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 along with the proposed park for a total of approximately 43 mapped acres of parkland, and the private roadways of Bricktown Way and Tyrellan Avenue would also be mapped as streets. 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~~ The sections 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 anticipated that the construction of the school would last for approximately 24 months, with an additional six months for interior setup of the school. 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~~FEIS 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~~**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 formal 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~~NYCLPC-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~~year 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

Year 2015

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 approximately 150 foot by 40 foot site is located in Block 7452, Lot 75, on 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. (NYS Site A08501.002814)..* 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 LPCNYCLPC for review and approval. Remedial measures, including Phase 1B testing and, if needed as determined by NYCLPC based upon the results of the Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with LPC and/or, if appropriate, OPRHP, will be required to be undertaken by the developer(s) through provisions in the Contract of Sale between NYC the New York City Economic Development Corporation ("NYCEDC") and the developer(s).

Year 2020

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 as well as areas 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~~the above identified sites ~~stated above~~ is not yet known (see **Chapter 7.0**~~). At this time,~~) because 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~~RFP 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, and, if needed as determined by NYCLPC based upon the results of the Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with ~~LPC~~NYCLPC and~~/or~~, if appropriate, OPRHP, will be undertaken. These remedial measures will be required to be undertaken by the developer(s) through provisions in ~~the Contract of Sale~~any contract of sale, lease or other legally binding agreement between ~~NYC~~NYCEDC or the City 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 federal or state regulated 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~~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~~. Examples of construction BMPs for natural resources that apply to actions in both the 2015 year and 2020 year under the Proposed Project 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, measures such as hay bales, check dams, eco-logs, silt fencing and/or other sediment and erosion control measure would be implemented as dictated by the local soil conservation district. These structures would be regularly inspected to ensure they function properly.

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

    - ~~– 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~~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~~trees be protected with root mats and exclusion barriers around the dripline. After construction ceases, it is recommended that the ~~tree~~trees be inspected by a certified arborist to determine what, if any damage may have occurred to the ~~tree~~trees 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~~

During the construction of Fairview Park, NYCDPR would implement standard tree protection measures to protect existing trees within and adjacent to construction zones. As applicable, New York City Administrative Code § 18-107 and the Rules of the City of New York Title 56 § 5-01 et seq., would be followed for trees to be removed from the Fairview Park site.

- Invasive and Nuisance Species Removal – restoration programs should include a program for the removal of invasive plants and nuisance species and the reintroduction of native plant species, where feasible, especially in recently disturbed habitats and along the edges of habitats. Where possible, parcel development will include removal of nuisance and invasive species and inclusion of native and noninvasive species. Where the opportunity allows on Retail Site A, the Library, Retail Site B, the school, and the senior housing sites, the associated developers and/or responsible agencies will remove invasive/nuisance species and strive to use native and noninvasive species in the landscaping of their sites and will share their planting lists with the New York City Department of Parks and Recreation ("NYCDPR") for their review and consultation.

- ~~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 approximately 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~~ a maximum 15,000-square-foot branch of the New York Public Library~~,~~ (NYPL), 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 2015 development ~~that~~sites would ~~occur by 2015 would also remove or alter~~involve the loss of approximately 20.5 acres of habitat for flora and fauna ~~over portions of the Development Area. These~~while approximately 13.7 acres of habitat areas would be preserved within the proposed Fairview Park. Approximately 85 percent of the lost habitats ~~are largely~~would be successional woodlands and fields. None of the habitats are rare or unique and are common in southern New York State. ~~Yet the area~~

