A. INTRODUCTION

This chapter considers the potential of the proposed project to affect historic resources on or near the project site. The project site, located on the northeast corner of the NYU Langone Medical Center (NYULMC) campus, currently contains seven buildings, as well as a landscaped courtyard, at-grade parking, and loading areas. The buildings on the project site would be demolished to develop the Kimmel Pavilion to house hospital functions and an Energy Building to house a combined heat and power (CHP) plant and electric service for the campus, as well as radiation oncology patient care. The Kimmel Pavilion and Energy Building would be linked to, and would function with, the existing Tisch Hospital. Oxygen tanks, to be housed in an enclosure, would be located in the area of the unenclosed truck docks on East 30th Street at the south end of the campus.

This chapter also considers the potential of the proposed project to impact historic resources in comparison with the complying building that could be built absent the proposed action.

Historic resources include both archaeological and architectural resources. The study area for archaeological resources is the site itself where disturbance from excavation and construction can be anticipated. In comments dated July 14, 2010, the New York City Landmarks Preservation Commission (LPC) determined that the project site is not archaeologically sensitive (see Appendix B). Therefore, no further analysis of archeological resources is required.

In general, potential impacts on architectural resources can include both direct physical impacts and indirect impacts. Direct impacts include demolition of a resource and alterations to a resource that cause it to become a different visual entity. A resource could also be damaged from vibration (i.e., from construction blasting or pile driving) and additional damage from adjacent construction that could occur from falling objects, subsidence, collapse, or damage from construction machinery. Adjacent construction is defined as any construction activity that would occur within 90 feet of an architectural resource, as defined in the New York City Department of Buildings (DOB) *Technical Policy and Procedure Notice* (TPPN) #10/88.[1]

Indirect impacts to architectural resources are contextual or visual impacts that could result from project construction or operation. As described in the *New York City Environmental Quality Review (CEQR) Technical Manual*, indirect impacts could result from blocking significant public views of a resource; isolating a resource from its setting or relationship to the streetscape; altering the setting of a resource; introducing incompatible visual, audible, or atmospheric elements to a resource's setting; or introducing shadows over a historic landscape or an architectural resource

[1] TPPN #10/88 was issued by DOB on June 6, 1988, to supplement Building Code regulations with regard to historic structures. TPPN #10/88 outlines procedures for the avoidance of damage to historic structures resulting from adjacent construction, defined as construction within a lateral distance of 90 feet from the historic resource.

with sun-sensitive features that contribute to that resource's significance (e.g., a church with stained-glass windows).

Study areas for architectural resources are determined based on the area of potential effect for construction period impacts, as well as the larger area in which there may be visual or contextual impacts. The *CEQR Technical Manual* sets the guidelines for the study area as being typically within an approximately 400-foot radius of the project site (see Figure D-1). Within the study area, architectural resources analyzed include properties listed on or determined eligible for listing on the State and National Registers of Historic Places (S/NR), New York City Landmarks (NYCLs), New York City Historic Districts (NYCHDs) and properties pending such designation, and properties potentially eligible for S/NR or NYCL listing ("potential architectural resources").

PRINCIPAL CONCLUSIONS

As detailed below, the proposed action would not have adverse impacts on historic resources. Further, the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) determined that the project would have no adverse impacts on cultural resources, including archaeological and architectural resources in a letter dated July 22, 2010.

B. HISTORY OF THE PROJECT SITE AND CONTEXT

The NYULMC campus, located between First Avenue, the Franklin D. Roosevelt (FDR) Drive, and East 34th and East 30th Streets, is part of a larger medical corridor that includes Bellevue Hospital. The medical corridor was planned as part of a Robert Moses era urban renewal project in the Kips Bay and Bellevue South neighborhoods on the east side of Manhattan.

Bellevue Hospital was founded in 1736 as an almshouse on what is now the site of City Hall. In the late 18th century, the City leased and subsequently purchased property north of East 26th Street, where an existing estate was converted for use as an Isolation Hospital. Additional land was purchased in the early 19th century and a new almshouse with hospital pavilions erected by 1816. In 1826, these facilities were improved and enlarged, and the complex named "Bellevue Hospital."

In 1841, the University Medical College was organized as part of the University of New York. Bellevue Hospital Medical College was established 20 years later, with these institutions merging to form the University and Bellevue Hospital Medical College at the end of the 19th century. Between 1911 and 1939, several new Bellevue Hospital buildings were built, including the R & S, Administration, Psychiatric, and Tuberculosis Buildings, on the east side of First Avenue south of East 30th Street.

In 1947, the New York University (NYU)-Bellevue Medical Center was formally established, with plans subsequently prepared to build a new NYU-Bellevue Medical Center. These new facilities were intended to allow the institution to maintain its status as a first class medical school by improving its educational facilities and expanding its research program. To this end, land was purchased between East 30th and 34th Streets, with East 33rd, 32nd, and 31st Streets discontinued by New York City east of First Avenue. The firm of Skidmore, Owings & Merrill (SOM) was retained to prepare a master plan for the construction of the new institution. Principal buildings of the proposed new complex would include a College of Medicine and a post graduate medical school (contained in the Medical Science Building), the University Hospital (now Tisch) designed to primarily serve middle-income patients, the University Clinic

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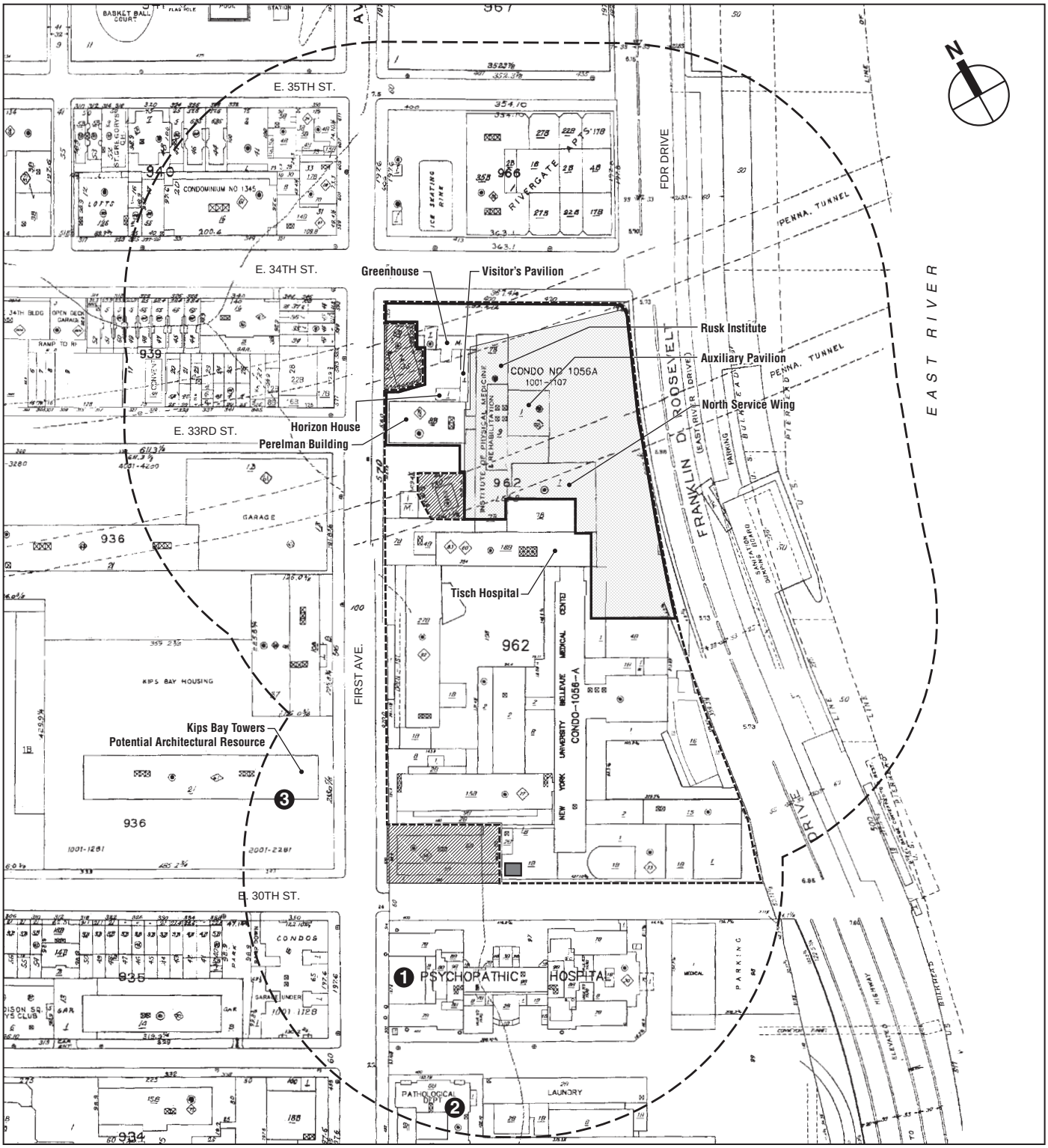

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SCALE

Project Site Boundary

Site of Proposed Buildings

Bulk Oxygen Site

Zoning Lot Boundary

Out Parcel

400-Foot Perimeter

❶ *Psychiatric Building, 500 First Avenue (S/NR - Eligible)*

❷ *R & S Building, 492 First Avenue (S/NR)*

❸ *Kips Bay Towers, Potential Architectural Resource*

Historic Resources

Figure D-1

and the Institute of Physical Medicine and Rehabilitation (Rusk Institute), the Hall of Residence and the Alumni Hall Auditorium. The new medical center was developed pursuant to an agreement with New York City, which limited lot coverage, building height, and required parking. The new medical center was developed jointly by NYU and the City of New York, with the proposed site plan designed in accordance with agreements with the City with respect to building coverage, parking, street arrangements, light and air, and open space. The buildings were designed by SOM in a contemporary style.

The construction of the Institute of Rehabilitation was made a priority, and it was the first piece of the master plan built. The other primary buildings of the master plan followed. They were built to the south of the project site. They included the Medical Science Building (built in 1954 and designed to house, among other functions, the College of Medicine and Post-Graduate Medical School), and Alumni Hall and the Hall of Residence (both built in 1957). Tisch Hospital, to which the new Kimmel Pavilion and Energy Building would connect, was built in 1963.

Alterations, additions, and new construction have changed the campus as it became evident that spaces envisioned in the initial master plan were not sufficient to meet the institution's growing and evolving programmatic needs. Additional facilities were constructed at the north end of the campus on the project site, including the Greenhouse and Horizon House in 1959, the Visitor's Pavilion (1964), and the Perelman Pavilion, Auxiliary Pavilion, and Millhauser Laboratories (1967-68). In addition, Gimbel Court, a small courtyard on the east side of the Rusk Institute, was built in 1969, and emergency generating and service facilities were also added.

A number of other buildings and additions have also been completed on the campus south of Tisch Hospital. These include the Schwartz Lecture Hall Building and Healthcare Center in the 1970s, which connected to the west side of Alumni Hall; the Charles C. Harris Skin and Cancer Unit and the Skirball Institute, connecting with and west of Tisch Hospital and filling the blockfront along First Avenue; and the Coles and Smilow Pavilions, connecting to and east of Alumni Hall. Overall, the campus has changed dramatically since the master plan was first developed, with much of the original open space removed and relationship of the original buildings altered through modifications and new construction.

The name of the institution has also changed over time, and in 2008 was renamed the Elaine A. and Kenneth G. Langone Medical Center in honor of the chairman of the board of NYU trustees and his wife.

C. EXISTING CONDITIONS

PROJECT SITE

The project site does not contain any known or potential architectural resources. It is occupied by seven buildings described below. In addition, Tisch Hospital, to which the new buildings will be connected, is described.

1. RUSK INSTITUTE (1952-1958)

As described above, the Rusk Institute was the first of the SOM master plan buildings built. Dr. Howard Rusk (1901-1989), associate editor of *The New York Times*, and a former Chief of the Convalescent Services Program of the U.S. Air Force, was a pioneer in physical rehabilitation. Rehabilitation techniques developed by Rusk became standard components of rehabilitation

medicine throughout the world. Rusk was also a long-time advocate for a national program to rehabilitate and train the country's disabled to allow them to work and lead productive lives, and in general, he was a champion for a better distribution of medical services in the country. In 1946, Dr. Rusk was appointed chairman of a new department of Rehabilitation and Physical Medicine at the NYU School of Medicine, the first such program at a medical college in the nation.

The building was built in two phases. The first phase of the building, consisting of four floors, was opened in January of 1951. The modernist building was designed to contrast with, and be an improvement over, the older buildings which had been temporarily occupied by the Institute at 325 East 38th Street, pending the planning and acquisition of funds to complete the permanent Institute.

The second phase, which consisted of an additional three stories, was completed in 1958. The 3-story addition was added to the building as a seamless addition and mirrored the original design, with rows of double hung windows on the east and west façades and no fenestration on the north and south façades.

Since completion of the building, alterations to its exterior have included replacement of the original metal double hung windows with aluminum windows (except those on the east façade of the building at the first floor), addition of egress doors on East 34th Street, and installation of another canopy that extends beneath the original concrete overhang and provides additional shelter east and west of the building. In addition, the building's west façade on the first floor, which had windows and was originally exposed as the east façade, has been altered through the construction of the adjoining Visitor's Pavilion, which extends along the west façade of the building, in 1964. This resulted in the removal of the original first floor façade and windows. There have been modifications to the interiors, including a full renovation of the sixth floor that removed the original double loaded corridor plan, renovations of the pediatric areas in the 1970's and 1980's, and installation of drop ceilings.

2. GREENHOUSE (1959)

The Enid A. Haupt Glass Garden was dedicated in May 1959 as an amenity to the Institute of Physical Medicine and Rehabilitation. It is a greenhouse designed by SOM and donated by Enid A. Haupt, publisher and editor of *Seventeen Magazine*. In the 1970s, NYU opened one of the country's first horticultural therapy programs in the Glass Garden, and the Glass Garden has continued to provide horticultural therapy in this location. Since its construction, the greenhouse has been expanded. It is a simply designed glass and metal structure set on a brick base with peaked roofs, which connected to west side of the lobby of Rusk Institute and the north side of the Visitor's Pavilion (described below).

3. HORIZON HOUSE (1959)

Horizon House was built in 1959 as a freestanding, approximately 1,100 square feet (sf) two-bedroom structure with a porch, within the Rusk Institute gardens. The building was designed to serve as a model ranch house where patients—handicapped, elderly, or with cardiac conditions—could practice skills they had learned in rehabilitation therapy in a real home environment. The house was a gift to the Institute of Physical Medicine and Rehabilitation from James Rosati & Sons, builders from St. Petersburg, Florida. Though not the first handicapped house developed, it was envisioned to be able to be incorporated into large residential developments.

The house's handicapped friendly design included non-skid floors of terrazzo with embedded carborundum chips, no stairs or door sills, easy open windows, electrical switches at hand level, a built in vacuum cleaner (so only a hose extending from the built-in feature needed to be maneuvered), a kitchen with cupboards and counters placed at lower heights for wheelchairs, among other features, and wipe-clean mosaic tiled window sills. Joseph P. Kennedy was Horizon House's first resident in 1959, when he was recovering at the New York Medical Center after suffering a stroke.

Horizon House has been altered through the construction of the Visitor's Pavilion on the west side of Rusk Institute in 1964, which provided access into Horizon House from Rusk Institute, but which obscured the building's west façade and resulted in the removal of at least one original window in the west façade. In 1968, The Perelman Pavilion was built, behind and connecting to Horizon House, obscuring its rear (south) façade. It is not clear what specific physical alterations were made to the south façade of Horizon House, e.g., whether original windows were sealed. However, these new buildings changed the character of this structure from one that was freestanding to one joined by other campus buildings. Horizon House was used as a daily training center until 1982 when renovations added amenities and features that would allow for overnight stays for the patients and their families. The terrazzo floors have been covered over, or replaced by, vinyl flooring. However, the mosaic window sills remain.

4. VISITOR'S PAVILION (1964)

The Visitor's Pavilion is a one 1½-story structure with a peaked roof, which was built parallel to, and adjoining, the west façade of Rusk Institute. This rectangular building also connects to the south side of the Greenhouse to the north and the north side of the Perelman Pavilion to the south. This structure also provides access to Horizon House. The west façade, which faces a small courtyard formed by this building, Horizon House, and the Greenhouse, is clad in steel and glass and set on a brick base. This design mimics that of the Greenhouse. The building has a metal shed-like roof.

5. AUXILIARY PAVILION (1967)

The Auxiliary Pavilion is a 1-story brick building that connects to the east side of Rusk Institute and forms the southern boundary of the Gimbel Gardens. The Auxiliary Pavilion was built to house facilities for the volunteer department of the Institute of Rehabilitation Medicine. It is now used for outpatient physical therapy.

6. PERELMAN PAVILION (1968)

The Perelman Pavilion is an 8-story brick building that was built as a research wing to Rusk Institute. This wing is clad in brick and extends perpendicularly from the west façade of Rusk Institute to which it is connected. The north and south façades are fenestrated with rows of windows; the east and west façades are windowless.

7. NORTH SERVICE WING

This is a 1-story (12-foot-tall) building located on the east side of the Rusk Institute.

8. TISCH HOSPITAL

Tisch Hospital was built as the University Hospital in 1963 and was the last building of the original SOM master plan completed. It is a 19-story white brick building, oriented east-west on the site just south of the Rusk Institute. The building has continuous rows of casement windows on its north and south façades. The east façade has only one vertical band of windows and the west façade is windowless.

Tisch Hospital has been substantially altered since its original construction, including the addition of the Millhauser Research Laboratories on the north façade in 1968, and by construction of links to the Charles C. Harris Skin and Cancer Unit and the Skirball Institute to the west. In addition, the interior has been reconfigured to accommodate existing and new departments, and a number of windows have been replaced.

University Hospital was renamed the Tisch Hospital in 1989, in honor of the gift made by Laurence A. and Preston Robert Tisch and their families to fund biomolecular medical research and increase salaries of the researchers for the institution to remain competitive.

SIGNIFICANCE FINDINGS

As described above, the project site contains two buildings that were constructed as part of the original SOM master plan, Rusk Institute (1952-1958) and Tisch Hospital (1963). Neither building is of a particularly distinguished design nor are they built or clad in any unusual materials. The buildings have been substantially altered through time in response to changing hospital standards and needs. As such, neither of these buildings appear to individually meet National Register eligibility criteria as they do not possess historic integrity.

Similar to the Rusk Institute and Tisch Hospital, Horizon House and the Greenhouse meet the 50 year age criteria for listing on the S/NR. These buildings were not part of the original master plan. The Greenhouse is not particularly distinguished architecturally, and it has been altered through the construction of the Visitor's Pavilion. Horizon House, while significant in the history and evolution of rehabilitative medicine, has been substantially altered from a freestanding structure to one that is connected to other structures, obscuring original façades and design intent. It no longer serves its original function. Therefore, these buildings also do not appear to meet criteria as individual National Register eligible resources. The Auxiliary and Perelman Pavilions, built in 1967 and 1968 respectively, do not meet the age criteria for S/NR listing and are also not distinguished architecturally.

Overall, it should be noted that the campus has provided the setting for a number of medical advancements, including the advances made by Dr. Rusk in physical therapy. As a complex, however, the NYULMC project site buildings do not constitute a nexus of architecturally distinguished buildings, such as found at other New York City hospitals that have been listed on or determined eligible for listing on the National Register. The north end of the campus has been significantly altered from the original master plan through the removal of the Rusk Gardens, and construction of additional medical and service facilities and modifications to the buildings described above. Therefore, the current condition of the campus is one of a conglomeration of buildings and service facilities that were built at different times and no longer reflect the intent of the original SOM master plan. In addition, the NYU-Bellevue Medical Center was built as part of larger urban renewal efforts on the east side of Manhattan. These late 1940s urban renewal efforts are not especially early, when compared to earlier urban initiatives such as the Parkchester Houses developed in the Bronx between 1938 and 1942. As such, for the reasons

described above, the buildings on the project site as a group also do not appear to meet S/NR or NYCL eligibility criteria.

STUDY AREA

KNOWN ARCHITECTURAL RESOURCES

There are two known architectural resources in the study area.

The former Bellevue **Psychiatric Building** (S/NR-eligible), located at 500 First Avenue at the southeast corner of First Avenue and East 30th Street, is a 10-story red brick, limestone, and granite structure with a modified H-plan (See Resource No. 1 on Figure D-1 and view 1 of Figure D-2). It was built in 1936 and designed by Charles B. Meyers and Thompson, Holmes & Converse. The building is very similar in design to the McKim, Mead, & White-designed buildings of the Bellevue Hospital complex, particularly in its facade materials and its Italian Renaissance style.

The Psychiatric Building is surrounded on three sides by a tall fence of brick, wrought iron, and rusticated limestone columns, with large decorative urns atop each column. The building has a stone cornice with dentil detailing, a balustrade, brick arches, stone courses, and cast-iron panels with an eagle design There are brick quoins at each corner and brickwork patterning in a number of locations. The former main entrance has a rusticated limestone base, a portico over the door with a balustrade above, supported by Doric columns, and a decorative limestone arch enclosing a pedimented window, and a cartouche depicting the seal of New York City. The south side of the building has a rusticated limestone base and an arched doorway. The east facade of the building has a raised terrace.

The **R&S Building** (S/NR) is a 6-story U-shaped red brick and granite building located at 492 First Avenue directly across from the Psychiatric Building at the southeastern corner of First Avenue and former East 29th Street (See Resource No. 2 on Figure D-1 and view 2 of Figure D-2). The R&S Building was built in 1910 to house the hospital's pathology department and dormitories for its male staff. It was designed by McKim, Mead, & White as part of the firm's master plan for the Bellevue Hospital campus, and is one of the few buildings remaining from this period. The building was designed in a restrained adaptation of an Italian Renaissance style. It has a symmetrical composition; its facades are divided into four horizontal courses, with single courses of limestone blocks marking the divisions, topped by a terra-cotta cornice and a rooftop balustrade. The horizontal courses are pierced by large groups of sash windows, some of which appear to be double-tiered. The double-tiered window groups are topped with flat arches of brick with limestone keystones. Cast-iron panels between the windows of each floor are pressed with simple geometrical designs. Three tall arches in the front elevation create a central loggia that encompasses the height of the first two stories. The rear elevation is relatively unadorned. On the south facade is a small, classically-inspired doorway surrounded by a simple Doric molding and topped by an unembellished pediment supported by brackets.

POTENTIAL ARCHITECTURAL RESOURCE

One potential architectural resource has been identified, the Kips Bay Towers (formerly the Kips Bay Plaza) complex between First and Second Avenues and East 33rd and 30th Streets (see Resource No. 3 of Figure D-1 and Figure D-3). This residential complex was designed by I.M. Pei & Associates with S.J. Kessler & Sons, and built in 1958-1963. It was constructed by developer William Zeckendorf and also sponsored by Webb & Knapp, as a component of Robert

Psychiatric Building, 500 First Avenue **1**

R & S Building, 492 First Avenue **2**

Known Architectural Resources

Figure D-2

South Tower, First Avenue and East 30th Street **3**

North Tower, Second Avenue and East 33rd Street **4**

Potential Architectural Resources - Kips Bay Towers

Figure D-3

Moses' urban renewal plan for the east side of Manhattan, which included the medical corridor that contains NYULMC complex. Kips Bay Towers consists of twin 21-story apartment buildings flanking a public plaza, with a retail arcade, and parking. The buildings, consisting of approximately 330 and 350-foot-long slabs, are aligned parallel to one another and the east-west cross streets. Designed in the International Style, sources indicate that this was one of Pei's first major projects in New York City and was influenced by Le Corbusier's Unite de Habitation built in 1952 in Marseille, France.

The design pioneered the use of cast-in-place concrete to create New York's first exposed concrete apartment houses. The facades, composed of a concrete grid, are structural load-bearing components which allowed for the reduction of internal supports typically required in apartment buildings, resulting in a more open, flexible floor plan. The concrete grid also reduced direct sun and glare on the buildings' windows.

There are no other potential architectural resources in the study area. In addition to Tisch Hospital (described above), properties in the study area consist of the southern portion of the NYULMC campus, which contains three buildings from the original campus plan—the Medical Science Building, the Hall of Residence and the Alumni Hall Auditorium. A number of other buildings and additions have also been completed south of Tisch Hospital. These include the Schwartz Lecture Hall Building and Healthcare Center in the 1970s, which connected to the west side of Alumni Hall; the Charles C. Harris Skin and Cancer Unit and the Skirball Institute, connecting with and west of Tisch Hospital and filling the blockfront along First Avenue; and the Coles and Smilow Pavilions, connecting to and east of Alumni Hall. Overall, the campus has changed dramatically since the master plan was first developed, with much of the original open space removed and relationship of the original buildings altered through modifications and new construction.

Beyond the campus, the study area contains mostly more recently constructed buildings and older residential buildings that have been altered through the removal of details such as cornices, original windows, and alterations to the ground floor, including addition of new storefronts. As such, there are no other properties in the study area that appear to meet criteria for listing on the S/NR.

D. THE FUTURE WITHOUT THE PROPOSED ACTION

As described in greater detail in Attachment A, "Project Description," the future without the proposed action (the "No Action" condition) assumes that none of the discretionary approvals take place. In the future without the proposed action, NYULMC has determined that it would build a new hospital pavilion in an as-of-right configuration that complies with all the zoning requirements. It would also incorporate many of the functions intended for the Energy Building. The bulk oxygen tanks would be located within an existing one-story loading dock structure behind the Office of the Chief Medical Examiner.

As there are no architectural resources on the project site, there will be no adverse impacts to such resources as a result of the construction of the conforming building. There are no projects planned for completion by the project build year of 2017 that will directly affect known and potential architectural resources in the architectural resources study area.

E. PROBABLE IMPACTS OF THE PROPOSED ACTION

PROJECT SITE

In the proposed scenario, the Kimmel Pavilion would be 2 stories (52 feet) shorter than in the No Action condition, and the Energy Building would be a new element that would not occur in the No Action condition. The proposed project also would have a slightly larger footprint than the No Action condition building. The proposed bulk oxygen storage site would be located behind the Office of the Chief Medical Examiner as in the No Action Condition but within a new enclosure built on former East 30th Street in front of the one-story loading dock structure. As the tanks would be placed standing up, the enclosure would have a smaller footprint than the No Action Condition but would be double the height (at approximately 49 feet tall). The enclosure would be clad in concrete and with a metal screen to block the tanks from view.

As there are no architectural resources on the project site, the proposed action would have no adverse significant adverse impact on such resources.

STUDY AREA

The incremental difference in the height of the Energy Building in the proposed and No Action conditions – five stories—and the anticipated larger footprint of the project would not have any significant adverse impacts on known and potential architectural resources. These resources are not located within the potential area of effect for potential construction related impacts, defined by the New York City Department of Buildings as with 90 feet of construction. The historic buildings associated with the Bellevue hospital complex south of East 30th Street are also located at too great a distance, with buildings of the NYULMC buildings intervening, to be affected visually by the changes in height and bulk proposed for the new Kimmel and Energy Buildings at the north end of the NYULMC complex. This is also the case with Kips Bay Plaza, which is located across First Avenue with NYULMC buildings intervening between this potential architectural resource and the project site. Further, the Kips Bay Plaza complex has existed in a context that includes the evolving NYULMC complex since its construction.

