features at the subject property.

Soils

According to the *Soil Survey of Suffolk County, New York* (USDA, 1975) (*Soil Survey*), soils are classified according to distinct characteristics and placed (according to these characteristics) into "series" and "mapping units." A "series" is a group of mapping units formed from particular disintegrated and partly weathered rocks that lie approximately parallel to the surface and that are similar in arrangement and differentiating characteristics such as color, structure, reaction, consistency, mineralogical composition and chemical composition. "Mapping units" differ from each other according to slope, and may differ according to characteristics such as texture. There are places that have been surveyed where the soil material is so rocky, so shallow, so severely eroded, or so altered by man that it cannot be classified by soil series. These places are shown on the soil map and are described in the *Soil*

Survey, but are called "land types" and are given descriptive names. Therefore, not all mapping units are members of a soil series.

The *Soil Survey* maps the subject property with the following soil series and land types, including the Atsion series, Carver series, Cut and Fill land, Deerfield series, Haven series, Plymouth series, and Riverhead series. Table 69 indicates that over 25 percent of the site is comprised of cut and fill land, which has been previously disturbed. Relevant excerpts from the *Soil Survey* relating to the soil series and the specific mapping units are presented below and depicted in Figure 28.

Table 69 – Soil and Land Types at EPCAL Property

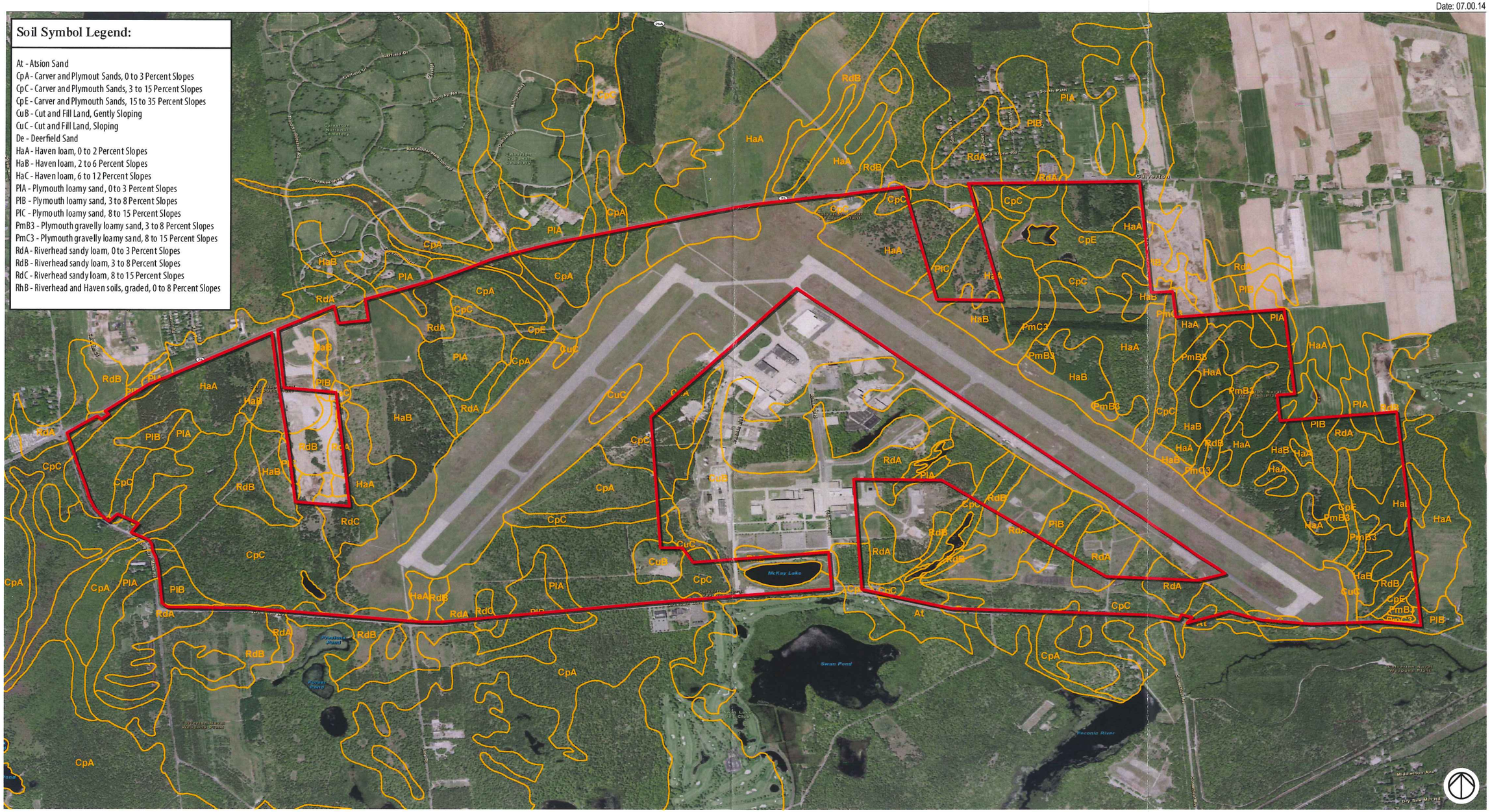
Symbol	Soil Type	Approximate Acres (ac)	Approximately Percentage of the Site (%)
At	Atsion Sand	7.82	0.34
CpA	Carver and Plymouth Sands, 0 to 3 percent slopes	191.21	8.29
CpC	Carver and Plymouth Sands, 3 to 15 percent slopes	327.51	14.20
CpE	Carver and Plymouth Sands, 15 to 35 percent slopes	57.50	2.49
CuB	Cut and fill land, gently sloping	614.95	26.67
CuC	Cut and fill land, sloping	17.22	0.75
De	Deerfield sand	3.14	0.14
HaA	Haven loam, 0 to 2 percent slopes	404.81	17.56
HaB	Haven loam, 2 to 6 percent slopes	269.23	11.68
HaC	Haven loam, 6 to 12 percent slopes	2.00	0.09
PlA	Plymouth loamy sand, 0 to 3 percent slopes	85.23	3.70
PlB	Plymouth loamy sand, 3 to 8 percent slopes	55.65	2.41
PlC	Plymouth loamy sand, 8 to 15 percent slopes	8.01	0.35
PmB3	Plymouth gravelly loamy sand, 3 to 8 percent slopes	32.37	1.40
PmC3	Plymouth gravelly loamy sand, 8 to 15 percent slopes	19.00	0.82
RdA	Riverhead sandy loam, 0 to 3 percent slopes	130.21	5.65
RdB	Riverhead sandy loam, 3 to 8 percent slopes	56.08	2.43
RdC	Riverhead sandy loam, 8 to 15 percent slopes	17.50	0.76
RhB	Riverhead and Haven soils, graded, 0 to 8 percent slopes	6.29	0.27
TOTAL		**2,305.73***	**100%**

*This total does not include wetlands and water bodies.