~~supports~~However, the Retail Site "A" and Fairview Park sites support a variety of mammals (e.g., mice, voles, raccoons, deer, etc.). Displacement of wildlife within the ~~area would~~constructed portions of the Development Area could occur during construction. ~~Some of these habitats~~Habitats on Retail Site "A" and the active recreation and parking areas of Fairview Park would be permanently altered and/or removed ~~and~~, which would render portions of the remaining habitat (i.e., areas adjacent to the park's recreation areas) unsuitable for ~~some~~those species~~.~~ more sensitive to human activity. Visual and noise disturbances during the construction phase may cause these animals to relocate to the undisturbed suitable habitats adjacent to the ~~expected building footprints.~~newly built areas. However, once construction activities are completed, ~~it is expected that proposed landscaping on these sites and~~the 13.7 acres of preserved natural areas within the ~~park~~proposed Fairview 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~~ (i.e., north and west of Fairview Park), thereby putting additional pressure on these habitats due to overpopulation of some species. Species already relatively adapted to an urban environment (e.g., squirrels, opossum, deer, etc.) can easily adapt to a change in this environment. However, anthropogenic encroachment and disturbances (e.g., noise, light, etc.) into what is now a low-noise environment would make the senior housing and school sites, which are proposed to be constructed by 2020 an unattractive habitat to organisms (e.g., forest birds that prefer large tracks of wooded area) that are more intolerant of urban disturbances.

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~~ impacting the mammals, birds and some reptiles that would normally use the contiguous habitat for migration, feeding, foraging and/or breeding. The impacts of this 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 Retail 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 into that preserve. The removal of the habitats on the 2015 development parcels may have indirect impacts to the CPPSPP, as portions of these removed habitats serve as a vegetated buffer for the CPPSPP. 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 construction, as noted earlier, would further reduce available habitats for species that are less adaptable to disturbed environments.

One endangered and one threatened plant species were observed within the proposed footprints of the development that would occur by 2015. Fringed boneset (threatened) was observed in open areas (e.g., successional old fields Variants I and II, and unpaved paths) throughout the area.[1] The development of Retail Site "A" and the recreational areas of the proposed Fairview Park by 2015 would remove approximately 2.2 acres or 10 percent of potential boneset habitat through habitat loss and/or direct removal of individual plants. It is not anticipated that this level of potential habitat loss and direct plant removal due to the Proposed Project in 2015 would pose a significant impact to these boneset 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*~~

[1] NYSDEC, 2013, August 22, phone communication, regarding NYSDEC adopted revision to regulation 6 NYCRR Part 193.3 Protected Native Plants (May of 2012), which included changes to incorporate information compiled by NYNHP and reflects changes in the scientific names of many plants. One of the updated changes was the removal of late-flowering boneset (*eupatorium serotinum)* which no long appears on any of the lists of protected plants set forth in 6 NYCRR Part 193.3, and therefore it has no regulatory status.

~~*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.~~
Torrey's mountain mint, an endangered species, was identified in the 2012 survey in one discrete location in the parking lot near the southern border of Retail Site "A." There is a preserved area of mountain mint at the Bricktown Centre retail complex located approximately 700 feet south of the Retail Site "A" mountain mint and therefore outside of the Project Area. However, the proximity of the Retail Site "A" and Bricktown Centre mint colonies suggests they are both part of the larger Charleston site identified by the NYNHP.[2] As a result of the mitigation efforts for the Bricktown Centre project there are now numerous additional mountain mint sites in Staten Island which were not identified by NYNHP. Mitigation for the Bricktown Centre project included a preservation and propagation plan (the "Bricktown Plan") implemented in 2006 by the City under the direction of NYCDPR's Natural Resources Group and NYCDPR's Greenbelt Native Plant Center (GNPC), with assistance from other expert ecologists. Under the Bricktown Plan, over 500 pots of greenhouse-grown Torrey's mountain plants were outplanted to approximately 15 sites in Staten Island. Internal monitoring studies performed for the GNPC indicate several of the NYCDPR-established mountain mint outplanting sites were successful in fostering high survivorship, vigor, and reproduction.

Construction of Retail Site "A" would remove a colony of mountain mint from the Charleston site, which would be considered a significant adverse impact. However, the Bricktown Centre colony along Veterans Road West within the Charleston site will remain preserved in its protected habitat area. Therefore, the Charleston site mentioned by NYNHP above will be impacted, but it will not be removed in its entirety. Proposed mitigation measures for the Retail Site "A" mountain mint removal are discussed **in Chapter 4**.

Year 2020

As further discussed in **Chapter 2.8**, by the 2020 analysis year, ~~approximately 25.7~~an additional 29.6 acres of ~~land~~habitat area would be subject to earthmoving and filling associated with construction of Englewood Avenue, the school, senior housing, and Retail Site "B" ~~development~~developments, for a total ~~nearly 60~~of approximately 50 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~~Avenue, the current topography may require substantial earthmoving activities in order to create a road embankment capable of supporting street traffic.