The incremental difference in the bulk oxygen storage site's footprint and height would not adversely affect architectural resources. The site is not located within 90 feet of any architectural resources, and as such no adverse construction related impacts would be anticipated. The enclosure would not be visible from the R&S Building and Kips Bay Plaza. Though the enclosure would be visible from the Psychiatric Building, it would not affect the context of this historic building which has co-existed with the NYULMC complex across East 30th Street for many years.

In a letter dated July 22, 2010, OPRHP determined that the proposed action would have no adverse impact on cultural resources. ✷

A. INTRODUCTION

This attachment considers the potential of the proposed Kimmel Pavilion and Energy Building to affect the urban design and visual resources of the project site, a part of the New York University Langone Medical Center (NYULMC) campus, and the surrounding area. The campus occupies a superblock bounded by East 30th and 34th Streets, the Franklin D. Roosevelt (FDR) Drive, and First Avenue. The proposed project site currently contains seven buildings, as well as a landscaped courtyard, 128 at-grade parking spaces, and loading areas.

Based on the methodologies of the 2010 *New York City Environmental Quality Review (CEQR) Technical Manual*, the study area for this analysis is defined as ¼-mile from the boundary of the project site, consistent with the study area used for the land use analysis (see Figure E-1). The following preliminary assessment addresses urban design and visual resources for existing conditions and the future without and with the proposed action for the year 2017, when the proposed project is expected to be completed. The basis for comparison is the complying building complex as it would be developed in the absence of the proposed action. In both the No Action condition and with the proposed action, there would be an HVAC exhaust stack atop the Kimmel Pavilion that would rise to a height of approximately 522 feet.

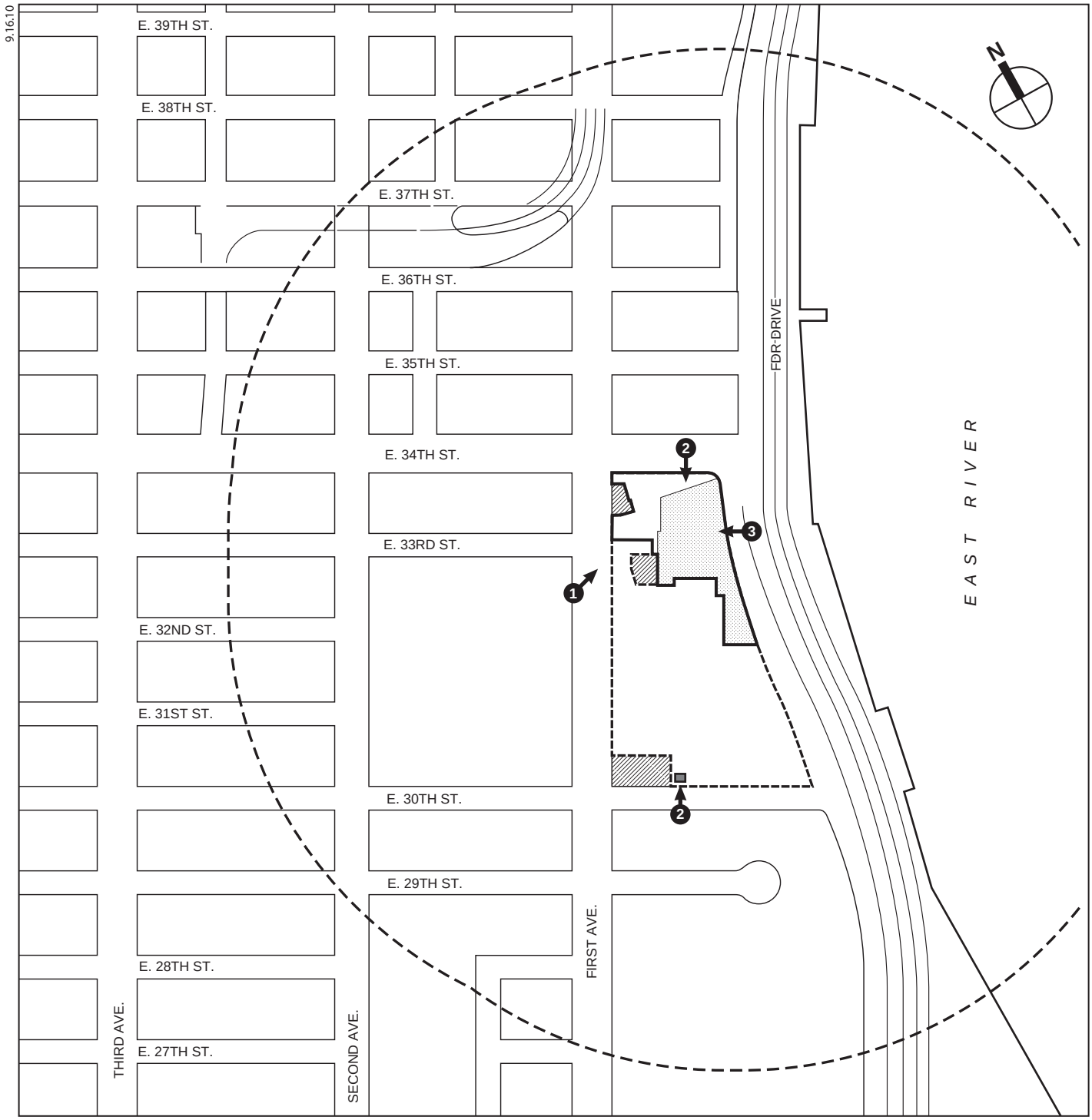
This preliminary assessment concludes that in comparison to the future with the proposed action (the "No Action" condition), the proposed project would not be anticipated to result in any significant adverse impacts to urban design and visual resources and does not require further analysis.

B. EXISTING CONDITIONS

URBAN DESIGN

PROJECT SITE

The project site is located at the northeast corner of the NYULMC campus. It includes seven NYULMC-related buildings: the 7-story (69-foot-tall) Rusk Institute for Rehabilitative Medicine; the 1-story (12-foot-tall) Auxiliary Pavilion, located directly east of the Rusk Institute; a 1-story (12-foot-tall) North Service Wing building on the east side of the Rusk Institute; the 1-story Greenhouse, Visitors Pavilion, and Horizon House structures, on the west side of the Rusk Institute (10-, 10-, and 11-feet-tall, respectively); and the 9-story (122-foot-tall) Perelman Building (see Figures E-2 through E-4). The project site also includes the Gimbel Garden, an enclosed, paved courtyard with trees, landscaping, and benches; 128 at-grade parking spaces at the northeast corner of the campus; and loading areas along the east side of the site facing the FDR Drive Service Road. A portion of the project site near the FDR Drive Service Road is used for NYULMC's bulk oxygen tank facility, which consists of several tanks surrounded by a screen enclosure. In total, the existing buildings on the project site comprise 191,095 zoning square feet (zsf), and are below the site's maximum floor area ratio (6.5). The



Project Site Boundary

Site of Proposed Buildings

Bulk Oxygen Site

Zoning Lot Boundary

Out Parcel

Study Area Boundary (1/4-Mile Perimeter)

Photograph View Direction and Reference Number

Visual Resources Study Area

Figure E-1

7.29.10

Aerial Photogeraph of Project Site and Study Area

Figure E-2

Looking northeast to project site from First Avenue **1**

Looking south to project site from East 34th Street **2**

Photographs of Project Site

Figure E-3

Looking west to project site from FDR Drive service road **3**

Looking north to project site (proposed location of bulk oxygen storage) from East 30th Street **4**

Photographs of Project Site

Figure E-4

site also includes a driveway entrance to the Rusk Institute and the parking area on East 34th Street; the parking area is illuminated by several tall lightposts.

The project site also includes a 1-story enclosed loading dock/storage area, with a roll-up door and two unenclosed truck bays, at the southern end of the campus on East 30th Street (see Figure E-4).

STUDY AREA

The study area includes four large superblocks. The first of these is the superblock on which the project site is located. There are three outparcels on the superblock. Two of the outparcels, at the northwest corner of the block, house 2-story ventilation buildings for the Amtrak tunnels that run beneath the site. The third outparcel on the corner of First Avenue and 30th Street belongs to the Office of the New York City Chief Medical Examiner and includes a 5-story building.

The second superblock in the study area, occupied by the residential Kips Bay Towers, is west of the project site and is bounded by East 30th and 33rd Streets and First and Second Avenues. The third superblock is south of the project site and is bounded by East 26th and 30th Streets, First Avenue, and the FDR Drive. This superblock is occupied by the Bellevue Hospital Center. The fourth superblock is roughly bounded by East 26th and 29th Streets, Second Avenue, and Mt. Carmel Place (between East 28th and 29th Streets, the superblock extends one block further east, to First Avenue).

The remainder of the study area is mostly developed in the typical Manhattan grid pattern, with wide avenues running north-south and narrow streets running east-west, creating long, rectangular blocks. This pattern is interrupted between East 34th and 40th Streets just east of Second Avenue for access roadways leading to the Queens-Midtown Tunnel; the portal of the tunnel itself spans the blocks between East 36th and 37th Streets west of First Avenue. The shoreline of the East River provides a curving edge to the study area, and the FDR Drive parallels the shoreline.

Hospital and residential uses dominate the area surrounding the project site; there also are ground-floor retail uses concentrated along East 34th Street and First and Second Avenues and some transportation/utility uses, including the Queens-Midtown Tunnel. The study area is very densely developed and includes several major developments; nearest the project site, these include the buildings of NYULMC on the project site superblock, Kips Bay Towers, Bellevue Hospital Center, and the 18- to 26-story residential buildings of Henry Phipps Plaza. The Kips Bay Towers are two 21-story (215-foot-tall), pre-cast concrete, modern apartment buildings oriented in an east-west direction and surrounded by grass lawns, flowers, and trees. There is also a parking garage at the northeast corner of the superblock and, just south of the garage, a 10-story, light brown brick Arnold & Marilyn Greenberg Hall, part of NYULMC. On the west side of the complex another large, two-story building has been developed that includes retail and cinema uses.

Beyond the project site, the NYULMC campus includes multiple mid- and high-rise buildings between 6 and 27 stories in height, which are connected by smaller 1- and 2-story structures. The buildings are mostly clad in glass, metal, and brick and are of modern design. The structures immediately surrounding the project site include the 21-story (251-foot-tall) Tisch Hospital, and the 25-story (289-foot-tall) Skirball Institute, which occupies much of the complex's First Avenue frontage. At various points within the superblock, but particularly on the FDR Drive service road, buildings are set back behind loading docks and service entrances.

Residential buildings in the study area include modern, tall apartment towers and smaller-scale buildings, including 4- and 5-story tenement buildings on First Avenue near East 34th Street, and along the north side of East 33rd Street west of First Avenue. The Rivergate residential complex, which occupies the full block bounded by East 34th and 35th Streets, First Avenue, and the FDR Drive, is 35 stories (315 feet tall) at its tallest point. Other large apartment towers in the study area, most of which are along the waterfront, include the Corinthian, a 55-story (546-foot-tall) apartment building that occupies the block between East 37th and East 38th Streets and First Avenue and the Queens-Midtown Tunnel approach; Manhattan Place, a large-scale 35-story (363-foot-tall) apartment complex at 630 First Avenue; and the Horizon Apartments, a 42-story (403-foot-tall), complex at 415 East 37th Street.

The streetscape of the study area is urban in character, with wide sidewalks on East 34th Street and First and Second Avenues and a very narrow sidewalk on the western side of the FDR Drive service road. The study area includes typical street furniture, including newspaper stands, parking meters, phone booths, and garbage bins. The majority of the study area's pedestrian traffic is concentrated along East 34th Street and First and Second Avenues. Breaks in the streetwall are caused by recessed building entrances, loading docks, and parking garage entrances and egresses. The main entrance to NYULMC, off First Avenue, is set back behind a driveway entrance for cars and emergency service vehicles, and a portion of the adjacent street area is cordoned off by plastic bollards.

There is one park within the project's study area, St. Vartan Park, on the blocks bounded by East 35th and 36th Streets and First and Second Avenues. The park, bisected by one of the access roads for the Queens-Midtown Tunnel, includes play fields, basketball and handball courts, sitting areas, and a playground. Other open spaces in the study area include esplanade areas along the waterfront from East 36th to East 38th Street and in the area between a restaurant at East 30th Street and a heliport at East 34th Street. Privately owned, publicly accessible open spaces are associated with some of the larger residential buildings in the study area, such as the Kips Bay, Rivergate, Corinthian, and Manhattan Place developments.

VISUAL RESOURCES

View corridors in the study area are generally long along the avenues and East 34th Street; in other portions of the study area, they are constrained or shortened by the superblocks noted above and along the access roadways to the Queens-Midtown Tunnel. In addition, the elevated FDR Drive viaduct serves to limit most views along its adjacent at-grade service road. Therefore, the most extensive view corridors in the study area are along First and Avenues and East 34th Street. Views north and south on the avenues and west on East 34th Street continue indefinitely for long distances. Views east on East 34th Street include the FDR Drive viaduct, which mostly limits views toward the East River and Hunter's Point, Queens. Views west on and around East 33rd Street from First Avenue include the tower of the Empire State Building, visible above other buildings closer to the project site area.

East of the FDR Drive viaduct is the East River Esplanade, which includes Glick Park between East 38th and East 36th Streets. The esplanade consists of a paved walkway with trees, shrubbery, and benches located along it. A low metal fence borders the walkway along the East River. The esplanade provides unencumbered views of the river and of the opposite Queens shoreline. View north along the esplanade include the United Nations Secretariat building and the metal trusses of the Queensboro Bridge. The FDR Drive viaduct, and parking beneath, obscures most views of the project site from the esplanade. Views south from the esplanade include the tall brick towers of the Waterside apartment complex and—at the south end of the

study area—the bulky 8-story Con Edison East River Power Plant at 14th Street, and the Williamsburg Bridge, visible within the view corridor formed by the curve of the Manhattan shoreline. Views east include industrial and warehousing uses on the Queens shoreline, a large, prominently visible Pepsi Cola sign, a large brick power plant, and the tall buildings of the Queens West development. Also present in these views are Gantry Plaza State Park and the 50-story green-glass-faced Citibank Tower that is located further inland.

C. THE FUTURE WITHOUT THE PROPOSED ACTION

PROJECT SITE

Absent the proposed action, NYULMC would build a new hospital pavilion on the project site in an as-of-right configuration that complies with all zoning requirements. This development would require the demolition of the seven buildings on the project site as well as the Gimbel Garden, at-grade parking spaces, and loading areas. In this scenario, there would not be an Energy Building, but there would be a mechanical shaft adjacent to Tisch Hospital (approximately 18 stories and 238 feet tall). The Kimmel Pavilion would be 24 stories and 463 feet tall (to the top of the mechanical parapet) and 707,306 zsf. The HVAC exhaust stack atop the Kimmel Pavilion would rise to a height of approximately 522 feet, approximately 85 feet above the 23rd story parapet and 59 feet above the 24th story mechanical parapet. With the Kimmel Pavilion and mechanical shaft providing 53,751 sf and 151 sf, respectively, of tower coverage, the total tower coverage on the project's zoning lot would be 147,638 sf (of a permitted 163,404 sf). The total lot coverage in this scenario would be 236,150 sf (of a permitted 267,134 sf). This scenario would not exceed the maximum permitted FAR for the site (6.5). Three curb cuts would be relocated and one new curb cut for loading would be developed along the site's FDR Drive service road frontage. In addition, in this scenario NYULMC's bulk oxygen tank facility would be relocated from its current site to the 1-story enclosed loading dock/storage area on East 30th Street, directly adjacent to the Schwartz Lecture Hall building. The facility would comply with all zoning requirements, would not involve any changes to floor area or lot coverage, and would not result in any notable changes to the exterior of the building, other than a new masonry wall and 11-foot, 5-inch wrought iron enclosure screening the equipment. No changes to the loading dock area would be required except for new masonry wall and wrought iron fence and gates at the perimeter of the site.

The uses of the building in this scenario would be consistent with uses that are currently present on the project site and prevalent in the surrounding area. The No Action condition would not entail any changes to streets or street patterns, public open spaces, visual resources, or natural features. The No Action condition would not be anticipated to notably change any surrounding view corridors. However, this structure would be far less suitable and efficient in meeting NYULMC's needs than the proposed Kimmel Pavilion and Energy Building.

STUDY AREA

The hospital pavilion that would be constructed absent the proposed action would be consistent with the height of other structures within the study area, particularly along the waterfront. The No Action condition would not entail any changes to streets or street patterns, public open spaces, visual resources, or natural features in the study area. The No Action condition would not be anticipated to notably affect any view corridors in the study area. Views in the study area closest to the project site would be altered by the No Action buildings and structures, as they would become a new element of these views; however, the buildings would comply with all

zoning requirements. The No Action condition also would not obstruct any views to visual resources.

OTHER FUTURE PROJECTS

On its campus but independent of the proposed project, NYULMC has received approval to expand and improve its emergency department by 2013 in order to meet the growing needs of the population and to provide separate facilities for pediatric patients.

Adjacent to the campus, major transportation initiatives are expected to improve transit along both 34th Street and First and Second Avenues. The 34th Street Transitway project is expected to create a set of fully protected bus lanes from the FDR Drive to Twelfth Avenue, as well pedestrian crossing islands and sidewalk expansions to address pedestrian safety needs. East of Fifth Avenue the bus lanes would be on the north side of 34th Street, while general traffic would flow eastbound on the south side of the street. The Transitway is expected to be operational in 2012. Starting in October 2010, the New York City Department of Transportation (NYCDOT) and Metropolitan Transportation Authority (MTA) will inaugurate Select Bus Service on First and Second Avenues. There will be curb side bus lanes as well as bike lanes and pedestrian safety islands.

Directly south of the campus, the first phase of the Alexandria Center for Science and Technology is expected to open as the first phase of East River Science Park, a project planned to support the development biotechnology in New York City. One of the three research buildings (the East Tower) has been substantially completed, while a second building (the West Tower) has been designed and the foundation has been built. In addition to laboratory space the Alexandria Center will provide a public plaza overlooking the East River at the cul-de-sac on the east end of 29th Street.

Portions of the study area have been rezoned in recent years but have yet to be redeveloped. The First Avenue Properties Rezoning (approved by the City Council in 2008) included the block bounded by East 35th and 36th Streets, First Avenue, and the FDR Drive, as well as the blocks north of East 38th Street (extending beyond the study area) between First Avenue and the FDR Drive. At East 35th Street and First Avenue, a 640-seat public school (PS/IS 281) is scheduled to begin construction soon and is expected to be completed by 2013. Approved plans for the remainder of that block include two residential towers totaling approximately 703,000 zsf, retail space totaling approximately 6,000 zsf, and open space of approximately 18,000-20,000 square feet (sf). At the north end of the study area, approved plans include an approximately 625,000-sf residential building with retail at the corner of East 38th Street and First Avenue. Immediately to its east will be an approximately 10,000 sf playground area.

Other anticipated development in the study area includes a 12-story, 128-unit residential building at 303 East 33rd Street between First and Second Avenues and a small commercial building is planned for the northwest corner of 30th Street and Second Avenue. Construction at the latter location has not begun but the site has been cleared.

These developments will be consistent with the existing uses in the study area, and would add to its already dense character. The planned transit improvements along 34th Street would be expected to improve pedestrian conditions in this portion of the study area.

D. PROBABLE IMPACTS OF THE PROPOSED ACTION

PROJECT SITE

As with the No Action condition, the proposed action would require the demolition of the seven buildings on the project site as well as the Gimbel Garden, at-grade parking spaces, and loading areas. In the proposed scenario, the Energy Building would be 6 stories tall. The 5th floor parapet along the FDR Drive Service Road would be approximately 137 feet tall, the 6th floor parapet would be approximately 155 feet tall, and the elevator parapet would be approximately 172 feet tall. The Energy Building, which would total 40,438 zsf, would be a new element that would not occur in the No Action condition. The Kimmel Pavilion would be 22 stories and 411 feet tall (to the top of the mechanical parapet) and 687,731 zsf in size (see Figures E-5 and E-6). The Kimmel Pavilion would be 2 stories (52 feet) shorter than in the No Action condition. As in the No Action condition, the HVAC exhaust stack atop the Kimmel Pavilion would rise to a height of approximately 522 feet. The stack would rise approximately 137 feet above the parapet of the 21st story and 111 feet above the 22nd story mechanical parapet. The total zoning square footage would be 728,169, approximately 20,863 zsf greater than in the No Action condition. The proposed project would also have a larger footprint than the No Action condition.

With the Kimmel Pavilion and Energy Building providing 61,075 sf and 16,767 sf, respectively, of tower coverage, the total tower coverage on the project's zoning lot would be 171,578 sf, which is 23,940 sf greater than in the No Action condition and 8,174 sf greater than the permitted coverage (163,404 sf). The total lot coverage in this scenario would be 256,156 sf, which is greater than in the No Action condition but still within the amount permitted by zoning (267,134 sf). The proposed project would not exceed the maximum permitted FAR for the site (6.5). One new curb cut would be created on First Avenue; on East 34th Street, the two existing curb cuts would be retained but relocated and enlarged; and on the FDR Drive service road, three existing curb cuts would be relocated and one new curb cut would be created.

In addition, NYULMC's bulk oxygen storage site would be relocated from its current site to East 30th Street, directly adjacent to the Schwartz Lecture Hall building. The proposed bulk oxygen storage would include a new enclosure built on East 30th Street in front of the existing one-story loading dock structure. As the tanks would be placed standing up, the enclosure would have a smaller footprint than the No Action condition but would be taller at approximately 49 feet. The existing roll-up door at the loading dock area would be replaced with a solid masonry wall. As in the No Action condition, the relocation of this facility would not involve any changes to floor area or lot coverage. However, a zoning waiver would be required for the height of the tanks and the screen walls.

In comparison to the No Action condition, the proposed project would not comply with the rear yard, rear yard setback, rear yard equivalent, initial setback distance, sky exposure plane, maximum permitted tower coverage, or curb cut regulations that relate to the site.

The proposed project, similar to the as-of-right building in the No Action condition, would be constructed on an existing block, and would not entail any changes to streets or street patterns, public open spaces, or natural features on the project site. The proposed project would result in the same use on the site as the No Action condition. Overall, the height, use, bulk, tower coverage, and lot coverage of the proposed project would not be substantially different from that of the No Action condition. While the proposed project would not comply with certain aspects of the zoning regulations, the anticipated change to the pedestrian experience would be minimal.

For Illustrative Purposes Only

Proposed Kimmel Pavilion
East 34th Street View

Figure E-5

9.24.10

For Illustrative Purposes Only

Proposed Kimmel Pavilion / Energy Building
East River View

Figure E-6

STUDY AREA

As with the No Action condition, the proposed Kimmel Pavilion and Energy Building would be constructed on an existing block and would not entail any changes to streets or street patterns, public open spaces, or natural features in the study area. The uses of the proposed buildings would be consistent with uses on the NYULMC campus and are prevalent in the surrounding area. The proposed Kimmel Building also would be consistent with the height of other tall structures the surrounding study area.

In comparison to the No Action condition, the proposed buildings would not be anticipated to notably change sunlight conditions for pedestrians on surrounding streets (see Attachment C, "Shadows"), or to notably change view corridors in the study area. Views in the study area closest to the project site would be altered by the proposed buildings, as they would become a new element of these views; however, these views also would be altered in the No Action condition. The proposed project would not partially or totally block a view corridor or views to a natural or built visual resource.

While the proposed project would not comply with certain aspects of the zoning regulations, the incremental differences to the pedestrian experience between the No Action condition and the proposed project would be minimal and would not be considered likely to disturb the vitality, walkability, or visual character of the project area. In comparison to the No Action condition, the proposed action would not change urban design features within the study area such that the context of a natural or built visual resource is altered. Furthermore, the proposed project would not result in an area-wide rezoning, a general large-scale development, or substantial changes to the built environment of a historic district or components of a historic building that contribute to the resource's historic significance.

This preliminary assessment therefore concludes that in comparison to the No Action condition, the proposed action would not be expected to result in any significant adverse impacts to urban design and visual resources and does not require further analysis. ✷

A. INTRODUCTION

This attachment presents the findings of the hazardous materials assessment and identifies potential issues of concern that could pose a hazard to workers, the community, and/or the environment during or after development of the proposed Kimmel Pavilion and Energy Building on the NYU Medical Center (NYULMC) campus. The proposed action would include demolition of existing structures in the northern portion of the project site and the construction of two new buildings, the Kimmel Pavilion and the Energy Building. The proposed construction would generally entail excavation to approximately five feet below grade, with some deeper disturbance (up to 25 feet below grade). The existing campus bulk oxygen storage tanks that are currently located within the footprint of the Energy Building also would need to be relocated at the southern portion of the superblock on the site of an existing loading dock. However, no excavation is proposed in this area. The potential for hazardous material concerns was evaluated based on a September 2010 *Phase I Environmental Site Assessment* (ESA) prepared by AKRF, a November 2010 *Draft Site Characterization Report – Consolidated Edison (Con Ed) East 32nd Street Site* (TetraTech EC, Inc.), and a November 2010 *Subsurface (Phase II) Investigation* of the proposed Energy Building site prepared by AKRF.

The Phase I ESA assessed the potential for hazardous materials to be present, based on a reconnaissance of the project site and surrounding area, a review of data on geology and hydrology of the area, an examination of historical Sanborn Fire Insurance maps and prior reports, and a review of pertinent federal and state databases. The November 2010 *Phase II* was conducted in accordance with a *Sampling Protocol and Health and Safety Plan (HASP)* prepared by AKRF in October 2010, and included the collection of soil and groundwater samples for laboratory analysis. The findings of the hazardous materials assessment were that no significant adverse impacts related to hazardous materials would be expected to occur either during or following the construction of the proposed project, provided certain protocols were to be followed.

The *Phase I ESA*, *Energy Building Sampling Protocol and HASP*, *Energy Building Phase II*, *Energy Building Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP)*, and the *Kimmel Pavilion Sampling Protocol and HASP* were submitted to the New York City Department of Environmental Protection (NYCDEP) for review and approval. In a letter dated February 10, 2011 from NYCDEP to the NYC Board of Standards and Appeals (BSA), NYCDEP approved the above documents.

B. EXISTING CONDITIONS

TOPOGRAPHY AND SUBSURFACE CONDITIONS

The surface topography slopes down to the east. Based on reports compiled by the U.S. Geological Survey (Brooklyn Quadrangle), the property lies at an elevation of approximately 10

feet above mean sea level. According to historical maps, the project site is located on an area created by landfilling in the mid-1800s and early 1900s. Bulkheads associated with historical shorelines may remain beneath the project site. Amtrak tunnels are located beneath the northern portion of the project site, approximately 55 to 65 feet below grade. Geotechnical borings in the vicinity of the site identified layers (from shallower to deeper) of: urban fill consisting of granular soils with boulders, wood, cinders, ash, brick and other construction debris (10 to 35 feet thick); silt with clay and/or organic material (5 to 15 feet thick); sand (5 to 40 feet thick) and/or decomposed rock (approximately 10 feet thick); and competent bedrock approximately 20 to more than 100 feet below grade. All layers were noted to increase in thickness toward the east, and bedrock sloped steeply down toward the east.