Date: 07.00.14

Soil Symbol Legend:

At - Atsion Sand
CpA - Carver and Plymout Sands, 0 to 3 Percent Slopes
CpC - Carver and Plymouth Sands, 3 to 15 Percent Slopes
CpE - Carver and Plymouth Sands, 15 to 35 Percent Slopes
CuB - Cut and Fill Land, Gently Sloping
CuC - Cut and Fill Land, Sloping
De - Deerfield Sand
HaA - Haven loam, 0 to 2 Percent Slopes
HaB - Haven loam, 2 to 6 Percent Slopes
HaC - Haven loam, 6 to 12 Percent Slopes
PlA - Plymouth loamy sand, 0 to 3 Percent Slopes
PlB - Plymouth loamy sand, 3 to 8 Percent Slopes
PlC - Plymouth loamy sand, 8 to 15 Percent Slopes
PmB3 - Plymouth gravelly loamy sand, 3 to 8 Percent Slopes
PmC3 - Plymouth gravelly loamy sand, 8 to 15 Percent Slopes
RdA - Riverhead sandy loam, 0 to 3 Percent Slopes
RdB - Riverhead sandy loam, 3 to 8 Percent Slopes
RdC - Riverhead sandy loam, 8 to 15 Percent Slopes
RhB - Riverhead and Haven soils, graded, 0 to 8 Percent Slopes



LEGEND
EPCAL Property
Soil Type

0 1,125 2,250 4,500 Feet

Source:Town of Riverhead GIS, Web Soil Survey, NRCS, USDA, available online at http://websoilsurvey.nrcs.usda.gov/.

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Soils Figure **28**

Atsion Series

The Atsion series consists of deep, nearly level, somewhat poorly drained to poorly drained, coarse-textured soils that formed in deep sandy outwash deposits. These soils are on plains adjacent to ponds, creeks and tidal inlets. They are also along the bottom of old glacial channels that are cut down close to the water table. These soils are throughout the County, but they generally are along the south shore and along the Peconic River. The native vegetation is red maple, pitch pine and white oak and highbush blueberries.

These soils have a seasonal high water table. Depth to the water table ranges from about six to 18 inches. Permeability is rapid in these sandy soils. Available moisture capacity is very low. Reaction is strongly acid to very strongly acid throughout. Natural fertility is low. The response of crops to lime and fertilizer is fair to poor. The root zone is 15 to 20 inches thick. Available moisture generally is more than adequate for most plants, but in areas that are drained, little moisture is available to plants that have shallow roots.

The mapping unit of the Atsion Series found at the subject property is Atsion Sand (At).

Carver Series

The Carver series consists of deep, excessively drained, coarse-textured soils. These soils are nearly level to steep and are throughout the county on rolling moraines and broad outwash plains. Slopes for these soils range from 0 to 35 percent. Native vegetation is white oak, black oak, scrub oak, and pitch pine.

Carver soils have a very low available moisture capacity. Natural fertility is very low. The response of crops to applications of lime and fertilizer is fair. Permeability is rapid throughout. The root zone is mainly in the uppermost 30 to 40 inches.

The mapping units of the Carver series found at the subject property are:

- Carver and Plymouth Sands, zero to three percent slopes (CpA)
- Carver and Plymouth Sands, three to 15 percent slopes (CpC)
- Carver and Plymouth Sands, 15 to 35 percent slopes (CpE)

Cut and Fill Land

Cut and fill land is made up of areas that have been altered in grading operations for housing developments, shopping centers, and similar non-farm uses. Generally, the initial grading consists of cuts and fills for streets or

parking lots. During this phase, excess soil material is stockpiled for final grading and topdressing around houses or other buildings.

Areas of Cut and fill land contain deep cuts in or near the sandy substratum of the soil or sandy fills of 28 inches or more. Generally, cuts are so deep or fills so thick that identification of soils by series is not possible. The soil material making up the upper 40 inches of this unit contains as much as 12 inches of sandy loam, loam, or silt loam in some places. The 28 inches that remain are loamy fine sand or coarser textured material. Cut and fill land is generally associated with Carver and Plymouth soils.

The soil material that remains after grading operations are completed has low available moisture capacity, is droughty, and is low to very low in natural fertility.

The areas of Cut and fill land have severe limitations to use in establishing and maintaining lawns and landscaping. The areas are not suited to farming operations because of the alteration of existing soil material and the presence of buildings and other man-made structures.

The mapping units associated with Cut and fill land that are found at the subject property are:

- Cut and fill land, gently sloping (CuB)
- Cut and fill land, sloping (CuC)

Deerfield Series

The Deerfield series consists of deep, moderately-well drained, coarse textured soils that formed in sand or loamy sand materials over deep layers of sand or sand and gravel. This nearly level soil is throughout the county in depressional areas, or it is adjacent to wetter soils that form the borders around lakes, ponds or tidal marshes. It is primarily on outwash plains. Native vegetation is white pine, pitch pine, white oak, red oak and huckleberry bushes.

Deerfield soils have very low available moisture capacity in the surface layer and upper part of the subsoil; however, deeper rooted plants can draw moisture from the water table. Permeability is rapid throughout the surface layer and subsoil. A seasonal high water table is at a depth of about 18 to 24 inches. Natural fertility is low and crop response to applications of lime and fertilizer is fair. The root zone is mainly in the upper 25 to 30 inches.

The mapping unit of the Deerfield series found at the subject property is Deerfield Sand (De).

Haven Series

The Haven series consists of deep, well-drained medium-textured soils that formed in a loamy or silty mantle over stratified coarse sand and gravel. These soils are present throughout the county, but most areas are on outwash plains between the two terminal moraines. Slopes range from zero to 12 percent, but they generally are between one and six percent. Native vegetation consists of black oak, white oak, red oak, scrub oaks, and pitch pine.

Haven soils have high to moderate available moisture capacity. Reaction is strongly acid to very strongly acid throughout. Natural fertility is low and the response of crops to lime and fertilizer is good. Internal drainage is good. Permeability is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. The root zone is mainly 25 to 35 inches thick.

The mapping units associated with the Haven series found at the subject property are:

- Haven loam, zero to two percent slopes (HaA)
- Haven loam, two to six percent slopes (HaB)
- Haven loam, six to 12 percent slopes (HaC)

Plymouth Series

The Plymouth series consists of deep, excessively drained, coarse-textured soils that formed in a mantle of loamy sand or sand over thick layers of stratified coarse sand and gravel. These nearly level to steep soils are throughout the county on broad, gently sloping to level outwash plains and on undulating to steep moraines. Native vegetation consists of white oak, black oak, pitch pine, and scrub oak.

