2.19 CONSTRUCTION

2.19.1 INTRODUCTION

As stated in the *CEQR Technical Manual,* construction impacts, although temporary in duration, can have disruptive and noticeable effects on the area that surrounds a project site. Construction impacts are considered to become significant when construction activity would result in a significant adverse effect in such technical areas as land use, open space, historic and cultural resources, natural resources, hazardous materials, transportation, air quality, noise, and neighborhood character.

The overall project is referred to as the Charleston Mixed-Use Development (the "Proposed Project"). The Proposed Project would develop an approximately 66-acre parcel (the "Development Area"), located in Charleston, Staten Island, with new parkland, retail, residential (senior housing), and community facility uses (a proposed school and proposed library), as well as the mapping and construction of public streets including Englewood Avenue (see **Chapter 1**). In addition, as part of the Proposed Project, an existing approximately 20-acre Conservation Area, located adjacent to the Development Area, would be mapped as parkland, and the private roadways of Bricktown Way and Tyrellan Avenue would also be mapped. The Development Area, the Conservation Area, and the existing private streets to be mapped and constructed, constitute the "Project Area". In total, the Project Area encompasses approximately 93 acres. The Project Area is generally bounded to the north by the future northern limit of Englewood Avenue and Clay Pit Pond State Park Preserve ("CPPSPP"), to the south and east by Veterans Road West, to the west by Arthur Kill Road, and to the south by the shopping center known as the Bricktown Centre at Charleston Mall.

Construction within the Development Area is expected to occur over several years. Retail Site "A" and Fairview Park are expected to be complete by the year 2015. The development of the remainder of the Development Area is expected to be complete by the year 2020, including the development of Retail Site "B," the school, and the senior housing, along with the construction of Englewood Avenue. Land clearing and construction-related activities for the 2015 analysis year are expected to occur over an approximately 24-month period for Fairview Park and the same approximately 24-month period for Retail Site "A." Land clearing and construction-related activities for the 2020 analysis year are expected to occur over an approximately 12-month period for the construction of Englewood Avenue, over approximately 24-month periods for Retail Site "B" and the senior housing components, and over an approximately 30-month period for the proposed school.

The determination of significance and need for related mitigation is generally based on the duration and magnitude of the potential construction impacts. Construction duration is often broken down into short-term (less than two years) and long-term (two or more years), for analysis of potential impacts. Where the duration of construction is expected to be short-term, any impacts resulting from such short-term construction generally do not require a detailed assessment. However, there are instances where a potential impact may occur over a short duration, and may be considered significant because it raises a specific concern. In such instances, a targeted assessment of the relevant technical area may be appropriate.

Construction activities resulting from the Proposed Project are expected to span in excess of two years, and as such, the effect is considered long-term. Additionally, the Development Area contains identified historic and cultural resources, and areas with natural resources. As such, further assessments regarding the potential for construction-related impacts are warranted.

The following sections of this chapter describe the general construction schedule and type of construction activities expected as a result of the Proposed Project, and provide an assessment of the potential impacts associated with the construction-related activities.

2.19.2 CONSTRUCTION SCHEDULE AND ACTIVITIES

2.19.2.1 Typical Construction Activities

The following is a general outline of construction stages expected on the majority of the individual development sites within the Development Area over a typical 24-month period. For projects of slightly greater duration, the stages would have approximately the same proportional length.

- Months 1-3: Site clearance, excavation, and foundation. The first months of construction generally entail site clearance; digging, pile-driving, pile-capping, and excavation for the foundation; dewatering (to the extent required), and reinforcing and pouring of the foundation. Typical equipment used for these activities would include excavators, backhoes, tractors, pile-drivers, hammers, and cranes. Trucks would arrive at the site with pre-mixed concrete and other building materials, and would remove any excavated material and construction debris.
- Months 4-8: Erection of superstructures. Once the foundations have been completed, the construction of the building's steel framework, ramps, and decking generally take place. This process involves the installation of beams, columns, and would require the use of cranes, derricks, hoists, and welding equipment, as warranted.
- Months 9-24: Facade and roof construction, mechanical installation, interior and finishing work. This generally includes the assembly of exterior walls and cladding; installation of heating, ventilation and air conditioning (HVAC) equipment and ductwork; installation and checking of elevator, utility, and life safety systems; and work on interior walls and finishes. During these activities, use of hoists and cranes generally continues and truck deliver materials and remove waste. Much of this work occurs when the building is fully enclosed, and therefore is often not as disruptive to the surrounding neighborhood.

2.19.2.2 Year 2015

Within the Development Area, construction of Retail Site "A" and Fairview Park are expected to be complete by the year 2015.

Land clearing and construction-related activities for the 23-acre Fairview Park are expected to occur over an approximately 24-month period. Construction activities for the park are expected to begin in January 2014 and last through the end of 2015. It is expected that a total of 54 trucks trips and 1,656 vehicle trips from construction workers would occur over this 24-month construction period, with an average of two trucks trips and 69 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal and dispersed throughout the work day (no more than one in any hour).

For Retail Site "A," land clearing and construction-related activities are expected to occur over an approximately 24-month period. Construction activities for 11-acre Retail Site "A," which includes the library, are expected to begin in January 2014 and last through December 2015. It is expected that a total of 8,160 trucks trips and 39,146 vehicle trips from construction workers would occur over this 24-month construction period, with an average of 340 trucks trips and 1,631 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal (at most four in a peak hour) and dispersed throughout the work day.

In total, during the full 24-month period of construction activities for these developments by the 2015 year, it is expected that, on average, there would be approximately 16 truck trips (expressed as Passenger Car Equivalents or "PCEs") and approximately 78 construction worker vehicle trips per day, with construction activities ending in the final months of 2015.

2.19.2.3 Year 2020

Construction in the remainder of the Development Area is expected to be complete by the year 2020, including the development of Retail Site "B," the school, the senior housing, and the Englewood Avenue and other road constructions.

Land clearing and construction-related activities for the construction of Englewood Avenue to Veterans Road West are expected to occur over an approximately 12-month period, beginning in January 2016 and ending in December 2016. It is expected that a total of 3,756 trucks trips and 200 vehicle trips from construction workers would occur over this 12-month construction period, with an average of 313 trucks trips and 17 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal and dispersed throughout the work day, with at most 14 truck trip PCEs in a single day.

For the construction of Retail Site "B," land clearing and construction-related activities are expected to occur over an approximately 24-month period, beginning in September 2016 and ending in August 2018. It is expected that a total of 4,762 trucks trips and 18,161 vehicle trips from construction workers would occur over this 24-month construction period, with an average of 198 trucks trips and 757 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal and dispersed throughout the work day, with at most nine truck trip PCEs in a single day, and approximately 35 construction worker vehicle trips per day.

Land clearing and construction-related activities for the senior housing components (the detached single-family units, multi-family building and community center space) are expected to occur over an approximately 24-month period, beginning in September 2018 and ending in August 2020. It is expected that a total of 4,909 trucks trips and 9,607 vehicle trips from construction workers would occur over this 24-month construction period, with an average of 205 trucks trips and 400 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal and dispersed throughout the work day, with at most 18 truck trip PCEs in a single day, and approximately 24 construction worker vehicle trips per day.

Land clearing and construction-related activities for the proposed school are expected to occur over an approximately 30-month period, beginning in July 2018 and ending in December 2020. While general construction of buildings lasts for an approximate 24-month period, the NYC School Construction Authority ("NYCSCA") has noted that the construction of schools, such as the proposed two-story school building for the Proposed Project, can last up to 30 months, as additional classroom, lab and other internal facilities can take time to set up. It is expected that a total of 11,603 trucks trips and 26,070 vehicle trips from construction workers would occur over this 30-month construction period, with an average of 387 trucks trips and 869 construction worker vehicle trips per month. The majority of construction worker vehicle trips are expected to occur between the morning hours of 6:00 a.m. to 7:00 a.m. and the afternoon hours of 3:00 p.m. to 4:00 p.m. Truck trips would be minimal and dispersed throughout the work day, with at most 18 truck trip PCEs in a single day, and approximately 40 construction worker vehicle trips per day.

During the peak of daily construction activities, which are expected to occur in July and August of the 2018 year when the Retail Site "B" activities are ending and construction activities on the school site are beginning, it is expected that there would be approximately 27 truck trip PCEs (with at most six in a peak hour) and approximately 75 construction worker vehicle trips per day.