During AKRF's November 2010 subsurface investigation at the proposed Energy Building site, groundwater was encountered at approximately 5 to 7 feet below grade and was tidally influenced. Based on surface topography, groundwater would be expected to flow in a generally easterly direction toward the East River, which is approximately 200 feet to the east. However, groundwater flow direction can be affected by many factors including subsurface openings or obstructions such as basements, underground utilities, parking garages and tunnels (including Amtrak tunnels beneath the northern portion of the site), bedrock geology, tidal fluctuations, and other factors beyond the scope of this assessment. Groundwater in Manhattan is not used as a source of potable water (the municipal water supply uses upstate reservoirs).

PHASE I ENVIRONMENTAL SITE ASSESSMENT (ESA)

The Phase I ESA identified the following:

- Prior to the construction of the current structures, the site was developed with a variety of uses including a portion of a Standard Gas Light Co. facility including two tanks with unspecified contents and a portion of a coal yard. Computerized New York City Department of Buildings (NYCDOB) records identified a filling station at 596 First Avenue in 1934. These records are most likely related to a filling station located off-site in the western portion of the superblock, but it is possible that a filling station did exist on the project site. The Standard Gas Light Co. facility is identified in regulatory databases as a New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Site, with Con Ed as the responsible party. In 2010, Con Ed conducted an investigation of this site, including the collection of soil and groundwater samples and the installation of three monitoring wells in a portion of the property southeast of the North Service Wing. This investigation, which is summarized below, did not identify evidence of any significant impacts from the historical manufactured gas storage, or other evidence of spills or releases in the portion of the property where testing was conducted. However, the sampling locations were limited and shallow soil (which could contain higher contaminant concentrations associated with manufactured gas storage, other on and off-site uses and/or the presence of urban fill) was not sampled during the investigation.
- Regulatory databases identified open and closed-status petroleum spills with the potential to affect subsurface conditions beneath the project site. NYULMC, including the project site, was identified in regulatory databases as a generator of hazardous waste. Five associated regulatory violations were reported between 1985 and 2005, but returns to compliance were noted in all cases. Hazardous waste associated with medical and laboratory uses was generated on-site. All such waste was collected in hazardous waste storage rooms in the basement of an off-site NYULMC building for pickup by a private contractor. All observed

chemicals on-site and in the off-site hazardous waste storage areas were neatly stored and labeled, and no odors or staining were noted.

- The surrounding area was historically mixed-use and included the remainder of Standard Gas Light Co. with a manufactured gas holder, factories, coal and lumber yards, a dyer and cleaner, garages and filling stations with buried gasoline tanks, and auto repair adjacent to the project site or potentially upgradient of the site with respect to groundwater flow. A dry cleaner was identified in regulatory databases approximately 100 feet north of the site.
- Hydraulic lifts were located in the parking lot in the northeastern corner of the project site. The lifts were connected to a single hydraulic tank. The hydraulic tank and piping for one lift appeared to be leaking during the site visit. If the hydraulic equipment was installed prior to 1979, it may contain polychlorinated biphenyl (PCB)-containing hydraulic oil.
- During the site visit, two 100-gallon diesel aboveground storage tanks (ASTs) were observed in a one-story emergency generator room east-adjacent to the Auxiliary Pavilion. No odors or staining were noted near the tanks. According to NYULMC representatives, these tanks were supplied by a 5,000-gallon diesel AST located in an underground vault south-adjacent to the generator room. The tank was not observed directly. Registration information indicated that it was most recently tested for tightness in 1987, but based on the type of the tank (aboveground with no soil contact), no tightness testing is required. An 8,000-gallon diesel AST was observed on-site east of the North Service Wing. The tank was located inside a locked chain-link enclosure, but was partially visible through gaps in the enclosure. No odors or staining were noted in the visible areas. This tank supplied a 275-gallon diesel AST on the Rusk Institute roof, which was not observed. All on-site tanks, as well as other tanks on the NYULMC campus, were registered with NYSDEC and according to NYULMC representatives, a Spill Prevention, Control and Countermeasure (SPCC) Plan was in place for the tanks. The locations of off-site NUYLMC tanks, as indicated by NYULMC representatives, were in an anticipated cross-gradient groundwater flow direction with respect to the project site.
- Minor surface staining, likely from vehicles, was noted in on-site parking and loading dock areas. Pavement in these areas was generally in good condition. However, some damaged pavement was observed in a loading dock north-adjacent to the North Service Wing, indicating a possibility of minor subsurface impacts associated with the staining.
- Based on the age of the site buildings, fluorescent lighting components and electrical equipment observed during the reconnaissance may contain PCBs, and asbestos-containing materials (ACM) and lead-based paint may exist in the buildings. Fluorescent lights on-site may contain mercury. Numerous utilities reportedly located beneath the site may contain PCB-containing components, asbestos-containing insulation or other ACM, and/or lead.

DRAFT SITE CHARACTERIZATION REPORT – CON ED EAST 32ND STREET SITE

Consolidated Edison [as a part of its investigation of all its former Manufactured Gas Plant (MGP) properties throughout New York City] retained Tetra Tech to conduct an investigation at the NYULMC property, which included the installation of three monitoring wells and the collection of three soil and three groundwater samples for laboratory analysis from the proposed Energy Building site.

Soil and groundwater samples were analyzed for volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, total cyanide, and Target Analyte List (TAL) metals. In summary, soil analytical results detected levels of VOCs, SVOCs, cyanide, and metals primarily below NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (USCOs). Groundwater analytical results detected carbon disulfide in two groundwater samples but at concentrations well below the NYSDEC Class GA (drinking water) standards; no SVOCs were detected in any of the groundwater samples. Metals were detected in all three groundwater samples at concentrations attributable to the suspended sediments contained in the samples and the brackish nature of the water. Overall, the investigation did not identify evidence of any significant impacts from the historical manufactured gas storage, or other evidence of spills or releases.

SUBSURFACE (PHASE II) INVESTIGATION – ENERGY BUILDING SITE

AKRF conducted a Subsurface (Phase II) Investigation at the proposed Energy Building site to supplement the results of the Site Characterization Report discussed above. AKRF obtained a total of twelve soil samples and three groundwater samples for laboratory analysis. Soil samples were analyzed for VOCs by EPA Method 8260, SVOCs by EPA Method 8270, PCBs by EPA Method 8082, pesticides by EPA Method 8081, and TAL metals. Since the investigation conducted by Tetra Tech in July 2010 included analysis groundwater samples for VOCs, SVOCs and metals, the groundwater samples collected by AKRF were analyzed for PCBs by EPA Method 8082 and pesticides by EPA Method 8081.

Soil encountered consisted primarily of sand, silt, and gravel with brick, concrete, asphalt, coal, and glass, (i.e., it included urban fill materials). No indications of contamination (e.g., PID readings, staining or odors) were detected in any of the recovered soil. No sheen or odors were detected in the sampled groundwater.

Soil analytical results were compared to NYSDEC Part 375 USCOs, CSCOs and (for metals) Eastern United States background levels published in NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046. Groundwater sample analytical results were compared to the NYSDEC Class GA Ambient Water Quality Standards, which are intended for current or potential potable water supplies, even though groundwater in Manhattan is not a potable source.

Analytical results were as follows:

- Acetone, benzene, 1,1-dichloroethene, methylene chloride, tetrachloroethylene, and toluene were detected in soil samples, but at concentrations well below the USCOs. No other VOCs were detected in the soil samples analyzed.
- SVOCs were detected in all soil samples analyzed. SVOCs exceeding their respective USCOs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene. Only benzo(a)pyrene in one sample slightly exceeded the CSCO. SVOCs in exceedance of USCOs were primarily polycyclic aromatic hydrocarbons (PAHs) and are attributable to the urban fill.
- Metals were detected in all soil samples analyzed, with five metals exceeding their respective USCOs, and barium exceeding its CSCO in two soil samples. Based on the field observations and analytical data, the elevated metal concentrations were most likely attributable to fill materials beneath the Site rather than a spill or leak.

- Twelve pesticides were detected in one shallow soil sample, six of which were at concentrations exceeding the USCOs. None of the pesticides detected exceeded the CSCOs and pesticides were not detected in the remaining samples analyzed. The pesticides detected may be attributable to past on-site usage. No pesticides were detected in the deeper sample from the same boring suggesting that the pesticide contamination has not migrated downward to the water table.
- No PCBs or pesticides were detected in the groundwater samples analyzed.

C. THE FUTURE WITHOUT THE PROPOSED ACTION

This analysis assumes that without the proposed action, a single building with a smaller footprint would be built on the project site. The construction would involve soil disturbance, potentially increasing pathways for human exposure to any subsurface hazardous materials. The soil disturbance would not be required to be conducted in accordance with the procedures described in the following Section D. However, legal requirements (including NYSDEC regulations) would need to be followed for disposal of soil and demolition debris, and petroleum tank closure and/or spill reporting as follows:

- Prior to any demolition or construction with the potential to disturb on-site petroleum storage tanks, they would be closed and removed from the site, along with any contaminated soil, in accordance with applicable requirements. Any tanks unexpectedly encountered during construction would also be properly closed and removed along with any contaminated soil and would be registered with NYSDEC and/or the New York City Fire Department, if applicable. Any evidence of a petroleum spill would be reported to NYSDEC and addressed in accordance with applicable requirements.
- Prior to any building demolition, all stored materials would be removed and disposed of in accordance with applicable regulatory requirements.
- Prior to any demolition activities, a comprehensive asbestos survey of the buildings would be conducted, and would include the sampling of all suspect materials to confirm the presence or absence of asbestos. The identified ACM would be removed and disposed of prior to building demolition in accordance with all applicable regulations.
- Unless there were labeling or test data which indicated that on-site fluorescent lights did not contain mercury, and that fluorescent lighting fixtures were not PCB-containing, disposal would be performed in accordance with all applicable regulations and guidelines.
- Any demolition activities with the potential to disturb lead-based paint would be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62 - Lead Exposure in Construction).
- If dewatering were to be required for construction, testing would be performed to ensure that the groundwater would meet NYCDEP sewer discharge requirements. If necessary, the water would be pretreated prior to discharge to the City's sewer system, as required by NYCDEP permit/approval requirements.

Without the proposed action, the amount of soil disturbance would be smaller than that anticipated with the proposed action, but potentially the controls on its performance would not be as stringent as under the proposed action, as described below.

D. PROBABLE IMPACTS OF THE PROPOSED ACTION

The greatest potential for exposure to contaminated materials would occur during demolition of existing structures and during subsurface disturbance associated with construction of the proposed project. However, the potential for adverse impacts associated with these activities would be avoided by performing these activities in accordance with the measures listed above in Section C as well as the following:

- For the proposed Energy Building site: Based on the findings of the Phase I ESA, the Con Ed Draft Site Characterization Report and the Phase II, a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) were prepared for the proposed Energy Building site for implementation during proposed construction. The Phase I ESA, Energy Building Sampling Protocol and Health and Safety Plan (HASP), Energy Building Phase II, and Energy Building RAP and CHASP were submitted to NYCDEP for review and approval. The RAP addressed requirements for items such as: soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures should petroleum storage tanks or contamination be unexpectedly encountered. The CHASP included measures for worker and community protection, including personal protective equipment, dust control and air monitoring. NYCDEP indicated approval of the submitted documents in a letter dated February 10, 2011 from NYCDEP to the BSA.
- For the proposed Kimmel Pavilion site: Based on the likely subsurface disturbance associated with the proposed action, a subsurface investigation (Phase II) work plan and a HASP for the Phase II proposed to determine whether past or present, on or off-site activities have affected subsurface conditions, were prepared and submitted to NYCDEP for review and approval. NYCDEP indicated approval of the Sampling Protocol and HASP in a letter dated February 10, 2011 from NYCDEP to the BSA. Based on the findings of the Phase II, an appropriate Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP) would be prepared (and submitted to NYCDEP for review and approval) for implementation during proposed construction. The RAP would address requirements for items such as: soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures should petroleum storage tanks or contamination be unexpectedly encountered. The CHASP would include measures for worker and community protection, including personal protective equipment, dust control and air monitoring.
- As part of the proposed project, the applicant has executed and recorded, on March 8, 2011, a Restrictive Declaration providing for the activities described above.

With the measures outlined above, no significant adverse impacts related to hazardous materials would be expected to occur as a result of the proposed action. Although the proposed project (as well as the building that would be constructed in the future without the proposed action) would involve use of various chemicals for medical operations and petroleum, the handling, storage, use and disposal of these is subject to strict regulation and, as such, would not be expected to present the potential for significant adverse impacts during operation of the proposed new buildings. ✷

A. INTRODUCTION

The NYU Langone Medical Center (NYULMC) proposes to develop two new buildings on its main campus that would house hospital functions and a combined heat and power (CHP) plant. The CHP plant would provide all of the steam demand, and a portion of the electric power demand, for the NYULMC campus, including existing campus facilities, the proposed Kimmel Pavilion, as well as to accommodate potential future campus growth. The CHP plant would have a maximum potential capacity of 15 megawatts (MW), including a natural gas-fired combustion turbine with a maximum heat input rating of 158 million British Thermal Units per hour (mmBtu/hr), with additional steam generated by a supplemental gas-fired duct burner rated at 82 mmBtu/hr using a heat recovery steam generator (HRSG). In addition to the CHP plant, a maximum of three dual-fuel back-up boilers with a combined capacity of approximately 180,000 lb/hr of steam would be used during periods when the CHP plant is not operating, due to scheduled CHP plant maintenance or other reasons. The backup boilers would fire natural gas with oil used only during the winter period when the utility gas supply is interrupted. Diesel-powered emergency generators would also be installed at the Energy Building and Kimmel Pavilion to provide emergency power to support critical functions in the event of a loss of utility and/or CHP power.

The CHP plant and back-up boilers would be housed in the Energy Building and the exhaust gases would be ducted through a common stack to the Kimmel Pavilion roof. The stack height for the 15 MW CHP would be approximately 522 feet above datum (524.6 feet above sea level). The new emergency generators would be installed at the Energy Building and Kimmel Pavilion with exhausts ducted to the roof of the buildings.

The potential for air quality impacts from the proposed project is examined in this attachment. Air quality impacts can be either direct or indirect. Direct impacts result from emissions generated by stationary sources at a development site, such as emissions from on-site fuel combustion for heat and hot water systems, or emissions from parking garage ventilation systems. Indirect impacts are impacts that are caused by emissions from on-road vehicle trips generated by a project or other changes to future traffic conditions due to the project.

The potential effects of the CHP plant, back-up boilers, and emergency generators on the NYULMC campus buildings and other buildings around the project site are examined. The project site is located within 400 feet of an industrial zone; therefore, the potential for air quality impacts from nearby industrial sources of air pollution (e.g., from manufacturing or processing facilities) are also examined. The HVAC systems would be served by the CHP or would be electric powered; therefore, an analysis of additional fossil fuel fired sources was not warranted.

The proposed project is not expected to significantly alter traffic conditions. The maximum hourly incremental traffic from the proposed project would not exceed the 2010 *City Environmental Quality Review (CEQR) Technical Manual* carbon monoxide screening threshold

of 140 peak hour trips at nearby intersections in the study area, nor would it exceed the particulate matter emission screening thresholds discussed in Chapter 17, Sections 210 and 311 of the 2010 *CEQR Technical Manual*. Therefore, a quantified assessment of on-street mobile source emissions is not warranted. However, the proposed project would include a parking garage. Therefore, an analysis was conducted to evaluate potential future pollutant concentrations in the vicinity of the ventilation outlets with the proposed parking garage. In addition, since portions of the project site are within 200 feet of the elevated Franklin Delano Roosevelt (FDR) Drive, the potential effects of vehicle emissions at potential building air intake locations were also evaluated as recommended in the *CEQR Technical Manual*.

PRINCIPAL CONCLUSIONS

The analyses conclude that the proposed project would not result in any significant adverse air quality impacts. A summary of the general findings is presented below.

The proposed project's parking garage would not result in any violations of National Ambient Air Quality Standards (NAAQS). It was also determined that CO impacts from the proposed parking facility would not exceed CEQR *de minimis* criteria. The maximum 1-hour and 8-hour average CO concentrations as well as the maximum 24-hour average PM_{10} concentration on the proposed buildings from the elevated FDR Drive are also well below the standards. Thus, the proposed project would not have significant adverse impacts from mobile source emissions.

Based on a detailed dispersion modeling analysis of the CHP plant and other proposed equipment, emissions of nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM_{10}) would not result in any violations of NAAQS. Emissions of particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) were analyzed in accordance with the city's current $PM_{2.5}$ interim guidance criteria, which determined that the maximum incremental increases in $PM_{2.5}$ concentrations from stationary sources would be below the significant impact thresholds.

The industrial source analysis determined that there are no sources with the potential to affect the proposed project.

B. POLLUTANTS FOR ANALYSIS

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. Ambient concentrations of CO are predominantly influenced by mobile source emissions. Particulate matter (PM), volatile organic compounds (VOCs), and nitrogen oxides (nitric oxide, NO, and NO_2, collectively referred to as NO_x) are emitted from both mobile and stationary sources. Fine PM is also formed when emissions of NO_x, sulfur oxides (SO_x), ammonia, organic compounds, and other gases react or condense in the atmosphere. Emissions of SO_2 are associated mainly with stationary sources, and sources utilizing non-road diesel such as diesel trains, marine engines, and non-road vehicles (e.g., construction engines). On-road diesel vehicles currently contribute very little to SO_2 emissions since the sulfur content of on-road diesel fuel, which is federally regulated, is extremely low. Ozone is formed in the atmosphere by complex photochemical processes that include NO_x and VOCs.

CARBON MONOXIDE

CO, a colorless and odorless gas, is produced in the urban environment primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas which does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances; elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

The proposed project is not expected to significantly alter traffic conditions. Since the proposed project would result in fewer new peak hour vehicle trips than the 2010 *CEQR Technical Manual* screening threshold of 140 trips at nearby intersections in the study area, a quantified assessment of on-street CO emissions is not warranted.

CO emissions were evaluated as a result of the combustion from the CHP plant, back-up boilers and emergency generators. An analysis was also conducted to evaluate future CO concentrations with the operation of the proposed Kimmel Pavilion's parking garage. In addition, an analysis of potential CO impacts from the FDR Drive on the proposed project's buildings was conducted.

NITROGEN OXIDES, VOCS, AND OZONE

NO_x are of principal concern because of their role, together with VOCs, as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants are advected downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO_x and VOC emissions from all sources are therefore generally examined on a regional basis. The contribution of any action or project to regional emissions of these pollutants would include any added stationary or mobile source emissions; the change in regional mobile source emissions of these pollutants would be related to the total vehicle miles traveled added or subtracted on various roadway types throughout the New York metropolitan area, which is designated as a moderate non-attainment area for ozone by the U.S. Environmental Protection Agency (EPA).

The proposed project would not have a significant effect on the overall volume of vehicular travel in the metropolitan area; therefore, no measurable impact on regional NO_x emissions or on ozone levels is predicted. An analysis of project-related emissions of these pollutants from mobile sources was therefore not warranted.

In addition to being a precursor to the formation of ozone, NO_2 (one component of NO_x) is also a regulated pollutant. Since NO_2 is mostly formed from the transformation of NO in the atmosphere, it has mostly been of concern further downwind from large stationary point sources, and not a local concern from mobile sources. (NO_x emissions from fuel combustion consist of approximately 90 percent or more NO and 10 percent NO_2 at the source.) Potential impacts on local NO_2 concentrations from the fuel combustion for the proposed project's stationary systems were evaluated.

LEAD

Airborne lead emissions are currently associated principally with industrial sources. Effective January 1, 1996, the Clean Air Act (CAA) banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding a 25-

year effort to phase out lead in gasoline. Even at locations in the New York City area where traffic volumes are very high, atmospheric lead concentrations are far below the 3-month average national standard of 0.15 micrograms per cubic meter ($\mu g/m^3$).

No significant sources of lead are associated with the proposed project and, therefore, analysis was not warranted.

RESPIRABLE PARTICULATE MATTER—PM_{10} AND $PM_{2.5}$

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are both numerous and varied, and they are emitted from a wide variety of sources (both natural and anthropogenic). Natural sources include the condensed and reacted forms of naturally occurring VOC; salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Naturally occurring PM is generally greater than 2.5 micrometers in diameter. Major anthropogenic sources include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating), chemical and manufacturing processes, all types of construction, agricultural activities, as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption (accumulation of gases, liquids, or solutes on the surface of a solid or liquid) of other pollutants, often toxic and some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$) and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}, which includes $PM_{2.5}$). $PM_{2.5}$ has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles, and is also extremely persistent in the atmosphere. $PM_{2.5}$ is mainly derived from combustion material that has volatilized and then condensed to form primary PM (often soon after the release from a source exhaust) or from precursor gases reacting in the atmosphere to form secondary PM.

Diesel-powered vehicles, especially heavy duty trucks and buses, are a significant source of respirable PM, most of which is $PM_{2.5}$; PM concentrations may, consequently, be locally elevated near roadways with high volumes of heavy diesel powered vehicles. The proposed project would not result in any significant increases in truck traffic near the project site or in the region, nor other potentially significant increase in $PM_{2.5}$ vehicle emissions as defined in Chapter 17, Sections 210 and 311 of the 2010 *CEQR Technical Manual*. Therefore, an analysis of potential impacts from project-generated mobile sources of PM was not warranted. However, an analysis of potential PM_{10} impacts from the FDR Drive on the proposed project's buildings was conducted.

On-site combustion sources would result in emissions of PM_{10} and $PM_{2.5}$; therefore, these sources were evaluated for potential impacts. Potential 24-hour and annual incremental impacts of $PM_{2.5}$ from the CHP plant and emergency generators were evaluated using an incremental microscale analysis.

SULFUR DIOXIDE

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels (oil and coal). Monitored SO_2 concentrations in New York City are lower than the current national

standards. Due to the federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Vehicular sources of SO_2 are not significant and therefore, an analysis of SO_2 from mobile sources was not warranted.

The proposed CHP plant would utilize natural gas and the emergency generators would utilize ultra-low sulfur diesel fuel, each of which has a negligible level of sulfur. However, the proposed back-up boilers would be capable of firing distillate fuel oil. Therefore, an analysis was performed to estimate the future levels of SO_2 with the proposed project.

NONCRITERIA POLLUTANTS

In addition to the criteria pollutants discussed above, noncriteria pollutants are of concern. Noncriteria pollutants are emitted by a wide range of man-made and naturally occurring sources. Emissions of noncriteria pollutants from industries are regulated by EPA. Federal ambient air quality standards do not exist for noncriteria pollutants; however, the New York State Department of Environmental Conservation (NYSDEC) has issued standards for certain noncriteria compounds, including beryllium, gaseous fluorides, and hydrogen sulfide. NYSDEC has also developed guideline concentrations for numerous noncriteria pollutants. The NYSDEC guidance document DAR-1 (September 2007) contains a compilation of annual and short term (1-hour) guideline concentrations for these compounds. The NYSDEC guidance thresholds represent ambient levels that are considered safe for public exposure.

The potential for impacts from nearby industrial sources on noncriteria pollutant concentrations within the proposed project site were examined.

C. AIR QUALITY REGULATIONS, STANDARDS, AND BENCHMARKS

NATIONAL AND STATE AIR QUALITY STANDARDS

As required by the CAA, primary and secondary NAAQS have been established for six major air pollutants: CO, NO_2, ozone, respirable PM (both $PM_{2.5}$ and PM_{10}), SO_2, and lead. The primary standards represent levels that are requisite to protect the public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO_2 (annual), ozone, lead, and PM, and there is no secondary standard for CO and the 1-hour NO_2 standard. The NAAQS are presented in Table G-1. The NAAQS for CO, annual NO_2, and SO_2 have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only. New York State also has standards for total suspended particulate matter (TSP), settleable particles, non-methane hydrocarbons (NMHC), and ozone which correspond to federal standards that have since been revoked or replaced, and for beryllium, fluoride, and hydrogen sulfide (H_2S).

EPA has revised the NAAQS for PM, effective December 18, 2006. The revision included lowering the level of the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ and retaining the level of the annual standard at 15 $\mu g/m^3$. The PM_{10} 24-hour average standard was retained and the annual average PM_{10} standard was revoked.

EPA has also revised the 8-hour ozone standard, lowering it from 0.08 to 0.075 parts per million (ppm), effective as of May 2008. On January 6, 2010, EPA proposed a change in the 2008 ozone NAAQS, lowering the primary NAAQS from the current 0.075 ppm level to within the range of

0.060 to 0.070 ppm. EPA is also proposing a secondary ozone standard, measured as a cumulative concentration within the range of 7 to 15 ppm-hours aimed mainly at protecting sensitive vegetation.

Table G-1
National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary		Secondary	
	ppm	µg/m3	ppm	µg/m3
Carbon Monoxide (CO)				
8-Hour Average [1]	9	10,000	None	
1-Hour Average [1]	35	40,000		
Lead				
Rolling 3-Month Average [2]	NA	0.15	NA	0.15
Nitrogen Dioxide (NO_2)				
1-Hour Average [3]	0.100	188	None	
Annual Average	0.053	100	0.053	100
Ozone (O_3)				
8-Hour Average [4,5]	0.075	150	0.075	150
Respirable Particulate Matter (PM_{10})				
24-Hour Average [1]	NA	150	NA	150
Fine Respirable Particulate Matter ($PM_{2.5}$)				
Annual Mean	NA	15	NA	15
24-Hour Average [6,7]	NA	35	NA	35
Sulfur Dioxide (SO_2)				
Annual Arithmetic Mean [8]	0.03	80	NA	NA
Maximum 24-Hour Average [1,8]	0.14	365	NA	NA
1-Hour Average[9]	0.075	196	NA	NA
Maximum 3-Hour Average [1]	NA	NA	0.50	1,300

Notes:

ppm – parts per million
µg/m^3 – micrograms per cubic meter
NA – not applicable
All annual periods refer to calendar year.
PM concentrations (including lead) are in µg/m^3 since ppm is a measure for gas concentrations.
Concentrations of all gaseous pollutants are defined in ppm and approximately equivalent concentrations in µg/m^3 are presented.

(1) Not to be exceeded more than once a year.
(2) EPA has lowered the NAAQS down from 1.5 µg/m^3, effective January 12, 2009.
(3) 3-year average of the annual 98th percentile daily maximum 1-hr average concentration. Effective April 12, 2010.
(4) 3-year average of the annual fourth highest daily maximum 8-hr average concentration.
(5) EPA has proposed lowering this standard further to within the range 0.060-0.070 ppm.
(6) Not to be exceeded by the annual 98th percentile when averaged over 3 years.
(7) EPA has lowered the NAAQS down from 65 µg/m^3, effective December 18, 2006.
(8) EPA revoked the 24-hour and annual primary standards, replacing them with a 1-hour average standard. Effective August 23, 2010.
(9) 3-year average of the annual 99th percentile daily maximum 1-hr average concentration. Effective August 23, 2010.