Plymouth soils have low to very low available moisture capacity. Natural fertility is low and the response of crops to lime and fertilizer is fair. Reaction is strongly acid to very strongly acid throughout the profile of most of these soils, but is strongly acid to medium acid in the lower substratum of soils in the silty substratum phase. The root zone is confined mainly to the upper 25 to 35 inches. Internal drainage is good. Permeability is rapid in all these soils except in those of the silty substratum phase. Permeability is moderate in the silty layer of soils in the silty substratum phase.

The mapping units of the Plymouth series found at the subject property are:

- Plymouth loamy sand, zero to three percent slopes (PlA)
- Plymouth loamy sand, three to eight percent slopes (PlB)
- Plymouth loamy sand, eight to 15 percent slopes (PlC)

- Plymouth gravelly loamy sand, three to eight percent slopes (PmB3)
- Plymouth gravelly loamy sand, eight to 15 percent slopes (PmC3)

Riverhead Series

The Riverhead series consists of deep, well-drained, moderately coarse textured soils that formed in a mantle of sandy loam or fine sandy loam over thick layers of coarse sand and gravel. These soils occur throughout the county in rolling to steep areas on moraines and in level to gently sloping areas on outwash plains. These soils range from nearly level to steep; however, they are generally nearly level to gently sloping. Native vegetation consists of black oak, white oak, red oak and scrub oak.

Riverhead soils have moderate to high available moisture capacity. Internal drainage is good. Permeability is moderately rapid in the surface layer and in the subsoil and very rapid in the substratum. Natural fertility is low and the response of crops to lime and fertilizer is good. Reaction is strongly acid to very strongly acid throughout. The root zone is mainly in the upper 25 to 35 inches. In many places where these soils have been farmed, a plow pan is in the lower part of the surface layer and in the upper part of the subsoil.

The mapping units associated with the Riverhead series found at the subject property include:

- Riverhead sandy loam, zero to three percent slopes (RdA)
- Riverhead sandy loam, three to eight percent slopes (RdB)
- Riverhead sandy loam, eight to 15 percent slopes (RdC)
- Riverhead and Haven soils, graded, zero to eight percent slopes (RhB)

The engineering and planning limitations for the specific mapping units and land types situated within the subject property are included in Table 70.

Table 70 – Soil Engineering and Planning Limitations

	Mapping Unit or Land Type	Slopes	Sewage Disposal Fields	Homesites*	Streets and Parking Lots	Lawns, Landscaping, and Golf Fairways
At	Atsion Sand	Nearly Level	SE:(A)	SE:(A)	M:(A)	SE:(A), (C)
CpA	Carver and Plymouth sands	0-3 %	SL[7]	SL	SL	SE:(C)
CpC	Carver and Plymouth sands	3-15 %	SL to M:[7](E)	SL to M:(E)	M to SE:(D)	SE:(C)
CpE	Carver and Plymouth sands	15-35 %	SE:(D)[7]	SE:(D)	SE:(D)	SE:(C), (D)
CuB	Cut and Fill land, gently sloping[6]	1-8%	SL	SL	M:(D)[4]	SE:(C)
CuC	Cut and Fill land, sloping[6]	8-15%	M:(D)	M:(D)	SE:(D)[5]	SE:(C)
De	Deerfield sand	0-3%	M:(B)[7]	M:(B)	M:(B)	SE:(C)
HaA	Haven loam	0-2%	SL[7]	SL	SL	SL
HaB	Haven loam	2-6%	SL[7]	SL	M:(D)[4]	SL
HaC	Haven loam	6-12%	M:(D)[7]	M:(D)	SE:(D)[5]	M:(D)
PlA	Plymouth loamy sand	0-3%	SL[7]	SL	SL	SE:(C)
PlB	Plymouth loamy sand	3-8%	SL[7]	SL	M:(D)[4]	SE:(C)
PlC	Plymouth loamy sand	8-15%	M:(D)[7]	M:(D)	SE:(D)[5]	SE:(C)
PmB3	Plymouth gravelly loamy sand, eroded	3-8%	SL[7]	SL	M:(D)[4]	SE:(C), (F), (G)
PmC3	Plymouth gravelly loamy sand, eroded	8-15%	M:(D)[7]	M:(D)	SE:(D)[5]	SE:(C), (F), (G)
RdA	Riverhead sandy loam	0-3%	SL[7]	SL	SL	SL
RdB	Riverhead sandy loam	3-8%	SL[7]	SL	M:(D)[4]	SL
RdC	Riverhead sandy loam	8-15%	M:(D)[7]	M:(D)	SE:(D)[5]	M:(D)
RhB	Riverhead and Haven soils, graded	0-8%	SL[7]	SL	M:(D)[4]	SL

*Homesite" is the only designation in the *Soil Survey* that represents building construction. Homesites are defined by the *Soil Survey* as sites for "homes or for buildings of three stories or less."

Engineering and Planning Limitation Rating:
SL = Slight - Few or no limitations or limitations can be overcome at little cost.
M = Moderate - Limitations are harder to correct or not possible to correct entirely.
SE = Severe - Use severely limited by some characteristics difficult or costly to overcome.
NR = Not Rated

Reasons for Limitations:
(A) Seasonal High Water Table at Depth of ½ to 1½ feet
(B) Seasonal High Water Table at Depth of 1½ to 2 feet
(C) Sandy Surface Layer
(D) Slopes
(E) Slopes in Places
(F) Gravel
(G) Erosion

1 High water table is less restrictive for houses without basements
2 Stability, as used here, refers to the tendency of the soils to slough on a ditch 6 feet deep; limitations are less restrictive for shallower ditches.
3 In some areas, the water table is 1½ to 4 feet below the surface of these parts. Downward movement of water is impeded by silt and sand.
4 Slight for town or county roads.
5 Moderate for town or county roads.
6 These units are mainly in built-up areas, and they are not well suited to uses other than present use. Interpretations in the table apply to small ungraded areas.
7 Possible pollution hazard to lakes, springs, or shallow wells in these rapidly permeable soils.
8 If the till layer is less than 3 feet thick in these soils, the limitation is severe.
9 The till substratum of these soils is more difficult to excavate than the substratum of other soils in the county; however, the till does not appreciably reduce workability.
10 Water infiltration rates are slightly impeded by silty subsoil in places.