Implementation of the full 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~~2020 would impact approximately 0.3 additional acres of unregulated/non-jurisdictional wetland habitats, and 0.07 acres of NYSDEC-regulated/USACE-jurisdictional 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~~(all within ~~the area for~~Wetland C as shown in Figure 2.8-5 in **Chapter 2.8**) associated with 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~~. This roadway's assumed 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 2.8.5.2** 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

[2] New York State Register and Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR), Section 193.3 defines "site" as "a colony or colonies of plants separated from other colonies by at least one-half mile." http://www.dec.ny.gov/regs/15522.html

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. As more fully detailed in **Chapter 4**, mitigation efforts for natural resources can also be applied during construction. Opportunities to minimize the impacts on natural resources will be determined during the subsequent planning and design phases for this roadway, including permitting applications, in consultation with the applicable permitting agencies.

The development that would occur by the 2020 analysis year would ~~bifurcate~~divide 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 along the Englewood Avenue corridor and in the adjacent CPPSPP and the Conservation Area. Currently, the relatively narrow dirt track that separates the CPPSPP from the Conservation Area does not serve as an impediment to fauna transiting between the parcels~~. Moreover,~~ and 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~~Unlike the Development Area, however, 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~~Removal of this undisturbed continuous canopy for the construction of an 80-foot wide road would bifurcate a valuable habitat and adversely impact fauna within CPPSPP and the Conservation Area.

~~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.~~
The CPPSPP, Conservation Area, Wetlands B and C, and the portions of these areas in the Englewood Avenue corridor comprise a large forested parcel with mature trees. As identified in subchapter 2.8-3, CPPSPP is a NYSDEC Bird Conservation Area, and bird species (including State-listed species) and other fauna that live in the CPPSPP, likely transit to the Conservation Area for usage of the habitat. Avifauna may be impacted within the area of Englewood Avenue during the construction phase as a result of direct loss of habitat and visual and noise disturbances. Avifauna would also be adversely impacted by direct displacement from the construction area (e.g., removal of trees). Also, after construction, forest birds would continue to be impacted from operational impacts Englewood

Avenue. Past studies (Kociolek et al, 2011; Kuitunen et al., 1998; Reijnen and Foppen, 1994) have shown that bird density is reduced close to the roadways and highways due to noise, pollution and/or bird strikes from vehicles.

Mammals, herptofauna, insects, and other organisms utilize the habitats within the construction footprint of Englewood Avenue under the Proposed Project. While none of these species are solely dependent on the habitat areas within the Englewood Avenue construction footprint, construction of this road would require organisms present within these habitats to relocate to adjacent parcels, resulting in an increased competition of resources and reduced habitat for the organisms of the Conservation Area and CPPSPP to utilize. During the 2012 survey no listed species or evidence of listed species (e.g., nests, tracks, etc.) were observed in the Englewood Avenue corridor.

The Proposed Project in 2020 would result in a significant adverse impact on available habitats for fringed boneset, a threatened plant species, by reducing by approximately 78 percent the open field-type habitats within the Development Area that is generally conducive to its growth. As discussed in **Chapter 2.8**, the potential extent of the impact and the effectiveness of possible mitigation measures depend on how much of these areas would change through natural succession from open field to more woody habitats not suitable for boneset growth before the 2020 sites are developed.

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~~4**, 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. The impacts of the construction of Englewood Avenue on natural resources as discussed above are based on a worst-case assumption. Opportunities to minimize these impacts are discussed in the Mitigations chapter and will be determined during the subsequent planning and design phases for this roadway, including permitting applications, in consultation with permitting agencies.

Mitigation concepts presented in **Chapter 4.0** are subject to review and approval by applicable regulatory agencies, including NYSDEC, USACE, and NYCDPR. These measures include the following by resource or habitat areas:

Wetlands

General Recommendations/Best Management Practices

Compliance with all construction restrictions and permit conditions contained within the NYSDEC/USACE freshwater wetland permits that would ultimately be obtained for disturbance of wetlands as a result of constructing Englewood Avenue. These permits are likely to include measures including not limited to the following:

- 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. The EINSP would ensure compliance with permit conditions.