Source: 40 CFR Part 50: National Primary and Secondary Ambient Air Quality Standards.

EPA lowered the primary and secondary standards for lead to 0.15 $\mu g/m^3$, effective January 12, 2009. EPA revised the averaging time to a rolling 3-month average and the form of the standard to not-to-exceed across a 3-year span. The current lead NAAQS will remain in place for one year following the effective date of attainment designations for any new or revised NAAQS before being revoked, except in current non-attainment areas, where the existing NAAQS will not be revoked until the affected area submits, and EPA approves, an attainment demonstration for the revised lead NAAQS.

EPA established a new 1-hour average NO_2 standard of 0.100 ppm, effective April 12, 2010, in addition to the annual standard. The statistical form is the 3-year average of the 98th percentile of daily maximum 1-hour average concentration in a year.

EPA established a new 1-hour average SO_2 standard of 0.075 ppm, replacing the 24-hour and annual primary standards, effective August 23, 2010. The statistical form is the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour concentrations (the 4th highest daily maximum corresponds approximately to 99th percentile for a year.)

NAAQS ATTAINMENT STATUS AND STATE IMPLEMENTATION PLANS

The CAA, as amended in 1990, defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by EPA, the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA.

In 2002, EPA re-designated New York City as in attainment for CO. The CAA requires that a maintenance plan ensure continued compliance with the CO NAAQS for former non-attainment areas. New York City is also committed to implementing site-specific control measures throughout the city to reduce CO levels, should unanticipated localized growth result in elevated CO levels during the maintenance period.

Manhattan has been designated as a moderate NAA for PM_{10}. On December 17, 2004, EPA took final action designating the five New York City counties and Nassau, Suffolk, Rockland, Westchester, and Orange Counties as a $PM_{2.5}$ non-attainment area under the CAA due to exceedance of the annual average standard. Based on recent monitoring data (2006-2009), annual average concentrations of $PM_{2.5}$ in New York City no longer exceed the annual standard. EPA has determined that the area has attained the 1997 annual $PM_{2.5}$ NAAQS effective December 15, 2010.

As described above, EPA has revised the 24-hour average $PM_{2.5}$ standard. In October 2009 EPA finalized the designation of the New York City Metropolitan Area as nonattainment with the 2006 24-hour $PM_{2.5}$ NAAQS, effective in November 2009. The nonattainment area includes the same 10-county area EPA designated as nonattainment with the 1997 annual $PM_{2.5}$ NAAQS. By November 2012 New York will be required to submit a SIP demonstrating attainment with the 2006 24-hour standard by November 2014 (EPA may grant attainment date extensions for up to five additional years).

Nassau, Rockland, Suffolk, Westchester, Lower Orange County Metropolitan Area (LOCMA), and the five New York City counties had been designated as a severe non-attainment area for ozone (1-hour average standard). In November 1998, New York State submitted its *Phase II Alternative Attainment Demonstration for Ozone*, which was finalized and approved by EPA effective March 6, 2002, addressing attainment of the 1-hour ozone NAAQS by 2007. These SIP

revisions included additional emission reductions that EPA requested to demonstrate attainment of the standard, and an update of the SIP estimates using the latest versions of the mobile source emissions model, MOBILE6.2, and the nonroad emissions model, NONROAD—which have been updated to reflect current knowledge of engine emissions and the latest mobile and nonroad engine emissions regulations.

On April 15, 2004, EPA designated these same counties as moderate non-attainment for the 8-hour average ozone standard which became effective as of June 15, 2004 (LOCMA was moved to the Poughkeepsie moderate non-attainment area for 8-hour ozone). EPA revoked the 1-hour standard on June 15, 2005; however, the specific control measures for the 1-hour standard included in the SIP are required to stay in place until the 8-hour standard is attained. The discretionary emissions reductions in the SIP would also remain but could be revised or dropped based on modeling. On February 8, 2008, NYSDEC submitted final revisions to a new SIP for ozone to EPA. NYSDEC has determined that achieving attainment for ozone before 2012 is unlikely, and has therefore made a request for a voluntary reclassification of the New York nonattainment area as "serious."

In March 2008 EPA strengthened the 8-hour ozone standards. SIPs will be due three years after the final designations are made. On March 12, 2009, NYSDEC recommended that the counties of Suffolk, Nassau, Bronx, Kings, New York, Queens, Richmond, Rockland, and Westchester be designated as a non-attainment area for the 2008 ozone NAAQS (the NYMA MSA nonattainment area). It is unclear at this time what the attainment status of these areas will be under the newly proposed standard due to the range of concentrations proposed.

New York City is currently in attainment of the annual-average NO_2 standard. EPA has promulgated a new 1-hour standard. The existing monitoring data for NYC indicates background concentrations below the standard. NYSDEC has determined that the present monitoring does not meet the revised EPA requirements in all respects and has recommended a designation of "unclassifiable" for the entire state. Therefore, it is likely that New York City will be designated by EPA as "unclassifiable" at first (January 2012), and then classified once three years of monitoring data are available (2016 or 2017).

EPA has established a new 1-hour SO_2 standard, replacing the 24-hour and annual standards, effective August 23, 2010. Based on the available monitoring data, all New York State counties currently meet the 1-hour standard. Additional monitoring will be required. EPA plans to make final attainment designations in June 2012, based on 2008 to 2010 monitoring data and refined modeling. SIPs for nonattainment areas will be due by June 2014.

DETERMINING THE SIGNIFICANCE OF AIR QUALITY IMPACTS

The State Environmental Quality Review Act (SEQRA) regulations and the *CEQR Technical Manual* state that the significance of a predicted consequence of a project (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.[1] In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS (see Table G-1) would be deemed

[1] *CEQR Technical Manual*, Chapter 17, section 400, May 2010; and State Environmental Quality Review Regulations, 6 NYCRR § 617.7

to have a potential significant adverse impact. In addition, in order to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas, threshold levels have been defined for certain pollutants; any action predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

DE MINIMIS CRITERIA REGARDING CO IMPACTS

New York City has developed *de minimis* criteria to assess the significance of the increase in CO concentrations that would result from the impact of proposed projects or actions on mobile sources, as set forth in the 2010 *CEQR Technical Manual*. These criteria set the minimum change in CO concentration that defines a significant environmental impact. Significant increases of CO concentrations in New York City are defined as: (1) an increase of 0.5 ppm or more in the maximum 8-hour average CO concentration at a location where the predicted No Action 8-hour concentration is equal to or between 8 and 9 ppm; or (2) an increase of more than half the difference between baseline (i.e., No Action) concentrations and the 8-hour standard, when No Action concentrations are below 8.0 ppm.

$PM_{2.5}$ INTERIM GUIDANCE CRITERIA

NYSDEC has published a policy to provide interim direction for evaluating $PM_{2.5}$ impacts[1]. This policy would apply only to facilities applying for permits or major permit modifications under SEQRA that emit 15 tons of PM_{10} or more annually. The policy states that such a project will be deemed to have a potentially significant adverse impact if the project's maximum impacts are predicted to increase $PM_{2.5}$ concentrations by more than 0.3 $\mu g/m^3$ averaged annually or more than 5 $\mu g/m^3$ on a 24-hour basis. Projects that exceed either the annual or 24-hour threshold will be required to prepare an environmental impact statement (EIS) to assess the severity of the impacts, to evaluate alternatives, and to employ reasonable and necessary mitigation measures to minimize the $PM_{2.5}$ impacts of the source to the maximum extent practicable.

In addition, the New York City Department of Environmental Protection (NYCDEP) is currently recommending interim guidance criteria for evaluating the potential $PM_{2.5}$ impacts for projects subject to CEQR. The interim guidance criteria currently employed by NYCDEP for determination of potential significant adverse $PM_{2.5}$ impacts under CEQR are as follows:

- 24-hour average $PM_{2.5}$ concentration increments which are predicted to be greater than 5 $\mu g/m^3$ at a discrete receptor location would be considered a significant adverse impact on air quality under operational conditions (i.e., a permanent condition predicted to exist for many years regardless of the frequency of occurrence);
- 24-hour average $PM_{2.5}$ concentration increments which are predicted to be greater than 2 $\mu g/m^3$ but no greater than 5 $\mu g/m^3$ would be considered a significant adverse impact on air quality based on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations;
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.1 $\mu g/m^3$ at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of approximately 1 square kilometer, centered on the

[1] CP33/Assessing and Mitigating Impacts of Fine Particulate Emissions, NYSDEC 12/29/2003.

location where the maximum ground-level impact is predicted for stationary sources; or at a distance from a roadway corridor similar to the minimum distance defined for locating neighborhood scale monitoring stations); or

- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.3 $\mu g/m^3$ at a discrete receptor location (elevated or ground level).

Actions under CEQR predicted to increase $PM_{2.5}$ concentrations by more than the NYCDEP or NYSDEC interim guidance criteria above will be considered to have a potential significant adverse impact. NYCDEP recommends that its actions subject to CEQR that fail the interim guidance criteria prepare an EIS and examine potential measures to reduce or eliminate such potential significant adverse impacts.

The above NYCDEP and NYSDEC interim guidance criteria have been used to evaluate the significance of predicted impacts of the proposed project on $PM_{2.5}$ concentrations and determine the need to minimize particulate matter emissions from the proposed project.

D. METHODOLOGY FOR PREDICTING POLLUTANT CONCENTRATIONS

MOBILE SOURCES

PARKING FACILITIES

The proposed project would result in the operation of an above-grade 140-space parking facility. The outlet air from the garage's ventilation systems could contain elevated levels of CO due to emissions from vehicular exhaust emissions in the garage. The ventilation air could potentially affect ambient levels of CO at locations near the outlet vent. An analysis of the emissions from the outlet vent and their dispersion in the environment was performed, calculating pollutant levels in the surrounding area, using the methodology set forth in the 2010 *CEQR Technical Manual*.

Emissions from vehicles entering, parking, and exiting the garage were estimated using the EPA MOBILE6.2 mobile source emission model and an ambient temperature of 50.0°F, as referenced in the 2010 *CEQR Technical Manual*. All arriving and departing vehicles were conservatively assumed to travel at an average speed of 5 miles per hour within the parking garage. In addition, all departing vehicles were assumed to idle for 1 minute before exiting. The concentration of CO within the garage was calculated assuming a minimum ventilation rate, based on New York City Building Code requirements, of 1 cubic foot per minute of fresh air per gross square foot of garage area. To determine compliance with the NAAQS, CO concentrations were predicted for the maximum 8-hour average period. (No exceedances of the 1-hour standard would occur and the 8-hour values are the most critical for impact assessment.)

To determine pollutant concentrations, the outlet vent was analyzed as a "virtual point source" using the methodology in EPA's *Workbook of Atmospheric Dispersion Estimates, AP-26*. This methodology estimates CO concentrations at various distances from an outlet vent by assuming that the concentration in the garage is equal to the concentration leaving the vent, and determining the appropriate initial horizontal and vertical dispersion coefficients at the vent faces.

The CO concentrations were determined for the time periods when overall garage usage would be the greatest, considering the hours when the greatest number of vehicles would exit the facility. Departing vehicles were assumed to be operating in a "cold-start" mode, emitting higher levels of CO than arriving vehicles. Traffic data for the parking garage analysis was derived from the trip generation analysis.

The air from the parking garage was conservatively assumed to be vented through a single outlet at a height of approximately 10 feet. The vent face was modeled to directly discharge to Franklin Delano Roosevelt (FDR) Service Road, and receptors were placed along the sidewalks on both sides of the street (both near the vent and across the street) at a pedestrian height of 6 feet and at a distance 4 feet and 128 feet, respectively, from the vent. A persistence factor of 0.77, supplied by NYCDEP, was used to convert the calculated 1-hour average maximum concentrations to 8-hour averages, accounting for meteorological variability over the average 8-hour period.

Background and on-street CO concentrations were added to the modeling results to obtain the total ambient levels.

ELEVATED FDR DRIVE

An analysis was performed to estimate the maximum concentrations of pollutants from the elevated FDR Drive on the proposed buildings. CO and PM_{10} concentrations were estimated.

The prediction of vehicle-generated emissions and their dispersion in an urban environment incorporates meteorological phenomena, traffic conditions, and physical configuration. Air pollutant dispersion models mathematically simulate how traffic, meteorology, and physical configuration combine to affect pollutant concentrations. The mathematical expressions and formulations contained in the various models attempt to describe an extremely complex physical phenomenon as closely as possible. However, because all models contain simplifications and approximations of actual conditions and interactions, and since it is necessary to predict the reasonable worst-case condition, most dispersion analyses predict conservatively high concentrations of pollutants, particularly under adverse meteorological conditions.

The analysis employs a model approved by EPA that has been widely used for evaluating air quality impacts of projects in New York City, other parts of New York State, and throughout the country. The modeling approach includes a series of conservative assumptions relating to meteorology, traffic, and background concentration levels resulting in a conservatively high estimate of expected pollutant concentrations that could ensue from the FDR Drive on the proposed project.

Vehicle Emissions

Engine Emissions

Vehicular CO and PM engine emission factors were computed using the EPA mobile source emissions model, MOBILE6.2. This emissions model is capable of calculating engine emission factors for various vehicle types, based on the fuel type (gasoline, diesel, or natural gas), meteorological conditions, vehicle speeds, vehicle age, roadway types, number of starts per day, engine soak time, and various other factors that influence emissions, such as inspection maintenance programs. The inputs and use of MOBILE6.2 incorporate the most current guidance available from NYSDEC and NYCDEP.

An ambient temperature of 50.0° Fahrenheit was used. The use of this temperature is recommended in the *CEQR Technical Manual* for the Borough of Manhattan and is consistent with current NYCDEP guidance.

Road Dust

The contribution of re-entrained road dust to PM_{10} concentrations, as presented in the PM_{10} SIP, is considered to be significant; therefore, the PM_{10} estimates include both exhaust and road dust. Road dust emission factors were calculated according to the latest procedure delineated by EPA.[1]

Traffic Data

Traffic volumes used to evaluate the potential effects of vehicle emissions on the project site from the elevated FDR Drive were derived from traffic volume information from the New York State Department of Transportation (NYSDOT) 2008 *Traffic Data Report*. Future traffic volumes were projected using a 0.25-percent annual background growth rate for the first five years (2008-2013) and a growth rate of 0.125 percent for the subsequent years (2014-2017), consistent with 2010 *CEQR Technical Manual* guidance. Traffic data for the at-grade FDR Service Road were obtained from traffic volume information presented in the 2008 *First Avenue Properties Final Environmental Impact Statement*, and estimated by applying the 2010 *CEQR Technical Manual* growth rates.

DISPERSION MODEL FOR MICROSCALE ANALYSES

Maximum CO concentrations from the FDR Drive at nearby locations on the proposed buildings were predicted using the CAL3QHC model Version 2.0.[2] The CAL3QHC model has been updated with an extended module, CAL3QHCR, which allows for the incorporation of hourly meteorological data into the modeling, instead of worst-case assumptions regarding meteorological parameters. This refined version of the model, CAL3QHCR, is employed if maximum predicted future CO concentrations are greater than the applicable ambient air quality standards or when *de minimis* thresholds are exceeded using the first level of CAL3QHC modeling.

To determine motor vehicle generated PM concentrations, the CAL3QHCR model was applied. This refined version of the model can utilize hourly traffic and meteorology data, and is therefore more appropriate for calculating 24-hour average concentrations.

METEOROLOGY

In general, the transport and concentration of pollutants from vehicular sources are influenced by three principal meteorological factors: wind direction, wind speed, and atmospheric stability. Wind direction influences the direction in which pollutants are dispersed, and atmospheric stability accounts for the effects of vertical mixing in the atmosphere. These factors, therefore, influence the concentration at a particular prediction location (receptor).

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[1] EPA, Compilations of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Ch. 13.2.1, NC, http://www.epa.gov/ttn/chief/ap42, December 2003.

[2] EPA, User's Guide to CAL3QHC, A Modeling Methodology for Predicted Pollutant Concentrations Near Roadway Intersections, Office of Air Quality, Planning Standards, Research Triangle Park, North Carolina, EPA-454/R-92-006.

Tier I Analyses—CAL3QHC

In applying the CAL3QHC model, the wind angle was varied to determine the wind direction resulting in the maximum concentrations at each receptor.

Following the EPA guidelines[1], CAL3QHC computations were performed using a wind speed of 1 meter per second, and the neutral stability class D. The 8-hour average CO concentrations were estimated by multiplying the predicted 1-hour average CO concentrations by a factor of 0.77 to account for persistence of meteorological conditions and fluctuations in traffic volumes. A surface roughness of 3.21 meters was chosen. At each receptor location, concentrations were calculated for all wind directions, and the highest predicted concentration was reported, regardless of frequency of occurrence. These assumptions ensured that worst-case meteorology was used to estimate impacts.

Tier II Analyses—CAL3QHCR

A Tier II analysis performed with the CAL3QHCR model includes the modeling of hourly concentrations based on hourly traffic data and five years of monitored hourly meteorological data. The data consists of surface data collected at LaGuardia Airport and upper air data collected at Brookhaven, New York for the period 2005-2009. All hours were modeled, and the highest resulting concentration for each averaging period is presented.

ANALYSIS YEAR

The microscale analyses were performed for existing conditions and 2017, the year by which the proposed project is likely to be completed. The future analysis was performed with the proposed project (the Build condition) only as the receptors analyzed at the proposed buildings.

BACKGROUND CONCENTRATIONS

Background concentrations are those pollutant concentrations originating from distant sources that are not directly included in the modeling analysis, which directly accounts for vehicular emissions on the streets within 1,000 feet and in the line of sight of the analysis site. Background concentrations must be added to modeling results to obtain total pollutant concentrations at an analysis site. The highest background concentrations monitored at the nearest NYSDEC background monitoring station in the most recent 3-year period were used. It was conservatively assumed that the maximum background concentrations occur on all days. The background concentrations for the area of the project are presented in Table G-4.

RECEPTOR PLACEMENT

Impacts at the proposed Kimmel Pavilion and Energy Building were analyzed. Receptors were placed at various locations and elevations on both buildings along the side facing the FDR Drive to determine maximum impacts.

[1] *Guidelines for Modeling Carbon Monoxide from Roadway Intersections*, EPA Office of Air Quality Planning and Standards, Publication EPA-454/R-92-005.

STATIONARY SOURCES

ENERGY BUILDING

The Energy Building would include a CHP plant that would provide steam and electric power for the NYULMC campus. While the design for the CHP plant is not complete, the plant would have a maximum potential capacity of 15 megawatt (MW). In this configuration, the plant would include a natural gas-fired combustion turbine with a maximum heat input rating of 158 million British Thermal Units per hour (mmBtu/hr). The combustion turbine would generate a maximum of approximately 72,000 pounds per hour of steam, with additional steam generated by a supplemental gas-fired duct burner rated at 82 mmBtu/hr and capable of generating a maximum of 160,000 pounds per hour of steam using a heat recovery steam generator (HRSG). The combustion turbine and the duct burner analyzed are designed to meet all the required steam loads for the campus, including the proposed Kimmel Pavilion, as well as to accommodate potential future campus growth. The modeling analysis assumes that the CHP plant would operate continuously for up to 8,760 hours per year at 100 percent load.

The Energy Building could include back-up boilers that would be used during periods when the CHP plant is not operating, due to scheduled CHP plant maintenance or other reasons. At a maximum, the Energy Building would include three 60,000 lb/hr dual-fuel boilers. The anticipated operation of the backup boilers is minimal, and maintenance on the CHP plant would be expected to occur during non-peak demand periods. The boilers would be dual-fuel fired (No. 2 oil and natural gas) with oil used only during the winter period when the utility gas supply is interrupted. Annual boiler operation is anticipated to be a maximum of 24 days per year (576 hours per year).

Four existing emergency generators would remain on the campus in addition to six new emergency generators in the Energy Building and Kimmel Pavilion. Based on the current design, it is envisioned that each building would house three new generators each rated at approximately 2.5 MW emergency generators. Both the existing and the new emergency generators would be tested periodically for a short period to ensure their availability and reliability in the event of a sudden loss in utility electrical power, on a weekly basis for 15 to 30 minutes, and on a monthly basis for 1 to 1.5 hours. They would not be utilized in a peak load shaving program,[1] minimizing the use of this equipment during non-emergency periods. Emergency generators are exempt from NYSDEC air permitting requirements, but would require a permit or registration issued by NYCDEP, depending on the generator capacity. The emergency generators would be installed and operated in accordance with NYCDEP requirements, as well as other applicable codes and standards.

Dispersion Model

The potential impacts were evaluated using the EPA/AMS AERMOD dispersion model[2]. The AERMOD model was designed as a replacement to the ISC3 model by EPA. AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain,

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[1] The term “peak load shaving” refers to the use of customer-operated (non-utility) generators to produce electricity at the request of the local electrical utility in order to reduce the electrical demand during peak demand periods, particularly during the summer period.

[2] AERMOD: Description Of Model Formulation, 454/R-03-004, EPA, September 2004; and User's Guide for the AMS/EPA Regulatory Model AERMOD, EPA 454/B-03-001, September 2004 and Addendum December 2006.

surface and elevated releases, and multiple sources (including point, area, and volume sources). AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain, including updated treatments of the boundary layer theory, understanding of turbulence and dispersion, and includes handling of terrain interactions.

The AERMOD model calculates pollutant concentrations from one or more points (e.g., exhaust stacks) based on hourly meteorological data, and has the capability to calculate pollutant concentrations at locations where the plume from the exhaust stack is affected by the aerodynamic wakes and eddies (downwash) produced by nearby structures. The analyses of potential impacts from exhaust stacks were made assuming stack tip downwash, urban dispersion and surface roughness length, with and without building downwash, and elimination of calms.

The AERMOD model also incorporates the algorithms from the PRIME model, which is designed to predict impacts in the "cavity region" (i.e., the area around a structure which under certain conditions may affect an exhaust plume, causing a portion of the plume to become entrained in a recirculation region). The Building Profile Input Program (BPIP) program for the PRIME model (BPIPRM) was used to determine the projected building dimensions modeling with the building downwash algorithm enabled. The modeling of downwash from sources accounts for all obstructions within a radius equal to five obstruction heights of the stack.

Meteorological Data

The meteorological data set consisted of five consecutive years of meteorological data: surface data collected at LaGuardia Airport (2005–2009) and concurrent upper air data collected at Brookhaven, New York. The meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevation over the five-year period. These data were processed using the EPA AERMET program to develop data in a format which can be readily processed by the AERMOD model. The land uses around the site where meteorological surface data were available were classified using categories defined in digital United States Geological Survey (USGS) maps to determine surface parameters used by the AERMET program.

Receptor Placement

Discrete receptors (i.e., locations at which concentrations are calculated) were chosen on the nearby buildings for the stationary source modeling analysis. The model receptor network consisted of locations along the sides and roof of the buildings, at operable windows, intake vents, and otherwise accessible locations such as terraces. Rows of receptors were placed in the model at spaced intervals on the buildings at multiple elevations. 7-Minute digital elevation model (DEM) files were obtained for the receptor area. A terrain pre-processor program was used to determine the representative elevations for each receptor. All receptors were referenced to Universal Transverse Mercator (UTM) coordinates.

The receptor network included buildings on the NYULMC campus as well as existing and approved buildings in the study area that are assumed to be constructed in the No Build condition.

An additional analysis was conducted to determine impacts of $PM_{2.5}$ on a neighborhood-scale basis, in order to ensure that these impacts do not exceed the significant impact criterion of 0.1 $\mu g/m^3$. In accordance with the NYCDEP interim guidance criteria for $PM_{2.5}$, a neighborhood scale concentration represents the average concentration over an area of approximately one square kilometer centered on the location where the maximum local concentration is predicted.

Emission Estimates and Stack Parameters

For the combustion turbine and duct burner, NO_x, CO, and PM emission factors were obtained based on conceptual design information from vendors. NO_x emissions are assumed to be controlled with selective catalytic reduction (SCR) with a 90 percent efficiency. It was assumed that PM_{10} emissions are equivalent to $PM_{2.5}$ for the natural gas fired combustion turbine and duct burner. The SO_2 emission factor was also obtained from the conceptual design for the combustion turbine, while the EPA AP-42 SO_2 emission factor was used for the duct burner. The reasonable worst-case short-term and annual scenarios assume continuous operation of the CHP plant for 8,760 hours per year at 100 percent load.

For the back-up boilers, it was assumed that an ultra-low NO_x burner design would be utilized. Using vendor data for representative boilers, NO_x emissions were calculated based on a maximum concentration of 9 ppm when firing natural gas and 75 ppm when firing No. 2 fuel oil. CO emissions were calculated based on 9 ppm when firing natural gas and 36 ppm when firing fuel oil. The PM emission factor was obtained from EPA AP-42 Tables 1.3-1 and 1.4-2, with the additional condensable fraction for fuel oil from Table 1.3-2. PM_{10} and $PM_{2.5}$ emission factors were calculated using particle size distribution information in Table 1.3-6 of AP-42. SO_2 emissions were also obtained from AP-42 emission factors. SO_2 oil based emissions were calculated assuming 15 ppm sulfur content in the fuel oil, reflecting the recent legislation enacted in New York State mandating the use of such fuel by July 1, 2012[1].

The reasonable worst-case short-term scenario assumes daily (24-hour) continuous operation on fuel oil during January and February and on natural gas during the rest of the year. The reasonable worst-case annual scenario assumes that the back-up boilers could be used for a maximum of 576 hours per year. For the NO_2 and SO_2 annual modeling analyses, the calculated total annual emissions were prorated over the entire year and conservatively assume 100 percent operation on fuel oil, in addition to the emissions from the CHP plant. For $PM_{2.5}$ annual modeling analysis, since emissions from the CHP plant are greater than the emissions from the boilers, the annual analysis was performed assuming continuous operation of the CHP plant as a worst-case assumption.

For the proposed emergency generators, the major pollutants of concern are short-term emissions from PM_{10} and $PM_{2.5}$. Short-term emissions of SO_2 and CO were also analyzed. For the new emergency generators, emission rates for CO and PM were based on representative vendor data, and emission rates for SO_2 were estimated using AP-42 Table 3.4-1. For the existing emergency generators, all emission rates were based on AP-42 emission factors.

Annual impacts from the emergency generators were not analyzed since these units are only operated for short periods of time. In addition, 1-hour NO_2 and SO_2 concentrations from the emergency generators were not estimated since the NAAQS are based on a statistical-based number of exceedances above a specific concentration threshold. These standards are relatively new and therefore guidance for modeling and evaluating impacts from sources which are used for extremely limited periods of time (less than 0.5 percent per year) is not yet developed. Nevertheless, the emergency generators would be designed to meet all applicable federal, state and local regulations, which would require procurement of new equipment with a specific NO_x emission limit, and use of ultra-low sulfur diesel for minimization of SO_2 emissions.

