CHAPTER 16: CONSTRUCTION IMPACTS

Introduction

This chapter provides a discussion of the potential impacts due to construction activities associated with the Proposed Project. Due to the staggered construction schedule, impacts to some resource categories (e.g., noise) would be short term and temporary and would migrate around the Development Parcel depending on the location and the nature of construction activity. However, impacts to other resource categories (e.g., land use) could be long term, affecting the Development Parcel for the duration of the approximate 6-year construction period. As a project component is completed (e.g., BT or MART), the construction impacts from that part of the campus would cease, but construction in another area of the Development Parcel would occur. Efforts would be made to identify and implement measures to minimize impacts to the community, businesses, vehicular traffic, parking and pedestrian access. Note that the potential for public health impacts to occur as a result of the Proposed Project is addressed in Chapter 17, “Public Health.” The public health assessment presented in that chapter considers the topics of construction and operational air quality, construction and operational noise, and hazardous materials.

As described in detail in Chapter 1, “Project Description,” the Proposed Project would involve the construction of the MART, an approximately 250,000-gsf, 8-story structure; the BT, an approximately 200,000-gsf, 8-story structure; and the approximately 75,000-gsf MOB. In addition, various renovations would be required to connect these new buildings with the existing facilities on the campus. The Proposed Project would also include the construction of a 5-level, approximately 647,700-gsf parking garage adjacent the existing Hospital parking garage, the expansion of an existing parking lot, the construction a new approximately 30,000-gsf, 118-space valet parking lot for patients on the east side of Hospital Access Road, and the construction of a new approximately 135,000-gsf, 551-space employee parking lot on the north side of Edmund D. Pellegrino Road (south of the existing Central Utility Plant).

In addition, the southern portion of Edmund D. Pellegrino Road would be widened and the roadway would be realigned at the entrance to the existing Cancer Center and Ambulatory Surgery Center. The Proposed Project would add approximately 228,250 gsf (about 5.2 acres) of new roadway to the Project Site.

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1 For a conservative approach to the analysis of construction impacts, the shortest likely construction schedule was selected – six years. If the project construction duration is longer, there would be fewer overlapping activities resulting in lower peak material delivery and construction employee vehicle trips, lower peak noise levels, lower peak quantities of air emissions, etc.

2 Construction of this parking lot would include the placement of column foundations for a potential future parking garage at this site.
Methodology

In the absence of local environmental review guidance regarding construction impacts, the CEQR Technical Manual was utilized. The CEQR Technical Manual provides guidance on methods that can be used to assess impacts associated with construction activities associated with a proposed action. It also provides guidance in determining the appropriate study area within which analyses should be conducted. Thus, this construction impacts assessment generally follows CEQR Technical Manual guidance, as applicable.

The areas that would be most affected by construction generally consist of the areas immediately bordering the construction activity. However, in some cases impacts from construction activities extend beyond the immediate area surrounding the construction site. For example, noise from machinery required for excavation would affect the immediate area of the site, while dispersion of emissions from on-site construction equipment may affect a larger area. The analysis of construction-related impacts focuses on numerous technical analysis areas, and because the spatial extent affected by construction activity is not the same for all technical analysis areas, a study area appropriate for each resource was established according to the area that would be potentially affected by construction activity.

This RDEIS assesses the range of construction methods and activities that could be required for the Proposed Project. A reasonable worst-case approach is used in each technical analysis area to evaluate potential impacts. Accordingly, where a variety of construction techniques could reasonably be used to achieve a specific task, and the actual techniques to be employed are currently unknown, the method that would reasonably result in the worst potential impacts is the one selected for analysis. Additionally, because specific construction activities occur for only a small proportion of the total construction period, the analysis of potential impacts from the specific construction task is analyzed for the period when that activity is at a maximum. Thus, an analysis period for each resource category was selected according to the period when construction activities would produce maximum effects on that resource.

Some project elements are not expected to generate significant construction impacts due to their size and nature. These elements include interior renovations to the existing Hospital and HSC, new connections between buildings, and landscaping. These elements were not considered in the construction impacts analyses.

The peak period selected for each technical analysis area was established by examining the schedule of construction activities and assigning, for the duration of each activity (1) the quantity of heavy construction equipment required for that activity, (2) the number of truck trips required for the delivery of construction materials (or spoils disposal) for that activity, and (3) the number of construction workers expected to be on the Project Site for that activity. Further refinements were advanced by assigning equipment utilization factors (i.e., the fraction of the

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3 CEQR Technical Manual, City of New York, Mayor’s Office of Environmental Coordination, January 2012, Chapter 22.
work day such equipment would be in operation) to each piece of construction equipment, and by determining heavy trucking movements and determining where construction equipment would be located in relation to impact receptors.

Once the peak period for potential impacts was established for each resource category (noise, air quality, traffic and transportation, etc.), an initial screening analysis was conducted to determine whether land uses sensitive to each of the categories were located within the area likely to be affected by various construction activities. If the screening analysis identified land uses that could be affected, further analysis followed. Typically, the significance of a likely consequence (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected. Because the significance of an impact is in part a function of the duration of that impact, additional analysis was conducted if an impact was identified for a given resource category during its peak construction period to determine its duration.

Although the design of the facilities has not been completed, it is possible to evaluate the potential construction impacts of the Proposed Project by assuming construction techniques that represent the reasonable worst-case conditions expected to occur during the project’s construction. In order to conduct an analysis of worst-case conditions, it is assumed that:

- Construction activity for the MART, BT, MOB and the parking garage would overlap;
- Foundations for the MART, BT, MOB and parking garage would be supported on driven piles; and
- Excavation would be required for the MART, BT and the MOB, and cast-in-place concrete would be used for the basement floors and walls of all three buildings;
- The parking garage would be composed of prefabricated concrete elements; and
- The MART, BT and MOB would be composed of steel and curtain wall construction.