- Wetland Identification. The wetlands on site have been delineated. Prior to construction, all field identified sensitive resources (e.g., federal and state regulated wetlands and regulated adjacent areas, etc.) will be flagged to ensure resource protection. Protection measures will be implemented to ensure minimization of impacts to these 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 federal and state regulated wetlands would be reduced to the greatest extent practicable. If a regulated 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 during the permitting process.

- 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.

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

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

- Installation of high visibility snow fencing along the boundary of existing regulatory wetlands to avoid construction activities within wetland areas not covered by the future wetland permit that would need to be obtained for this project.

*General Recommendations/Best Management Practices*Threatened *and Endangered Species in USACE-jurisdictional and NYSDEC-regulated and Regulated Adjacent Areas*

- Endangered Species Survey– 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 an ecologically sensitive time frame (e.g., nesting, etc.), the project construction schedule and sponsors will adhere to these requirements.Habitat and Flora and Fauna Preservation

General Recommendations/Best Management Practices

- CPPSPP Bird Conservation Area (BCA) – As discussed in **Chapter 2.8**, the development of Englewood Avenue between CPPSPP and the Conservation Area from dirt path to paved road could reduce the co-mingling of some tree canopies, impacting the ability of some avifauna to travel between these two parcels, thereby adversely impacting the NYSDEC-designated BCA. The BCA could be extended to officially include the approximately 20-acre NYCDPR Conservation Area, affording additional protections to this area

- In areas where access for construction equipment is needed, tracking pads could be installed to minimize the earth disturbance associated with use of this equipment.

- Vernal Pool Habitat Preservation and/or Creation. Only Wetland B has been identified as a vernal pool habitat meeting all four criteria (concerned with absence of fish, use by other species, physical characteristics, and persistence of water, as detailed in **Chapter 2.8**). For any wetland habitats that do not occur within the build footprints, a vegetated buffer should remain in place around them. In undeveloped areas on site, especially wooded areas at the base of slopes, shallow depressions should be created, when possible, to recreate the small isolated wetlands that would be removed through the implementation of Retail Sites "A" and "B." These areas should have a vegetated buffer around them. Also, during construction appropriate measures would be taken to ensure that existing vernal pools are not directly or indirectly impacted by construction activities.

Mitigation Measures

- Englewood Avenue (portion between CPPSPP and Conservation Area) – the uses of culverts or other structures underneath the road surface are recommended to allow for the passage of fauna under the roadway is advisable as part of the eventual design of this roadway. This would also maintain suitable travel ways for organisms between CPPSPP and the Conservation Area. Plans for underpasses, wildlife crossings, etc. would be designed in consultation with the appropriate regulatory agencies. A nuisance and invasive species removal program could be targeted along the edges of Englewood Avenue.

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~~were 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.~~

A Phase II Environmental Site Investigation was completed in July 2013 which consisted of the collection and analysis of soil, soil vapor, and groundwater samples.

A summary of the laboratory analysis included:

- No VOCs, SVOCs, PCBs, or Pesticides were identified in the soil samples collected at concentrations above their respective Unrestricted, Restricted Residential, or Commercial SCOs.

- The metals arsenic, copper, and lead were detected in one soil sample at concentrations exceeding Unrestricted SCOs, but below the respective Restricted Residential and Commercial SCOs;
- No VOCs, SVOCs, PCBs or Pesticides were identified in the groundwater sample at concentrations above the NYSDEC Class GA values;
- Total (non-filtered) aluminum, cobalt, iron, and sodium were detected above their respective NYSDEC Class GA values in the collected groundwater sample. Dissolved (filtered) cobalt, iron, manganese, and sodium were detected above respective NYSDEC Class GA values; and

- VOCs were detected in several of the soil gas samples at concentrations slightly above their respective USEPA ambient air concentrations but not above NYSDOH Air Guidance Values.

- Laboratory results of the paint chip samples indicated that the eastern gate's coating contained 0.37 percent lead and the western gate's coating contained 1.69 percent lead.