2.19.2.4 Governmental Coordination and Oversight

The governmental oversight of construction in New York City is extensive and involves a number of city, state, and federal agencies. **Table 2.19-1** shows the main agencies involved in construction oversight and each agency's areas of responsibility. The primary responsibilities lie with New York City agencies:

***New York City Agencies*:**

- The New York City Department of Buildings ("NYCDOB") has the primary responsibility for ensuring that the construction meets the requirements of the Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, NYCDOB enforces safety regulations to protect both construction workers and the public. The areas of responsibility include installation and operation of construction equipment, such as cranes and lifts, sidewalk shed, and safety netting and scaffolding.
- The New York City Department of Environmental Protection ("NYCDEP") enforces the Noise Code, approves remedial action plans ("RAPs") and Construction Health and Safety Plans ("CHASPs"), and regulates water disposal into the sewer system.
- The New York City Fire Department ("FDNY") has primary oversight for compliance with the Fire Code and for the installation of tanks containing flammable materials.
- The New York City Department of Transportation ("NYCDOT") reviews and approves any traffic lane and sidewalk closures.
- New York City Transit ("NYCT") is in charge of bus stop relocations, and any subsurface construction within 200 feet of a subway.
- The Landmarks Preservation Commission ("NYCLPC") approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

***New York State and Federal Agencies*:**

- The New York State Department of Environmental Conservation ("NYSDEC") regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks.
- The New York State Department of Labor ("NYSDOL") licenses asbestos workers.
- The US Environmental Protection Agency ("EPA") has wide ranging authority over environmental matters, including air emissions, noise, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level.
- The US Occupational Safety and Health Administration ("OSHA") sets standards for work site safety and the construction equipment.

Table 2.19-1

Construction Oversight in New York City

Agency	Area(s) of Responsibility
New York City	
Department of Buildings	Primary oversight for Building Code and site safety
Department of Environmental Protection	Noise, hazardous materials, dewatering
Fire Department	Compliance with Fire Code, tank operation
Department of Transportation	Traffic lane and sidewalk closures
New York City Transit	Bus stop relocation; any subsurface construction within 200 feet of a subway
Landmarks Preservation Commission	Archaeological and historic architectural protection
Department of Parks and Recreation	Parkland including any existing trees and street trees
New York State	
Department of Labor	Asbestos workers
Department of Environmental Conservation	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan, Industrial SPDES, if any discharge into the Hudson River
United States	
Environmental Protection Agency	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration	Worker safety

2.19.3 POTENTIAL IMPACTS DURING CONSTRUCTION

Under the CEQR process, any construction period expected to last longer than 24 months is considered "long-term," though construction activities are themselves not permanent. As construction activities associated with the Proposed Project would last for longer than 24 months, a preliminary assessment was performed of the technical areas reviewed in the EIS that could be affected. The results of these assessments are presented below. Specially, these areas are: land use; open space; historic and cultural resources; natural resources; hazardous materials; transportation; air quality; noise; and neighborhood character (an amalgam of potential impacts on land use, socioeconomic conditions, community facilities, open space, shadows, urban design, transportation and infrastructure).

2.19.3.1 Land Use and Neighborhood Character

A construction impact analysis of land use, as well as for neighborhood character, is typically needed if construction would require continuous and extended use of property, potentially affecting the nature of the land use and the character of the neighborhood. A land use assessment for construction impacts looks at the type and duration of construction activities that would occur on-site to determine if they would affect neighborhood land use patterns or neighborhood character. For example, as noted in the *CEQR Technical Manual*, a single property might be used for staging for several years, resulting in a "land use" that would be industrial in nature. The nature of existing land uses in the surrounding area (e.g., residential, commercial, industrial, etc.) will determine to a great extent whether the extended use of a single site for construction staging would be compatible with neighboring properties and would potentially have a significant adverse impact on the surrounding area.

The Proposed Project is not expected to result in any significant adverse construction-related impacts on land uses or neighborhood character within the surrounding area. While construction activities in the Development Area are expected to span approximately seven years, each individual development, with the exception of the school, would take less than two years to complete, as previously described in section 2.19.2 of this chapter. The on-site land clearing and construction activities would last for limited durations on each specific development site within the Development Area.

2.19.3.2 Open Space

The *CEQR Technical Manual* states that a construction impacts analysis for open space should be conducted if an open space resource would be used for an extended period of time for construction-related activities, such as construction staging, or if access to the open space would be impeded for an extended period during construction activities. The analysis usually documents the amount of open space proposed for use as staging, the length of time that the open space would be used, and the current condition of the open space and current utilization by the community.

The Proposed Project is not expected to result in any significant adverse construction related impacts on open space or on the public use of open space areas. Construction activities would occur within the vacant portions of the Development Area and would not alter or impact the adjacent Conservation Area, which would be mapped as parkland as part of the overall Project Area, and is separated from the Development Area by a series of fences. The Conservation Area is currently not accessible for pedestrians (i.e., there are no trails or active uses) and will remain so as part of the Proposed Project. Standard construction protection measures (i.e., fencing) would also be taken to minimize any disturbance on adjacent open space or other open spaces in the surrounding area, including CPPSPP, which is adjacent to the location for the proposed construction of Englewood Avenue. Fairview Park would be open to users by the end of the 2015 year along with Retail Site "A", and the northern and western borders of the park would be fenced off from the on-going construction of the senior housing,

school, and Retail Site "B" components during their respected construction activities through the year 2020.

Therefore, significant adverse impacts to open spaces during construction are not expected to occur. The exact nature of those protective measures would be developed as the conceptual plans for the individual development sites are refined.

2.19.3.3 Historic and Cultural Resources

The *CEQR Technical Manual* states construction impacts may occur on historic and cultural resources if in-ground disturbances or vibrations associated with project construction could undermine the foundation or structural integrity of nearby resources. Both impacts on archaeological resources from construction and demolition of an architectural resource as a result of the project are assessed as part of the historic and cultural resources analysis.

Historic and Architectural Resources

As further discussed in **Chapter 2.6**, "Historic and Cultural Resources," such resources are defined in the *CEQR Technical Manual* as districts, buildings, structures, sites, and objects of historical, aesthetic, cultural, and archaeological importance. This includes resources listed in the State/National Registers of Historic Places ("S/NRHP"), resources determined eligible for listing in the S/NRHP by the New York State Office of Parks, Recreation, and Historic Preservation ("OPRHP"), landmarks designated or under consideration for designation by the NYCLPC, National Historic Landmarks ("NHL"), National Monuments, and previously unidentified resources that meet the S/NRHP and/or LPC eligibility requirements.

No historic architectural resources have been identified within or sufficiently close to the Development Area that would be affected by the Proposed Project by the 2015 analysis year or by the 2020 analysis year. Therefore, the Proposed Project would not result in significant adverse impacts to historic architectural resources.

One resource has been identified within the Historic Architectural Resources study area. As discussed in **Chapter 2.6**, the LPC-designated and S/NR-listed Charles Kreischer House has the potential to be indirectly affected by the Proposed Project. The eastern boundary of the Charles Kreischer House property is just over 400 feet west from the western boundary of the Development Area, where the passive trail system of Fairview Park is planned. However, the Development Area is generally screened from the Charles Kreischer House by the existing Colonial Rifle Range and the MTA Bus Annex, which provide buffers between the Charles Kreischer House and the proposed development. As a result, it is anticipated that views of the Development Area from the Charles Kreischer House would continue to be screened by these existing buffers. In the event that construction activities become visible from the resource, they would not be anticipated to impact its setting, because nearby activities would be short-term in nature and result in parkland, commercial, residential and civic buildings compatible with the current setting.

Overall, in terms of construction-related effects, it is not anticipated that development occupying from the Proposed Project either by the 2015 or 2020 years analysis would result in indirect visible or audible impacts, including vibratory or dust impacts, because of the distance between the Proposed Project and this resource. Dust and vibration are not expected to travel to the Kreischer House based on its distance from the Development Area.

Archaeological Resources

<u>Year 2015</u>

As further discussed in **Chapter 2.6**, "Historic and Cultural Resources", by the year 2015, construction activities do have the potential to disturb or destroy three archaeological sites located within these sections of the Development Area that were identified through previous Phase IB/II archaeological

surveys conducted in 1999 and 2000 by John Milner Associates, Inc. for the Bricktown Centre at Charleston Project, resulting in the potential for adverse impacts to archaeological resources. Two of these resources are prehistoric sites and one is a historic site complex. The three sites are described below:

- *Site C4-MCB-1 (NYS Site A08501.002766).* This prehistoric site was located during the Phase IB survey atop a prominent knoll in the east-central portion of the current Project Area. According to project mapping, this site is located in Block 7452, Lot 75, proposed Retail Site "A". The site is considered to be archaeologically significant.