It is also assumed that construction of the Proposed Project would begin in 2013 and end in 2018. The construction period for the MART would be approximately 27 months, beginning in 2013 and ending in 2016. Construction of the BT would occur over a 36-month period, beginning in 2013 and ending in late 2017; renovations to existing Hospital towers would begin in 2015 and end in 2018. Based on information contained in the Parking Feasibility Study, it is further assumed that construction of the new surface parking areas would be completed in 2013,
while construction of the parking garage would begin in 2013 and end in 2014, and construction of the MOB would be completed in 2016.\textsuperscript{4}

The MOB would contain two levels below ground and a footprint of approximately 18,750 gsf. The MART would contain two levels below ground with an approximate 31,250-gsf footprint, and the BT also would contain two levels below ground with a footprint of approximately 25,000 gsf. The 5-level parking garage would have an approximate 142,100-gsf footprint.

\textit{Construction Scenario}

Since the design for the Proposed Project is still evolving, assumptions have been made to reflect the worst-case scenario (\textit{e.g.}, driven piles for foundation support to reflect worst-case noise conditions). It is expected that all work for the Proposed Project would be conducted during one 8-hour shift (7:00 a.m. to 4:00 p.m. with two 15-minute breaks and one 30-minute lunch break) per day, Monday through Friday. For construction traffic analysis, an additional shift beginning at 9:00 a.m. and ending at 6:00 p.m. was considered. In addition, it was assumed that trucking required for material delivery and debris disposal would occur from 7:00 a.m. to 6:00 p.m. In order to capture the reasonable worst-case construction scenario, it is assumed that all trucking would occur Monday through Friday.

\textit{Site Preparation.} Removal of some existing ancillary structures would be required before construction of certain project elements (\textit{i.e.}, one or more ancillary structures may be located within the footprint of the BT). In the case of parking lots, heavy construction machinery would break up the portions of the parking lot surfaces to be removed, and then load the debris into trucks for disposal off of the Project Site. Trees located on undeveloped land would be cut and removed from the site. Uncontaminated soil collected from site leveling activity would be stockpiled at an undetermined location on the campus for later reuse.

Ground preparation would occur in several steps. Initially, a construction fence would be erected around the construction site. Predemolition activities would include the identification of utilities, building condition surveys, and final hazardous materials assessments. The process would include a determination of the potential level and characteristics of airborne particulates from demolition activities, and an assessment of the nature of construction debris for disposal. Hazardous materials and asbestos-containing materials (\textit{“ACM”}) present in any buildings or structures proposed for demolition would be delineated and removed, as appropriate, prior to demolition and in accordance with applicable laws, regulations and regulatory procedures. A discussion of potential impacts associated with the presence of contaminated materials, together with a discussion of relevant management techniques, is provided in Chapter 10, “Hazardous Materials.”

\textsuperscript{4} Feasibility Study and Options Analysis Prepared for Stony Brook University Medical Center for East Campus Parking SUNY at Stony Brook, Cameron Engineering & Associates, LLP, November, 2011.
Demolition debris would then be loaded into trucks and hauled off site. All demolition debris would be transported by licensed haulers and would be disposed of in facilities licensed for such activity. Regarding the potential removal of ancillary structures adjacent to the western side of the existing Hospital building, it is expected that trucks would stage in the area to the west. Due to the proximity of sensitive land uses in the area demolition activities would be performed using construction equipment with the lowest feasible noise levels.

**Excavation.** Site retention activities would begin the excavation process. All excavation side walls would be sloped, shored, sheeted, braced or otherwise supported to protect worker safety, comporting with U.S. Occupational Safety and Health Administration (“OSHA”) regulations and local ordinances. After site retention, the basement cavity is excavated. Typically, hydraulic excavators remove the earthen material to the desired level. The excavation spoils would either be stockpiled on-site for later removal, or be loaded directly onto waiting trucks and hauled off-site.

**Foundations.** When basement cavities have been excavated to the desired depth, installation of piles to support the spread footings and basement slab would begin. For this analysis the use of a pile driver is assumed because it would generate the greatest amount of noise. Foundations and slabs would then be installed on the piles. Concrete would be delivered to the site via ready-mix concrete trucks and transferred to the footing forms via normal pumping methods. The need for an on-site batching plant is not anticipated. After the footings and basement slabs are installed, concrete basement walls would be constructed to the elevation of the ground floor. The walls would be waterproofed and drainage systems around the building would be installed. After the basement walls are constructed, the soldier piles and lagging used for site retention may be removed.

**Structural Steel/Building Envelope.** After the foundation and basement structure are complete, erection of the steel superstructure would begin. For this activity, steel members would be raised into position by a crane and bolted, welded or otherwise secured in place. As the superstructure proceeds, concrete floors would be poured and initial elements of the heating, ventilation, air conditioning, plumbing and electrical systems would be installed. The exterior elements — curtain wall and façade precast panels — would be installed on the superstructure, and interior components would also be installed. These stages of constructing would likely follow a staggered sequence where construction tasks for the BT building would follow those for the MART. This strategy would reduce the quantity of heavy construction equipment needed at any given time and reduce the number of construction workers required on the campus.

Overall construction of the project would take approximately six years, starting in 2013 with completion in 2018. While some construction activities would be occurring throughout the construction period, the majority of construction impacts generally occur during the early stages of construction, during excavation, pile driving (if utilized) and foundation work and erection of steel superstructures. These activities would be occurring at one or more locations on the Development Parcel for approximately 3.5 years, from mid-2013 to mid- to late-2016. For the MART and the BT it is estimated that the curtain wall would be in place in early 2015 and early
2017, respectively. For the MOB it is estimated that the curtain wall would be in place in early 2016. Prior to the installation of the curtain walls, construction activities would include site preparation and soil excavation, which use heavy equipment such as excavators, front-end loaders and heavy trucks. Subsequent stages of construction include concrete pours, steel erection and roughing of mechanical, electrical and plumbing (“MEP”) systems. Heavy equipment such as cranes, concrete pumps, compressors and delivery trucks would be used in these stages. Construction activity that takes place after these stages would largely occur indoors, without the use of heavy construction equipment.

The parking garage would use different construction techniques than the MART, BT and MOB. It is assumed that the garage would be built of prefabricated elements and would not require extensive excavation. These elements would be trucked to the site and assembled. Major construction equipment for garage construction would include cranes, backhoes or frontend loaders, compressors and generators, and welding machines. It is estimated that construction of the garage would begin in mid-2013 and end in mid-2014.