Source: http://websoilsurvey.nrcs.usda.gov and *Soil Survey of Suffolk County*, New York (USDA, 1975)

On-site soils were evaluated in 1997 as part of the environmental review of the prior reuse plan. According to the *1997 EIS*, a soil boring and sampling program for parts of the NWIRP Calverton's fenced-in area was undertaken. The depths of the borings ranged from six to 22 ft (1.8 to 6.7 m) below surface level. Analysis of the borings indicate that much of the fenced area is underlain predominantly by fine to coarse sediments of probable glaciofluvial (glacier and water-based) origin. Three district lithofacies were encountered and include (NUS, 1995):

- Upper lithofacies consist predominantly of silty, fine-grained sand with varying amounts of peat and clay, representing a mixture of soil, fill, and glacial deposits;
- Middle lithofacies consist of predominantly fine-grained sand with varying amounts of medium to coarse-grained sand, and pebbles, probably representing undisturbed glacial deposits; and
- Lower lithofacies consist of micaceous, silty clay.

Topography

According to the 1997 EIS, most of the EPCAL property is relatively flat, intermorainal area between the Harbor Hill end moraine to the north and the Ronkonkoma terminal moraine to the south. The landscape surrounding the site includes broad farm fields, interspersed with large forested area. The terrain is relatively flat, broad, glacial outwash plain, sloping from north to south.

According to the United States Geological Survey (USGS) Topographic Map (Wading River Quadrangle), elevations at the subject property range from 30± feet above mean sea level (amsl), within the southeastern portion of the subject property, to 95± feet amsl, within the northwestern portion of the property (see Figure 29).

In general, elevations increase from the northeast to the southeast, toward NYS Route 25 and Wading River Road. Traveling along NYS Route 25, elevations at the subject property follow that elevation change, varying between approximately 70 and 85 feet amsl. Traveling westerly along Grumman Boulevard, elevations at the subject property increase from approximately 35 to 70 feet amsl. Traveling northerly along Wading River Manor Road, elevations generally fluctuate between 60 and 75 feet amsl.

Thus, the general topographic pattern of the subject property is that lower elevations occur in the eastern areas of the property and higher elevations in the western portions of the subject property. A slope analysis showing the existing conditions was performed, and is presented in Table 71, in Section 3.9.2, below.

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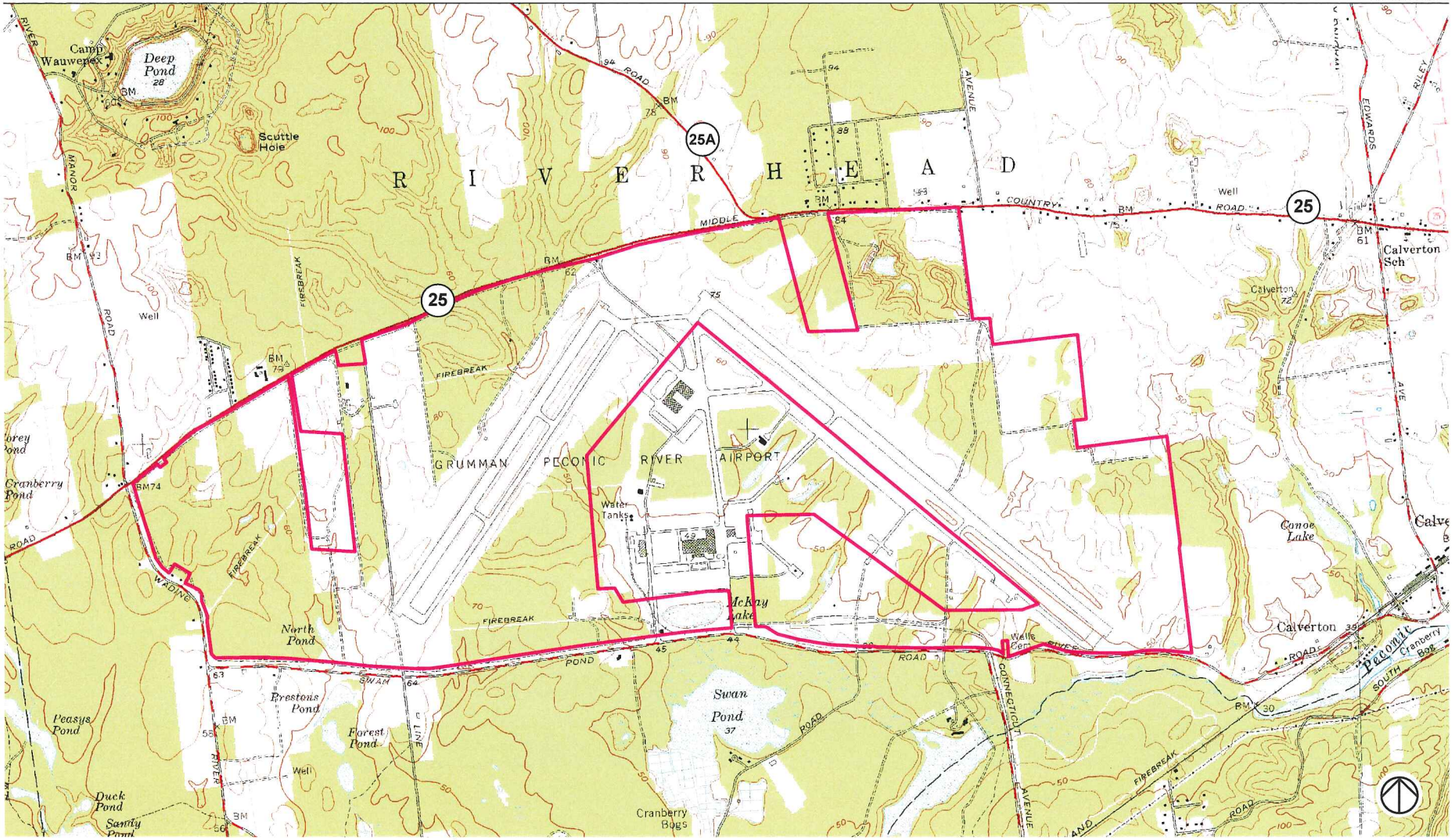

LEGEND

EPCAL Property

Source: USGS Topographic Map, 7.5 Minute Series, Wading River, N.Y. (1967) and Riverhead, N.Y. (1956) Quadrangles.

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USGS Topographic Map

Figure **29**

3.9.2 Potential Impacts

Geology

Since 1) bedrock is estimated to be located approximately 1200 feet beneath the EPCAL Property, 2) there are no geologic features at the subject property, and 3) no extensive excavation or filling of the property is anticipated, implementation of the proposed action would have no impact on the geological resources underlying the property.