- *Fairview Prehistoric Site (NYS Site A08501.002815)*. This prehistoric site was located in 1999 during JMA Phase II excavations at the Balthasar Kreischer Estate Ruins Site. Most of the prehistoric material was recovered from a small, 60-foot-by-40-foot area to the southeast of the main house foundation remains, but prehistoric cultural material was also recovered from test units to the northwest and east of the main house foundation. This prehistoric site may once have covered the entire landform. The limited testing conducted to date suggests that at least portions of the prehistoric site retain sufficient integrity to contribute important archaeological data; the site is considered to be archaeologically significant.

- *Balthasar Kreischer Estate (Fairview) Ruins*. JMA conducted Phase II fieldwork at the Kreischer Estate in 1999. JMA documented 18 features with visible surface remains across the estate ruins. The features included the main house foundation, an extensive complex of foundation remains, intact archaeological features (such as possible cisterns and wells), landscape features (such as summer house/gazebo remains, pond, and driveways), and mid-Late-19th century and Early-20th century sheet middens (ceramic and glass sherds, etc). The site is historically significant in local terms for its association with the Kreischer Brickworks, the establishment of Kreischerville (Charleston), and other 19th century works that were sponsored by the Kreischer family. The site is also significant as an intact archaeological example of a 19th century elite residence and its associated features.

As more fully detailed in **Chapter 2.21**, the proposed Fairview Park has been designed to minimize the potential for adverse impacts to these identified archaeological sites. During construction, protection measures, such as fencing will be installed to assure that sensitive areas are preserved

In addition, as discussed in **Chapter 2.6**, "Historic and Cultural Resources," a prehistoric site was located during the Phase IB survey atop a prominent knoll in the east-central portion of the current Project Area. This approximately 150 foot by 40 foot site, which is considered to be archaeologically significant, is located in Block 7452, Lot 75, the parcel on which Retail Site "A" would be developed. Further archaeological investigation will be required to be undertaken in the parkland and on Retail Site "A" prior to construction or any ground disturbing activities. A Scope of Work for archaeological field testing will be prepared and submitted to LPC for review and approval. Remedial measures, including Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with LPC and/or OPRHP, will be required to be undertaken by the developer(s) through provisions in the Contract of Sale between NYC and the developer(s).

<u>Year 2020</u>

As further discussed in Chapter 2.6, "Historic and Cultural Resources", construction of the remainder of the Development Area by the year 2020 has the potential to disturb or destroy one prehistoric archaeological site located within the remaining sections of the area, which was identified through prior archaeological survey work. In addition, there are portions of the remainder of the area that possess archaeological potential that have never been surveyed. These resources are noted below:

Englewood Avenue

- *Site A7-MCB-1 (NYS Site A08501.002767)*. This prehistoric site was located during the Phase IB survey on a small, pronounced knoll or hill with a flat summit just south of the proposed route of Englewood Avenue, within the (now) existing conservation area. The site is estimated to cover an area approximately 65 feet by 25 feet. The site is considered to be archaeologically significant. The Proposed Project included development that is limited at this site location, as it lies within the existing Conservation Area. However, completion of Englewood Avenue along the northern boundary of the Conservation Area has the potential to adversely impact this prehistoric site

- *Englewood Avenue Extension and Pedestrian/Bicycle Path*. It is possible that remains of prehistoric occupation are present in this 80-foot wide linear corridor. Given the density of prehistoric site locations already identified for this portion of Staten Island, including a site located less than 50 feet south of Englewood Avenue on the Project Area itself, it is possible that intact prehistoric resources are present.

Retail Site "B"

- *Block 7494: Lots 8, 90, 95, 97, and 183 - Retail Site "B"*. Completion of Retail Site "B" may disturb or destroy potential archaeological resources. It is possible that early features associated with the tenure of the Shea family (ca.1853-1887) are present on this property. Such features could include wells, cisterns, or privies, in addition to foundation remains of the house itself. It is equally possible that features associated with the tenure of the Beckman family (ca.1887-ca.1917) are present. It is also possible that remains of prehistoric occupation are present on this parcel. Given the number of previously identified prehistoric sites and traces of occupation noted for the southwestern portion of Staten Island, including those located within the Project Area itself, it is quite possible that intact prehistoric resources are located on this parcel.

- *Block 7487, Lot 100 – Retail Site B*. Block 7487, Lot 100 lies in the southwestern portion of the current Project Area. This Block has been impacted by recent development, notably the construction of the MTA Bus Depot that fronts on Arthur Kill Road. The bus annex occupies approximately one third of Block 7487. However, the portion of Block 7487 that lies to the south of the bus depot and north of Block 7494 and the extant sewer line running along the southern block boundary has not been previously surveyed.

The potential for the Proposed Project to result in significant adverse impacts on these identified sites stated above is not yet known (see **Chapter 7.0**). At this time, there are no specific development proposals for Site Retail Site "B" or the senior housing site and future developers will be selected pursuant to a RPF process. Further archaeological investigation will be required to be undertaken by the developer(s) after selection. For all developments in the Project Area to be completed by the year 2020, remedial measures, including Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with LPC and/or OPRHP, will be required to be undertaken by the developer(s) through provisions in the Contract of Sale between NYC and the developer(s).

2.19.3.4 Natural Resources

The *CEQR Technical Manual* states that if a project or construction staging area is located near a sensitive natural resource, such as wetlands, construction activities may result in the disruption of these areas. The analysis of construction's effects on natural resources would also consider the loss or additional destruction of natural resources on the project site or in the staging area. An assessment could also include an inventory of existing street trees within the construction impact zone if the project would potentially result in the loss of those trees.

For both the 2015 year and 2020 year under the Proposed Project, general Best Management Practices (BMPs) would be adhered to in order to protect natural resources during construction of project components near sensitive natural resources, such as NYSDEC regulated or ACOE jurisdictional wetlands discussed in **Chapter 2.8**. As design plans for the project are only conceptual at the time of

publication of this document, examples of construction BMPs for natural resources include, but are not limited to:

General Construction

- Environmental Inspector – The project sponsor would provide Environmental Inspectors (EINSPs) who are both experts in ecology and who would confirm in the field that plans and stipulations are adhered to. EINSPs would have "stop work" authority should an activity deviate from a designed plan and potentially impact natural resources.

- Exclusion Barriers - In order to prevent disturbance to natural resources outside the construction footprint, construction fencing and/or exclusion barriers would be erected along the border of the disturbance footprint. To further reduce potential impacts to natural resources, prior to the initiation of work, the boundaries of the disturbance footprints will be clearly flagged in order to provide a visual reference of the limits of disturbance..

- Sediment and Erosion Control – Construction activities would adhere to a sediment erosion and control plan. When necessary and appropriate, hay bales, silt fencing and/or other sediment and erosion control measure would be implemented. These structures would be regularly inspected to ensure they functioning properly.

- Pollution Prevention. No refueling, washing and/or handling of toxic substances would occur within 100 feet of a wetland or regulated adjacent area. These activities would only occur in designated laydown areas with appropriate containment measures.

- Material Disposal – All waste materials generated during construction would be handled and disposed of properly in approved receptacle or facility.

Specific Construction BMPs for Flora and Fauna

- Endangered Species – Prior to construction, qualified individuals would survey the area for threatened and endangered species. If these species are present, the project's sponsor would consult with the appropriate regulatory agency for guidance on transplant or translocation of the resource.

  For threatened and endangered resources outside, but in close proximity to, the construction footprint, appropriate protection and avoidance measures would be adhered to ensure they are not directly or indirectly impacted. These measures would be developed in consultation with the regulatory agencies.

- Seasonal Restrictions – If the regulatory agencies require the construction not occur or be modified during a ecologically sensitive time frame (e.g., nesting, etc.), the project construction schedule and sponsors will adhere to these requirements.

- Tree Protection - With respect to the protection of onsite trees, it is likely that trees located along the edge of the construction boundary would have portions of their drip lines or critical root zones lie within the construction footprint. When this occurs, appropriate protective measures (e.g. root mats, etc.) will be utilized to prevent compression of soils and root damage. If trees growing on site are to be retained and utilized in as part of the future landscape designs, it is recommended that the tree be protected with root mats and exclusion barriers around the dripline. After construction ceases, it is recommended that the tree be inspected by a certified arborist to determine what, if any damage may have occurred to the tree and what, if any, corrective measures would be required.