Materials for the MART, BT, MOB and parking garage would be delivered to the site on flat bed or tractor trailer trucks and staged such that they would be moved into position through the use of the tower cranes for each building. Each building, with the exception of the garage, would have a material and personnel hoist for vertical transportation. Each of the construction sites would be enclosed with a construction fence that would shield the area from view at ground level, attenuate noise emanating from the site, and prevent unauthorized access.

Construction Condition and Potential Impacts

The following sections address the technical analysis areas that are evaluated in the other chapter of this RDEIS. The construction conditions are described first, followed by a discussion of potential impacts that may occur during the approximate 6-year construction period.

Land Use and Zoning

Land Use. Most elements of the Proposed Project — the three new buildings as well as the parking garage — would be located along the western portion of the Development Parcel. Land uses within the area likely to be affected by construction activity include hospital use (including in-patient uses at the Hospital and out-patient uses at the Ambulatory Surgery Center and Cancer Center), academic and research uses (HSC, plus the School of Marine and Atmospheric Sciences, located on the South Campus to the southwest of the Project Site), woodland areas to the west and southwest, and parking and other transportation uses (i.e., access roads within the Development Parcel and Nicolls Road). The proposed employee parking lot would be located near the Ambulatory Surgery Center and Cancer Center that house medical out-patient uses, as well as residential uses to the east of Health Sciences Drive such as single-family homes on Jackson Drive and University Drive (roughly 1,000 feet to the northeast) and the Chapin Apartments (SBU graduate student housing approximately 500 feet east of the proposed employee parking lot).
Land use on the MART and BT site and immediate vicinity would be temporarily changed to a construction zone with staging areas for construction equipment, supplies and material. Land use on adjacent parcels would generally remain consistent with Existing Conditions with some level of disruption in normal functions due to construction. Land use on other portions of the Development Parcel would not change as a result of construction activity. No significant adverse impacts to land use are anticipated.

Zoning. No changes in area zoning would be needed to facilitate construction. Therefore, no significant adverse impacts to zoning are anticipated.

Community Character

The Development Parcel would be situated within the greater SBUMC campus and would be isolated from the residential areas outside the Project Site boundaries. Construction activity would temporarily change the character of the SBUMC campus and portions of the SBU Main and South Campuses in addition to residential areas situated approximately 1,000 feet to the east/northeast of the Development Parcel (i.e., University Drive and Jackson Drive residences) and approximately 1,200 feet to the south along Nicolls Road. Such changes would include noise from and views of construction activity (material deliveries and machinery operation), detours and congestion on vehicular roadways and disruptions to pedestrian circulation within the Development Parcel. However, such changes would be limited to the duration of the construction period. The ground preparation stages of construction for the facilities would be completed in approximately four months, and construction of the new facilities would be completed approximately one to three years after construction begins. No significant long-term adverse impacts to community character are anticipated.

Open Space and Recreation Facilities

No public open space or recreational facilities are situated within the area that would be affected by construction activity associated with the Proposed Project. The nearest public open space or recreational resources are Kettle Hole Park, located south of Health Sciences Drive approximately 600 feet south of the Development Parcel, and recreational/athletic fields associated with the Nassakeag Elementary School approximately 1,500 feet to the east on Pond Path. Due to the distance to public open space and recreational facilities, no significant adverse impacts are anticipated.

Community Facilities and Services

Community facilities exist within, adjacent to, or on the Project Site (see Chapter 5, “Community Facilities”). Such facilities include hospital and health care services; academic buildings, and libraries and research centers. The nature of such facilities makes them sensitive to unabated demolition and construction activities, especially noise, vibration and exhaust.

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5 Pursuant to Section 375(3) of the New York State Education Law, facilities constructed for state university purposes are not subject to local regulation, including zoning.
emissions. Potential impacts to community facilities and services due to construction noise, vibration and exhaust emissions, and the possible mitigation of such impacts, are addressed later in this chapter. No significant impacts to community facilities and services are anticipated.

**Archaeological and Historic Resources**

A Phase IA Archaeological Documentary Study and Phase IB field investigations were completed for the Proposed Project (see Chapter 6, “Historic and Archaeological Resources”). Given the lack of potential historic architectural resources within or adjacent to the Area of Potential Effect (“APE”), significant adverse impacts to historic architectural resources would not occur as a result of construction activity associated with the Proposed Project. The archaeological field testing did not identify precontact artifacts, and no further archaeological investigations were recommended for the Development Parcel. Accordingly, construction of the Proposed Project would not result in significant adverse impacts to archaeological resources.

**Socioeconomic Conditions**

All construction sites for the Proposed Project would be located within the SBUMC campus. Construction activities associated with the Proposed Project would not physically restrict access to any off-campus business in the vicinity of the Project Site. Pedestrian and delivery access to businesses would remain the same as Existing Conditions and would not be affected by construction activity associated with the Proposed Project.

Construction and renovation activities would create employment opportunities, a large share of which would likely be filled by local residents. Local businesses would likely experience increased activity due to the influx of construction workers. As discussed in Chapter 3, “Socioeconomic Conditions,” local spending on construction materials and local household spending by construction workers would be “recycled” throughout the local and state economies, supporting the creation of additional jobs and tax revenues. According to economic input-output modeling data, the multiplier effect for construction of commercial and health care structures in Suffolk County is approximately 1.5, indicating that for every $1,000,000 of construction spending, an additional $500,000 of economic activity would be supported at other businesses in the county. No significant adverse impacts to socioeconomic conditions are anticipated. Rather, local and regional economies would be expected to benefit during the construction stage of the Proposed Project due to the multiplier effect.