Soils and Topography

A portion of the EPCAL Property has been previously disturbed by various earth-moving activities associated with the site's use as naval weapons production and air plane testing facility. While additional soils will be disturbed in order to implement the proposed action, the soils located in areas designated for preservation or open space, which comprise approximately 1,500 acres (65± percent of the site), would not be disturbed or altered.

In general, the soils on the site are typically deep, nearly level to gently-sloping and well-drained. Therefore, none of the proposed activities (e.g., subdivision infrastructure, and the development of mixed use areas for industrial, commercial and other permitted and supportive uses, and their associated utilities) are expected to result in significant adverse impacts to the on-site soils. While development would require the temporary movement of soils for burying utilities, as well as leveling and grading for site preparation, it is anticipated that the soils that would be disturbed would be used elsewhere on the site. Therefore, development would not permanently displace these soils, although their compositions may change somewhat due to mixing.

Development of individual lots within the EPCAL Property would result in the disturbance of soils for foundation excavation, utility installation, grading, paving, and landscaping. The disturbance of soils for construction and regrading activities increases the potential for erosion and sedimentation.

Based on the soil characteristics and the planning and engineering limitations defined in the *Soil Survey*, the site has a variety of soil types, with varying engineering and planning limitations. These limitations also vary by type of proposed use. As part of site-specific applications for development within the EPCAL Property, applicants would be required to conduct on-site borings to determine specific soil conditions, and to ensure that appropriate measures are implemented to mitigate issues that may arise (e.g., the potential need for topsoil to

establish landscaping, the potential need for excavation of unsuitable soils and the potential importation of material to facilitate proper drainage).

The disturbance of soils for construction and regrading activities increases the potential for erosion and sedimentation. As indicated in the *New York Guidelines for Urban Erosion and Sediment Control*, the erosion potential of a site is determined by five factors: soil erodibility, vegetative cover, topography, climate, and season. Soil erodibility is dependent on the structure, texture and percentage of organic matter in the soil. The presence of vegetation on a site protects soils from the erosive forces of precipitation and overland flow, as top growth vegetation shields the soil surface from precipitation while the root mass holds soil particles in place. Also, grasses limit the speed of runoff and help to maintain the infiltration capacity of the soil. The topography of a site, including slope length and steepness, influences the volume and velocity of surface runoff. Long slopes carry more volume to the base of the slope, and steep slopes increase runoff velocity.

All development within the EPCAL Property would be required to employ proper erosion and sedimentation controls (e.g., the strategic placement of silt fencing and hay bales to prevent overland runoff and to protect on-site drywells from siltation, maintenance of construction entrances to minimize the transport of sediment on to roadways, placement of appropriate cover over soil stockpiles to protect from wind and precipitation).

In conjunction with the preparation of the final site plans for the subdivision (and the individual lots if disturbance is more than one acre in size), a comprehensive Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented, which will detail conformance with water quality and quantity criteria, as well as specific structural measures to be implemented during construction. The Town of Riverhead requires the preparation of a SWPPP in accordance with Chapter 110, Stormwater Management and Erosion and Sediment Control, of the Town Code.

With suitable and proper erosion and sedimentation controls, in accordance with Chapter 110 of the Town Code, it is not expected that site redevelopment would result in significant adverse impacts associated with ground disturbance, regrading and/or construction activities. Furthermore, based upon the foregoing analysis, no significant adverse impacts to native soils are anticipated as a result of the implementation of the proposed action.

As with any typical development project, the disturbance of soil (as described above) and the grading of land would be expected. However, since the topography is relatively flat with moderate slopes, the topographic conditions would not be expected to limit the potential development/redevelopment of the site. Furthermore, as part of the site plan approval, applications for development would be required to comply with Chapter 63, Grading, of the Town Code.

As shown in the table below, a pre- and post-construction slope analysis was prepared to illustrate the slope conditions at the site.

Table 71 – Pre- and Post-Construction Slope Analysis

Slope Category	Pre-Construction Area (Acreage)*	Percentage of Site	Post-Construction Area (Acreage)*	Percentage of Site
0 to 10 percent	2,115 acres	91%	2,092 acres	90%
10 to 15 percent	116 acres	5%	116 acres	5%
15 percent or greater	93 acres	4%	116 acres	5%

*Approximate

Based upon anticipated future development of the EPCAL Property in accordance with the Subdivision Map, the cut and fill of the subdivision infrastructure (including roads and stormwater facilities) is expected to be balanced.

This does not address earthwork on individual lots. As the proposed development on individual lots occurs during the expected build-out period, site engineering plans for each of the parcels will be developed based on detailed and accurate topographic information and detailed architectural design for the buildings. There would be opportunity during the development of the various lots to design grading plans so as to ensure earthwork will be balanced as development proceeds. As such, no significant adverse impacts to topographic features would be anticipated.

3.9.3 Proposed Mitigation

In order to ensure that there will be no significant adverse impacts to soils or topography upon implementation of the proposed action, the following mitigation measures will be employed:

- During the course of construction (both for the subdivision infrastructure and the individual lots), there is a potential for soil erosion, as is the case with any construction project that includes disturbance of the existing ground surface. Erosion and sedimentation control measures would be undertaken prior to and during construction, in accordance with construction's best management practices and town regulations, specifically Chapter 110 of the Town Code, to minimize potential erosion and sedimentation.

- Site-specific applications for redevelopment would require on-site borings in order to determine specific soil conditions, and to ensure that appropriate construction measures are implemented.

- Parcels to be developed or redeveloped would implement dust control measures during dry or windy periods. The appropriate methods of dust control would be determined by the surfaces affected (i.e., roadways or disturbed areas) and would include, as necessary, the application of water, spray adhesives, the use of stone in construction roads, and vegetative cover.

- As more detailed topographic and architectural plans are developed throughout the build-out period, grading plans would be refined to bring the earthwork more into balance as development proceeds.

- Phasing of the project over a number of years would minimize the impact of excavation, as it would spread out the number of truck trips associated with soil removal.

3.10 Water Quality and Hydrology

3.10.1 Existing Conditions

Groundwater Resources

Long Island is considered a sole source aquifer region, which means that groundwater is the single water supply source. The EPCAL Property is located in this region, and therefore, land uses have the potential to impact the quality of the water supply. According to the NYSDEC, "the aquifers underlying Long Island are among the most prolific in the country. Almost all of Long Island's drinking water is from groundwater with surface water an insignificant contributor...The three most important Long Island aquifers are the Upper Glacial Aquifer, the Lloyd Aquifer, and the Magothy Aquifer."