It is anticipated that some pruning of trees would be required along future roadways and/or for site access. If pruning of a tree is required, the pruning would occur under the supervision of a certified arborist. Also, if an engineered slope is to impact the soils within the critical root zone, consideration would be given to modifying the slope with retaining walls, tree wells, tree pits, etc to allow for the preservation and future growth of established trees.

Wetlands

- Wetland Identification. The wetlands on site have been delineated. Prior to construction, all field identified sensitive resources (e.g., wetlands, regulated adjacent areas, etc.) will be flagged to ensure resource protection. Protection measures will be implemented to ensure minimization of impacts to wetlands and other water resources resulting from sedimentation, erosion, turbidity, unanticipated spills or leaks of fuel, and/or other toxic materials, etc.

- Wetland Disturbance. Disturbance to wetlands would be reduced to the greatest extent practicable. If a wetland area needs to be impacted, temporary road mats, or swamp mats, will be used to minimize compaction of soils and disturbance to existing vegetation when accessing wetland areas. Following construction, swamp mats will be removed in reverse order of placement as soon as practicable. Impacts arising from the use of temporary road mats will be mitigated by implementing restoration measures developed in coordination with the regulatory agencies.

- Stockpiling and Storage - Fill, construction material, spoils, etc. will not be stored within 100 feet of a wetland, regulated adjacent area, or waterbody. Moreover, most construction related items would not be stored and/or deposited within 100 ft of a wetland or regulated adjacent area.

Year 2015

As further discussed in **Chapter 2.8**, the Proposed Project would result in significant adverse construction-related impacts to natural resources. By the year 2015, as part of the Proposed Project, the City would develop the new 23-acre Fairview Park. Adjacent to the park, the 11-acre site of Retail Site "A" is expected to be developed by a private developer. This site would also include an approximately 15,000-square-foot branch of the New York Public Library, which would share parking with the retail uses. The development of this area would impact approximately 0.1 acres of non-regulated wetland habitats, although no impacts to NYSDEC regulated wetlands or USACE jurisdictional wetlands would occur. These wetland impacts would occur during the construction of this area.

The development that would occur by 2015 would also remove or alter approximately 20.5 acres of habitat for flora and fauna over portions of the Development Area. These habitats are largely successional woodlands and fields. None of the habitats are rare or unique and are common in southern New York State. Yet the area supports a variety of mammals (e.g., mice, voles, raccoons, deer, etc.). Displacement of wildlife within the area would occur during construction. Some of these habitats would be permanently altered and removed and would render the remaining habitat unsuitable for some species. Visual and noise disturbances during the construction phase may cause animals to relocate to the undisturbed suitable habitats adjacent to the expected building footprints. However, once construction activities are completed, it is expected that proposed landscaping on these sites and within the park would allow for some species to relocate back to the area or to contiguous tracts of land adjacent to or near the area, thereby putting additional pressure on these habitats due to over population of some species. Once construction is complete, it is anticipated that the fauna utilizing the area would adapt to the available habitats.

The construction activities by the year 2015 would result in some minor habitat fragmentation of contiguous habitat of the CPPSPP, the Conservation Area, and the Development Area. Fragmentation would impact the mammals, birds and some reptiles that would normally use the contiguous habitat for migration, feeding, foraging and/or breeding. The impacts of habitat fragmentation would be reduced because the development of Retail Site "A" and Fairview Park would leave a vegetated corridor (north of

these parcels) that is contiguous with the CPPSPP, the Conservation Area and other undeveloped portions of the Development Area.

During construction of new retail on Site "A" and Fairview Park, it is estimated that 538 trees would be impacted. The Development Area is approximately one-fourth the size of the CPPSPP and impacts would result in further encroachment in the preserve. The removal of the habitats within the area may have indirect impacts to the CPPSPP, as it serves as a vegetated buffer for the preserve. In the last century, the development of Staten Island, especially southern Staten Island, has removed large parcels of vegetated land. The removal of additional vegetated areas, during and after construction, would further reduce available habitats for species that are not adapted to disturbed environments.

Two endangered and one threatened plant species were observed within the proposed footprints of the development that would occur by 2015. Two species, the bonesets (one threatened and one endangered), were observed in open areas (e.g., successional old fields Variants I and II, and unpaved paths) throughout the area. As such, the removal and/or disturbance of open areas, during and after construction, would impact the bonesets through habitat loss and direct removal of individual plants. However, due to the observed prevalence of bonesets throughout the area, it is not anticipated that the removal of some of the onsite open area habitats by the 2015 analysis year would result in a significant impact to the species.

Torrey's Mountain Mint, an endangered species, occurs in one discreet location on the southern border of Retail Site "A". A review of the NYS NHP website indicates that, "*There are three existing populations in New York but all of them are small or highly threatened"* and *"A recently discovered population on Staten Island was almost destroyed by the construction of a shopping center*." NYS NHP conservation and management strategies for the species identify that "open areas need to be maintained without directly damaging existing plants." The removal of one of the remaining three sites for this species would be viewed as a significant adverse impact by regulatory agencies.

Year 2020

As further discussed in **Chapter 2.8**, by the 2020 analysis year, approximately 25.7 acres of land would be subject to earthmoving and filling associated with construction of the school, senior housing, and Retail Site "B" development, for a total nearly 60 acres altered within the Development Area. Impacts under this analysis would be similar to those described above for the 2015 analysis year. For the construction of the Englewood Road, the current topography may require substantial earthmoving activities in order to create a road embankment capable of supporting street traffic.

Implementation of the Proposed Project by the year 2015 would impact approximately 0.1 acres of wetland habitats. No impacts to NYSDEC regulated wetlands or USACE jurisdictional wetlands would occur by the 2015 year. Implementation of developments under the 2020 year analysis on Retail Site "B," the Senior Housing site and the school site would impact approximately 0.3 additional acres of wetland habitats, none of which would be determined to be NYS DEC regulated. The total acreage of wetland impacts of the Proposed Project, as well as within the area for the construction of Englewood Avenue, would be 0.4 acres The construction of Englewood Avenue, and specifically the segment between the CPPSPP and the Conservation Area under the proposed 80-foot wide conceptual roadway design, would impact approximately 0.1 additional acres of USACE jurisdictional wetlands and NYSDEC-regulated wetlands, included in the total above. The construction footprint would end several feet from the delineated boundary of Wetland B, also regulated by the NYSDEC, as shown in **Chapter 2.8**. Actions to mitigate the impacts to these regulated and jurisdictional wetlands would be required by the two regulatory agencies. Representatives of the USACE noted during a field visit in January 2013, that impacts to these types of jurisdictional forested wetlands should be reduced to the greatest extent practicable and that unavoidable impacts would require mitigation. These impacts would begin during construction activities, which in the vicinity of wetlands could cause such impacts as siltation due to increased erosion from clearing and grading activities. Erosion and siltation would be minimized through the use of such best management practices (BMPs) as silt fences and stormwater management structures, in accordance with an approved Erosion and Sedimentation Control Plan.

The development that would occur by the 2020 analysis year would bifurcate remaining undeveloped habitats on site from the CPPSPP and the Conservation Area. Although many of the directly impacted habitats are generally successional habitats that are common to New York State, construction activities would potentially have indirect impacts on the CPPSPP and Conservation Area through removal and bifurcation of a large contiguous vegetated buffer area. Approximately 1,156 trees within the remaining portions of the Development Area would be removed as a result of construction activities, and overall, the Proposed Project would impact approximately 2,013 trees. Construction and implementation of development by the 2020 analysis year would also remove additional areas that serve or could serve as habitat to threatened and endangered bonesets.

The construction of the 80-foot wide Englewood Avenue would result in direct impacts to wildlife that exists in the CPPSPP and the Conservation Area. Currently, the dirt track that separates the CPPSPP from the Conservation Area does not serve as an impediment to fauna transiting between the parcels. Moreover, the canopies of the trees in both parcels intermingle in some locations, which provide an undisturbed continuous canopy. The CPPSPP is a NYSDEC Bird Conservation Area, and bird species, including listed species that live in the CPPSPP and likely transit to the Conservation Area for usage of the habitat there. Removal of the undisturbed continuous canopy for the construction of an 80-foot wide road would result in bifurcating valuable habitat and would have negative impacts on fauna within the CPPSPP and the Conservation Area. Moreover, unlike the Development Area, the forest habitats in the CPPSPP and Conservation Area have fully developed mature canopies, which have limited the undergrowth of dense vines that are stressing trees within this section of the Development Area. The opening of an 80-foot wide corridor roadway through this forested area would create an "edge effect" on both sides of the road and would likely contribute to localized increases of dense understory vegetation, which would further impact the value of the habitat on the parcels. Also, within the build footprint, the state-listed rare red-maple sweetgum swamp habitat is present. The construction of Englewood Avenue to the 80-foot width would remove approximately 0.3 acres of this habitat type, along with impacts to approximately 319 trees.