**Design and Visual Resources**

During construction of the Proposed Project, the following changes to visual resources are anticipated: construction equipment, safety barriers and other evidence of construction would be visible. Although plywood walls around portions of the construction site perimeters

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6 Historical Perspectives, Inc. *Phase IA Archaeological Documentary Study, Proposed Renovation, Expansion, and Modernization of Stony Brook University Medical Center, Town of Brookhaven, Suffolk County, New York, May 2011; Phase IB Archaeological Field Investigations, Proposed Renovation, Expansion, and Modernization of Stony Brook University Medical Center, Town of Brookhaven, Suffolk County, New York, December 2011.*
would shield construction activity from view, such activity would remain visible, especially from the upper floors of the Hospital and HSC buildings. Regarding the entire Development Parcel, the effects of construction activity on design and visual resources would last for the duration of the construction period; however, the effects in specific areas within the Development Parcel could be shorter. No significant adverse impacts with respect to design and visual resources are anticipated.

**Natural Resources**

The Development Parcel is located in the South Setauket Woods special groundwater protection area ("SGPA") and critical environment area ("CEA") and would be situated above the USEPA-designated Nassau-Suffolk sole source aquifer (see Chapter 9, "Natural Resources"). Special conditions may apply if construction activity, including the installation of piles, would affect the aquifer.

Construction of the Proposed Project would require a NYSDEC State Pollution Discharge Elimination System ("SPDES") General Permit for Stormwater Discharges from Construction Activities (GP-0-10-001) due to the total area of disturbance (greater than one acre in size). A Stormwater Pollution Prevention Plan ("SWPPP") and an Erosion and Sediment Control ("ESC") plan would be prepared as part of the SPDES construction permit application. The SWPPP and ESC plan would be provided as part of the construction documents and cannot be completed until more details about design are available. The terms of the permit would minimize the potential for significant adverse impacts to surface waters and groundwater during construction.

Potential impacts that may occur during construction of the Proposed Project would include disruption of wildlife activities due to noise, and hazards to small animals during clearing and grading. (See Chapter 9, "Natural Resources," for a complete evaluation of the Proposed Project’s potential impacts to natural resources.) The clearing of habitats, as well as the noise and vibration from construction operations would displace mobile wildlife species. These species would be likely to return to the remaining undeveloped areas once construction activity was complete.

To minimize potential temporary construction impacts to wildlife habitat, limits of disturbance would be properly marked prior to construction to avoid clearing of upland forest habitat that is outside of the Proposed Project’s footprint. Existing mature trees would be preserved to the extent practicable and integrated into the footprint of new development. During construction, mitigative measures would be taken to ensure minimal disruption to wildlife and vegetation. It is expected that vegetation and natural areas affected by construction activity would be replanted and/or restored where possible. Therefore, it is expected that the Proposed Project would not result in significant adverse effects to natural resources. Best management practices, such as runoff containment, would prevent construction-related sediment from migrating to proximate water bodies such as the freshwater wetland situated approximately 1,320 feet north of the Development Parcel. No significant adverse impacts to natural resources are anticipated.
Traffic and Transportation

Traffic. Construction activity associated with the Proposed Project would be contained within the SBUMC campus. Vehicles delivering construction materials would likely use Health Sciences Drive and Hospital Access Road for access to the MART, BT, MOB and the parking garage, and Health Sciences Drive and Edmund D. Pellegrino Road for access to the new surface parking lots. It is projected that 40 or more truck trips per day would be generated during the peak periods of construction-related trucking. The two periods when construction-related trucking would be at a maximum are expected to be in late 2013, during excavation for the MART and construction of the parking garage (43 truck trips per day), and in mid-2014, during foundation work for the MART concurrent with excavation and foundation work for the BT and the MOB. For each peak trucking period this volume of truck trips would last approximately two months. Generally, construction-related trucking is expected to be in the range of five to 15 truck trips per day (see Figure 16-1).

It is anticipated that construction activities at the Development Parcel would not require vehicular travel lane closures along Health Sciences Drive, however Hospital Access Road, Pellegrino Road and Road A and Road B would likely be modified to accommodate construction traffic and construction logistics. No major traffic diversion would be necessary during the construction of the Proposed Project.

Based on projections regarding delivery of construction materials for the Proposed Project, it is estimated that during the two periods when delivery of construction materials would be highest, approximately 40 trucks would enter the Development Parcel on a daily basis. If these trips are dispersed throughout the 11-hour workday (7:00 a.m. to 6:00 p.m.), approximately three or four trucks (one-way) would enter the site every hour. The two periods when material delivery would be expected to be at a maximum would occur in late 2013 during excavation of the MART and construction of the parking garage, and in mid- to late-2014 when construction of foundations and erection of steel for the MART and the MOB would be ongoing (see Figure 16-1).

It is projected that construction worker trips to the Development Parcel would be at a maximum in mid-2015 when interior work on MART would be in the latter stages, foundation work on the BT would be underway and the erection of steel and installation of curtain wall elements of the MOB would be under construction. During this period, it is projected that the number of worker trips to the Development Parcel would be approximately 75 to 100. The existing a.m. peak hour in the vicinity of the Development Parcel is 7:45 a.m. to 8:45 a.m., and the weekday p.m. peak hour is 4:30 p.m. to 5:30 p.m. It is expected that workers on the first shift would arrive at the Development Parcel prior to 7:00 a.m. and would leave between 3:30 p.m. and 4:00 p.m. Workers on the second shift would likely arrive before 9:30 a.m. and depart between 6:00 p.m. and 6:30 p.m. As such, the construction worker traffic peak hours would be offset from the local peak traffic hours. As a result, no significant traffic impacts would be expected to occur in the area during the Proposed Project’s construction period.
Parking. The proposed parking improvements would be performed in phases in order to minimize disruption to parking conditions at SBUMC. The 118-space valet parking lot (Lot 3) and the 551-space employee lot (Lot 4) would be constructed first and would be completed in 2013. Second, the existing Medical Center parking lot (Lot 2) would be expanded and completed later in 2013. Area 1 would then be leveled for temporary parking to replace the Community Doctor parking area. Finally, the new 5-level parking garage would be constructed. Completion of the parking garage is expected in 2014.

Transit and Pedestrians. Construction activity, equipment and fencing would alter pedestrian circulation throughout the Development Parcel for extended periods during different stages of the overall construction duration. All areas of construction would be fenced off to prevent unauthorized access. Construction of the Proposed Project would require temporary sidewalk closures or sidewalk-width reductions adjacent to some of the existing buildings. Pedestrian access to all operating buildings would remain and safety sheds over pedestrian pathways would be erected as necessary. As a result, no significant transit or pedestrian impacts were identified during the demolition and construction of the Site.