More specifically, according to the NYSDEC,[64]

> *"The Upper Glacial Aquifer is an unconfined aquifer directly underlying the ground surface. The Upper Glacial aquifer was formed during the last ice age. Of note, the Harbor Hill Moraine and Ronkonkoma Moraine represent two different glacial advances and run roughly east to west for the length of Long Island. They comprise poorly sorted glacial till (sand, pebbles, rock, boulders) deposited at the glacier's leading edge. Found between these moraines and to the south, are outwash plains of well sorted sand and gravel.*
>
> *The Magothy is the largest of Long Island's aquifers. Consisting of sand deposits alternating with clay, it attains a maximum thickness of approximately 1,100 feet and is the source of water for most of Nassau County and about half of Suffolk County. The formation can be seen in the coastal bluffs of the north shore and plunges under the land surface to the south.*
>
> *The Raritan Formation underlies the Magothy. Its two primary units are an upper clay member and a lower sand member named the Lloyd Sand. The clay member separates the Magothy and Lloyd aquifers and serves as a confining unit for the underlying Lloyd Sand aquifer. The clay member has a maximum thickness of 300 feet.*
>
> *The Lloyd Aquifer is the deepest and oldest of Long Island's aquifers. It is a sand and gravel formation ranging in thickness from zero to five hundred feet. At its deepest, it is 1,800 feet below the surface. The water contained in the Lloyd aquifer is about six thousand years old. Not many wells tap this formation and New York Environmental Conservation Law §15-1528 establishes a moratorium on the use of water from this*

[64] Source: http://www.dec.ny.gov/lands/36183.html.

formation in order to maintain it for future generations. The Lloyd is underlain by bedrock."

Depth to Groundwater and Groundwater Divide

As identified in Section 3.9.1 of this DSGEIS, surface elevations at the subject property range from approximately 30± feet amsl to 95± feet amsl, based upon a review of the USGS Topographic Map (see Figure 29) and the 1997 EIS. Based upon a review of the "Water-table and Potentiometric-surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, April-May 2010, USGS, 2013," the water table elevation beneath the subject property ranges from approximately 35± feet amsl to 45± feet amsl, with it being deeper on the western side of the site (see Figure 30). Water table altitudes generally mimic the prevailing topographic elevation pattern; for this project, the highest being found at the north and west, and the lowest occurring at the eastern boundary of the site. Accordingly, in those areas of the subject property with the lowest topographic elevations, the water table is at or approaching the ground surface. Thus, based upon published data, the depth-to-water ranges from approximately zero to 60 feet below grade surface (bgs). However, data from soil borings taken as part of the *1997 EIS* indicated that the depth to the water table is estimated to range from approximately five feet beneath the south-central part of the "fenced area" (near McKay Lake) to approximately 20 feet at the northeastern portion of the site, near Route 25.

Groundwater flow on Long Island is characterized by a groundwater divide, extending east-west along its length. To the north of the groundwater divide, horizontal groundwater generally flows toward the north; in areas south of the divide, it flows toward the south. At a point west of the Brookhaven National Laboratory (Upton, New York), the main groundwater divide splits into northern and southern branches, continuing along the North and South Forks of Long Island. The northern branch of the groundwater divide bisects the subject property, such that the northern portion of the site exhibits horizontal groundwater flow toward the north (see Figure 31). The southern portion of the site is situated between the northern and southern branches of the divide, such that shallow flow recharge travels toward the Peconic River, or downward and eastward within the Magothy aquifer.

The Long Island Comprehensive Waste Treatment Management Plan (208 Study)

In 1978, Long Island was divided into eight Hydrogeologic Zones in the Long Island Comprehensive Waste Treatment Management Plan (hereinafter referred to as the "208 Study") prepared by the Long Island Regional Planning Board. These zones

were delineated based upon groundwater recharge characteristics, existing water quality, water supply potential, and other factors, and their identification assisted in the development of targeted wastewater management approaches for each zone with the intent of protecting Long Island's aquifers.

The subject property is located in Zone III (see Figure 32), which encompasses the eastern portion of the Magothy recharge zone and is generally of high water quality. Zone III is located in central Suffolk and a small portion of eastern Suffolk County. This zone is a recharge area, and includes a major portion of the Long Island Central Pine Barrens. Most of the area within the zone is relatively undeveloped and contains groundwater of excellent quality in the Upper Glacial, Magothy and Lloyd aquifers. Some contamination occurs in the Upper Glacial aquifer in the western portion of the zone. This contamination seems to be associated with the impacts of development, including the discharge from on-site sanitary systems. It appears likely that there are several small plumes of contamination that originated from sewage treatment plants, old landfills, or as a result of spills and other activities.

The 208 Study lists structural, non-structural and non-point source control options for wastewater management for each Hydrogeologic Zone. Non-point source controls must be regarded as an essential part of a comprehensive wastewater treatment management plan (page 80).

The Highest Priority Areawide Alternatives for Zone III (pages 81-82) are as follows:

- Require nitrogen removal for treatment plants recharging effluent
- Provide for the routine maintenance of on-site [sanitary] disposal systems
- Restrict the use of inorganic, fast-acting fertilizers. Promote the use of low-maintenance lawns
- Control stormwater runoff to minimize transport of nutrients, metals and organic chemicals to groundwaters
- Prohibit the use of certain chemical cleaners in on-lot [sanitary] systems.