Listed species exist in the CPPSPP and the Conservation Area. Many of these species either transit between both parcels or depend on the contiguous habitats to provide a vegetated buffer from anthropogenic disturbance. The bifurcating of habitats would have a negative effect on wildlife. Although there were no direct observations of listed species within the build footprint, Wetlands B and C and adjacent parcels provide habitat conditions favorable to listed species that occur on the Site. Under this scenario, these habitats would be impacted and removed once construction activities commence.

As noted above, significant adverse impacts to natural resources are expected to occur during construction activities in the Development Area. Potential construction impacts would be reduced by implementing the construction BMPs discussed above. In addition, as more fully detailed in **Chapter 2.21**, mitigation efforts for natural resources can also be applied during construction, including avoidance of resources, compensatory replacement for lost wetlands, enhancement of existing habitats, as well as a variety of other actions tailored to the characteristics of the Proposed Project.

2.19.3.5 Hazardous Materials

A hazardous material is any substance that poses a threat to human health or the environment. Substances that may be of concern include heavy metals, volatile organic compounds ("VOCs"), semi-volatile organic compounds ("SVOCs"), methane, polychlorinated biphenyls ("PCBs"), pesticides, dioxins, hazardous wastes, radiation sources, etc.

The *CEQR Technical Manual* states that because soils are disturbed during construction and utility placement, any project proposed for a site that has been found to have the potential to contain hazardous materials should also consider the possible construction impacts that may result from that contamination and identify measures to avoid impacts This is typically part of the hazardous materials analysis.

The Proposed Project is not expected to result in any significant adverse construction related impacts to hazardous materials. As detailed further in **Chapter 2.9**, "Hazardous Materials," a Phase I Environmental Site Assessment ("Phase I ESA") was performed for the Project Area in general accordance with the American Society of Testing and Materials ("ASTM") Standard Practice E 1527-05. Based on the findings of the Phase I ESA, a Phase II Subsurface Investigative Work Plan (Phase II Work Plan) and Site Specific Health and Safety Plan (HASP) have been prepared and submitted to NYCDEP for review and approval for the proposed parkland and Retail Site "A." The Phase II Work Plan includes soil, groundwater, and soil vapor testing at locations distributed across the two sites. If indicated by the results of the testing, a Remedial Action Plan (RAP) and Site Specific Construction Health and Safety Plan (CHASP) will be prepared and submitted to NYCDEP for review and approval. Required remediation will be performed in compliance with all federal, state, and local regulations. With the implementation of these measures prior to construction, no significant adverse hazardous material impacts are expected during construction or operation of these sites.

Prior to construction, as part of the Due Diligence process for all schools, the NYCSCA will perform further environmental studies (if necessary) and investigations to determine the environmental conditions at the proposed school site. Environmental Due Diligence includes, but is not limited to, Phase I ESAs, Phase II ESAs and Mitigation as appropriate.

At this time there are no specific development proposals for Retail Site "B" and the housing site and future developers will be selected pursuant to a Request for Proposal. Further subsurface investigations will be required to be undertaken by the developer(s) after selection. For Retail Site "B" and the senior housing site, Phase II ESAs and mitigations as necessary, through continued consultation with NYCDEP, will be required to be undertaken by the developer(s) through provisions in the Land Disposition Agreement (LDA) between New York City and the developer(s).

If unexpected areas of contamination are discovered during construction, these materials would be removed during construction or isolated from public contact with impervious surfaces such as buildings, parking areas and roadways, thus eliminating the potential for public exposure during the operational period. In addition, the general debris and junk vehicles would be removed from the site and properly disposed offsite.

- The Proposed Project would require excavation of soil within these sections of Project Area, and possibly dewatering of groundwater from excavations depending on the depth and location of the excavations for the proposed structures and buildings. In the event that unexpected areas of contamination are encountered during construction, the following mitigation measures would be undertaken as necessary to protect project workers and the surrounding community from exposure to hazardous materials. A Construction Health and Safety Plan ("CHASP") would be prepared prior to construction to include contingency procedures for protecting project workers and the surrounding community from exposure to hazardous materials if encountered;
- Contaminated soils would be separated from non-contaminated soils and stored to prevent runoff and public exposure pending testing for disposal; and,
- Contaminated soils would be transported from the site in covered vehicles and disposed at a licensed facility with chain-of-custody documentation.

Based on the above measures, significant adverse impacts regarding hazardous materials during construction are not expected to occur.

2.19.3.6 Transportation

The *CEQR Technical Manual* notes that construction activities may affect several elements of the City's transportation system, including traffic, transit, pedestrians, and parking. A transportation analysis of construction activities is predicated upon the duration, intensity, complexity and/or location of construction activity. Analysis of construction activities on transportation is often not required, as many projects do not generate enough construction traffic to warrant such analysis. Three main factors are considered before

determining whether a preliminary assessment of the effect of construction on transportation is needed. The factors include:

1. Whether the project's construction would be located in a Central Business District (CBD) or along an arterial or major thoroughfare. If 'yes', the duration and the nature of the construction activity (which could include, if known, the number of construction-related auto and truck trips (in PCEs), on-site vs. on-street staging area, hours of construction, etc.) should be considered to determine whether a preliminary assessment would be needed.

2. Whether the project's construction activities, regardless of whether it will be located either in a CBD or along an arterial or major thoroughfare, would require closing, narrowing, or other-wise impeding moving lanes, roadways, key pedestrian facilities (*e.g.,* sidewalks, crosswalks, corners/corner reservoirs), parking lanes and/or parking spaces in on-site or nearby parking lots and garages, bicycle routes and facilities, bus lanes or routes, or access points to transit. If so, would the closure be located in an area with high pedestrian activity or near sensitive land uses such as a school, hospital, or park, and if 'yes', the proximity of the closure to the sensitive area(s), the extent of the rerouting of pedestrians, bicycles or vehicular traffic, and the duration of the closure activity should be considered to determine whether a preliminary assessment would be needed.

3. Whether the project would involve construction on multiple development sites in the same geographic area, such that there is the potential for several construction timelines to overlap, and last for more than two years overall. If yes, then a preliminary assessment of the effect of construction on transportation may be needed.

The Development Area is not located within a CBD, but rather in the southwestern portion of the Borough of Staten Island. The area is adjacent to Arthur Kill Road and Veterans Road West, as well as near the West Shore Expressway and Outerbridge Crossing. Construction activities induced by the Proposed Project will cause some short-term increases in local truck and other vehicular traffic on these roadways, due to the arrivals and departures of construction workers during the morning and afternoon hours, respectively, combined with daily truck deliveries and removal of construction materials and equipment from the project site. Construction is planned to take place on weekdays only, with the peak construction traffic volumes occurring during off-peak travel times on the surrounding roadway network, thereby minimizing potential traffic impacts. It is anticipated that the construction equipment and deliveries would have on-site staging areas during construction for loading and unloading of materials to avoid off-site impacts. It is expected that all construction parking and staging can be accommodated on each site. As such, queuing of construction-related traffic on study area roadways and street closures or loss of off-site parking are not anticipated.

Construction activities within the Development Area by the 2015 and 2020 analysis years would not require the closing or narrowing of moving lanes along the adjacent roadways of Arthur Kill Road and Veterans Road West, as all construction activities are expected to be accommodated on each site for development. No key pedestrian facilities, parking lanes and/or parking spaces, bicycle routes, bus lanes or access points to transit would also be altered.

By the year 2020, Englewood Avenue would fully connect Veterans Road West on the east with Arthur Kill Road on the west. The existing built section of Englewood Avenue in its western segment would be re-aligned and widened. These activities would result in temporary disturbance to those existing properties along this section of the roadway. Construction activities, including the widening and re-alignment of the existing portion and the land clearing, grading and paving of the new eastern portion of the roadway, would last approximately 12-months.