Based on the findings of the Phase I ESA and Phase II ESI, the following environmental control measure would be implemented for the 2015 developments:

- As per NYCDEP recommendations, a moisture/vapor barrier would be incorporated into the design plans of any proposed structures on the Retail Site "A," public library and Fairview Park sites.

- NYCDPR and the developer for Retail Site "A" will submit a Soil Management Plan (SMP) and a Remedial Action Plan ("RAP"), respectively, to NYCDEP for review and approval. The SMP and the RAP will indicate that contaminated soils would be properly disposed of in accordance with the applicable regulations of the NYSDEC. If re-use of soil on-site is proposed, the SMP and the RAPRAPs will detail the amount of cut/fill, the proposed testing frequency and applicable standards, and for the park – the proposed locations for the re-used soil. The Retail Site "A" RAP will include information regarding the library parcel which will be prepared and graded by the Retail Site "A" developer.

- NYCDPR and the developer for Retail Site "A" will submit a Construction Health and Safety Plan ("CHASP") to NYCDEP to protect workers' potential exposure to contaminants for the proposed construction project. Soil disturbance would not occur without NYCDEP's written approval of the CHASP. If excavated soils are expected to be temporarily stockpiled on-site, they must be covered with polyethylene sheeting while disposal options are determined. Additional testing would be conducted, as required, by the disposal/recycling facility.

- If any petroleum-impacted soils (which display petroleum odors and/or staining) are encountered during the excavation/grading activities, the impacted soils would be removed and properly disposed of in accordance with all NYSDEC regulations.

- Dust suppression would be maintained by the contractor during the excavating and grading activities at the site. Any underground storage tanks (including dispensers, piping, and fill-ports) that are encountered would be properly removed/closed in accordance with all applicable NYSDEC regulations.

- If de-watering into City storm/sewer drains occurs during the proposed construction, a NYCDEP Sewer Discharge Permit would be obtained prior to the start of any de-watering activities at the site.

With the implementation of these measures no significant adverse hazardous material impacts are expected to result from the construction of the year 2015 developments.

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~~For all developments in the Project Area to be completed by the year 2020, Phase II Environmental Site Assessments and mitigations as necessary, through continued consultation with NYCDEP, will be required to be undertaken. These further subsurface investigations will be required to be undertaken by the developer(s) through provisions in the ~~Land Disposition Agreement (LDA)~~contract of sale, lease or other legally binding agreement between ~~New York~~ NYCEDC or the City and the developer(s). With the implementation of these measures prior to construction no significant adverse hazardous material impacts are expected during construction or operations within the entire Development Area.

Paint chip samples from the eastern and western access gates detected concentrations of lead at 0.37 and 1.69 percent, respectively. Any disturbance to these gates must be conducted in accordance with OSHA Lead In Construction Standard (29 CFR 1926.62) requirements, and waste generation, handling, transport and disposal must be conducted in accordance with NYS Parts 360-364 Regulations and Federal Resource Conservation and Recovery Act (RCRA) requirements.

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~~the Development 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.

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**				

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 sulfur diesel fuel ("ULSD") 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~~two years or more, and would generally not occur during the same periods. 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~~24 months from July 2018 through ~~the end~~July of 2020, with the potential for an additional six months of interior set-up time.

Overall construction of the proposed school is expected to occur over an approximately 24 to 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~~six-months of construction would be limited to interior work.

To ensure that construction of Fairview Park will results in the lowest feasible diesel particulate matter emissions and to minimize the effects of construction activities, NYCDPR will comply with all local laws, including Section 24-163 of the Administrative Code as it pertains to air quality.

To ensure that the construction of the remainder of 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. Emissions generated by construction activities on the project sites would be minimized by adhering to the following practices:

- Ultra-low Sulfur Diesel Fuel. ULSD will also be used exclusively for all diesel engines throughout the construction sites.
- Diesel Equipment Reduction. Construction of the Proposed Project will minimize the use of diesel engines and use electric engines, to the extent practicable. The applicants will apply for a grid power connection early on so as to ensure the availability of grid power, reducing the need for on-site generators, and require the use of electric engines in lieu of diesel where practicable.
- Best Available Tailpipe Reduction Technologies. Nonroad diesel engines with a power rating of 50 horsepower ("hp") or greater and controlled truck fleets (i.e., truck fleets under long-term contract with the project) including but not limited to concrete mixing and pumping trucks, will utilize the best available tailpipe ("BAT") technology for reducing DPM emissions. Diesel particle filters ("DPFs") have been identified as being the tailpipe technology currently proven to have the highest reduction capability. Construction contracts will specify that all diesel nonroad engines rated at 50 hp or greater will utilize DPFs, either installed on the engine by the original equipment manufacturer ("OEM") or retrofit with a DPF verified by EPA or the California Air Resources Board, and may include active DPFs if necessary; or other technology proven to reduce DPM by at least 90 percent.
- Utilization of Tier 2 or Newer Equipment. In addition to the tailpipe controls commitments, the construction program will mandate the use of Tier 2 or later construction equipment for non-road diesel engines greater than 50 hp. In addition, to minimize hourly emissions of NO_2, non-road diesel-powered vehicles and construction equipment meeting or achieving the equivalent of higher USEPA non-road diesel emission standards will be used in construction, where practical and feasible.

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.~~two years, and thus would be temporally spread out through the seven years of total build period. In addition, because the site is large, the construction activities will be divided into widely separated clusters and thus the potential for impact at any given time and location is minimal. Therefore, the on-site construction equipment activities associated with each element can be considered independent and ~~temporary.~~the potential for impacts is minimal. Among these construction elements, the effects from Retail Site "A" and Fairview Park construction would have the least ~~temporary~~independent 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~~is operating 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~~these four privately-owned 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~~NYCLPC 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~~an RFP process. Further archaeological investigation will be required to be undertaken by the developer(s) after selection. ~~Remedial~~For all developments in the Project Area to be completed by the year 2020, remedial measures, including Phase 1B testing, and, if needed as determined by NYCLPC based upon the results of the Phase 1B testing, any necessary Phase 2 and 3 investigations, and continued consultation with ~~LPC~~NYCLPC and ~~/or~~, if appropriate, OPRHP, will be undertaken. These remedial measures will be required to be undertaken by the developer(s) through provisions in ~~the Contract of Sale~~any contract of sale, lease or other legally binding agreement between ~~NYC~~NYCEDC or the City and the developer(s).

The Proposed Project would result in significant adverse construction-related impacts to natural resources, including habitats and NYSDEC-regulated and USACE-jurisdictional wetlands ~~and habitats.~~. Development by the year 2015 would impact approximately 0.~~106~~1 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.~~wetlands and 0.07 acres of regulated/jurisdictional wetlands. 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, an additional approximately ~~25.7~~29.6 acres of land would be subject to earthmoving and filling associated with construction of Englewood Avenue and the school, senior housing, and Retail Site "B" development, for a total of approximately 50 acres of lost habitat areas for the entire Proposed Project.

~~The area supports a variety of mammals and displacement of wildlife within the area would occur during construction. Two~~Displacement of wildlife within these areas would occur during and after construction. Visual and noise disturbances during the construction and long-term operation of the Proposed Project may cause animals to relocate to undisturbed suitable habitats within and adjacent to the Development area, in 2015 and CPPSPP and the Conservation Area in 2020, reducing habitat for organisms already living in those areas.

One 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~~Fringed boneset was 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~~ It is not anticipated that this level of potential habitat loss and direct plant removal due to the Proposed Project in 2015 would pose a significant impact to these boneset species. The Proposed Project in 2020 would result in a significant adverse impact on available habitats for fringed boneset, a threatened plant species, by reducing by approximately 78 percent or 17.3 acres, the open field-type habitats within the Development Area that is generally conducive to its growth. However, observations in the 2012 survey visits identified successional vegetation patterns within open field. Continued succession by woody species in these areas could reduce the identified boneset habitat by 2020 in the absence of the Proposed Project.

Torrey's mountain mint, an endangered species, was identified in 2012 in one discrete location on the southern border of Retail Site "A." Although the preserved mountain mint colony at Bricktown Centre is located approximately 700 feet south (but outside of the Project area), the removal of Retail Site "A"s mountain mint colony would be viewed as a significant adverse impact.

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)~~NYCDPR 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.~~