The reasonable worst-case short-term scenario for the emergency generators assumed two test scenarios, based on current NYULMC operating experience: (1) a weekly test for up to 30 minutes in

[1] Environmental Conservation Law (ECL) S 19-0325 Sulfur Reduction Requirements

length, which would be performed at partial load (50 percent load was assumed); and (2) a monthly test at full load (100 percent) for up to 90 minutes. For the new emergency generators, the analysis assumed that for the full load test one engine each on Kimmel Pavilion and Energy Building would be tested simultaneously with the CHP Plant. For the 50 percent load test, all three engines on Kimmel Pavilion, and two engines on Energy building would be tested simultaneously with the CHP Plant. For the existing emergency generators, the analysis assumed that each generator could be tested simultaneously with the other additional sources at the facility.

Maximum short-term and annual emission rates were calculated for the CHP plant, the boilers, and the emergency generators. Stack parameters and emission rates are provided in Table G-2 for the proposed project's major sources of emissions and G-3 for the existing generators that would remain in operation with the proposed project.

The CHP plant was modeled to reflect varying ambient conditions, which can affect maximum output. The CHP plant would be equipped with water injection to reduce the ambient air temperature, therefore, operation at three different ambient conditions, i.e., 10°F, 30°F, and 59°F was considered in the air quality analysis to determine the maximum potential impacts. The 10°F temperature condition was determined to be the worst-case, and was therefore used as the basis for analyzing air quality impacts with the proposed project.

The proposed CHP plant was assumed to operate on a continuous basis at maximum net output of 15 MW. However, due to the nature of electricity generation, the proposed facility may potentially operate on a non-continuous basis, and at varying loads. If the combustion turbine operates at partial load, the CHP plant would not fire the duct burner. Exhaust emission rates from the turbine would be much lower than at 100 percent load, however, there would only be small differences in the stack exhaust velocities and temperatures. Consequently, air quality impacts would be lower than at 100 percent load and therefore, modeling of the combustion turbine operation at partial load was not warranted.

NO_2 concentration increments were estimated using a NO_2 to NO_x ratio of 0.59, which is based on the ambient annual average NO_2 to NO_x ratio as measured at New York City monitoring stations in the most recent available three year period (2006-2008), as described in EPA's *Guideline on Air Quality Models* at 40 CFR part 51 Appendix W, Section 5.2.4.[1]Although this general guidance from EPA is focused on estimating annual-average NO_2 concentrations, the use of a 59 percent conversion ratio of NO to NO_2 is a reasonably conservative estimate for 1-hour concentrations as well. For example, in a document evaluating various modeling approaches to estimating NO_2 using EPA modeling procedures, a number of scenarios were evaluated showing transformation ratios to be lower than that level (59 percent) out to distances of hundreds of meters and more.[2] Further, EPA has issued a guidance document[3] for applying conversion ratios for 1-hour NO_2 concentrations indicating that the screening approaches used for the annual NO_2 assessments generally can be applied to the 1-hour standard. The 1-hour NO_2 analysis was performed for the CHP and back-up boilers only, since the emergency generators would be used on a very limited basis (less than 0.5 percent per year).

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[1] http://www.epa.gov/scram001/guidance/guide/appw_05.pdf

[2] MACTEC, Sensitivity Analysis Of PVMRM and OLM in AERMOD, September 2004. Available on EPA's website with distributed AERMOD materials.

[3] Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard, June 28, 2010.

Table G-2
Stack Parameters and Emission Rates – Proposed Sources(1)

Parameter	Value			
	CHP plant (2)	Boilers (3)	Emergency Generators @ 100 % load (5)	Emergency Generators @ 50% load(6)
Stack Height (ft)(4)	518	518	411.6 / 147.2	411.6 / 147.2
Stack Exhaust Inside Diameter (ft)	4.7	4.7	1.0	1.0
Stack Exit Velocity (ft/s)	122.6	66.3 / 63.8	404.2	257.7
Stack Exit Temperature (F)	283.7	300	921.9	848.5
NO_x Emission Rate (1 hour) (g/s)	0.1881	0.3058 / 2.5521	(7)	(7)
NO_x Emission Rate (Annual) (g/s)	0.1881	0.1678	(8)	(8)
CO Emission Rate (1 hour) (g/s)	1.9011	0.1887 / 0.7444	0.7383	0.1480
CO Emission Rate (8 hour) (g/s)	1.9011	0.1887 / 0.7444	0.1384	0.0185
PM_{10} Emission Rate (24 hour) (g/s)	0.4815	0.2071 / 0.4367	0.0031	0.00073
$PM_{2.5}$ Emission Rate (24 hour) (g/s)	0.4815	0.2071 / 0.2943	0.0031	0.00073
$PM_{2.5}$ Emission Rate (Annual) (g/s)	0.4815	0.0194	(8)	(8)
SO_2 Emission Rate (1 hour) (g/s)	0.0089	0.0164 / 0.0404	(7)	(7)
SO_2 Emission Rate (3 hour) (g/s)	0.0089	0.0164 / 0.0404	0.0026	0.00043
SO_2 Emission Rate (24-hour) (g/s)	0.0089	0.0164 / 0.0404	0.00032	0.000053
SO_2 Emission Rate (Annual) (g/s)	0.0089	0.0027	(8)	(8)

Notes:
(1) Stack parameters and emission rates for the CHP plant are presented at 59ºF (ISO) conditions.
(2) Short-term and annual emission rates are for the CHP plant operating continuously for 8,760 hours per year at 100 percent load.
(3) Short-term emission rates are for all three boilers operating simultaneously. The first emission rate is for boilers operating on natural gas. The second emission rate is for boilers operating on fuel oil. It is assumed that fuel oil would only be utilized during January and February. Annual emission rates for the boilers assume three boilers operating for 576 hours per year on fuel oil.
(4) Stack height above grade (approximately 524.6 feet above sea level). For the emergency generators, the first value is the stack height on top of the Kimmel Pavilion and the second value is the stack height on top of the Energy Building.
(5) Emission rates are per engine, operating at 100% load for 1.5 hours per day for monthly testing.
(6) Emission rates are per engine, operating @ 50% load for 0.5 hours per day for weekly testing.
(7) 1- Hour impacts of NO_2 and SO_2 from the emergency generators were not analyzed.
(8) Annual impacts from the emergency generators were not analyzed since these units are only operated for short periods of time.

Table G-3
Stack Parameters and Emission Rates – Existing Sources(1)

Parameter	Value					
	2- 1,400 kw Emergency Generators at Smilow		1-1,250 Emergency Generator at Skirball		1-1,000 kw Emergency Generator at HCC	
	100% Load	50% Load	100% Load	50% Load	100% Load	50% Load
Stack Height (ft)	275	275	310	310	120	120
Stack Exhaust Inside Diameter (ft)	1	1	1	1	1	1
Stack Exit Velocity (ft/s)	245.2	147.1	229.2	137.5	160.9	96.5
Stack Exit Temperature (F)	905	814.5	1007.1	906.4	884.1	795.7
NO_x Emission Rate (Annual) (g/s)	(2)	(2)	(2)	(2)	(2)	(2)
CO Emission Rate (1 hour) (g/s)	1.3000	0.3250	1.1608	0.2902	0.9286	0.2322
CO Emission Rate (8 hour) (g/s)	0.2438	0.0406	0.2176	0.0363	0.1741	0.0290
SO_2 Emission Rate (3 hour) (g/s)	0.0014	0.0002	0.0013	0.0002	0.0010	0.0002
SO_2 Emission Rate (24-hour) (g/s)	0.0002	0.00003	0.0002	0.00003	0.0001	0.00002
SO_2 Emission Rate (Annual) (g/s)	(2)	(2)	(2)	(2)	(2)	(2)

Notes:
(1) Stack parameters are based on data for similar sized engines.
(2) Annual impacts from the emergency generators were not analyzed since these units are only operated for short periods of time.
(3) $PM_{2.5}$ impacts from the existing emergency generators were not analyzed since $PM_{2.5}$ is evaluated on an incremental basis.
(4) 1- Hour impacts of NO_2 and SO_2 from the emergency generators were not analyzed.

Total hourly NO_2 concentrations throughout the modeling period were determined by adding the maximum 1-hour modeled concentration to the maximum 98th percentile background concentration, averaged over three years, in accordance with the form of the 1-hour standard.

The CHP plant, backup boiler and emergency generator systems would be subject to federal, state and local regulations. The type of NYSDEC air permit required would be primarily based on whether the projected emissions of air pollutants would exceed major source thresholds as defined in 40 CFR 52.21 and 6 NYCRR Parts 201 and 321. NYSDEC issues state facility permits or registrations for minor sources of emissions and Title V permits for major sources of emissions and sources subject to certain regulations. Depending on the final design, the facility could be either a minor source or a major source. The facility would be permitted as a major source in the event that maximum potential CO_2e emissions are greater than the Prevention of Significant Deterioration (PSD) and Title V threshold of 100,000 tpy. NYCDEP would issue construction permits and certificates to operate for each source (CHP Plant, back-up boilers, emergency generators).

Permits include protection against air quality impacts such as emission limits for specific pollutants, limitations of the types of fuels on which the emissions sources would operate, and monitoring, reporting, and recordkeeping requirements. The limitations are based upon EPA and NYSDEC standards that are designed to protect public health and the environment. In addition, requirements for the locations of the stacks and limitations on the minimum stack heights would be included in the Restrictive Declaration.

Background Concentrations

To estimate the maximum expected pollutant concentration at a given receptor, the predicted impacts must be added to a background value that accounts for existing pollutant concentrations from other sources that are not directly accounted for in the model (see Table G-4).

Table G-4
Maximum Background Pollutant Concentrations

Pollutant	Average Period	Location	Concentration (µg/m^3)	NAAQS (µg/m^3)
NO_2	1-hour(1)	PS59, Manhattan	147.4	188
	Annual(2)		67.7	100
CO	1-hour(3)	PS59, Manhattan	2,634	40,000
	8-hour(3)	CCNY, Manhattan	2,061	10,000
SO_2	1-hour(4)	PS59, Manhattan	141.9	196
	3 hour(3)		183	1,300
	24 hour(3)		99	365
	Annual(2)		29	80
PM_{10}	24 Hour(3)	Madison Avenue, Manhattan	63	150

Sources: New York State Air Quality Report Ambient Air Monitoring System, NYSDEC, 2004-2008
(1) 3-year average of the annual 98th percentile daily maximum 1-hr average concentration (2005-2007). PS59 stopped collecting data in 2008.
(2) 5-year maximum from 2004 – 2008 from PS59 for consistency with the 1-hour averages.
(3) 5-year highest second-highest measured value from 2005 – 2009 except for PM_{10} which is based on the 4-year highest second-highest value from 2006 – 2009.
(4) 3-year average of the annual 99th percentile daily maximum 1-hr average concentration (2006-2008). PS59 stopped collecting data in 2008.

The background levels are based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations over a recent five-year period for which data are available, with the exception of PM_{10}, which is based on four years of data, consistent with NYCDEP guidance. For the 3-hour and 24-hour SO_2, PM_{10} 24-hour, and CO averages, the highest second-highest measured values over the specified period were used. Consistent with the form of the standard, for the 1-hour NO_2 and SO_2 averaging periods, the 3-year average of the annual 98th and 99th percentile daily maximum 1-hr average concentration was used, respectively. The annual average background values are the highest measured average concentrations. It was conservatively assumed that the maximum background concentrations occur on all days.

INDUSTRIAL SOURCES

The potential impacts of existing industrial operations in the surrounding area on the proposed project were evaluated. An initial study are of 400 feet was established, as recommended in the 2010 *CEQR Technical Manual*. The *CEQR Technical Manual* also requires an assessment of any actions that could result in the location of sensitive uses within 1,000 feet of a large emission source. No such sources of emissions were identified; therefore, the analysis focused on potential sources of emissions from industrial activities within the 400 foot study area.

Land use and Sanborn maps were reviewed to identify potential sources of emissions from manufacturing/processing operations. Next, a field survey was conducted to identify buildings within 400 feet of the project site that have the potential for emitting air pollutants. The survey was conducted on August 13, 2010. In addition, a search of EPA and State-permitted facilities within the study area was conducted using the EPA Envirofacts database.[1] A citywide NYCDEP database was also reviewed. The results of the investigation did not identify any businesses in the area with industrial source operations. Therefore, no significant impacts on the proposed project are anticipated from industrial source emissions.

E. THE FUTURE WITHOUT THE PROPOSED ACTION

As described in Attachment A, “Project Description,” additional growth and development would occur within the project site and in the study area in the No Action condition by 2017. Overall, stationary source emissions would be greater than existing conditions due to the development of the new hospital pavilion and CHP plant in an as-of-right configuration and the development of a public school and a residential complex north of the campus; while industrial source emissions in the No Action condition would likely be similar to the exiting condition.

F. PROBABLE IMPACTS OF THE PROPOSED ACTION

The proposed action would result in a new parking facility and a new CHP plant which could also affect the surrounding community with emissions. The following sections describe the results of the studies performed to analyze the potential impacts on the surrounding community from these sources.

[1] EPA, Envirofacts Data Warehouse, http://oaspub.epa.gov/enviro/ef_home2.air, [*August 16, 2010]*.

MOBILE SOURCES

PARKING GARAGE

Based on the methodology previously described, the maximum predicted 8-hour average CO concentration from the proposed parking facility was analyzed using several receptor points, a near side receptor on the same side of the street as the parking facility and a far side receptor on the opposite side of the street from the parking facility for a street side vent. The total CO impacts included both background CO levels and contributions from traffic on adjacent roadways (for the far side receptor only). A potential receptor was also placed on the façade of the proposed Kimmel Pavilion above the parking garage on the side facing FDR Service Road, where the vent is expected to be located. The maximum predicted 8-hour average CO concentration of all the sensitive receptors described above would be 2.9 ppm for the near side receptor. This value includes a predicted concentration of 1.1 ppm from the parking garage vent, and includes a background level of 1.8 ppm. This concentration is substantially below the applicable 8-hour standard of 9 ppm. As the results show, the proposed parking garage would not result in any significant adverse air quality impacts.

ELEVATED FDR DRIVE

CO

As described in Section D, "Methodology," a CO analysis were undertaken to determine CO concentration on the proposed Kimmel Pavilion and Energy Building at locations near the elevated FDR Drive. The maximum predicted 1-hour and 8-hour average CO concentrations at elevated receptors on the proposed buildings are 4.3 ppm and 3.3 ppm, respectively. The results show that future CO concentrations at the project site situated near elevated roadways would be well below the CO standards of 35 ppm and 9 ppm, on a 1-hour and 8-hour average, respectively.

PM_{10}

PM_{10} concentrations from the elevated FDR Drive at various elevated receptors on the proposed buildings were determined using the methodology previously described. The future maximum predicted 24-hour PM_{10} concentration is 75.0 $\mu g/m^3$, which includes a background level of 63 $\mu g/m^3$. The results indicate that future PM_{10} concentrations at the proposed buildings would be well below the PM_{10} standard of 150 $\mu g/m^3$.

STATIONARY SOURCES

ENERGY BUILDING

The maximum predicted concentrations from the modeling analysis were added to the maximum ambient background concentrations and compared to the NAAQS. The results of this analysis are presented in Table G-5 for NO_2, CO, PM_{10}, and SO_2. Impacts from the proposed project are less than their respective NAAQS; therefore the proposed project would not result in any significant adverse air quality impacts.

Maximum concentrations of $PM_{2.5}$ from the proposed project were estimated. Impacts were compared to the City's interim guidance criteria for $PM_{2.5}$. The maximum predicted 24-hour and localized annual average incremental $PM_{2.5}$ concentrations are presented in Table G-6.

Table G-5
Future (2017) Maximum Modeled Pollutant Concentration (in µg/m^3)

Pollutant	Averaging Period	Maximum Modeled Impact	Background	Total Concentration	NAAQS
NO_2	1-hour	39.41	147.4	186.8	188
	Annual	0.13	67.7	67.8	100
CO	1-hour	2,298.71	2,634	4,932.7	40,000
	8-hour	254.91	2,061	2,315.9	10,000
SO_2	1-hour	1.06	141.9	143.0	196
	3-hour	2.01	183	185	1,300
	24-hour	0.22	99	99.2	365
	Annual	0.01	29	29.0	80
PM_{10}	24-hour	2.6	63	65.6	150

Table G-6
Future (2017) Maximum Predicted $PM_{2.5}$ Concentrations (in µg/m^3)

Pollutant	Averaging Period	Maximum Concentration	Interim Guidance Threshold
$PM_{2.5}$	24-hour	2.58	5/2[(1)]
	Annual (discrete)	0.29	0.3
	Annual (neighborhood scale)	0.01	0.1

Notes:
[(1)] 24-hour $PM_{2.5}$ interim guidance criterion, > 2 µg/m^3 (5 µg/m^3 not-to-exceed value), depending on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations.

As shown in Table G-6, the maximum 24-hour incremental impacts at any discrete receptor location would be less than the applicable interim guidance criterion of 5 µg/m^3. On an annual basis, the maximum projected $PM_{2.5}$ increments would be less than the applicable interim guidance criterion of 0.3 µg/m^3 for local impacts and 0.1 for neighborhood scale impacts.

The air quality analysis also evaluated impacts with the 24-hour average interim guidance criterion of 2 µg/m^3 for discrete receptor locations. The assessment examined the magnitude, duration, frequency, and extent of the increments at locations where exposure above the 2 µg/m^3 threshold averaged over a 24-hour period could occur. The receptor location with the maximum continual 24-hour exposure was predicted on the proposed residential building at 700 First Avenue (known as Waterside 1-1), at an elevation of approximately 601.5 feet above sea level. At this location, the maximum 24-hour $PM_{2.5}$ incremental concentration from the proposed project was predicted to be 2.58 µg/m^3, at a maximum annual frequency of two times per year, and at an average frequency of less than twice per year, over five years. On the same floor, there were locations with incremental concentrations exceeding 2 µg/m^3 on all facades of the building. At these receptors, 24-hour incremental concentrations from the proposed project were predicted to exceed 2 µg/m^3 at a maximum frequency ranging from one to two times per year, with an average frequency of less than two times per year. One other floor on this building was found to have locations with incremental concentrations exceeding 2 µg/m^3, on the north, south and east façades at an elevation of 582.8 feet. At these receptors, 24-hour incremental concentrations from the proposed project were predicted to exceed 2 µg/m^3 at a maximum frequency of one time per year. Two locations on the proposed residential building at 616 First Avenue (known as 616-1) also had incremental concentrations exceeding 2 µg/m^3 on the south and west façades at an elevation of 482 feet, as well as at one location on the south façade of the existing Corinthian Apartments building located at 330 East 38th Street, at an elevation of 545.2 feet. At each of

these buildings, 24-hour incremental concentrations from the proposed project were predicted to exceed 2 $\mu g/m^3$ at a maximum frequency of one time per year. Overall, the magnitude, extent, and frequency of concentrations above 2.0 $\mu g/m^3$ are very low. ✷

A. INTRODUCTION

The proposed Kimmel Pavilion and Energy Building on the NYU Langone Medical Center (NYULMC) campus would not generate sufficient traffic to have the potential to cause a significant noise impact (i.e., it would not result in a doubling of passenger car equivalents [PCEs] which would be necessary to cause a 3 dBA increase in noise levels). However, ambient noise levels adjacent to the project site must be considered in order to address City Environmental Quality Review (CEQR) noise abatement requirements for the proposed buildings. This potential is assessed below.

B. ACOUSTICAL FUNDAMENTALS

Sound is a fluctuation in air pressure. Sound pressure levels are measured in units called "decibels" ("dB"). The particular character of the sound that we hear (a whistle compared with a French horn, for example) is determined by the speed, or "frequency," at which the air pressure fluctuates, or "oscillates." Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz ("Hz"). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (e.g., a whistle) are more easily discernable and therefore more intrusive than many of the lower frequencies (e.g., the lower notes on the French horn).

"A"-WEIGHTED SOUND LEVEL (DBA)

In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the descriptor of noise levels most often used for community noise. As shown in Table H-1, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as a library at 40 dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable.

Table H-1
Common Noise Levels

Sound Source	(dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	80–90
Busy city street, loud shout	80
Busy traffic intersection	70–80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas, or residential areas close to industry	50–60
Background noise in an office	50
Suburban areas with medium-density transportation	40–50
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
Sources: Cowan, James P. *Handbook of Environmental Acoustics,* Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

EFFECTS OF DISTANCE ON SOUND

Sound varies with distance. For example, highway traffic 50 feet away from a receptor (such as a person listening to the noise) typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100 feet, assuming soft ground conditions. This decrease is known as “drop-off.” The outdoor drop-off rate for line sources, such as traffic, is a decrease of approximately 4.5 dBA (for soft ground) for every doubling of distance between the noise source and receiver (for hard ground the outdoor drop-off rate is 3 dBA for line sources). Assuming soft ground, for point sources, such as amplified rock music, the outdoor drop-off rate is a decrease of approximately 7.5 dBA for every doubling of distance between the noise source and receiver (for hard ground the outdoor drop-off rate is 6 dBA for point sources).

SOUND LEVEL DESCRIPTORS

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise that fluctuates over extended periods have been developed. One way is to describe the fluctuating sound heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the “equivalent sound level,” L_{eq}, can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted by $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively. Discrete event peak levels are given as L_1 levels.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates very little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}.

For purposes of the proposed action, the L_{10} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation. The 1-hour L_{10} is the noise descriptor used in the *CEQR Technical Manual* noise exposure guidelines for City environmental impact review classification.

C. NOISE STANDARDS AND CRITERIA

NEW YORK CEQR NOISE CRITERIA

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise level (see Table H-2, "Required Attenuation Values to Achieve Acceptable Interior Noise Levels"). Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for hospital uses such as inpatient beds and clinical space and 50 dBA or lower for hospital uses such as cafeteria/kitchen space and are determined based on exterior $L_{10(1)}$ noise levels.

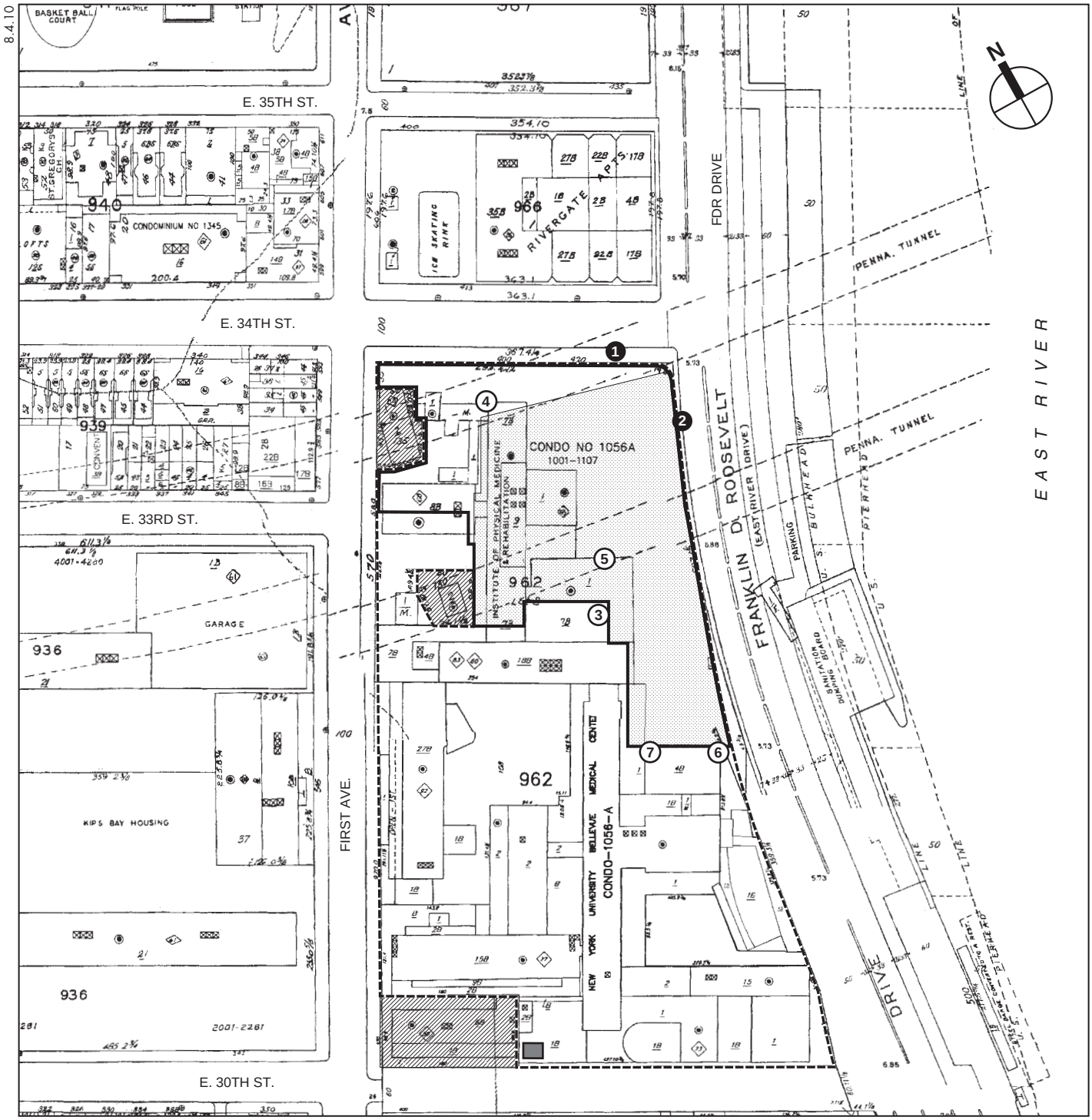
Table H-2
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Noise Level With Proposed Action	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation[1]	(I) 28 dB(A)	(II) 31 dB(A)	(III) 33 dB(A)	(IV) 35 dB(A)	$36 + (L_{10} - 80)^2$ dB(A)

Notes:
1 The above composite window-wall attenuation values are for residential dwellings and community facility development. Commercial office spaces and meeting rooms would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
2 Required attenuation values increase by 1 dB(A) increments for L_{10} values greater than 80 dBA.
Source: New York City Department of Environmental Protection.

D. EXISTING NOISE LEVELS

Existing noise levels at the proposed project site were measured at seven (7) locations (see Figure H-1). Table H-3 lists the receptor site locations and their representative uses. Receptor Sites 1, 2, 3, and 4 were used to determine CEQR building attenuation requirements for the proposed Kimmel Pavilion and Receptor Sites 5, 6, and 7 were used to determine CEQR building attenuation requirements for the proposed Energy Building.