Construction-related trips to and from the site are projected to occur on weekdays between 5:00 a.m. and 5:00 p.m., although the majority of the trips are expected to take place between 6:00 to 7:00 a.m. and between 3:00 to 4:00 p.m., in conjunction with the arrival and departure of construction workers. On a typical weekday, the peak periods for existing vehicular traffic generally occur between approximately

8:00 a.m. to 9:00 a.m., and between approximately 5:00 p.m. to 6:00 p.m. Therefore, the timing of the on-site construction activities reduces the impact that construction vehicles have on traffic on the surrounding street network during these peak periods, largely because workers are expected to initiate daily construction activity before the morning peak hour of traffic on the surrounding roadway network, and also conclude construction activities before the afternoon peak hour (i.e., the majority of the construction travel occurs during "off-peak" hours).

Construction Trip Generation

Average Daily Construction Trips per Calendar Quarter

For each of the proposed development sites in the Development Area, the total numbers of construction workers and construction trucks were forecasted based on building sizes, material quantities, man-power rates, and other factors. In accordance with *CEQR Technical Manual* guidelines, truck trips were converted to Passenger Car Equivalents, or PCEs. PCE values of 1.0 per auto, 2.0 per three-axle trucks, and 2.5 per four-axle trucks were used in these projections. These calculated numbers of workers and truck PCEs were then distributed over the anticipated periods of construction for each development component to estimate the average daily number of construction workers and truck PCEs projected to travel to the site in each calendar quarter. The resultant estimate of the average daily numbers of construction workers and truck PCEs, for each calendar quarter over the seven-year construction period is summarized in **Table 2.19-2** below.

Table 2.19-2

Estimated Average Daily Number of Construction Workers and Construction Trucks (PCEs) On-Site, Per Calendar Quarter

Year	**2014**				**2015**				**2016**				**2017**			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Workers	78	78	78	78	78	78	78	78	1	1	12	36	35	35	35	35
Trucks (PCEs)	16	16	16	16	16	16	16	16	14	14	17	24	9	9	9	9
Total (PCEs)	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**94**	**15**	**15**	**29**	**60**	**44**	**44**	**44**	**44**
Year	**2018**				**2019**				**2020**							
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*				
Workers	35	35	70	59	59	59	59	59	59	59	52	40				
Trucks (PCEs)	9	9	27	27	27	27	27	27	27	27	24	18				
Total (PCEs)	**44**	**44**	**97**	**86**	**86**	**86**	**86**	**86**	**86**	**86**	**76**	**58**				

As shown in **Table 2.19-2**, the proposed construction schedule assumes construction activities and construction trips would peak in the third quarter of 2018 with 97 total PCE trips, coinciding with construction of Retail Site "B" and the proposed school. In addition, a slightly lower but more sustained peak would occur during 2014 and the first half of 2015 with 96 total PCE trips, coinciding with construction of Retail Site "A," the library, and the park. These two time periods represent peak days of work, and many days over the entire seven-year construction period would have fewer construction workers and trucks on-site. For a conservative reasonable worst-case analysis of potential construction traffic impacts, these two peak periods of construction activity were used as the basis for estimating peak hour construction traffic volumes.

Travel Demand Assumptions for Construction

The construction schedule assumes that all site activities would take place during the typical construction shift of 7:00 a.m. to 3:30 p.m. Construction worker travel would typically take place during the hours before and after the work shift. It is estimated that 80 percent of all workers would arrive in the 60-minute period before the start of the construction shift, and also leave in the 60-minute period after the end of each shift. The remaining workers (i.e., 20 percent) would travel in the hours immediately before and

after these times. This is due to slight variations in the particular schedules and day-to-day work activities of the various trades. Construction-related trips to and from the site are projected to occur on weekdays between 5:00 a.m. and 5:00 p.m., although the majority of the trips are expected to take place between 6:00 to 7:00 a.m. and between 3:00 to 4:00 p.m., in conjunction with the arrival and departure of construction workers.

It is anticipated that construction workers would travel to and from the development sites primarily by private autos (approximately 90 percent of the total workforce), at an average vehicle-occupancy of approximately 1.1 persons per auto, with a lesser percentage (approximately 10 percent of the total workforce) using public buses in the vicinity of the site. Construction truck trips would occur throughout the day during the hours of the construction shift (generally 7:00 a.m. to 3:30 p.m.), and trucks would remain in the area for relatively short durations (less than one hour).

Peak Hour Construction Trips

Table 2.19-3 shows hourly construction worker auto trips and construction truck trips (PCEs) during the first construction peak period (2014 to early 2015), involving construction of Retail Site "A", the library, and the park. **Table 2.19-4** shows similar information for the second peak in third quarter peak in 2018, involving Retail Site "B" and the proposed school.

As shown in these tables, the estimated daily vehicle trips were distributed to various hours of the day based on the typical work shift allocations and conventional arrival/departure patterns of construction workers and trucks described above. For construction workers, as noted above, the substantial majority (80 percent) of the arrival and departure trips are expected to take place during the hour before and after each shift. For construction trucks, deliveries would occur throughout the time period while the construction site is active. To avoid traffic congestion and ensure that materials are on-site for the start of each shift, some construction truck deliveries would occur during the hours before the regular day shift begins (12 percent of the total before 7:00 a.m.), overlapping with construction worker arrival traffic.

As shown in **Table 2.19-3**, construction traffic associated with the first peak construction period (i.e., 2014 year and early 2015 year) generates a peak of 54 total PCEs during the 6:00 a.m. to 7:00 a.m. hour, and 52 total PCEs during the 3:00 p.m. to 4:00 p.m. hour. Similarly, as shown in **Table 2.19-4**, construction traffic associated with the second peak construction period (i.e., third quarter of 2018 year) generates a peak of 49 total PCEs during the 6:00 a.m. to 7:00 a.m. hour, and 46 total PCEs during the 3:00 p.m. to 4:00 p.m. hour throughout the study area roadway network.

These projected incremental numbers of vehicle-trips would be distributed to multiple site-access points and intersections in the vicinity of the development sites and, therefore, would not reach the *CEQR Technical Manual* analysis threshold of 50 PCEs at any one intersection in any one peak hour. Furthermore, the projected volumes of construction traffic during the weekday AM and PM peak hours are not projected to exceed the projected operational (post-construction) traffic volumes during the weekday AM and PM peak hours. Based on these findings, a detailed construction traffic analysis is not warranted, as significant adverse construction-related traffic impacts are not expected to occur as a result of the Proposed Project.

During the peak construction period for the second analysis (year 2020), the incremental numbers of additional construction vehicle trips to be added at any one intersection are projected to be well below the CEQR threshold of 50 peak-hour trips. Traffic increases of this magnitude are not considered to be significant, regardless of the background traffic volume (i.e., the 2015 year analysis, or Phase 1, in operation). Therefore, further quantitative analysis of the year 2020 construction in conjunction with year 2015 operation is not required.

Table 2.19-3

Projected Daily Construction Vehicle Trips by Hour during Peak Quarters in 2014 and Early 2015

Peak Truck PCEs =	**16**	
Peak Passenger Car PCEs=	**78**	
Average Vehicle Occupancy=	**1.1**	**persons/vehicle**
Worker Mode-Split Auto =	**90%**	
Worker Mode-Split Bus =	**10%**	

Hour of Day	Temporal Distributions[1]				Car Trips (Workers)			Truck Trips			Truck (PCE) Trips			Total Vehicle Trips			Total Vehicle Trips (PCEs)		
	Workers IN	Workers Out	Trucks IN	Trucks OUT	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
12-1AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1-2 AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-3AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-4AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-5AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-6AM	**10%**	0%	**6%**	**6%**	6	0	6	0	0	1	1	1	2	7	0	7	7	1	8
6-7AM	**80%**	0%	**6%**	**6%**	51	0	51	0	0	1	1	1	2	52	0	52	52	1	53
7-8AM	**10%**	0%	**11%**	**11%**	6	0	6	1	1	2	2	2	3	7	1	8	8	2	10
8-9AM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
9-10AM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
10-11AM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
11AM-12PM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
12-1PM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
1-2PM	0%	0%	**11%**	**11%**	0	0	0	1	1	2	2	2	3	1	1	2	2	2	3
2-3PM	0%	**10%**	**11%**	**11%**	0	6	6	1	1	2	2	2	3	1	7	8	2	8	10
3-4PM	0%	**80%**	0%	0%	0	51	51	0	0	0	0	0	0	0	51	51	0	51	51
4-5PM	0%	**10%**	0%	0%	0	6	6	0	0	0	0	0	0	0	6	6	0	6	6
5-6PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-7PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-8PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8-9PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9-10PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-11PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11PM-12AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL =	**100%**	**100%**	**100%**	**100%**	**64**	**64**	**128**	**8**	**8**	**16**	**16**	**16**	**32**	**72**	**72**	**144**	**80**	**80**	**160**

Note:

1 = Assumes one construction shift between 7:00AM and 3:30PM. Assumes truck arrivals uniformly distributed throughout the day, and duration of stay on-site of less than one hour.