SBU Campus bus service would largely remain the same as it currently operates, as there are no bus stops in the area of the Development Parcel. It is also expected that Suffolk County Transit bus service to the Medical Center also would not be affected by construction activities.

Air Quality

Construction activities such as site preparation, demolition, excavation, vehicle movement, and material transport have the potential to release dust particles into the atmosphere. Such construction-related air quality impacts are generally temporary in nature and limited to the
During construction the use of best management practices would reduce or eliminate potential impacts to air quality due to construction activity. The construction general contractor for the Proposed Project would be required to implement measures to minimize air pollutant emissions, with a focus on reducing fugitive dust, particulate matter, and nitrogen oxides emissions. These measures would include the use of ultra-low sulfur diesel (“ULSD”) fuel, with sulfur content less than 15 parts per million (“ppm”), in all diesel engines, and the use of diesel retrofit technology (e.g., diesel particulate filters) and other best available technologies on heavy-duty diesel engines not already fitted with such devices.

Soils removed during excavation and grading activities that remain at a centralized location for an extended period of time would be covered with plastic sheeting to prevent the generation of fugitive dust emissions. Additionally, dust control measures would be implemented during construction grading and excavation, as necessary, to minimize off-site migration of contaminants. Soil for disposal at a landfill or recycling facility would be transported by a licensed waste hauler, under appropriate manifests or bill of lading procedures, as required.

**Noise**

*Town of Brookhaven Noise Ordinance.* The Town of Brookhaven has a noise ordinance (Chapter 50 of the Town Code) which limits allowable noise levels from a facility by the land use category that the receiver is located in, including industrial, commercial and residential. The most restrictive levels are for residential land uses, for which there are different daytime and nighttime limits. These limits are summarized in Table 16-1 below. Construction noise is exempt from the ordinance; however, construction is limited to the hours of 7:00 a.m. to 6:00 p.m. on weekdays.

**Table 16-1. Town of Brookhaven Noise Ordinance (dB(A))**

<table>
<thead>
<tr>
<th>Receiving Property Category</th>
<th>Daytime (7:00 a.m. to 10:00 p.m.)</th>
<th>Nighttime (10:00 p.m. to 7:00 a.m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>65</td>
<td>50</td>
</tr>
<tr>
<td>Commercial</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Industrial</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>


**Mobile Sources.** Two periods were identified when construction-related materials delivery would be at a maximum. One peak period would occur in the latter part of 2013 during excavation for the MART and construction of the parking garage; and the other peak period
would occur in mid- to late-2014 during foundation work for the MART and excavation work for the BT and MOB. During these peak periods it was estimated that for a brief period approximately 41 delivery trucks would travel to the Development Parcel on a daily basis. Construction worker commuting trips during the first peak (2013) were projected to be approximately 40 one-way trips per day, and were projected to be 45 trips during the second peak (late 2014).

To assess mobile source noise impacts related to construction traffic, vehicular traffic volumes were converted into Passenger Car Equivalent (“PCE”) values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars.

For this assessment it was assumed that one-half of the material delivery trucks would be medium-duty trucks and one-half would be heavy-duty trucks, and that these trips would be distributed over the 11-hour work day. Therefore, approximately two heavy-duty and two medium-duty trucks would enter the Development Parcel each hour. As such, for that hour the medium-duty trucks would have a PCE of approximately 26 and the heavy-duty trucks would have a PCE of approximately 94. Assuming all workers arrived within the same hour an additional 45 worker commuting trips would be added to the truck PCEs for a total of 165 PCE for a typical worst-case hour.

Existing traffic conditions are provided in Chapter 13, “Traffic and Transportation.” As established in Chapter 13, traffic volumes at the intersection of Nicolls Road and Health Sciences Drive during the a.m. peak were 3,317, during the Midday peak 2,532, and during the p.m. peak volumes were 3,533. Traffic volumes at other intersections in the area were of a similar magnitude.

A change of 3 dBA in noise levels is the minimum discernable to the human ear, and traffic volumes must double to produce a 3-dBA increase in noise levels. Construction-related traffic to and from the Development Parcel would not double traffic volumes at intersections or roadways in the vicinity of the Proposed Project. No significant adverse impacts to noise due to construction-related mobile sources are anticipated.

Stationary Sources. The major noise-generating activities associated with construction of the Proposed Project would include breaking and removing the parking lots, excavation of basement cavities, subgrade foundation work and erection of building superstructures.

Perceived noise levels at a receptor are a function of the noise level of the generator(s), the distance from the source to the receptor and features (e.g., topography, vegetation, structures, noise barriers, etc.) of the intervening space. In order to evaluate noise levels, the conditions under which construction would occur were established in the following manner. It is expected that various pieces of construction equipment, including hydraulic excavators, jackhammers, cranes, compressors, trucks, and loaders, etc. would be utilized during various stages of
construction. Identification of the combinations of construction equipment that would be used during the construction period was based on available project information. The scheduling of construction activities was derived from an overall construction schedule, and geographical information, and the location of noise receptors was derived from maps and field visits. From this information, the spatial and aural relationship between construction activity — including the types and number of pieces of construction equipment — and noise receptor was established and modeled.

Typical noise emission levels from construction equipment were derived from the Federal Highway Administration’s (“FHWA”) Roadway Construction Noise Model (“RCNM”). These noise emission levels were used as a basis to evaluate potential construction-related noise impacts under various construction scenarios (described below) at receptor locations in the vicinity of the Development Parcel, including receptors located off campus.

Another essential input used to calculate construction noise levels at each noise-sensitive receptor was the Acoustical Usage Factor (“AUF”). This is the percentage of time that a certain piece of equipment is expected to be operated at maximum power while on site during construction. Since the construction equipment would not be expected to be in operation at full power continuously, an AUF was assigned to each piece of equipment. The AUF and established noise levels for equipment expected to be utilized during construction were based on data from the RCNM, Version 1 User’s Guide. 7 The “Peak Quantity” is the number of equipment pieces to be utilized during a peak construction period, such as the peak one-hour period. The “Usage Factor” is the percentage of time that the equipment is expected to be in operation.