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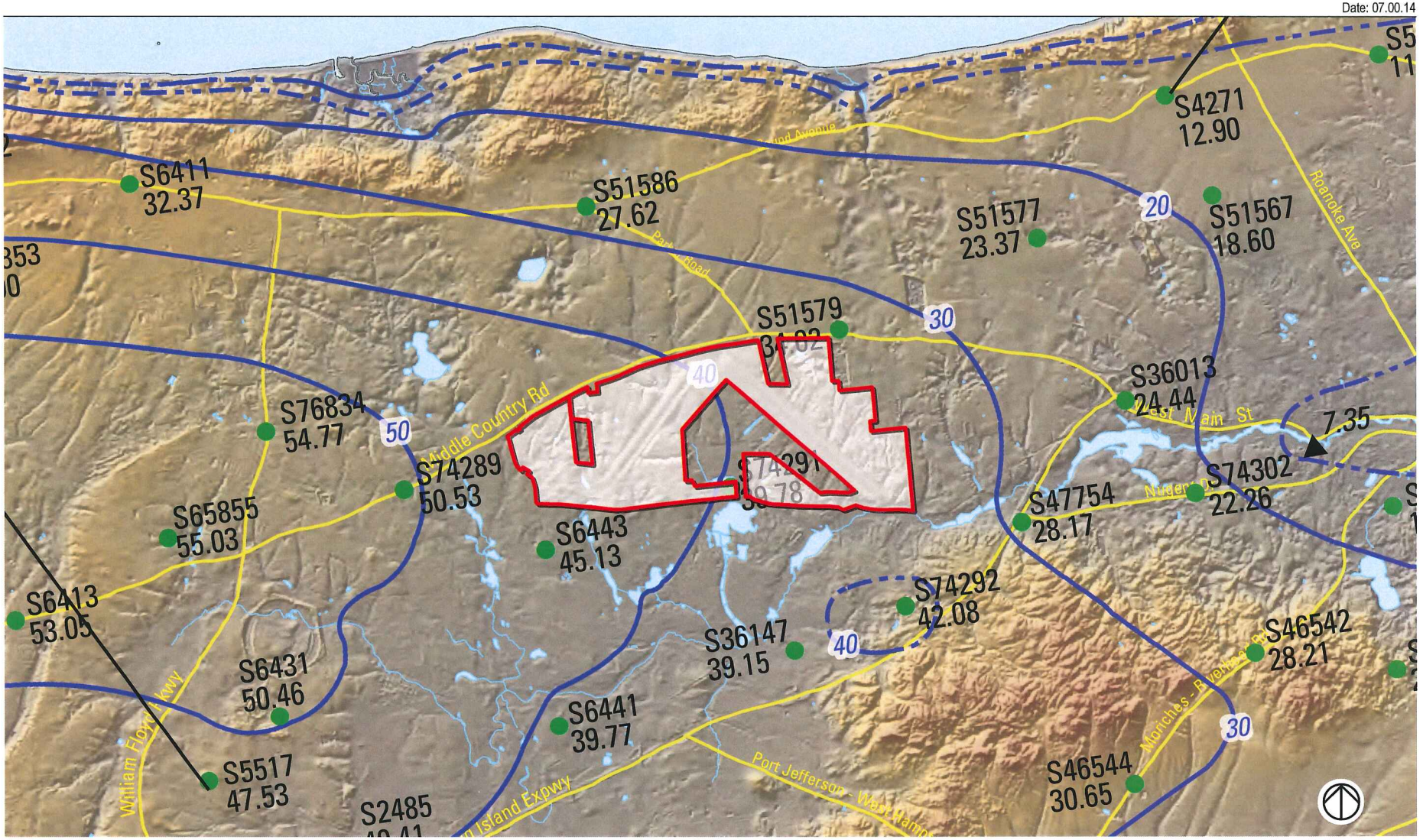

LEGEND

EPCAL Property

Source: Water-table and Potentiometric-surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, April-May 2010, USGS, 2013.

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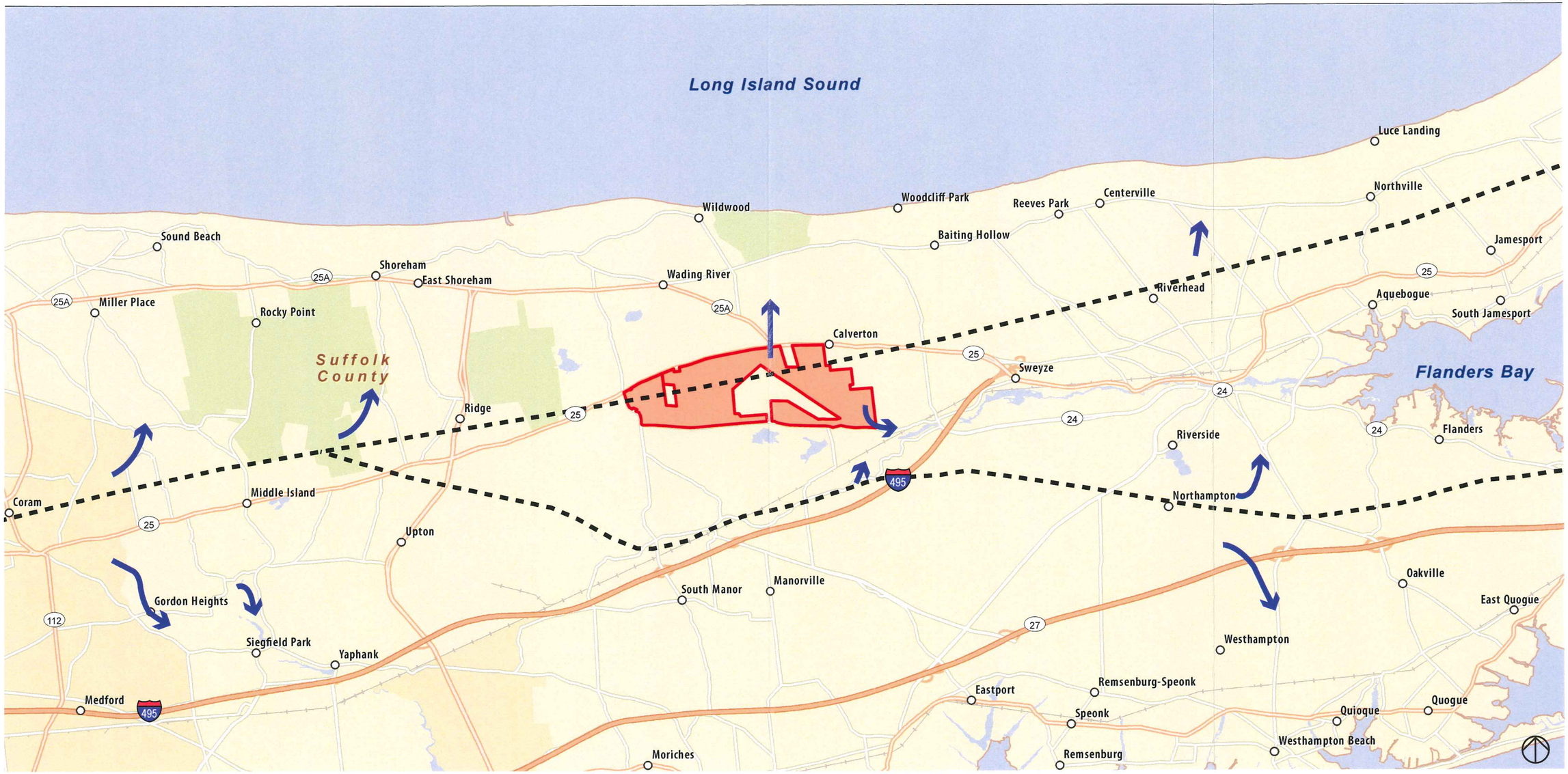
Water Table Elevation

Figure
30

Date: 07.00.14



LEGEND

- EPCAL Property
- Long Island Groundwater Divide
- Direction of Groundwater Flow

Source: Town of Riverhead GIS, the Long Island Comprehensive Special Groundwater Protection Area Plan, Long Island Regional Planning Board, 1992