Table 2.19-4

Projected Daily Construction Vehicle Trips by Hour during Peak Quarter in 2018

Peak Truck PCEs = 27
Peak Passenger Car PCEs= 70
Average Vehicle Occupancy= 1.1 persons/vehicle
Worker Mode-Split Auto = 90%
Worker Mode-Split Bus = 10%

Hour of Day	Temporal Distributions[1]				Car Trips (Workers)			Truck (PCE) Trips			Total Vehicle Trips (PCEs)		
	Workers IN	Workers Out	Trucks IN	Trucks OUT	In	Out	Total	In	Out	Total	In	Out	Total
12-1AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
1-2 AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
2-3AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
3-4AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
4-5AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
5-6AM	**10%**	0%	**6%**	**6%**	6	0	6	2	2	3	7	2	9
6-7AM	**80%**	0%	**6%**	**6%**	46	0	46	2	2	3	47	2	49
7-8AM	**10%**	0%	**11%**	**11%**	6	0	6	3	3	6	9	3	12
8-9AM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
9-10AM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
10-11AM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
11AM-12PM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
12-1PM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
1-2PM	0%	0%	**11%**	**11%**	0	0	0	3	3	6	3	3	6
2-3PM	0%	**10%**	**11%**	**11%**	0	6	6	3	3	6	3	9	12
3-4PM	0%	**80%**	0%	0%	0	46	46	0	0	0	0	46	46
4-5PM	0%	**10%**	0%	0%	0	6	6	0	0	0	0	6	6
5-6PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
6-7PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
7-8PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
8-9PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
9-10PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
10-11PM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
11PM-12AM	0%	0%	0%	0%	0	0	0	0	0	0	0	0	0
TOTAL =	**100%**	**100%**	**100%**	**100%**	**57**	**57**	**115**	**27**	**27**	**54**	**84**	**84**	**169**

Note:

1 = Assumes one construction shift between 7:00AM and 3:30PM. Assumes truck arrivals uniformly distributed throughout the day, and duration of stay on-site of less than one hour.

2.19.3.7 Air Quality

Temporary impacts on local air quality during construction within the Development Area include fugitive dust (particulate) emissions from land clearing operations and mobile source emissions from operations of off-road equipment and on-road trucks.

Fugitive dust emissions could occur from land clearing, excavation, hauling, dumping, spreading, grading, compaction, wind erosion, and traffic over unpaved areas. Actual quantities of emissions depend on the extent and nature of the land clearing operations, the type of equipment employed, the physical characteristics of the underlying soil, the speed at which construction vehicles are operated, and the type of fugitive dust control methods employed. Much of the fugitive dust generated by construction activities consists of relatively large-size particles, which are expected to settle within a short distance from the construction site and not significantly impact nearby buildings or people particularly for those elements relatively far away from them. All appropriate fugitive dust control measures, including watering of exposed areas and dust covers for trucks, would be expected to be employed during construction to minimize potential fugitive dust emissions. To ensure that the construction of the proposed project would result in the lowest practicable diesel particulate emissions, the project would implement an emissions reduction program for all construction activities, such as: diesel equipment reduction; clean fuel (i.e., use of ultra-low sulfur diesel); best available tailpipe reduction technologies; utilization of newer equipment; source location; dust control; and idle restriction.

Mobile source emissions may result from the operation of construction equipment, trucks delivering materials and removing debris, workers' private vehicles, or occasional disruptions in traffic near the construction site.

Localized pollutant increases due to trucks and workers traveling to and from the site would be minimized by the following types of standard traffic maintenance requirements:

- Limiting any temporary street closings to off-peak hours whenever possible;
- The existing number of traffic lanes would be maintained to the maximum extent possible.
- Idling of delivery trucks or other equipment would not be permitted during unloading or other inactive times; and
- Following applicable air pollution control codes to use ultra-low diesel fuel during construction activities and other applicable best management practices ("BMPs").

Moreover, based on peak hour traffic forecasts during construction periods previously summarized in **Tables 2.19-3** and **2.19-4**, the maximum peak hour truck and commuting vehicle two-way trips are well below the CEQR-established mobile source screening thresholds for both CO and $PM_{2.5}$ that require a microscale analysis. Therefore, the off-site on-road truck and worker's commuting vehicular emissions impacts would not be significant.

Although construction will last for about seven years, individual construction element at the same location would not last three years or more. Each proposed element would be constructed according to the following approximate schedule:

- Retail Site "A" and Fairview Park: 24 months in 2014 and 2015.
- Englewood Avenue: 12 months in 2016.
- Retail Site "B": 24 months from September 2016 to August 2018.
- Senior Housing: approximately 24 months from July 2018 through July 2020
- School: approximately 30 months from July 2018 through the end of 2020.

Overall construction of the proposed school is expected to occur over an approximately 30-month period. However this period includes both interior and exterior work. While exterior construction

activities last for an approximately 24-month period, the NYCSCA has noted that the construction of schools, such as the proposed two-story school, potentially require additional months, as specialized classrooms, lab and other internal facilities can take time to set up. It is expected that the remaining 6-months of construction would be interior work.

As indicated, the construction elements listed above would mostly occur on separate timelines and on separate parcels within the Project Area, and construction on any one parcel would be completed within three years. Therefore, the on-site construction equipment activities associated with each element can be considered independent and temporary. Among these construction elements, the effects from Retail Site "A" and Fairview Park construction would have the least temporary impacts since the activity would occur at 800 feet or greater distance from the nearest residences along Englewood Avenue.

Due to the distribution and separation of construction among five different parcels over a seven-year period significant adverse construction-related air quality impacts are not expected as a result of the Proposed Project. By 2015, construction of Fairview Park and Retail Site "A" would occur over a 24-month period, with the closest sensitive receptors (e.g., existing residences, publicly accessible parkland, etc.) being the Tides residential community located approximately 900 feet to the west, across Arthur Kill Road. For the construction of Retail Site "B," land clearing and construction-related activities are expected to occur over an approximately 24-month period, ending in 2018. The closest sensitive receptor to this site is the Tides residential community located approximately 80 feet to the west, across Arthur Kill Road, and the proposed Fairview Park to the east that will be in operation by the 2015 year. The closest park amenities to the area for construction of Retail Site "B" would be the passive trail system, which is located more than 80 feet away (the same distance as the Retail Site "B" is in relation to the Tides residential community). To the north of the park are the southern boundaries for construction of the school and housing sites. Construction activities from the school and housing sites are expected to be at least 50 feet from park amenities that are in operation by the year 2015. Therefore, significant adverse construction-related air quality impacts are not expected as a result of the Proposed Project.

2.19.3.8 Noise

Construction noise impacts would be caused by the operation of construction equipment on or near the Project Area, and by the travel of construction-related car and truck traffic through the community. Construction noise levels are typically highest during any excavation and foundation phases, when several large pieces of construction equipment operate on construction sites. Construction noise from on-site equipment depends on:

- The type and number of the machinery,
- Which pieces of equipment are operating at any one time,
- How frequently the equipment operates throughout the work day, and
- How far removed they are from the construction site boundaries and from the nearest sensitive receptors (e.g., residences, schools, parks, etc.).

Peak noise levels from impact equipment (e.g., pile drivers, pavement breakers, etc.) can be close to or over 100 dB(A) or higher at 50 feet from the equipment. Placing applicable noise barriers (e.g., temporary plywood walls) around areas where those equipment operate or minimizing their use by utilizing quieter equipment to achieve the same purposes would help reduce these potential temporary noise impacts.

As with most construction projects in the City, the Proposed Project would result in temporary and short-term impacts on adjacent properties. Construction noise is regulated by the New York City Noise Control Code and by the U.S. Environmental Protection Agency ("EPA") noise emission standards for construction equipment. These local and federal controls require that certain types of construction equipment and vehicles meet specific noise emission standards. Except under exceptional circumstances, City regulations limit construction activity to weekdays between the hours of 7:00 a.m. and

6:00 p.m., and construction materials must be handled and transported in a manner that avoids the generation of unnecessary noise.