0 100 250 FEET

SCALE

Project Site Boundary

Site of Proposed Buildings

Bulk Oxygen Site

Zoning Lot Boundary

Out Parcel

1 *Noise Receptor*

3 *Elevated Noise Receptor*

Noise Receptor Locations

Figure H-1

Table H-3
Noise Receptor Locations

Receptor	Location	Elevation	Representation
1	East 34th Street between First Avenue and FDR Drive	Street level	North Façade (Facing East 34th Street) of Kimmel Pavilion
2	FDR Drive Service Road Southbound between East 34th and East 30th Streets	Street level	East Façade of Kimmel Pavilion, Floors 1 to 7 (Facing FDR / Heliport)
3	Roof of Millhauser Labs	Approximately 90 feet above street-level	Kimmel Pavilion (1) East Façade, Floors 8 to 22 (Facing FDR / Heliport), and (2) South Façade (Facing Tisch / Proposed Energy Building)
4	Roof of Rusk Institute, Facing Northwest towards First Avenue / East 34th Street	Approximately 90 feet above street-level	West Façade of Kimmel Pavilion (Facing First Avenue)
5	Roof of North Service Wing	Approximately 15 feet above street-level	North Façade of Energy Building (Facing Proposed Kimmel Pavilion)
6	Northeast Corner of Coles Student Labs Rooftop	Approximately 50 feet above street-level	Energy Building (1) East Façade (Facing FDR / Heliport), and (2) South Façade (Facing Coles Student Labs)
7	Northwest Corner of Coles Student Labs Rooftop	Approximately 50 feet above street-level	West Façade of Energy Building (Facing Tisch / Millhauser / Medical Science Building

At Receptor Sites 1, 2, 4, and 5, existing noise levels were measured for 20-minute periods during the three weekday peak periods—AM (7:00 to 9:00 AM), midday (MD) (12:00 PM to 2:00 PM), and PM (4:30 to 6:30 PM). At Receptor Site 3, a 12-hour continuous noise measurement was made from approximately 7:00 AM to 7:00 PM. At Receptor Sites 6 and 7, a 24-hour continuous noise measurement was made. Measurements were taken on June 8, 2010, June 17, 2010, and June 18, 2010.

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Sound Level Meters (SLM) Type 2260 (S/Ns 2375602 and 2001692), a Brüel & Kjær Sound Level Meter (SLM) Type 2270 (S/N 2706757), Brüel & Kjær ½-inch microphones Type 4189 (S/Ns 2378182, 2021267, and 2695523), Brüel & Kjær Sound Level Calibrators Type 4231 (S/N 1800102, 2412436, and 2688762), and Brüel & Kjær Outdoor Microphone Kits Type 1404. The SLMs have laboratory calibration dates of August 14, 2009, July 22, 2009, and March 11, 2010, respectively which are valid through August of 2010, July of 2010, and March of 2011, respectively. The Brüel & Kjær SLMs are Type 1 instruments according to ANSI Standard S1.4-1983 (R2006). The instruments/microphones were mounted on a tripod at a height of approximately 5 feet above the ground/rooftop, except for Sites 3 and 7. At these sites, the microphone was mounted on a pole overhanging the roof. Microphones were mounted at least approximately 5 feet away from the building or any other large reflecting surfaces. The SLMs were calibrated before and after readings with a Brüel & Kjær Type 4231 Sound Level Calibrator using the appropriate adaptor. Measurements at each location were made on the A-scale (dBA). The data were digitally recorded by the sound level meter and displayed at the end of the measurement period in units of dBA. Measured quantities included L_{eq}, L_1, L_{10}, L_{50}, L_{90}, and 1/3 octave band levels. A windscreen was used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

The results of the existing noise level measurements are summarized in Tables H-4, H-5, and H-6.

Table H-4
Existing Noise Levels at Sites 1, 2, 4, and 5 (in dBA)

Site	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
1	East 34th Street between First Avenue and FDR Drive	AM	76.8	87.3	80.2	72.0	68.5
		MD	74.9	84.0	78.2	71.4	68.7
		PM	76.9	84.7	80.2	74.3	71.0
2	FDR Drive Service Road Southbound between East 34th and East 30th Streets	AM	82.8	92.5	87.8	77.3	69.0
		MD	78.5	90.4	80.8	72.8	68.8
		PM	82.7	94.4	85.0	78.2	72.5
4*	Roof of Rusk Institute, Facing Northwest towards First Avenue / East 34th Street	AM	69.0	72.4	69.9	68.8	67.7
		MD	68.5	72.8	69.6	68.1	67.2
		PM	69.1	74.0	70.8	68.5	67.2
5	Roof of North Service Wing	AM	76.9	87.9	80.1	71.9	69.9
		MD	77.4	88.3	81.1	71.7	70.3
		PM	73.6	82.2	77.1	70.3	66.0

Note:
* Site 4 represents the Kimmel Pavilion west façade; since the west façade will be shielded from heliport noise, measurements were paused to exclude heliport activities.

Table H-5
Existing Noise Levels at Site 3 (in dBA)

Site	Measurement Location	Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
3	Rooftop of Millhauser Labs	7:08 AM	76.3	78.9	77.3	76.3	75.0
		8:00 AM	79.4	90.9	81.6	75.0	73.6
		9:00 AM	77.7	87.1	79.8	75.9	74.6
		10:00 AM	76.7	85.8	76.7	75.3	74.0
		11:00 AM	79.0	90.4	80.1	75.6	74.2
		12:00 PM	77.8	87.0	80.1	75.4	73.9
		1:00 PM	77.8	88.6	78.8	75.2	73.5
		2:00 PM	76.7	84.8	78.7	75.2	73.6
		3:00 PM	78.2	90.6	77.8	74.8	73.3
		4:00 PM	77.3	88.0	77.8	74.9	73.4
		5:00 PM	78.9	89.7	80.8	76.0	74.0
		6:00 PM	76.0	82.1	77.3	75.3	73.6

Table H-6
Existing Noise Levels at Sites 6 and 7 (in dBA)

Site	Measurement Location	Start Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}
6	Northeast Corner of Coles Student Labs Rooftop	9:00 AM	77.9	83.0	79.2	77.7	75.8
		10:00 AM	77.7	86.3	78.7	76.6	74.4
		11:00 AM	78.9	87.3	79.5	77.6	75.9
		12:00 PM	77.7	82.8	78.8	77.2	75.6
		1:00 PM	77.9	85.4	78.8	77.2	75.4
		2:00 PM	78.1	83.9	79.0	77.5	75.9
		3:00 PM	77.5	89.0	78.4	74.4	72.1
		4:00 PM	79.4	89.8	80.7	76.8	74.7
		5:00 PM	78.5	87.4	79.6	77.0	74.6
		6:00 PM	79.7	88.4	80.5	77.7	76.2
		7:00 PM	77.2	80.9	78.5	77.1	75.3
		8:00 PM	77.5	80.5	78.7	77.5	75.8
		9:00 PM	77.1	80.1	78.5	77.0	75.2
		10:00 PM	78.0	84.0	78.8	77.4	75.6
		11:00 PM	77.1	82.5	78.6	76.8	74.5
		12:00 AM	76.5	80.2	78.1	76.2	73.6
		1:00 AM	75.0	79.1	77.2	74.5	71.4
		2:00 AM	73.7	78.2	76.2	73.1	69.5
		3:00 AM	72.6	77.3	75.1	72.0	68.2
		4:00 AM	73.9	78.6	76.4	73.3	69.7
		5:00 AM	76.9	80.4	78.9	76.7	73.9
		6:00 AM	79.1	81.9	80.4	78.9	76.9
		7:00 AM	78.7	81.3	79.8	78.6	77.2
		8:00 AM	78.7	85.1	79.6	78.1	76.6
7	Northwest Corner of Coles Student Labs Rooftop	10:00 AM	76.3	83.6	77.3	75.4	74.6
		11:00 AM	76.7	84.6	77.3	75.6	74.8
		12:00 PM	76.0	81.1	76.6	75.5	74.9
		1:00 PM	76.0	81.8	76.4	75.5	74.8
		2:00 PM	76.2	82.4	76.9	75.6	74.9
		3:00 PM	77.3	87.6	77.5	75.1	74.3
		4:00 PM	77.7	86.7	79.3	75.5	74.7
		5:00 PM	77.0	85.6	78.3	75.3	74.4
		6:00 PM	76.9	86.3	78.0	74.8	74.2
		7:00 PM	74.6	76.1	75.1	74.5	73.9
		8:00 PM	74.7	77.0	75.2	74.6	74.0
		9:00 PM	74.4	76.1	75.0	74.4	73.7
		10:00 PM	74.8	79.9	75.1	74.4	73.8
		11:00 PM	74.8	79.6	75.3	74.3	73.6
		12:00 AM	74.3	76.0	75.0	74.2	73.6
		1:00 AM	74.2	76.1	74.8	74.0	73.3
		2:00 AM	73.7	75.1	74.4	73.7	73.1
		3:00 AM	73.7	75.1	74.3	73.6	73.0
		4:00 AM	74.0	75.5	74.7	73.9	73.3
		5:00 AM	75.2	76.8	76.1	75.2	74.3
		6:00 AM	76.0	80.3	76.4	75.7	74.9
		7:00 AM	75.8	79.7	76.5	75.5	74.9
		8:00 AM	76.7	83.0	77.5	76.0	75.3
		9:00 AM	76.8	83.8	77.2	75.9	75.3

At all monitoring sites (except for Site 4; see note in Table H-4), vehicular and heliport traffic noise were the dominant noise sources. Measured levels are high and reflect the level of vehicular activity on the adjacent streets and the helicopter approach, idle, and take offs at the nearby heliport at the end of East 34th Street. In terms of the CEQR criteria, the existing noise levels at Sites 1, 2, 3, 5, and 6 would be in the "clearly unacceptable" category and noise levels at Sites 4 and 7 would be in the "marginally unacceptable" category.

E. NOISE ATTENUATION MEASURES

As shown in Table H-2, the *CEQR Technical Manual* has set noise attenuation quantities for buildings based on exterior $L_{10(1)}$ noise levels in order to maintain interior noise levels of 45 dBA or lower for hospital uses such as inpatient beds and clinical space and 50 dBA or lower for hospital uses such as cafeteria/kitchen space. The results of the building attenuation analysis are summarized in Table H-7 (Kimmel Pavilion) and Table H-8 (Energy Building).

Table H-7
Kimmel Pavilion CEQR Attenuation Requirements

Proposed Building Façade Locations	Maximum Measured L_{10} (in dBA)	Attenuation Required (in dBA)
North Façade (Facing East 34th Street)	80.2	37
East Façade, Floors 1 to 7 (Facing FDR/Heliport)	87.8	44*
East Façade, Floors 8 to 22 (Facing FDR/Heliport)	81.6	38
West Façade (Facing First Avenue)	71.5**	28
South Façade (Facing Tisch/Proposed Energy Building)	81.6	38

Notes: Attenuation requirements are for spaces containing noise sensitive uses.
(1) 8th Floor cafeteria would require 5 dBA less attenuation.
(2) CEQR attenuation requirements do not apply to loading, parking, mechanical space, etc. uses.
* Due to combination of a large volume of buses accelerating/traveling on the FDR service road/FDR on-ramp, vehicular traffic on the FDR, and heliport landing/idling/take-off events. 44 dBA of window/wall attenuation between the exterior and the closest noise-sensitive space(s) would be achieved by window/wall acoustical design measures or design features such as using a corridor to separate noise-sensitive space(s) from the building façade.
** Adjusted based on distance to roadway.

Table H-8
Energy Building CEQR Attenuation Requirements

Proposed Building Façade Locations	Maximum Measured L_{10} (in dBA)	Attenuation Required (in dBA)
North Façade (Facing Proposed Kimmel Pavilion)	81.1	38
East Façade (Facing FDR/Heliport)	80.7	37
South Façade (Facing Coles Student Labs)	80.7	37
West Façade (Facing Tisch/Millhauser/Medical Science Building)	79.3	35

Notes: Attenuation requirements are for spaces containing noise sensitive uses.
(1) 1st and 2nd floor kitchen uses would require 5 dBA less attenuation.
(2) CEQR attenuation requirements do not apply to cogeneration/mechanical space, etc. uses.

The attenuation of a composite structure is a function of the attenuation provided by each of its component parts and how much of the area is made up of each part. Normally, a building façade consists of the wall, glazing, and any vents or louvers for heating, ventilation, and air

conditioning (HVAC) units in various ratios of area. Currently, the proposed design for the buildings includes a curtain wall with specially selected acoustical glazing for all façades and central air conditioning (a means of alternate ventilation). The proposed buildings' façades, including these elements, would be designed to provide a composite Outdoor-Indoor Transmission Class (OITC) rating greater than or equal to the attenuation requirements listed in Table H-7[1] and H-8. The OITC classification is defined by the American Society of Testing and Materials (ASTM E1332-10) and provides a single-number rating that is used for designing a building façade including walls, doors, glazing, and combinations thereof. The OITC rating is designed to evaluate building elements by their ability to reduce the overall loudness of ground and air transportation noise. By adhering to these design specifications, the proposed buildings will thus provide sufficient attenuation to achieve the CEQR interior noise level guideline of 45 dBA L_{10} for noise-sensitive hospital uses such as inpatient beds and clinical space and 50 dBA L_{10} or lower for hospital uses such as cafeteria/kitchen space.

Based upon the $L_{10(1)}$ values measured at the project site, the proposed project's design measures would be expected to provide sufficient attenuation to achieve the CEQR interior noise level requirements.

While the Energy Building's mechanical equipment schedule has not yet been developed, the buildings mechanical system (i.e., HVAC systems) would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code, the New York City Department of Buildings Code and the Mechanical Code) and to avoid producing levels that would result in any significant increase in ambient noise levels. In addition, the design of the proposed Energy Building would include sufficient mechanical equipment noise control measures to ensure that the building attenuation requirements listed in Tables H-7 and H-8 would satisfy CEQR interior noise level requirements. ✷

[1] 44 dBA of window/wall attenuation between the exterior and the closest noise-sensitive space(s) would be achieved by window/wall acoustical design measures or design features such as using a corridor to separate noise-sensitive space(s) from the building façade.

A. INTRODUCTION

The two new buildings that NYU Langone Medical Center (NYULMC) proposes to develop on its main campus would house hospital functions and a combined heat and power (CHP) plant. Existing bulk oxygen storage tanks would also be relocated to a site along former East 30th Street. While medical facilities associated with NYU have for many years occupied the superblock on which the project site is located, the buildings require approvals from the Board of Standards and Appeals (BSA) for waivers of applicable rear yard, rear yard equivalent, setback and sky exposure plane, tower coverage, parking, and curb cut requirements.

This chapter analyzes the extent to which the proposed action may alter neighborhood character. Neighborhood character is considered to be an amalgam of various elements, including land use, socioeconomic conditions, open space, historic and cultural resources, urban design and visual resources, shadows, traffic, and noise. Following the guidelines of the 2010 *City Environmental Quality Review (CEQR) Technical Manual*, the assessment in this chapter focuses on the defining elements that contribute to the character of the neighborhood.

B. EXISTING CONDITIONS

The existing character of the project site and the neighborhood that surrounds it is defined in large part by the medical facilities and other institutions that predominate.

As described in greater detail on Attachment A, "Project Description," the site of the proposed Kimmel Pavilion and Energy Building is part of the larger campus superblock of NYULMC that is bounded by First Avenue and the Franklin D. Roosevelt (FDR) Drive and East 30th and East 34th Streets. The project site currently contains seven buildings that are all part of NYULMC, as well as related uses such as parking and loading areas. The buildings on the project site include the Rusk Institute for Rehabilitative Medicine (Rusk Institute), the Perelman Building, the Auxiliary Pavilion, the Greenhouse, Horizon House, Visitor's Pavilion, and North Service Wing.

Three outparcels on the superblock that are not part of the NYULMC zoning lot include two small parcels owned by Amtrak and a third at the corner of the former East 30th Street that belongs to the Office of Chief Medical Examiner (OCME) of the City of New York. Directly across First Avenue from the campus is NYULMC Arnold & Marilyn Greenberg Hall, a residence hall. Other NYULMC uses not on the campus superblock include outpatient surgery, musculoskeletal institute, clinical cancer center, multiple ambulatory care centers, research laboratories, and administrative offices.

The surrounding neighborhood includes a mix of medical institutional, non-medical institutional, residential, retail, open space and transportation uses. However, it is the institutional uses—primarily related to medicine and research—that have the greatest influence on the character of the area. Major institutional uses extend south along the First Avenue corridor and include

Bellevue Hospital Center, Hunter College Brookdale Health Science Center, the Veterans Administration Hospital, and a New York City Department of Health Public Health Laboratory.

Other institutional uses, more typical of those found throughout Manhattan, include City offices and facilities, the Churchill School, the Chapel of the Sacred Hearts of Jesus and Mary, St. Vartan Armenian Cathedral, and a mission to the United Nations.

Residential uses are also found throughout the study area, which contains a mix of modern, tall apartment towers and smaller-scale buildings, including 4- and 5-story tenement buildings. Larger residential buildings include: the Rivergate, which occupies a full block and is 35 stories (315 feet tall); the Corinthian, a 55-story (546-foot-tall) apartment building; Manhattan Place, a 35-story (363-foot-tall) apartment complex; and the Horizon Apartments, a 42-story (403-foot-tall) building. Commercial uses in the area tend to be concentrated in the ground floors of buildings along First and Second Avenues. There is one park within the project's study area (St. Vartan Park), esplanade areas along portions of the waterfront, and privately owned publicly accessible open spaces at some of the larger residential buildings in the neighborhood. The FDR Drive, a busy elevated highway, runs parallel to the East River through the eastern part of the neighborhood.

As described in Attachment D, "Historic and Cultural Resources," the project site, remainder of the NYULMC campus, and the immediately surrounding area do not contain any known or potential architectural resources, and the proposed action would have no effect on historic and cultural resources.

In terms of urban design, the neighborhood is characterized by a wide range of building types of varying heights, styles and designs. As discussed in Attachment E, "Urban Design and Visual Resources," the project site itself includes the 7-story (69-foot-tall) Rusk Institute for Rehabilitative Medicine; the 1-story (12-foot-tall) Auxiliary Pavilion; a 1-story (12-foot-tall) North Service Wing building; the 1-story Greenhouse, Visitors Pavilion, and Horizon House structures (between 10 and 11-feet-tall); and the 9-story (122-foot-tall) Perelman Building. The project site also includes an enclosed courtyard, at-grade parking, loading areas, and NYULMC's bulk oxygen storage facility. The project site also includes a 1-story enclosed loading dock/storage area, with a roll-up door and two unenclosed truck bays, at the southern end of the campus on the former East 30th Street. The remainder of the NYULMC campus includes multiple mid- and high-rise buildings between 6 and 27 stories in height, which are connected by smaller 1- and 2-story structures. The buildings are mostly clad in glass, metal, and brick and are of modern design.

The area includes four large superblocks: the one on which the project site is located, the superblock occupied by Kips Bay Towers to the west, the Bellevue Hospital Center superblock south of the project site, and a fourth superblock south of East 29th Street and west of First Avenue. The remainder of the study area is mostly developed in the typical Manhattan grid pattern with wide avenues running north-south and narrow streets running east-west.

The streetscape of the study area is urban in character, with wide sidewalks on East 34th Street and First and Second Avenues and a very narrow sidewalk on the western side of the FDR Drive service road. The study area includes typical street furniture, including newspaper stands, parking meters, phone booths, and garbage bins. The majority of the study area's pedestrian traffic is concentrated along East 34th Street and First and Second Avenues. Noise levels are generally high and reflect the busy level of vehicular traffic on area streets. The nearby heliport at the water's edge also contributes to the high urban noise levels.

C. THE FUTURE WITHOUT THE PROPOSED ACTION

As described in greater detail in Attachment A, "Project Description," the future without the proposed action (the "No Action" condition) assumes that none of the discretionary approvals are obtained, but that because of its needs for new inpatient rooms, procedure rooms, and other improvements, NYULMC would build a new as-of-right hospital pavilion that would be far less suitable and efficient in meeting NYULMC's needs than the proposed project. Nonetheless, the as-of-right project would be consistent with other uses and building types on the block and in the surrounding area. As described above, the neighborhood has a long history of medical uses that continues today.

As described in greater detail in Attachment B, "Land Use, Zoning, and Public Policy," other projects are planned or underway that may be completed by the project build year of 2017, including the expansion and improvement of NYULMC's Emergency Department, the 34th Street Transitway and the Alexandria Center for Science and Technology at East River Science Park. To the north, portions of the rezoned First Avenue Properties site may be redeveloped with a public school, residential towers, retail, and open space. Additional development in the area will include smaller residential and commercial projects.

The expansion of the NYULMC Emergency Department is expected to improve upon the emergency services and its design and use would be compatible with surrounding buildings and the medical character of the area.

While the 34th Street Transitway project and Select Bus Service (SBS) are primarily intended to reduce travel time and increase the level of comfort for customers, improvements are planned that will change the streetscape and thus have a minor effect on neighborhood character. These include the addition of curbside bus lanes, bike lanes on First and Second Avenues, and pedestrian safety islands at certain intersections south of 34th Street to help reduce crossing distances for pedestrians.

The Alexandria Center for Science and Technology at East River Science Park will be consistent with the surrounding medical-oriented uses. The tall new buildings, of contemporary design, are already visible from the surrounding area and contribute to the area's diverse skyline.

The other projects, with a combination of residential towers and retail and open space uses, would be consistent with the residential character of the neighborhood, which already includes similar uses.

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

According to the 2010 *CEQR Technical Manual*, it is unlikely that a project would have neighborhood character impacts in the absence of an impact in any of the relevant technical areas. As described elsewhere in this EAS and its attachments, the proposed project and the BSA actions would not have a significant adverse impact in any of the technical areas that contribute to neighborhood character, including land use, socioeconomic conditions, open space, historic and cultural resources, urban design and visual resources, shadows, traffic, and noise.

The effects of the proposed action on neighborhood character would be substantially the same as conditions in the future without the proposed action. The proposed project would be consistent with the character of the surrounding neighborhood. The project site and the superblock on which it is located are now and have traditionally been associated with medical uses. The NYULMC campus itself is part of a larger concentration of similar uses that contain medical,

research and associated facilities, such as Bellevue Hospital and East River Science Park. Residential, commercial and open space uses, which are all found throughout the area, have long existed alongside the medical- and research-oriented facilities in the area and the proposed project would represent a continuation of that history. Further, since the population on the campus would be the same in either case there would be no increase in the open space user population and no significant adverse impacts on open space.

As with the No Action condition, the proposed action would require the demolition of the seven buildings on the project site as well as the Gimbel Garden, at-grade parking spaces, and loading areas. Since none of these buildings were identified as historic resources and the site is not considered archaeologically sensitive, there would not be any adverse impact on Historic resources.

In terms of urban design and visual character, the proposed Kimmel Pavilion would be two stories (52 feet) shorter than the No Action building and the Energy Building would be a new element that would not occur in the No Action condition. In either case, there would be a 522-foot-high HVAC exhaust stack. The proposed project would have a slightly larger footprint than the No Action building. Nevertheless, they would be substantially similar in terms of urban design and visual characteristics, and the proposed project would not have a significant adverse impact on urban design and visual character.

Similarly the shadows cast by the proposed buildings would be similar to those cast by the no action building with somewhat lesser shadows from the Kimmel Pavilion and somewhat longer shadows from the Energy Building. Therefore, there would be no significant adverse shadow impacts.

With the same population as the No Action building, the Kimmel Pavilion and the Energy building would generate no additional traffic over the No Action condition and there would be no potential for increases in noise due traffic.

Overall, the effects of the proposed Kimmel Pavilion and Energy Building would be essentially the same as those in the No Action building, and the proposed BSA actions would not have a significant adverse impact on neighborhood character. ✷

A. INTRODUCTION

This chapter considers the potential for adverse impacts during construction of the proposed Kimmel Pavilion and Energy Building on the NYU Langone Medical Center (NYULMC) campus. This chapter provides a description of the types of activities likely to occur during construction, compares construction of the No Action building to construction of the proposed buildings, and then assesses the potential for significant adverse impacts from the construction activities. The methods that may be employed to avoid or minimize the potential for significant adverse impacts are also considered.

Construction of the two proposed buildings and relocation of the bulk storage oxygen tanks is expected to take place during an approximately 78-month period starting in 2011 and finishing in 2017. By comparison construction of the single No Action building would take place over a 90-month period beginning in 2011 and finishing in 2018. No significant adverse impacts are anticipated because construction of the proposed Kimmel Pavilion and Energy Building would be very similar to construction of the No Action building, except that construction of two proposed buildings would be completed more quickly, and because NYULMC would commit to using Best Available Technology (BAT) for construction equipment and other impact avoidance measures to the extent feasible, as described in this attachment.

Construction worker and vehicle trips, and construction truck trips projected for peak construction are not expected to result in significant adverse traffic and parking and transit and pedestrians impacts. Coordination with the New York City Department of Transportation (NYCDOT) Office of Construction Mitigation and Coordination (OCMC) would be undertaken to ensure proper implementation of maintenance and protection of traffic (MPT) plans and requirements.

Air pollutant emissions from construction equipment and trucks would be significantly reduced by using BAT to the extent feasible to control emissions and other additional measures, as practicable. The additional measures address both the emissions levels and the location of sources relative to nearby sensitive locations such as residences, schools, and playgrounds. With BAT and additional measures, significant impacts on air quality during construction are not expected to occur.

For noise impact determination purposes, significant adverse impacts are based on whether maximum predicted incremental noise levels at sensitive receptor locations off-site would be greater than the impact criteria suggested in the *City Environmental Quality Review (CEQR) Technical Manual* for two consecutive years or more. Noise from construction activities and some construction equipment is regulated by the NYC Noise Control Code and by the United States Environmental Protection Agency (EPA). In addition, NYULMC would commit to a proactive approach to minimize noise during construction activities. This approach employs a wide variety of measures that greatly exceed standard construction practices, but the implementation of

which is deemed feasible and practicable to minimize construction noise and reduce potential noise impacts. These measures would be implemented and described in the Construction Noise Mitigation Plan required by the NYC Noise Control Code.[1] This program includes both source controls and path controls, which are described in this attachment.

Preparation and enforcement of a Health and Safety Plan (HASP) is expected to prevent any significant adverse impacts from hazardous materials.

B. DESCRIPTION OF CONSTRUCTION ACTIVITIES

REMEDIATION AND ABATEMENT

Abatement of asbestos, lead-based paint, and polychlorinated biphenyls (PCBs), and removal of any petroleum storage tanks would proceed prior to demolition of existing buildings. Remediation and abatement would occur by floor prior to interior demolition of the Rusk Institute. This work would be undertaken by specially trained workers. In addition, where soil contamination is suspected, the soils would be removed prior to general excavation.

An NYC-certified asbestos investigator would inspect the buildings for asbestos-containing materials (ACMs). If ACMs are found, these materials would be removed by a New York State Department of Labor (NYSDOL)-licensed asbestos abatement contractor prior to building demolition. Asbestos abatement is strictly regulated by the New York City Department of Environmental Protection (NYCDEP), NYSDOL, EPA, and the United States Occupational Safety and Health Administration (OSHA) to protect the health and safety of construction workers and nearby residents and workers. Depending on the extent and type of ACMs, these agencies would be notified of the asbestos removal project and may inspect the abatement site to ensure that work is being performed in accordance with applicable regulations. After the abatement is completed, and the work areas have passed a visual inspection and monitoring, if applicable, the general demolition work can begin. Demolition of buildings with the potential to disturb lead-based paint would be carried out in accordance with the applicable OSHA regulations.