Because of the nature of the work, the number of pieces of equipment being used and the noise emission levels from the type of equipment required, the two construction tasks that would generate the most noise are excavation and subgrade foundation work. These tasks were modeled using FHWA RCNM. This model incorporates the noise emission levels and acoustic usage factors discussed above.

Due to their proximity to the Proposed Project, the following potential noise receptors were selected for RCNM evaluation:

- The Hospital and HSC Complex and Towers,
- The Ambulatory Surgery Center and Cancer Center,
- The residential development on Jackson and University Drives, and
- Kettle Hole Park and residences located south of Health Sciences Drive.

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The RCNM was utilized for several different construction activity scenarios associated with development of the MART and BT. The model revealed that the noisiest period would likely be when excavation was occurring in one area of the MART footprint while pile driving was occurring in another, concurrent with ground preparation for the BT. Under this scenario the model predicted noise levels presented in Table 16-2. The modeling was completed without considering the intervening topography and land cover, such as hills, trees and buildings. The presence of these features would reduce actual noise levels from those indicated on the following tables.

Table 16-2: Projected MART and BT Construction Noise Levels

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Distance</th>
<th>Noise Level (L_{eq})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and HCS Complex and Towers</td>
<td>Adjacent</td>
<td>94.5 dB(A)</td>
</tr>
<tr>
<td>Molecular Medicine &amp; Biology</td>
<td>720 feet</td>
<td>68.5 dB(A)</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>1,000 feet</td>
<td>68.9 dB(A)</td>
</tr>
<tr>
<td>School of Marine &amp; Atmospheric Sciences</td>
<td>950 feet</td>
<td>68.9 dB(A)</td>
</tr>
<tr>
<td>Kettle Hole Park and Residences</td>
<td>1,800 feet</td>
<td>63.3 dB(A)</td>
</tr>
<tr>
<td>University Drive Residences</td>
<td>1,340 feet</td>
<td>65.9 dB(A)</td>
</tr>
</tbody>
</table>


The RCNM was utilized for construction activity associated with development of the parking garage. The model was run under a scenario where in one area of the garage footprint earthwork was being conducted while in another area two cranes were positioning prefabricated elements into place and these elements were being installed with welders, pneumatic tools and other equipment. The predicted noise levels are presented in Table 16-3.

Table 16-3: Projected Parking Garage Construction Noise Levels

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Distance</th>
<th>Noise Level (L_{eq})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and HCS Complex and Towers</td>
<td>240 feet</td>
<td>72.2 dB(A)</td>
</tr>
<tr>
<td>Molecular Medicine &amp; Biology</td>
<td>1,200 feet</td>
<td>58.2 dB(A)</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>275 feet</td>
<td>71.0 dB(A)</td>
</tr>
<tr>
<td>School of Marine &amp; Atmospheric Sciences</td>
<td>450 feet</td>
<td>66.8 dB(A)</td>
</tr>
<tr>
<td>Kettle Hole Park and Residences</td>
<td>1,200 feet</td>
<td>58.2 dB(A)</td>
</tr>
<tr>
<td>Chapin Apartments</td>
<td>1,500 feet</td>
<td>56.3 dB(A)</td>
</tr>
</tbody>
</table>


Several iterations of the model were completed to evaluate the maximum noise levels associated with construction of the MOB. It was determined that noise levels would be highest during a scenario in which excavation and pile driving were conducted concurrently for the facility. The predicted levels associated with this stage in construction for the garage are provided in Table 16-4.
Table 16-4: Projected MOB Construction Noise Levels

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Distance</th>
<th>Noise Level (L_{eq})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and HCS Complex and Towers</td>
<td>700 feet</td>
<td>71.5 dB(A)</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>90 feet</td>
<td>89.4 dB(A)</td>
</tr>
<tr>
<td>School of Marine &amp; Atmospheric Sciences</td>
<td>420 feet</td>
<td>76.0 dB(A)</td>
</tr>
<tr>
<td>Kettle Hole Park and Residences</td>
<td>1,000 feet</td>
<td>68.4 dB(A)</td>
</tr>
<tr>
<td>Chapin Apartments</td>
<td>1,400 feet</td>
<td>65.5 dB(A)</td>
</tr>
</tbody>
</table>


The RCNM was utilized to evaluate the maximum noise levels associated with construction of the employee parking lot. It was assumed that ground preparation and grubbing was being conducted in one area of the proposed lot while paving was being conducted in another. The predicted levels associated with this construction for the employee parking lot are provided in Table 16-5.

Table 16-5: Projected Employee Parking Lot Construction Noise Levels

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Distance</th>
<th>Noise Level (L_{eq})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital and HCS Complex and Towers</td>
<td>530 feet</td>
<td>62.1 dB(A)</td>
</tr>
<tr>
<td>Cancer Center</td>
<td>500 feet</td>
<td>62.6 dB(A)</td>
</tr>
<tr>
<td>Kettle Hole Park and Residences</td>
<td>840 feet</td>
<td>58.1 dB(A)</td>
</tr>
<tr>
<td>Chapin Apartments</td>
<td>550 feet</td>
<td>61.8 dB(A)</td>
</tr>
<tr>
<td>Jackson Drive Residences</td>
<td>1,000 feet</td>
<td>56.6 dB(A)</td>
</tr>
</tbody>
</table>


The RCNM was run to evaluate the maximum noise levels associated with roadway improvements throughout the Development Parcel. Because construction associated with roadway improvements would migrate from one segment of the road to another, this modeling effort predicted noise levels for any receptor located 50 feet from the construction activity under a scenario in which a grader, a scraper and a paver were under operation concurrently. Given the nature of this work, the noise generated by roadway improvements in any one area would be of short duration, approximately a few weeks or so. The predicted levels associated with construction of roadway improvements are provided in Table 16-6.