Therefore, given these factors, the distribution of construction among five different parcels over a seven-year period significant adverse construction-related noise impacts are not expected as a result of the Proposed Project. By 2015, construction of Fairview Park and Retail Site "A" would occur over a 24-month period, with the closest sensitive receptors (e.g., existing residences, publicly accessible parkland, etc.) being the Tides residential community located approximately 900 feet to the west, across Arthur Kill Road. For the construction of Retail Site "B," land clearing and construction-related activities are expected to occur over an approximately 24-month period, ending in 2018. The closest sensitive receptor to this site is the Tides residential community located approximately 80 feet to the west, across Arthur Kill Road, and the proposed Fairview Park to the east that will be in operation by the 2015 year. The closest park amenities to the area for construction of Retail Site "B" would be the passive trail system, which is located over 80 feet away (the same distance as the Retail Site "B" is in relation to the Tides residential community).

Land clearing and construction-related activities for the construction of Englewood Avenue to Veterans Road West are expected to occur over an approximately 12-month period, ending in December 2016. The closest sensitive receptors to this site are existing two-story residence located along the north side of Englewood Avenue, directly adjacent to the re-alignment of the roadway. Some of these residences are also located near and across the street from the development site of the senior housing parcel, which is expected to occur over an approximately 24-month period ending in August 2020. Adjacent to the senior housing parcel is the proposed school site, which is located approximately 250 feet from the nearest existing residence along the north side of the roadway. Construction of the school would over an approximately 30-month period ending in December 2020. To the south, portions of Fairview Park (which would be operational by the year 2015) would be situated adjacent to the southern boundaries for construction of the school and housing sites. Construction activities from the school and housing sites are expected to be at least approximately 50 feet from park amenities that are in operation by the year 2015.

2.19.3.9 Other Technical Areas

In addition to the technical areas discussed above, a preliminary assessment of the potential for construction-related impacts in other technical areas was performed for the Proposed Project. As per the *CEQR Technical Manual*, the other technical areas assessed were: socioeconomic conditions; community facilities; shadows; urban design and visual resources; and infrastructure, as follows below:

- ***Socioeconomic Conditions***: The Proposed Project is not expected to result in any significant adverse construction related impacts on socioeconomic conditions. Although the Development Area is vacant, there are residential and commercial properties abutting the existing built portion of Englewood Avenue that may be affected by its mapping and reconstruction, as shown in Figure 4 of **Chapter 1**. Only four of these 22 properties are privately owned. The other 18 properties are currently owned by the City of New York and are within the Development Area.

  For most of the properties, only minor front yard portions are expected to be modified by the widening and realignment of Englewood Avenue. However, the widening will require acquisition of a portion of one property at 21 Englewood Avenue (Block 7380, Lot 51), located on the north side of Englewood Avenue, near the intersection with Arthur Kill Road. The proposed realignment of Englewood Avenue would encompass part of a two-story frame residential building with two residential units, with approximately 3,050 square feet of floor area on the approximately 28,054 square foot lot. The Proposed Project would directly displace these two residential units. As noted above, displacement is not typically considered significant unless it involves 500 or more residents. Therefore, the Proposed Project is unlikely to have significant impacts based on direct residential displacement and no further analyses are required.

  There are also a few commercial properties abutting the existing built portion of Englewood Avenue that may be affected by its mapping and reconstruction. Portions of these properties

adjacent to the roadway may be modified by the widening and realignment of Englewood Avenue, however, total displacement of these commercial uses would not occur. Although businesses on four properties (Block 7380, Lot 51; Block 7465, Lot 1; Block 7464, Lot 1; and on Block 7465, Lot 6) would lose a portion of their parking/front landscaping, no businesses would need to be relocated as part of the Proposed Project.

The proposed construction activities would create construction and related jobs, a positive benefit. Construction activities would result in direct benefits due to expenditures on labor, materials, and related services, as well as indirect benefits due to expenditures for material suppliers and by construction workers and other employees involved in construction activities.

- ***Community Facilities and Services***: The Proposed Project is not expected to result in any significant adverse construction related impacts on community facilities within the area. Construction activities would not displace any existing community facilities, as none exist within or in close proximity to the Development Area. Local police departments, fire departments, and hospitals have sufficient resources to provide emergency services, if necessary, during construction activities.
- ***Urban Design and Visual Resources***: The Proposed Project is not expected to result in any significant adverse construction-related impacts on urban design or visual resources within the Development Area or within the surrounding area. Any visual impacts within the area that would occur due to construction activities, including various construction equipment and materials placed on the site, would be temporary and would be buffered from the neighboring areas by existing trees and vegetation.
- ***Infrastructure***: Construction activities associated with the Proposed Project are not expected to result in any significant adverse construction-related impacts on infrastructure (e.g., water supply and wastewater/stormwater conveyance). Best management and other practices would be adhered to, following all applicable local and state regulations, during construction activities to minimize and control stormwater runoff on the site.

Thus, the Proposed Project would not lead to significant adverse construction-related impacts that would affect the other technical areas listed above.

2.19.3.10 Conclusion

As demonstrated in this chapter, construction-related activities due to the Proposed Project are not expected to have any significant adverse impacts on land use and neighborhood character, open space, hazardous materials, transportation, air quality, noise, or other technical areas.

Significant adverse impacts to historic and cultural resources and to natural resources are expected as a result of the Proposed Project. Construction activities do have the potential to disturb or destroy archaeological sites located within the Development Area, resulting in the potential for significant adverse impacts to archaeological resources. A prehistoric site was located during the Phase IB survey atop a prominent knoll in the east-central portion of the current Project Area. This approximately 150 foot by 40 foot site, which is considered to be archaeologically significant, is located in Block 7452, Lot 75, the parcel on which Retail Site “A” would be developed. Further archaeological investigation will be required to be undertaken in the parkland and on Retail Site “A” prior to construction or any ground disturbing activities. A Scope of Work for archaeological field testing will be prepared and submitted to LPC for review and approval. The potential for the Proposed Project to result in significant adverse impacts on the remainder of identified sites within the Development Area is not known. At this time, there are no specific development proposals for Site Retail Site “B” and future developers will be selected pursuant to a RPF process. Further archaeological investigation will be required to be undertaken by the developer(s) after selection. Remedial measures, including Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with LPC and/or OPRHP, will be required to be undertaken by the developer(s) through provisions in the Contract of Sale between NYC and the developer(s).
The Proposed Project would result in significant adverse construction-related impacts to natural resources, including wetlands and habitats. Development by the year 2015 would impact approximately

0.106 acres of non-regulated wetland habitats. Construction that would occur by the 2020 analysis year would impact approximately 0.30 acres of non-regulated wetland habitats. Erosion and siltation would be minimized through the use of such best management practices (BMPs) as silt fences and stormwater management structures, in accordance with an approved Erosion and Sedimentation Control Plan. Development that would occur by 2015 would also remove or alter approximately 20.5 acres of habitat for flora and fauna over portions of the Development Area. By the 2020 analysis year, approximately 25.7 acres of land would be subject to earthmoving and filling associated with construction of the school, senior housing, and Retail Site "B" development.

The area supports a variety of mammals and displacement of wildlife within the area would occur during construction. Two endangered and one threatened plant species were observed within the proposed footprints of the 2015 year developments. Two species, the bonesets (one threatened and one endangered), were observed in open areas (e.g., successional old fields Variants I and II, and unpaved paths) throughout the Development Area. Removal of the bonesets constitutes a significant adverse impact. Torrey's Mountain Mint, an endangered species, occurs in one discreet location on the southern border of Retail Site "A." Review of the NYS NHP website indicates "*There are three existing populations in New York but all of them are small or highly threatened"* and *"A recently discovered population on Staten Island was almost destroyed by the construction of a shopping center*." NYS NHP conservation and management strategies for the species identify that "open areas need to be maintained without directly damaging existing plants." The removal of one of the remaining three sites for this species would be a significant impact.. Implementation of the 2020 development would also remove mapped habitat that could support threatened and endangered bonesets and would also be viewed as significant.

Development by the year 2015 (Fairview Park and Retail Site "A") would impact 538 of the surveyed trees within the Development Area, while development by the year 2020 (Retail Site "B", the school and senior housing) would impact 1,156 of the surveyed trees. Development of Englewood Avenue would impact 319 of the surveyed trees. In total, 2,013 of the surveyed trees would be impacted. As per Local Law 3 (*Local Laws of the City of New York For The Year 2010*), trees in public property under the jurisdiction of the New York City Parks Department (NYC DPR) require mitigation (replacement) if removed. The amount of mitigation (number of trees needed to replace each tree approved for removal) is determined by calculating the size, condition, species and location rating of the tree proposed for removal. Mitigation may be accomplished by replanting trees or monetary compensation. Visual and noise disturbances during the construction phase may also cause animals to relocate to the undisturbed suitable habitats adjacent to the expected building footprints.