Because potential sources of contamination including historical manufactured gas storage, petroleum spills, coal, gas, and lumber storage, manufacturing, historical and current petroleum storage, and current medical and laboratory use and hazardous waste generation have been identified on and near the project site, a Phase II ESA would be conducted to determine whether these potential sources have impacted the project site. If contaminated soils are found, a Remedial Action Plan (RAP) would be developed to remediate the soils. Disturbance of existing soils would be conducted in accordance with a construction HASP.

The HASP would detail measures to reduce the potential for exposure (e.g., dust control) and measures to identify and manage known contamination and unexpectedly encountered contamination. The HASP would include mitigation procedures to prevent unsafe exposure to contaminant vapors and particulates. In the event that soil-containing petroleum or other compounds above state-approved cleanup levels are discovered during excavation activities, such soil would be segregated and disposed of in accordance with all applicable federal, State, and local regulations and guidelines.

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[1] NYC Noise Control Code (i.e., Local Law 113). Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007.

Five aboveground storage tanks (ASTs) ranging in size from 100 to 8,000 gallons were identified in the Phase I ESA (see Section F, "Hazardous Materials"). These and any unrecorded underground storage tanks (USTs) encountered during excavation they would be removed and disposed of in accordance with federal, State, and City regulations. If contaminated soil is excavated during the tank removal, it would be remediated according to the requirements of the NYSDEC Spill Response and Remediation (Spills) program, and samples would be collected to ensure that all soil exceeding applicable guidance values is removed.

SITE SETUP AND DEMOLITION

Site setup would remove all loose materials, prepare material lay-down areas, install security fencing with access gates, and setup construction trailers with temporary power. The purpose is to generally prepare the site for the construction activities.

Typical demolition requires a solid temporary fence and netting around a building to prevent accidental dispersal of building materials into areas accessible to the general public. Interior demolition of the Rusk Institute and the Perelman Building would follow abatement floor-by-floor, and then the structures would be deconstructed floor-by-floor. As the buildings are deconstructed, excavators and front-end loaders would be used to load materials into dump trucks. The debris would be sorted prior to disposal at landfills to maximize recycling opportunities.

EXCAVATION AND FOUNDATIONS

Due to the high water table, Amtrak tunnels, and the sewer easement, any building on the project site would not be expected to have a basement. Excavation would be limited to that needed for elevator pits and other types of pits. An excavator and/or a backhoe may be used to dig the loose soil and load it onto dump trucks for removal from the site.

Foundation work would include the use of cranes, pumps, motorized concrete buggies, concrete pumps, jackhammers, pneumatic compressors, and a variety of small tools as well as concrete trucks. Concrete trucks coming to the pour would park along the Franklin D. Roosevelt (FDR) Drive Service Road, where they would pump the concrete. Several trucks could be pumping concrete at the same time. Foundation work would also require pile drivers and a boring machine for caissons.

PILE DRIVING AND CAISSONS

The building foundations would be on piles and caissons. Caissons can have a larger diameter than piles. Pile drivers would be used for the piles, but a rotary boring machine would be used for the caissons. A temporary casing is used to seal the pile bore through water-bearing or unstable strata. On reaching the design depth, a reinforcing cage is lowered into the hole, and concrete poured. The concrete is brought to the level where the grade beam or pile cap is to be constructed. The casing can be withdrawn or left in situ.

DEWATERING

Due to the high water table, dewatering may be necessary even though the excavation is expected to be minimal. If dewatering is necessary, the water may be sent to an on-site sedimentation tank so that the suspended solids could settle out. The decanted water would be

discharged into the NYC sewer system, and the settled sediment conveyed to a licensed disposal area. Discharge into the sewer system is governed by NYCDEP regulations.

For water discharged into the NYC sewer system, NYCDEP regulations specify the following maximum concentration of pollutants:

- Petroleum hydrocarbons 50 parts per million
- Cadmium 2 parts per million
- Hexavalent chromium 5 parts per million
- Copper 5 parts per million
- Amenable cyanide 0.2 part per million
- Lead 2 parts per million
- Mercury 0.05 part per million
- Nickel 3 parts per million
- Zinc 5 parts per million

In addition, NYCDEP limits other pollutants, such as total suspended particles, in the discharge water. NYCDEP also imposes project specific limits, depending on the location of the project and contamination that has been found in nearby areas. For large-volume discharges into the sewer system—which is not expected at the project site—NYCDEP samples and tests the discharge water.

UTILITY AND SEWER CONNECTION

New water lines and sanitary sewers are expected to be required to connect the new buildings to existing utility lines in the streets. In addition, upgraded power and telecommunications connections would be required. It is expected that these would be trenched in the FDR Drive Service Road. Upon completion the roadway would be repaved in accordance with NYCDOT specifications. Traffic control measures would be coordinated with NYCDOT and implemented while work is ongoing to protect the workers and to maintain traffic flow. The new water and sewer connections would be designed and constructed to NYCDEP standards. NYCDEP would review and approve the connections. The review process would include evaluation to ensure that service to users would not be disrupted or impaired while the temporary measures are in place.

CORE AND SHELL—SUPERSTRUCTURE AND ENCLOSURE

This phase of construction would include the framework (installation of beams and columns) and floor decks as well as the façades. These activities would require the use of cranes, compressors, personnel and material hoists, concrete pumps, on-site reinforcing bar bending jigs, welding equipment, and a variety of hand-held tools, in addition to the delivery trucks that would bring construction materials to the site.

The façades of the buildings are expected to be either steel and glass curtain wall or terra cotta rain screens. In either case, the exterior is typically assembled off-site and trucked to the site. Façade panels would be lifted into place by large cranes from the bed of the tractor trailers and secured on the face of the building.

INTERIORS AND FINISHING

This would include the construction of interior partitions, installation of lighting fixtures, interior finishing (flooring, painting, etc.), and mechanical and electrical work, such as the installation of elevators. Mechanical and other interior work would overlap with core and shell construction. Equipment used during interior construction would include exterior hoists, pneumatic equipment, delivery trucks, and a variety of small hand-held tools.

While there are generally a large number of workers at this stage of construction is the quietest (especially when the enclosure is complete), and it does not generate fugitive dust.

Commissioning occurs at the end of construction and involves completing all of the punch list items, which are typically small tasks that were not completely finished. In addition, final cleanup and touchup of the site and final approvals from city and state authorities are part of the commissioning.

C. GENERAL CONSTRUCTION PRACTICES

Certain practices would be observed throughout construction of either the No Action building or the proposed Kimmel Pavilion and Energy Building. A contact person for community relations throughout the construction period would be designated. This person would serve as the contact for the community to voice concerns about construction activities and would be available to meet with the community to resolve concerns or problems. In addition, the New York City Department of Buildings (NYCDOB) has a telephone system to report any construction complaints anonymously. NYCDOB investigates all complaints and may shut down construction if any violations of city regulations are found. In addition, NYCDOB may institute fines and other penalties.

The following describes typical NYC construction practices. In certain instances, project practices may vary from those described below.

ACCESS AND DELIVERIES

Access to the construction site would be controlled. The work area would be fenced off, and limited access points for workers and trucks would be provided. Typically, worker vehicles would not be allowed into the construction area. Security guards and flaggers would be posted, and all persons and trucks would have to pass through security points. After work hours, the gates would be closed and locked. Unauthorized access would be prevented after work hours and during the weekend.

Material deliveries to the site would be controlled and scheduled. Unscheduled or haphazard deliveries would be minimized.

HOURS OF WORK

Construction activities for the buildings would take place in accordance with NYC laws and regulations, which allow construction activities to take place between 7:00 AM and 6:00 PM. Construction work would begin at 7:00 AM on weekdays, with most workers arriving between 6:00 AM and 7:00 AM. Typically, work would end at 3:30 PM, but it could be extended until 6:00 PM for such tasks as finishing a concrete pour for a pad, or completing the bolting of a steel frame erected that day. Extended workday activities would not include all construction workers on-site, but only those involved in the specific task. Extended workdays would occur during

foundation and superstructure tasks, and limited extended workdays could occur during other tasks over the course of construction.

At limited times over the course of constructing a building, weekend work would be required. Weekend work requires a permit from NYCDOB and, in certain instances, approval of a noise mitigation plan from NYCDEP under the City's Noise Code. The NYC Noise Control Code (Local Law 113 of 2005), effective July 1, 2007, limits construction (absent special circumstances as described below) to weekdays between the hours of 7:00 AM and 6:00 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6:00 PM and 7:00 AM and on weekends) may be permitted only to accommodate: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of City agencies; (iv) construction activities with minimal noise impacts; and (v) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the numbers of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than a normal workday. The typical weekend workday would be on Saturday, beginning with worker arrival and site preparation at 7:00 AM, and ending with site cleanup at 5:00 PM

A few tasks may have to be completed without interruption, and the work can extend past 6:00 PM. In certain situations, concrete must be poured continuously to form one structure without joints. This type of concrete pour is usually associated with foundations and structural slabs at grade, which often require a minimum of 12 hours or more to complete.

SIDEWALK AND LANE CLOSURES

It is likely that a lane along the FDR Drive Service Road would be closed to allow for construction access. This closure, which may not be necessary in their entirety for the duration of construction, would be coordinated with NYCDOT OCMC to ensure adequate MPT. Sidewalk sheds would likely be erected to protect pedestrians passing by the construction site.

STAGING AND LAYDOWN AREAS

Staging and laydown areas are expected to be located adjacent to the project site along the FDR Drive Service Road and East 30th Street. Materials that are needed during the day, such as reinforcing bars and prefabricated pieces, are usually delivered early in the day and are stored until needed. In certain cases, several days' worth of construction materials would be stored.

CONSTRUCTION WORKER PARKING

It is not expected that the construction workers would be able to park their vehicles on-site. Therefore, workers who drive to the project site would park either on-street or in off-street parking lots and garages.

D. THE FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed action, NYULMC has determined that its needs are so great that it would build a new hospital pavilion in an as-of-right configuration that complies with all the zoning requirements. This No Action building will also incorporate many of the functions intended for the Energy Building. However, as described in Attachment A, "Project

Description," it would be far less suitable and efficient in meeting NYULMC's needs than the proposed Kimmel Pavilion and the separate Energy Building.

Demolition of the existing buildings on the site and proposed construction of the No Action building is expected to take approximately 90 months, starting with phased demolition of the Rusk Institute and the Perelman Building in February 2011 and ending with completion of the energy plant in the No Action building in September 2018. Occupancy of the hospital portion of the building would be anticipated in August 2018. Table J-1 presents the estimated schedule.

Table J-1
Preliminary Construction Schedule—No Action Building

Remediation and Abatement/ Phased Demo Rusk & Perelman	Feb 2011	Nov 2016	69 mos.
Demo North Service Wing	June 2012	Dec 2012	6 mos.
Protect Vault	Sept 2012	Dec 2012	3 mos.
Excavation & Foundations	Feb 2013	April 2014	14 mos.
Superstructure	April 2014	Feb 2015	14 mos.
Enclosure	Sept 2014	Sept 2015	12 mos.
Mechanical & Interiors	Oct 2014	May 2018	43 mos.
Core & Shell of Energy Plant	Dec 2014	Oct 2015	10 mos.
CHP Fit Out	May 2015	May 2017	12 mos.
Energy Plant Fit Out	Oct 2015	June 2016	8 mos.
Energy Plant Testing & Commissioning	Nov 2015	Sept 2018	34 mos.
Phased Occupancy of Patient Floors	Sept 2017	Aug 2018	11 mos.
TOTAL DURATION			90 mos.
Source: Turner Construction			

The following section describes the anticipated construction activities and schedule for construction of the No Action building. Table J-2 presents the estimated numbers of construction workers and delivery trucks expected per day for each month of construction. Accounting for overlap of phases, the peak numbers of workers and truck deliveries would be over 500 workers and up to 51 truck deliveries per day.

REMEDIATION AND ABATEMENT

Remediation and abatement will take place floor by floor in advance of interior demolition, working from the top floor down.

SITE SET-UP AND DEMOLITION

Demolition would begin with the interiors of the Rusk Institute and the Perelman Building in February 2011 and would last until November 2016. As described above, demolition would follow abatement floor by floor. When interior demolition is complete, the façades would be removed and structure would be deconstructed. One bay of the Rusk Institute structure would remain standing until mechanical equipment on its roof can be moved. Demolition of the North Service Wing would occur from June 2012 to December 2012. During this phase, there would be on average 1 to 3 truck deliveries per day.

Table J-2
Number of Construction Workers and Delivery Trucks (per day) by Month
No Action Building

Month	Feb 11	Mar 11	Apr 11	May 11	Jun 11	Jul 11	Aug 11	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12
Workers	1	10	10	16	19	20	24	23	25	25	26	27	26	29
Trucks	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Activities	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD
Month	**Apr 12**	**May 12**	**Jun 12**	**Jul 12**	**Aug 12**	**Sep 12**	**Oct 12**	**Nov 12**	**Dec 12**	**Jan 13**	**Feb 13**	**Mar 13**	**Apr 13**	**May 13**
Workers	30	31	32	33	34	58	99	131	162	182	175	202	204	221
Trucks	1	1	3	3	3	3	3	3	3	1	11	11	11	11
Activities	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD; E&F	PD; E&F	PD; E&F	PD; E&F
Month	**Jun 13**	**Jul 13**	**Aug 13**	**Sep 13**	**Oct 13**	**Nov 13**	**Dec 13**	**Jan 14**	**Feb 14**	**Mar 14**	**Apr 14**	**May 14**	**Jun 14**	**Jul 14**
Workers	217	245	248	253	264	273	300	328	311	367	374	407	410	434
Trucks	11	11	11	11	11	11	11	11	11	11	26	16	16	16
Activities	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F; C&S	PD; C&S	PD; C&S	PD; C&S
Month	**Aug 14**	**Sep 14**	**Oct 14**	**Nov 14**	**Dec 14**	**Jan 15**	**Feb 15**	**Mar 15**	**Apr 15**	**May 15**	**Jun 15**	**Jul 15**	**Aug 15**	**Sep 15**
Workers	444	434	500	492	510	512	481	532	516	536	527	529	505	487
Trucks	16	26	46	46	51	51	51	36	36	39	39	39	39	39
Activities	PD; C&S	PD; C&S	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F
Month	**Oct 15**	**Nov 15**	**Dec 15**	**Jan 16**	**Feb 16**	**Mar 16**	**Apr 16**	**May 16**	**Jun 16**	**Jul 16**	**Aug 16**	**Sep 16**	**Oct 16**	**Nov 16**
Workers	501	480	494	487	454	474	456	458	437	432	423	390	394	365
Trucks	31	27	27	27	27	27	27	27	27	25	25	25	25	25
Activities	PD; C&S; I&F	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C	PD; I&F; C
Month	**Dec 16**	**Jan 17**	**Feb 17**	**Mar 17**	**Apr 17**	**May 17**	**Jun 17**	**Jul 17**	**Aug 17**	**Sep 17**	**Oct 17**	**Nov 17**	**Dec 17**	**Jan 18**
Workers	368	354	308	330	296	296	270	274	263	251	220	203	171	159
Trucks	24	24	24	24	24	24	21	21	21	21	21	21	21	21
Activities	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C
Month	**Feb 18**	**Mar 18**	**Apr 18**	**May 18**	**Jun 18**	**July 18**	**Aug 18**	**Sep 18**						
Workers	118	125	106	66	17	15	15	5						
Trucks	21	21	21	21	1	1	1	1						
Activities	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C						

Notes: Upper limits of estimated numbers of workers and trucks are used in this table.
PD: Phase Demolition
E&F: Excavation and Foundation
C&S: Core and Shell
I&F: Interiors and Finishing
C: Commissioning

EXCAVATION AND FOUNDATIONS

Excavation and foundation work would last from February 2013 to April 2014. During this phase of the work, up to 10 trucks could enter and exit the site daily. Due to the very high water table, below grade levels are not contemplated. Therefore, less excavation would occur than would be expected for a building of this type at a higher ground elevation.

CORE AND SHELL/SUPERSTRUCTURE AND ENCLOSURE

Core and shell construction of the No Action building would last from April 2014 to September 2015. Additional core and shell construction for the portion of the building housing the energy

plant would take place from December 2014 to October 2015. During this period, up to 30 daily truck deliveries would be expected.

INTERIORS AND FINISHING

Interiors and finishing including commissioning would take place from October 2014 to September 2018. Approximately 20 to 25 truck deliveries would be expected per day.

E. PROBABLE IMPACTS OF THE PROPOSED ACTION

The following analysis describes the construction activities and schedule with the proposed Kimmel Pavilion and Energy Building, compares the proposed construction with the No Action building and assesses the overall temporary effects of construction on the relevant areas of concern: land use, socioeconomic conditions, community facilities and services, historic resources, hazardous materials, transportation, air quality, and noise.

CONSTRUCTION ACTIVITIES AND SCHEDULE

With the proposed action, demolition of the existing buildings on the site and proposed construction of the Kimmel Pavilion and the Energy Building is expected to take approximately 78 months, starting with phased demolition of the Rusk Institute and the Perelman Building in February 2011 and ending with completion of the Kimmel Pavilion by June 2017 and complete occupancy by September 2017. Table J-3 presents the estimated schedule. The overall construction of the proposed buildings would be 12 months shorter than construction of the No Action building.

Table J-3
Preliminary Construction Schedule Proposed Project

Task	Start Month	Finish Month	Duration
ENERGY			
Abatement and Remediation/Set Up and Demolition	April 2012	July 2012	3 mos.
Foundation and Superstructure	July 2012	May 2013	10 mos.
Core and Shell	March 2013	Jan 2014	10 mos.
Fit outs	Aug 2013	Aug 2015	12 mos.
Commissioning	Feb 2015	Dec 2016	10 mos.
RADIATION ONCOLOGY			
Superstructure and Shielding	May 2013	Nov 2013	6 mos.
Fit Out	Sept 2013	Sept 2014	12 mos.
Equipment	July 2014	Oct 2014	3 mos.
DOH Inspection	Oct 2014	Nov 2014	1 mo.
KIMMEL PAVILION			
Abatement and Remediation/ Phased Demo Rusk & Perelman	Feb 2011	March 2015	49 mos.
Demo North Service Wing	June 2012	Dec 2012	6 mos.
Protect Vault	Sept 2012	Dec 2012	3 mos.
Foundations	Feb 2013	April 2014	2 mos.
Superstructure	April 2014	Feb 2015	10 mos.
Enclosure	Sept 2014	Sept 2015	12 mos.
Mechanical and Interiors	Oct 2014	June 2017	32 mos.
Phased Occupancy	Oct 2016	Sept 2017	11 mos.
TOTAL DURATION			78 mos.

Table J-4 presents the estimated numbers of construction workers and delivery trucks expected per day for each month of construction. The numbers of construction workers and truck deliveries would peak when the fit out of the Energy Building would overlap with construction

of the superstructure for the Kimmel Pavilion, when up to approximately 650 workers and 60 trucks per day would be expected.

Table J-4
Number of Construction Workers and Delivery Trucks (per day) by Month
Proposed Project

Month	Feb 11	Mar 11	Apr 11	May 11	Jun 11	Jul 11	Aug 11	Sep 11	Oct 11	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12
Workers	1	13	15	25	26	31	31	32	34	34	37	40	38	42
Trucks	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Activities	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD	PD
Month	**Apr 12**	**May 12**	**Jun 12**	**Jul 12**	**Aug 12**	**Sep 12**	**Oct 12**	**Nov 12**	**Dec 12**	**Jan 13**	**Feb 13**	**Mar 13**	**Apr 13**	**May 13**
Workers	43	46	49	54	60	89	143	197	227	251	238	269	283	307
Trucks	6	6	8	16	11	11	11	11	11	9	19	29	29	30
Activities	PD	PD	PD	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F	PD; E&F; C&S	PD; E&F; C&S	PD; E&F; C&S
Month	**Jun 13**	**Jul 13**	**Aug 13**	**Sep 13**	**Oct 13**	**Nov 13**	**Dec 13**	**Jan 14**	**Feb 14**	**Mar 14**	**Apr 14**	**May 14**	**Jun 14**	**Jul 14**
Workers	309	334	347	347	401	408	456	487	448	525	515	540	589	612
Trucks	22	22	37	40	40	40	39	39	29	29	44	34	34	35
Activities	PD; E&F; C&S	PD; E&F; C&S	PD; E&F; C&S; I&F	PD; E&F; C&S; I&F	PD; E&F; C&S; I&F	PD; E&F; C&S; I&F	PD; E&F; C&S; I&F	PD; E&F; C&S; I&F	PD; E&F; I&F	PD; E&F; I&F	PD; E&F; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F
Month	**Aug 14**	**Sep 14**	**Oct 14**	**Nov 14**	**Dec 14**	**Jan 15**	**Feb 15**	**Mar 15**	**Apr 15**	**May 15**	**Jun 15**	**Jul 15**	**Aug 15**	**Sep 15**
Workers	616	620	643	621	651	643	546	600	576	586	562	573	559	532
Trucks	35	45	62	61	61	61	62	47	46	46	46	46	46	31
Activities	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F	PD; C&S; I&F; C	PD; C&S; I&F; C	C&S; I&F; C	C&S; I&F; C	C&S; I&F; C	C&S; I&F; C	C&S; I&F; C	C&S; I&F; C
Month	**Oct 15**	**Nov 15**	**Dec 15**	**Jan 16**	**Feb 16**	**Mar 16**	**Apr 16**	**May 16**	**Jun 16**	**Jul 16**	**Aug 16**	**Sep 16**	**Oct 16**	**Nov 16**
Workers	538	495	499	492	424	450	403	395	369	339	326	296	294	267
Trucks	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Activities	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C	I&F; C
Month	**Dec 16**	**Jan 17**	**Feb 17**	**Mar 17**	**Apr 17**	**May 17**	**Jun 17**							
Workers	234	184	150	130	114	108	3							
Trucks	21	20	20	20	20	20	20							
Activities	I&F; C	I&F	I&F	I&F	I&F	I&F	I&F							

Notes: Upper limits of estimated numbers of workers and trucks are used in this table.
PD: Phase Demolition
E&F: Excavation and Foundation
C&S: Core and Shell
I&F: Interiors and Finishing
C: Commissioning

REMEDIATION AND ABATEMENT

Remediation and Abatement would take place floor by floor in advance of interior demolition working from the top floor down.

SITE SET-UP AND DEMOLITION

Demolition would commence with the interiors of the Rusk Institute and the Perelman Building which would begin in February 2011 and last until March 2015. Demolition would be phased to maintain the segment of the Rusk Institute which supports the existing emergency generators until new emergency generators can be placed in the proposed Energy Building. Demolition required for the Energy Building would occur from April 2012 to July 2012. The phased demolition of the Rusk

Institute and the Perelman Building would require approximately 1 to 2 trucks per day. Demolition required for the Energy Building would require approximately 5 trucks per day. During this overlap period there would be up to 7 trucks per day.

EXCAVATION AND FOUNDATIONS

Concrete trucks coming to the pour would park along the FDR Service Road or on East 34th Street, where they would pump the concrete. Several trucks could be pumping concrete at the same time.

Foundation work for the Kimmel Pavilion would overlap with the core and shell construction and fit out of the Energy Building. During this period, there would be up to 40 trucks that would enter and exit the site daily at the peak of work.

CORE AND SHELL

Core and shell construction of the proposed Energy Building would last approximately 10 months from March 2013 to January 2014. Work on the superstructure of the Kimmel Pavilion would begin about 3 months after the Energy Building is enclosed, and enclosure would be complete in about 13 months—September 2015. During this period, when interiors and finishing would also have begun, up to 62 truck deliveries would be expected per day.

INTERIORS AND FINISHING

For the Kimmel Pavilion interiors, finishing and commissioning would last from October 2014 until June 2017. This stage of construction for the Energy Building would last from August 2013 to August 2015 with testing and commissioning continuing until December 2016. It would begin while core and shell work is ongoing. During fit out of the Energy Building (including fit out/equipment installation for radiation oncology), up to 62 trucks per day would be expected. This accounts for overlap with construction of the Kimmel Pavilion superstructure.

PROBABLE IMPACTS

LAND USE

Demolition, excavation and construction activities (in particular, pile-driving) would be disruptive to nearby sensitive land uses, including the residential buildings and open spaces in the surrounding area. Once the buildings are largely enclosed and almost all the work is on the interior of the building, construction would be much less disruptive. Overall, given the intervening traffic thoroughfares (East 34th Street and the FDR Drive) and the measures to be taken to avoid impacts, as described below, construction of the new buildings is not expected to result in any significant adverse land use impacts.

SOCIOECONOMIC CONDITIONS

Construction would create direct benefits resulting from expenditures on labor, materials, and services, as well as substantial indirect benefits created by expenditures by material suppliers, construction workers, and other employees involved in the direct activity. Construction would also contribute to increased tax revenues for the City and State, including those from personal income taxes. There would be no significant adverse impacts on socioeconomic conditions due to construction.

COMMUNITY FACILITIES AND SERVICES

Ambulance access to the NYULMC Emergency Department is located on First Avenue and would not be affected by construction of the proposed Kimmel Pavilion and the Energy Building. Ambulance access to the nearby Bellevue Emergency Department via First Avenue and East 30th Street would not be affected. The traffic maintenance plan would provide for access via the FDR Service Road north of East 30th Street.

OPEN SPACE

The difference in the number of construction workers coming to the site for the No Action building and the number of construction worker for the proposed buildings is well below the threshold for analysis. There would be no adverse impacts due to an increase in open space users.

The nearest open spaces are Rivergate plaza and the nearby segment of East River Esplanade. Open space users are already subject to noise from traffic on First Avenue and 34th Street as well as the FDR Drive and its service roadways and the 34th Street heliport. The increase in construction noise with the proposed buildings would be similar to the increase in noise with the No Action building. As described in more detail below, potential noise and air quality impacts would be reduced by proposed and legally mandated measures.

HISTORIC RESOURCES

The project site is not located within 90 feet of any architectural resource. In addition, in a letter dated July 14, 2010, the New York City Landmarks Preservation Commission (LPC) determined that the site is not archaeologically sensitive. Therefore, no further analysis is required, and the proposed project would not have the potential for construction impacts on architectural and archaeological resources.

NATURAL RESOURCES

The site is occupied by several buildings and paved parking areas. The site provides no nesting or breeding opportunities for animal species. The only possible use is foraging by urban species, such as rats, feral cats, squirrels, and pigeons. Therefore, construction on the site would not have a significant adverse impact on natural resources.