Table 16-6: Projected Roadway Improvements Construction Noise Levels

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Distance</th>
<th>Noise Level (L_{eq})</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Receptors</td>
<td>50 feet</td>
<td>83.9 dB(A)</td>
</tr>
</tbody>
</table>


The results of the RCNM indicate a wide range of noise levels, depending on what element of the Proposed Project is under construction, the stage of construction on that element, and the distance to the receptor. As identified earlier, as a conservative measure, these noise level estimates did not account for noise attenuating features located between the noise source and the receptor. As such, actual construction noise levels would likely be lower than those
indicated in the above tables. In addition, the noise model did not consider the presence of noise walls around the construction sites evaluated. For example, if an 8-foot-high, plywood noise wall was situated around the construction site, it would be expected that noise levels experienced outside the wall would be reduced by approximately 3 dB.

Further noise mitigation strategies include staggering construction activities such that the noisiest construction equipment would not be used concurrently. Additional measures for controlling construction noise include:

- **Storage Areas.** Storage areas could be designated in locations removed from sensitive receptors. Where this is not possible, the storage of waste materials, earth, and other supplies may be able to be positioned in a manner that would function as a noise barrier.
- **Storage areas can be sited in remote locations.** In residential locations, storage areas can be partially shielded.
- **Truck access routes within the Development Parcel can be designated in locations to minimize noise impacts caused by truck traffic.**
- **Use of less noisy equipment.** One of the most effective methods of diminishing the noise impacts caused by individual equipment is to use less noisy machinery. By specifying and/or using less noisy equipment, the impacts produced can be reduced or, in some cases, eliminated. Source control requirements may have the added benefits of promoting technological advances in the development of quieter equipment. In some instances, using a less noisy piece of equipment may be possible, as opposed to using more conventional and sometimes noisier equipment to perform the same operation.
- **Mufflers.** Most construction noise originates from internal combustion engines. A large part of the noise emitted is due to the air intake and exhaust cycle. Specifying the use of adequate muffler systems can control much of this engine noise.
- **Shields.** Employing shields that are physically attached to the particular piece of equipment is effective, particularly for stationary equipment and where considerable noise reduction is required.
- **Dampeners.** Equipment modifications, such as dampening of metal surfaces, are effective in reducing noise due to vibration. Another possibility is the redesign of a particular piece of equipment to achieve quieter noise levels.
- **Aprons.** Sound aprons generally take the form of sound absorptive mats hung from the equipment or on frames attached to the equipment. The aprons can be constructed of rubber, lead-filled fabric, or PVC layers with possibly sound absorptive material covering the side facing the machine. Sound aprons

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8 PVC is polyvinyl chloride, the third most widely-produced plastic.
are useful when the shielding must be frequently removed or if only partial covering is possible.

- Enclosures. Enclosures for stationary work may be constructed of wood or any other suitable material and typically surround the specific operation area and equipment. The walls could be lined with sound absorptive material to prevent an increase of sound levels within the structure. They should be designed for ease of erection and dismantling.

- Selection of Equipment. Newer equipment is generally quieter than old equipment for many reasons, including technological advancements and the lack of worn, loose, or damaged components. Some equipment manufacturers have made their equipment quieter in recent years and have achieved significant reductions over older equipment. In some cases, the use of over- or under-powered equipment may be an unexpected source of excessive noise. The types of engines and power transfer methods also play a significant role in achieving lowered equipment noise. The use of electric powered equipment is typically quieter than diesel, and hydraulic powered equipment is quieter than pneumatic power.

- Maintenance Programs. Poor maintenance of equipment typically causes excessive noise levels. Faulty or damaged mufflers and loose engine parts such as screws, bolts, or metal plates contribute to increased noise levels. Removal of noise-reducing attachments and devices such as mufflers, silencers, covers, guards, vibration isolators, etc., would, to varying degrees, increase noise emission levels. Old equipment may be made quieter by simple modifications, such as adding new mufflers or sound absorbing materials. Loose and worn parts should be fixed as soon as possible.

- Equipment Operation Training. Careless or improper operation or inappropriate use of equipment can increase noise levels. Poor loading, unloading, excavation, and hauling techniques are examples of how lack of adequate guidance and training may lead to increased noise levels.

- Haul Roads. Haul roads can be designated in locations where the noise impacts caused by truck traffic would be reduced.

All practicable measures to control noise levels would be implemented in order to reduce noise levels within the Development Parcel, the greater SBUMC and SBU Campuses, and to populations outside of SBU.

Noise generated by construction activities would not be expected to be significant. Construction vehicles and equipment would adhere to local, state and federal requirements for noise emission control. Per the town’s noise ordinance, construction activities would be limited to weekdays between the hours of 7:00 a.m. and 6:00 p.m. Construction activities would therefore not result in a significant adverse noise impact upon the surrounding area.
Infrastructure, Utilities and Solid Waste

Construction of the Proposed Project would include connecting new buildings to existing utility infrastructure located within the Development Parcel. In addition, construction could occur in areas where utility transmission infrastructure is buried or is suspended above ground. Brief interruptions in utility service may be experienced when connections to the new building are being conducted and when existing lines are temporarily disconnected for relocation. Normal interruptions would be scheduled with all those that would be affected, and if necessary, provisions for alternative utility sources would be provided. No significant adverse impacts to utility supply or transmission would be expected to occur during the construction period.

Construction of the Proposed Project would generate solid waste consisting of construction debris. Disposal of all debris would be handled by the contractor and would be disposed of via private waste carters in accordance with applicable local, state and federal regulations. Construction of the Proposed Project would not be expected to result in a significant adverse solid waste impact.

Hazardous Materials

Typically, the greatest potential for hazardous materials impacts occur during the construction phase of a project. Activities such as demolition and excavation have the potential to disturb, release or otherwise expose workers and/or the general public to contaminants that may be contained within a structure or buried beneath the surface of the ground. Chapter 10, “Hazardous Materials,” discusses the findings of the assessment of potential hazardous materials located on the Development Parcel, and Chapter 17, “Public Health,” addresses the potential effects of handling these materials on construction workers and the general public.