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Groundwater Divide

Figure **31**

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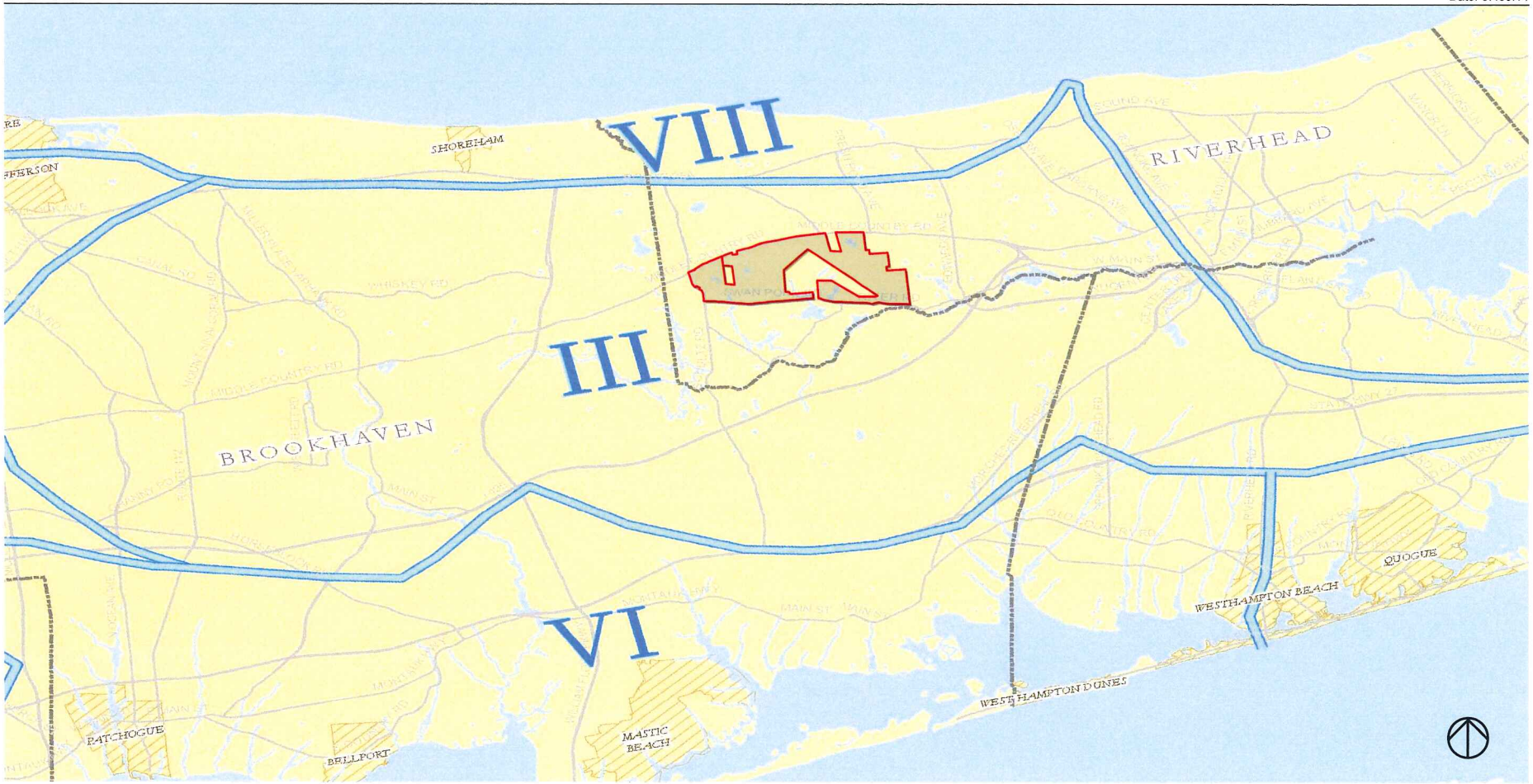

LEGEND

- EPCAL Property
- Hydrogeologic Zone Boundary
- III Hydrogeologic Zone
- Village Boundary

0 7,500 15,000 30,000 Feet

Source: Town of Riverhead GIS; Suffolk County Hydrogeologic Zones Map http://www.suffolk.ny.us/upload/planning/pdfs2/map/2011_pdf/hydrozones_122010.pdf, October 31, 2011

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Hydrogeologic Zones

Figure **32**

Final Long Island Groundwater Management Plan

The Final Long Island Groundwater Management Plan (NYSDEC, 1986) is a study funded by a grant from the U.S. Environmental Protection Agency (USEPA) under Section 208 of the Federal Clean Water Act (CWA). Under this grant, the NYSDEC, with cooperation and advice of numerous other State, Federal, and local agencies involved with groundwater management on Long Island, conducted an intensive review of Long Island groundwater problems and the programs that address them, and prepared a detailed Groundwater Management Program designed to assure a viable, high quality groundwater resource for the future.

According to the plan, the subject property is partially within an area identified with shallow groundwater contamination with organics. The three major categories of organics considered to be high priority water quality problems are: industrial solvents and degreasers; gasoline and petroleum product constituents; and pesticides and herbicides. The plan does not identify the subject property as being within areas of groundwater contamination with aldicarb (a pesticide) or nitrates.

Special Groundwater Protection Areas

According to the Long Island Comprehensive Special Groundwater Protection Area Plan (the *"SGPA Plan"*) (LIRPB, 1992), the EPCAL Property is situated within the Central Suffolk Special Groundwater Protection Area (SGPA) (see Figure 33). SGPAs are generally largely-undeveloped or sparsely-developed geographic areas of Long Island that provide recharge to portions of the deep flow aquifer system. They represent a unique final opportunity for comprehensive, preventative management to preclude or minimize land use activities that can have a deleterious impact on groundwater.

The Central Suffolk SGPA is the largest of nine SGPAs on Long Island, encompassing approximately 195 square miles within the Towns of Brookhaven, Riverhead, Southampton, and a small portion of the Town of Southold. The Central Suffolk SGPA includes virtually all of the areas designated as the Central Suffolk Pine Barrens,[65] and closely approximates the boundaries of Hydrogeologic Zone III. The Central Suffolk SGPA is considered to be Critical Environmental Area (CEA) for the purposes of SEQRA.

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[65] In 1993, subsequent to the preparation of the *SGPA Plan*, the New York State Legislature passed the "Long Island Pine Barrens Protection Act," protecting the largest, "central" remaining Long Island Pine Barrens region. The principal goals of the Act were the protection of groundwater, surface water, and future drinking water supplies for 1.8 million residents and the protection of a threatened landscape containing the greatest diversity of rare, threatened and endangered species in the State.