As discussed in Chapter 10, two Phase I Environmental Site Assessments (“ESAs”) were performed for the Proposed Project that examined the potential for hazardous materials impacts due to the construction and operation of the Proposed Project. The Phase I ESAs revealed no evidence of recognized environmental concerns (“RECs”) or potential environmental concerns with respect to the Development Parcel.

Hazardous materials used in the construction process and generated during construction can cause impacts if not properly managed. Some hazardous materials, including fuels and motor oils, paints, cleaners, and degreasers would be used during construction. While many of these materials are commonly used, they are considered hazardous materials based on their physical properties, and improper handling could endanger workers and the public and/or result in contamination of soil and/or water.

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9 Two Phase I ESAs were completed for the Proposed Project, one in 2011 and one in 2012. The first (Anson Environmental Ltd., Phase I Environmental Site Assessment: SUNY Stony Brook Parking Garage, Stony Brook, New York 11709, 2011) evaluated the site of the proposed parking garage while the second evaluated the remainder of the Development Parcel (Environmental Planning & Management, Inc., Phase I Environmental Site Assessment, Medical Center Expansion Project, University of New York at Stony Brook East Campus, Stony Brook, NY 11794, 2012).
Handling and storage of fuels and other flammable materials during construction would follow U.S. Occupational Safety and Health Administration ("OSHA") and local standards for fire protection and prevention. These measures include appropriate storage of flammable liquids and prohibition of open flames within 50 feet of flammable storage areas.

Implementation of provisions contained in a worker Health and Safety Plan ("HASP") is usually the principal means of protecting workers and the general public from exposure to contaminated materials. It is expected that a HASP would be developed for construction activity associated with the Proposed Project. The HASP would specify mitigation of potential worker and public exposure to airborne contaminant migration by incorporating dust suppression techniques in construction procedures. The plan would also specify mitigation of worker and environmental exposure to contaminant migration via surface water runoff pathways by implementation of comprehensive measures to control drainage from excavations and contaminated excavate generated during construction.

As a requirement of the HASP, personnel that have the potential to come into contact with contaminated materials would have specific training to assist them in identifying the presence of potential health and safety hazards. These workers would be required to implement the procedures specified in the HASP. Contingencies to address unexpected hazards would also be included in the HASP. If necessary, sampling and monitoring for the presence of contaminants would be included in the HASP and implemented during construction in accordance with OSHA regulations and guidelines. The HASP would also include medical monitoring, certification, and training requirements for workers with the potential to encounter certain contaminated materials (e.g., lead, asbestos, hazardous waste, etc.). With implementation of the HASP, no impacts to worker health and safety from hazardous materials related to Proposed Project construction are anticipated.

During construction of the Proposed Project, any hazardous materials encountered in soil, soil gas, groundwater, and building materials on the site would be managed, isolated, and/or removed in accordance with applicable requirements. If present, contaminated groundwater would be treated, as necessary, on site prior to discharge in accordance with requirements of the NYSDEC. Contaminated soil would be removed through excavation or isolated through the use of impermeable materials (e.g., concrete, asphalt, geotextiles, etc.). Drums or other containers with unidentified contents would be tested and disposed of in accordance with all appropriate laws and regulations. All structures to be demolished or renovated would be surveyed for the potential presence of hazardous materials contained in building materials and/or fixtures (e.g., ACM, LBP, and mercury). Hazardous building materials would be abated or managed prior to demolition activities as necessary, thus preventing the release of hazardous materials during demolition activities. The removal or replacement of any storm drain structures (i.e., to enable proposed construction of the parking garage and expansion of the existing SBUMC parking lot) would be performed in compliance with the Suffolk County Department of Health Services closure protocol. With implementation of measures such as these, no significant adverse hazardous/contaminated materials impacts would occur as a result of construction of the
Proposed Project. No impacts to the surrounding environment from hazardous materials due to construction of the Proposed Project would be anticipated.

**Vector Control**

Pest rodents in urban and suburban areas of the northeastern United States include the Norway rat (*Rattus norvegicus*) and house mouse (*Mus musculus*), both non-native to the area. Additionally, the native white-footed mouse (*Peromyscus leucopus*) also can be found in urban and suburban environments. The presence of rodents poses a public health concern, and may indicate to local residents a lack of environmental management.

The Norway rat and house mouse often colonize construction sites because of the availability of favorable habitat — exposed soil for burrowing, debris piles for cover, and refuse as a food source. Control of rodent populations can be achieved by eliminating or reducing favorable habitat, especially the availability of food sources through effective sanitation and refuse storage measures.

SBUMC currently has a vector control program in place to help control rodent and other pest species. The construction process can disturb rodent populations and cause affected species to migrate off site. A specific vector control plan, integrated with the existing program and started in advance of construction would be implemented. The project-specific rodent control program would be developed and implemented by the contractor hired to manage the construction process. The rodent control program during construction would include typical rodent control measures such as:

- Baseline survey and documentation of preconstruction conditions;
- Effective sanitation procedures, especially refuse storage, at the construction site and adjoining properties;
- Application of rodenticide and traps to eliminate existing rodents within the construction area and adjacent areas prior to the start of construction; and
- Removal of harborage or dump materials from the Development Site to reduce favorable habitat.

The program would include monitoring of rodent populations to determine the effectiveness of the control program, and modification of the program if necessary. No significant adverse vector impacts are expected from the construction of the Proposed Project.

**Conclusion**

No significant adverse impacts due to construction of the Proposed Project would be expected to occur outside of the SBUCM campus boundaries or outside the boundaries of the Development Parcel. Construction of the Proposed Project is expected to last approximately six years, from 2013 through 2018. During the construction period, construction activity would be apparent to different populations and to various degrees, depending on the location of the construction site within the campus and the stage of construction at that site. Some resources —
such as land use, visual characteristics and vehicular and pedestrian circulation within the Development Parcel — would experience these effects over the long term, perhaps the entire construction period. Other impact categories, for example noise or pedestrian circulation in a specific area within the Development Parcel, would experience the effects over a shorter period.

With implementation of mitigation measures outlined above and with the use of best management practices in construction processes, no significant adverse impacts due to construction of the Proposed Project are anticipated.