HAZARDOUS MATERIALS

The presence of hazardous materials threatens human health only when exposure to those materials occurs. Even then, a health risk requires both an exposure pathway to the contaminants and sufficient exposure to produce adverse health effects. To prevent such exposure and exposure pathways, the construction of either the No Action building or the proposed project would include appropriate health and safety and remedial measures that would govern both demolition and soil disturbance activities. These measures would be conducted in compliance with all applicable laws and regulations and would conform to appropriate engineering practices. Measures would include:

- Procedures for pre-demolition removal of asbestos and appropriate management of lead-based paint and PCB-containing equipment.

- Development of a HASP for site remediation, excavation, and redevelopment that would include procedures for managing both known contamination issues (e.g., tank removal) and any unexpectedly encountered contamination issues. The HASP would also include procedures for minimizing the generation of dust that could affect the surrounding community.

With the implementation of these measures, no significant adverse impacts related to hazardous materials would be expected to occur as a result of construction of the proposed project.

SOLID WASTE AND SANITATION

Building materials would be delivered to the project site, and waste materials would be hauled away by private carters. The volume of solid waste generated by construction of the proposed project would be similar to the amount generated by construction of the No Action building. Therefore no significant adverse impacts to solid waste and sanitation services would occur during the construction period.

TRANSPORTATION

Traffic and Parking

Construction of the proposed Kimmel Pavilion and Energy Building is expected to result in peak construction trip generation in December 2014 when up to 651 construction workers and approximately 60 truck deliveries have been projected to arrive on an average day. Based on the travel characteristics presented in the *First Avenue Properties Rezoning Final Supplemental Environmental Impact Statement (FSEIS)*, approximately 40 percent of the 651 construction workers would be expected to travel via auto at a vehicle occupancy rate of 1.90 and 80 percent of the peak period arrival and departure trips would take place during the peak travel hour. Applying these travel demand factors, the 651 construction workers would yield 110 auto trips arriving between 6:00 AM and 7:00 AM and departing between 3:00 PM and 4:00 PM. It should be noted that during days when extended work shifts are required, the number of construction worker vehicles departing during the 3:00 PM and 4:00 PM hour would be fewer than those projected, as a small number would depart later in the day between 5:00 PM and 7:00 PM.

As with other delivery traffic in New York City, construction truck traffic would concentrate on the earlier parts of the day, peaking in the early morning (between 6:00 AM and 7:00 AM) and diminishing gradually throughout the day. Up to approximately 20 percent or 24 total arrival and departure truck trips are expected to occur during the 6:00 AM to 7:00 AM hour. These trucks would be required to use NYCDOT-designated truck routes. Accounting for a Passenger Car Equivalent (PCE) of 2.0 per truck, in accordance with guidance from the *CEQR Technical Manual*, the construction of the proposed Kimmel Pavilion and Energy Building would result in 158 and 122 PCEs in the 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM construction peak hours, respectively.

Without the proposed action, construction of the No Action building would also generate maximum construction traffic toward the end of 2014, specifically from the fourth quarter of 2014 through the first quarter of 2015, with approximately 510 construction workers and 51 truck deliveries per day. Applying the same methodology, construction of the No Action building would result in 126 and 98 PCEs in the 6:00 AM to 7:00 AM and 3:00 PM to 4:00 PM construction peak hours, respectively. As summarized in Table J-5, construction of the proposed

Kimmel Pavilion and Energy Building would result in incremental construction traffic of 32 and 24 PCEs during the AM arrival and PM departure peak hours, respectively.

Table J-5
Summary of Construction Vehicle Trips

	Manpower				Truck Delivery				Total Vehicle Trip PCE		
	Person Trip		Auto Trip		Truck Trip		Truck PCE				
December 2014	In	Out	In	Out	In	Out	In	Out	In	Out	Total
NON-COMPLIANT											
05 AM - 06 AM	0	0	0	0	0	0	0	0	0	0	0
06 AM - 07 AM	521	0	110	0	12	12	24	24	134	24	158
07 AM - 08 AM	130	0	27	0	6	6	12	12	39	12	51
08 AM - 09 AM	0	0	0	0	6	6	12	12	12	12	24
09 AM - 10 AM	0	0	0	0	6	6	12	12	12	12	24
10 AM - 11 AM	0	0	0	0	6	6	12	12	12	12	24
11 AM - 12 PM	0	0	0	0	6	6	12	12	12	12	24
12 PM - 01 PM	0	0	0	0	6	6	12	12	12	12	24
01 PM - 02 PM	0	0	0	0	6	6	12	12	12	12	24
02 PM - 03 PM	0	65	0	14	3	3	6	6	6	20	26
03 PM - 04 PM	0	521	0	110	3	3	6	6	6	116	122
04 PM - 05 PM	0	65	0	13	0	0	0	0	0	13	13
05 PM - 06 PM	0	0	0	0	0	0	0	0	0	0	0
Daily Total	651	651	137	137	60	60	120	120	257	257	514
COMPLIANT											
05 AM - 06 AM	0	0	0	0	0	0	0	0	0	0	0
06 AM - 07 AM	408	0	86	0	10	10	20	20	106	20	126
07 AM - 08 AM	102	0	21	0	5	5	10	10	31	10	41
08 AM - 09 AM	0	0	0	0	5	5	10	10	10	10	20
09 AM - 10 AM	0	0	0	0	5	5	10	10	10	10	20
10 AM - 11 AM	0	0	0	0	5	5	10	10	10	10	20
11 AM - 12 PM	0	0	0	0	5	5	10	10	10	10	20
12 PM - 01 PM	0	0	0	0	5	5	10	10	10	10	20
01 PM - 02 PM	0	0	0	0	5	5	10	10	10	10	20
02 PM - 03 PM	0	51	0	11	3	3	6	6	6	17	23
03 PM - 04 PM	0	408	0	86	3	3	6	6	6	92	98
04 PM - 05 PM	0	51	0	10	0	0	0	0	0	10	10
05 PM - 06 PM	0	0	0	0	0	0	0	0	0	0	0
Daily Total	510	510	107	107	51	51	102	102	209	209	418
NET											
05 AM - 06 AM	0	0	0	0	0	0	0	0	0	0	0
06 AM - 07 AM	113	0	24	0	2	2	4	4	28	4	32
07 AM - 08 AM	28	0	6	0	1	1	2	2	8	2	10
08 AM - 09 AM	0	0	0	0	1	1	2	2	2	2	4
09 AM - 10 AM	0	0	0	0	1	1	2	2	2	2	4
10 AM - 11 AM	0	0	0	0	1	1	2	2	2	2	4
11 AM - 12 PM	0	0	0	0	1	1	2	2	2	2	4
12 PM - 01 PM	0	0	0	0	1	1	2	2	2	2	4
01 PM - 02 PM	0	0	0	0	1	1	2	2	2	2	4
02 PM - 03 PM	0	14	0	3	0	0	0	0	0	3	3
03 PM - 04 PM	0	113	0	24	0	0	0	0	0	24	24
04 PM - 05 PM	0	14	0	3	0	0	0	0	0	3	3
05 PM - 06 PM	0	0	0	0	0	0	0	0	0	0	0
Daily Total	141	141	30	30	9	9	18	18	48	48	96

Note:
Auto trips were calculated based on a 40-percent auto share with a vehicle occupancy rate of 1.90.

Since these net increases in construction-generated traffic are below the *CEQR* analysis threshold of 50 peak hour vehicle trips and the incremental parking demand would be a very small percentage of the area's overall parking supply, no further detailed analyses are warranted and there would not be a potential for any significant adverse traffic and parking impacts.

The curb lane and sidewalk on the southbound FDR Drive Service Road may be temporarily closed to accommodate construction activities. Sidewalk protection or temporary sidewalks would be provided, as stipulated in MPT plans approved by NYCDOT, along 34th Street as well as the FDR Drive Service Road and possibly along East 30th Street to maintain pedestrian access. Staging areas would be required from the start of foundation work until cranes and hoists are completely removed at the completion of the core and shell stage. Because the majority of construction activities would be accommodated on-site, construction trucks and equipment laydowns would be staged nearby, most likely along the FDR Drive Service Road and East 30th Street.

Transit and Pedestrians

As discussed above and presented in Table J-5, construction of the proposed Kimmel Pavilion and Energy Building would result in the need of 141 more construction workers per day than the No Action building during peak construction. With approximately 40 percent of these incremental construction workers commuting by auto, most of the remaining 60 percent, approximately 85 workers, would travel via transit. This level of increased transit usage, especially during hours that are outside of the commuter peak periods, would not result in the potential for any significant adverse transit impacts. Similarly, the incremental pedestrian trips would also not result in the potential for any significant adverse pedestrian impacts.

Where temporary sidewalk closures are required, adequate protection or temporary sidewalks with appropriate signage would be provided in accordance with NYCDOT requirements.

AIR QUALITY

Construction activities have the potential to impact air quality as a consequence of engine emissions from on-site construction equipment, as well as dust generating activities. In general, much of the heavy equipment used in construction has diesel-powered engines and produces relatively high levels of nitrogen oxides and particulate matter. Gasoline engines produce relatively high levels of carbon monoxide. Fugitive dust is composed of particulate matter. As a result, the primary air pollutants of concern for construction activities include nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$), and carbon monoxide (CO).

The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine particulate matter. To ensure that the construction of the proposed project results in the lowest feasible diesel particulate matter (DPM) emissions, an emissions reduction program could be implemented and could consist of the following components:

1. *Diesel Equipment Reduction*. The construction of the proposed project could minimize the use of diesel engines and use electric engines operating on grid power instead, to the extent practicable. Construction contracts would specify the use of electric engines where available and practicable and ensure the distribution of power connections as needed and subject to availability;

2. *Clean Fuel*. ULSD would be used exclusively for all diesel engines throughout construction. This would enable the use of tailpipe reduction technologies (see below) and would directly reduce DPM and sulfur oxides (SO_x) emissions;

3. *Planning*. Certain emission sources (e.g., concrete trucks and pumps, cranes, large generators) would be located as far as possible from residential buildings and public spaces, to the extent practicable;

4. *Idle Time Restrictions.* The construction specifications would include the restriction of on-site vehicle idle time to three minutes for all vehicles that are not using the engine to operate a loading, unloading, or processing device (e.g., concrete mixing trucks);

5. *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, such as concrete mixing and pumping trucks) could utilize the best available tailpipe 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 could specify that all diesel nonroad engines rated at 50 hp or greater and all controlled-fleet trucks would utilize DPFs or other tailpipe reduction technology, either original equipment manufacturer (OEM) or retrofit technology with add-on controls, verified to reduce DPM emissions by at least 90 percent (when compared with the uncontrolled exhaust of an equivalent engine). Ninety percent reduction has been verified by a study of actual reductions of $PM_{2.5}$ emissions from comparable engines used at a New York City construction site. Controls may include active DPFs,[1] if necessary;

6. *Utilization of Tier 3 or Newer Equipment.* In addition to the tailpipe controls commitments, the construction program would mandate the use of Tier 3[2] (or newer) construction equipment for nonroad diesel engines greater than 50 hp. The use of newer engines, is expected to reduce the likelihood of DPF plugging due to soot loading (i.e., clogging of DPF filters by accumulating particulate matter); and the more recent the "Tier," the cleaner the engine for all criteria pollutants, including PM. Additionally, while all engines undergo some deterioration over time, "newer," as well as better maintained, engines will emit less PM than their older Tier or unregulated counterparts. Therefore, restricting site access to equipment with lower engine-out PM emission values would enhance this emissions reduction program and implementation of DPF systems, as well as reduce maintenance frequency due to soot loading (i.e., less downtime for construction equipment to replace

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[1] Two types of DPFs are currently used: passive and active. Most DPFs currently in use are the "passive" type, which means that the heat from the exhaust is used to regenerate (burn off) the PM to eliminate the buildup of PM in the filter. Some engines do not maintain temperatures high enough for passive regeneration. In such cases, "active" DPFs can be used (i.e., DPFs that are heated either by an electrical connection from the engine, by plugging in during periods of inactivity, or by removal of the filter for external regeneration).

[2] The first federal regulations for new nonroad diesel engines were adopted in 1994, and signed by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces Tier 1 emissions standards for all equipment 50 hp and greater and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. The Tier 1 through 3 standards regulate the EPA criteria pollutants, including particulate matter (PM), hydrocarbons (HC), oxides of nitrogen (NO_x) and carbon monoxide (CO). Prior to 1998, emissions from nonroad diesel engines were unregulated. These engines are typically referred to as Tier 0.

clogged DPF filters). The use of Tier 3 or newer equipment would reduce emissions of NO_x (including NO_2) and hydrocarbons as compared to older, non-Tier 3 equipment. In addition, to minimize emissions of NO_2 from the proposed project's construction activities to the maximum extent practicable, non-road diesel-powered vehicles and construction equipment meeting or achieving the equivalent the EPA Tier 4 Non-road Diesel Engine Emission Standard would be used where conforming equipment is widely available, and the use of such equipment is practicable.

Construction also has the potential to adversely affect air quality as a result of activities that generate fugitive dust. In order to minimize adverse affects on air quality, the following components could also be implemented as part of the construction program to the extent feasible:

1. *Planning*. Fugitive dust control plans could be required as part of contract specifications;
2. *Watering*. Truck routes and exposed excavation areas would be watered as needed;
3. *Cleaning*. Truck exit areas would be established for washing off the wheels of all trucks that exit the construction sites, and could include drive off pads;
4. *Stabilization*. In cases where truck routes would remain in the same place for an extended period, the routes could be stabilized, covered with gravel, or temporarily paved to avoid the re-suspension of road dust;
5. *Truck Covers*. Dust covers for dump trucks would be required.

Due to the emissions control program outlined above, on-site emissions levels during construction are expected to be lower as compared with typical construction activity. Therefore, no significant adverse air quality impacts would be expected due to construction activity either near the construction site or along any of the vehicle routes leading to and from the site.

NOISE

Impacts on community noise levels during construction can result from noise from construction equipment operation, and from construction vehicles and delivery vehicles traveling to and from the site. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, the acoustical utilization factor of the equipment (i.e., the percentage of time a piece of equipment is operating), the distance from the construction site, and any shielding effects (from structures such as buildings, walls, or barriers). Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction relative to receptor locations.

Noise from construction activities and some construction equipment is regulated by the NYC Noise Control Code and by EPA. The NYC Noise Control Code, as amended December 2005 and effective July 1, 2007, requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special circumstances as described below) to weekdays between the hours of 7:00 AM and 6:00 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6:00 PM and 7:00 AM, and on weekends) may be authorized in the following circumstances: (1) emergency conditions; (2) public safety; (3) construction projects by or on behalf of City agencies; (4) construction activities with minimal noise impacts; and (5) where undue hardship is demonstrated resulting from unique site characteristics, unforeseen conditions, scheduling conflicts and/or financial considerations. EPA requirements mandate that certain classifications of construction equipment meet specified noise emissions standards.

In addition, NYULMC would commit to the source and path control measures identified in the Construction Mitigation Plan required by the NYC Noise Control Code. In terms of source controls (i.e., reducing noise levels at the source), the following measures for construction, which go beyond typical construction techniques, would be implemented:

- A wide range of equipment that produces lower noise levels than typical construction equipment required by the NYC Noise Control Code would be utilized. Table J-5 shows the noise levels for typical construction equipment and the noise levels for the equipment that would be used for construction of the proposed project.

Table J-5
Typical Noise Emission Levels for Construction Equipment

Equipment Item	Noise Level at 50 ft. (dBA)
Air compressor	81
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer, Drills	88
Loader	85
Paver	89
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	88

Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007; Transit Noise and Vibration Impact Assessment, Federal Transit Administration (FTA), May 2006; and Subchapter 5 of the NYC Noise Control Code.

- Where feasible and practicable, construction procedures and equipment (such as cement mixers, concrete trucks, concrete vibrators, cranes, delivery trucks, dump trucks, excavators,

fuel trucks, generators, hoists, miscellaneous small tools, tractors, and trailers) that produce noise levels below the requirements of the NYC Noise Control Code would be used.

- Generally, the project sponsors would schedule and perform noisy work during times of highest ambient noise levels.
- Dominant noisier equipment, such as tower cranes, loading and unloading trucks, concrete pumps, concrete trucks, and trash hauling trucks should minimize banging, clattering, and buzzing.
- As early in the construction period as practicable, electrical-powered equipment would be selected for certain noisy equipment, such as bar benders, cement mixers, concrete vibrators, hoists, miscellaneous tools, paver cutters, saws, scissor lifts, sprayers, and welders (i.e., early electrification).
- Minimize the use of impact devices as practicable, such as jackhammers, pavement breakers, pneumatic tools, and hoe rams, and only necessary equipment would be on-site.
- Typical equipment (i.e., compressors, jackhammers, and trash hauling vehicles) used at the construction sites need to meet the sound level standards specified in Subchapter 5 of the NYC Noise Control Code.
- Where practicable and feasible, construction sites would be configured to minimize back-up alarm noise. In addition, trucks would not be allowed to idle more than three minutes at the construction site based upon NYC Local Law.
- Contractors and subcontractors would be required to properly maintain their equipment and have quality mufflers installed.

In terms of path controls (e.g., placement of equipment, implementation of barriers or enclosures between equipment and sensitive receptors), the analysis assumes that the following measures would be implemented:

- Noisier equipment, such as tower cranes, concrete pumps, concrete trucks, and delivery trucks, would be located away from sensitive receptors, to the extent feasible.
- Noise barriers would be utilized to provide shielding. The construction sites would have a minimum 8-foot-high barrier, with a 15-foot-high barrier adjacent to residential and other sensitive locations. Where possible, concrete trucks and delivery trucks would be behind these barriers.
- Path noise control measures (i.e., portable noise barriers, panels, enclosures, and acoustical tents, where feasible) were assumed to be used for certain dominant noise equipment (i.e., concrete trowels, break ram, and paver cutter). The details to construct noise barriers, enclosures, tents, etc. are based upon the instructions of Chapter 28, “Citywide Construction Noise Mitigation.” in NYC Noise Control Code.
- Acoustical curtains would be used where internal construction activities use the equipment listed above, to break the line-of-sight and provide acoustical shielding between noise sources and sensitive receptors. ✷

Appendix A
Waterfront Revitalization Program
Coastal Assessment Form

For Internal Use Only:	WRP no. _____
Date Received:	DOS no.

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP, or other local, state or federal discretionary review procedures, and that are within New York City's designated coastal zone, must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program* (WRP). The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, other state agencies or the New York City Department of City Planning in their review of the applicant's certification of consistency.

A. APPLICANT

1. Name: **NYU Langone Medical Center**
2. Address: **c/o Elise Wagner, Kramer Levin Naftalis & Frankel LLP**
   1177 Avenue of the Americas New York, NY 10036
3. Telephone: **212-715-9189** Fax: **(212) 715-8208** E-mail: **ewagner@kramerlevin.com**
4. Project Site Owner: **NYU Langone Medical Center**

B. PROPOSED ACTIVITY

1. Brief description of activity: **NYULMC proposes to develop two new buildings on its main campus, which is located on the superblock bounded by former East 30th Street and East 34th Streets, the FDR Drive Service Road, and First Avenue. The proposed Kimmel Pavilion would house hospital functions and the proposed Energy Building would house a combined heat and power plant to support the campus, as well as space for patient care, specifically radiation oncology. Existing bulk oxygen storage tanks would also be relocated to an available site along former East 30th Street.**
2. Purpose of activity: **The majority of the clinical facilities on the NYULMC campus are in aging buildings with structural, mechanical, and electrical systems that cannot support state-of-the-art clinical technologies or environment of care. The proposed action would improve patient care and would address energy and utility needs.**
3. Location of Activity (street address/borough or site description):
   Portion of the superblock bounded by former East 30th Street and East 34th Street, the FDR Service Road, and First Avenue, Manhattan.
4. If a federal or state permit or license was issued or is required for the proposed activity, identify the permit type(s), the authorizing agency and provide the application or permit number(s), if known:
   N/A
5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s).
   NYULMC is seeking funding from the Dormitory Authority of the State of New York (DASNY). DASNY's action would consist of its authorization of the issuance of Dormitory Authority obligations on behalf of NYULMC, the proceeds of which would be used to finance the proposed project.
6. Will the proposed project result in any large physical change to a site within the coastal area that will require the preparation of an environmental impact statement?
   Yes _____ No **X** If yes, identify Lead Agency:
7. Identify **city** discretionary actions, such as a zoning amendment or adoption of an urban renewal plan, required for the proposed project.
   Waivers of applicable rear yard, rear yard equivalent, initial setback and sky exposure plane, rear yard setback, tower coverage, parking, and curb cut requirements.

C. COASTAL ASSESSMENT

Location Questions:	Yes	No
1. Is the project site on the waterfront or at the water's edge?		X
2. Does the proposed project require a waterfront use?		X
3. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?		X

Policy Questions	Yes	No

The following questions represent, in a broad sense, the policies of the WRP. Numbers in parentheses after each question indicate the policy or policies addressed by the question. The new Waterfront Revitalization Program offers detailed explanations of the policies, including criteria for consistency determinations.

Check either "Yes" or "No" for each of the following questions. For all "yes" responses, provide an attachment assessing the effects of the proposed activity on the relevant policies or standards. Explain how the action would be consistent with the goals of those policies and standards.

4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)		X
5. Is the project site appropriate for residential or commercial development? (1.1)		X
6. Will the action result in a change in scale or character of a neighborhood? (1.2)		X
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)		X
8. Is the action located in one of the designated Significant Marine and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)		X
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)		X
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)		X
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)		X
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)		X

Policy Questions cont'd	Yes	No
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)		X
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)		X
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)		X
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)		X
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)		X
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound-East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)		X
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitat? (4.1)		X
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1 and 9.2)		X
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)		X
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)		X
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)		X
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)		X
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)		X
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)		X
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)		X
28. Would the action cause violations of the National or State air quality standards? (5.2)		X
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)		X
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands?		X
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)		X
32. Would the action result in any activities within a Federally designated flood hazard area or State designated erosion hazards area? (6)	X	
33. Would the action result in any construction activities that would lead to erosion? (6)		X
34. Would the action involve construction or reconstruction of flood or erosion control structure? (6.1)		X

Policy Questions cont'd	Yes	No
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)		X
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)		X
37. Would the proposed project affect a non-renewable source of sand? (6.3)		X
38. Would the action result in shipping, handling, or storing of solid wastes; hazardous materials, or other pollutants? (7)	X	
39. Would the action affect any sites that have been used as landfills? (7.1)		X
40. Would the action result in development of a site that may contain contamination or has history of underground fuel tanks, oil spills, or other form of petroleum use or storage? (7.2)	X	
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	X	
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)		X
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)		X
44. Would the action result in the provision of open space without the provision for its maintenance? (8.1)		X
45. Would the action result in any development along the shoreline but NOT include new water-enhanced or water-dependent recreational space? (8.2)		X
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)		X
47. Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)		X
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)		X
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)		X
51. Would the proposed action have a significant adverse impact on historic, archaeological, or cultural resources? (10)		X
52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)		X

D. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City's Waterfront Revitalization Program, pursuant to the New York State Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If the certification can be made, complete this section.

"The proposed activity complies with New York State's Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent Name: **Anne M. Locke, Chief Operating Officer, AKRF, Inc.**
Address: **440 Park Avenue South, 7th Floor**
New York, NY 10016

Applicant/Agent Signature: Anne M Locke Date 9-27-10

Appendix B
Agency Correspondence

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
1 Centre Street, 9N, New York, NY 10007 (212) 669-7700 www.nyc.gov/landmarks

ENVIRONMENTAL REVIEW

BOARD OF STANDARDS AND APPEALS/LA-CEQR-M 7/13/2010

Project number **Date received**

Project: 433 EAST 30 STREET, lot in part

Properties with no archaeological significance:

433 EAST 30 STREET, BBL 1009627501

Archaeological review only.

7/14/2010

SIGNATURE DATE

26977_FSO_DNP_07142010.doc

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

New York State Office of Parks, Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

David A. Paterson
Governor

Carol Ash
Commissioner

July 22, 2010

Claudia Cooney
AKRF
440 Park Avenue South
7th Floor
New York, New York 10016

Re: DASNY
NYU Langone Medical Center - Kimmel Pavilion & Energy Building
East 34th Street and FDR Drive/MANHATTAN, New York County
10PR04628

Dear Ms. Cooney:

Thank you for requesting the comments of the Field Services Bureau of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Field Services Bureau and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director

An Equal Opportunity/Affirmative Action Agency

printed on recycled paper

Environmental Protection

Caswell F. Holloway
Commissioner

Angela Licata
Deputy Commissioner
Bureau of Environmental Planning and Analysis
alicata@dep.nyc.gov

59-17 Junction Boulevard
Flushing, NY 11373
T: (718) 595-4398
F: (718) 595-4479

February10, 2011

Mr. Rory Levy
CEQR Examiner
New York City Board of Standards and Appeals
40 Rector Street, 9th Floor
New York, New York 10006-1705

Re: 400-424 East 34th Street
NYU Langone Medical CenterKimmel Program -560 First Avenue
Block 962, Lot 80, 108,1001, 1002, 1003, 1004, 1005, 1006, 1107
CEQR #11BSA029M
11DEPTECH015M
New York, New York

Dear Mr. Levy:

The New York City Department of Environmental Protection, Bureau of Environmental Planning and Analysis (DEP) has reviewed the November 2010 Phase II Environmental Site Investigation Workplan (Phase II Workplan)and Health and Safety Plan (HASP) for the Kimmel Pavilion, the November 2010 Phase II Subsurface Investigation (Phase II), Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) for the Energy Building prepared by AKRF, Inc. on behalf of the applicant, New York University Langone Medical Center (NYULMC) for the above-referenced project. The applicant is seeking a variance from the New York City Board of Standards and Appeals (BSA) pursuant to section 72-21 of the zoning resolution (ZR) to waive rear yard and rear yard equivalent pursuant to ZR sections 24-36, 24-382. The applicant is also seeking a waiver of ZR Section 24-522 to waive initial setback distance and sky exposure plane and rear yard setback regulations. In addition, the applicant is also seeking a waiver of ZR Sections 24-54, 13-132, 25-62 and 13-142 to waive tower coverage, parking and curb cut requirements. The variances would allow relocation of existing bulk oxygen tanks andthe construction of the Kimmel Pavilion and Energy Building. As currently proposed, the Kimmel Pavilion would house hospital functions and the proposed Energy Building would house a combined heat and power plant to support the campus, as well as space for radiation oncology programs. In addition, existing bulk oxygen storage tanks would be relocated to an available site along East 30th Street.The project site is located ona superblock which is bounded by East 34th Street to the north, East 30th Street to the south, First Avenue to the west and the FDR Drive Service Road to the east in the Kips Bay section of Community District 6 in Manhattan.

The Energy Building

During the November 2010 fieldwork AKRF completed six soil borings (SB-1 through SB-6) to the depth of approximately feet below ground surface (ftbgs). Two soil samples were collected from each boring and analyzedand analyzed for Target Compound List (TCL) Volatile Organic Contaminants (VOCs) by United States Environmental Protection Agency (EPA) Method 8260, Semi Volatile Organic Contaminants (SVOCs) by EPA Method 8270, Polychlorinated Biphenyls (PCBs) by EPA Method 8082 and TAL metals. Three groundwater samples (MW-1 to MW-3) were collected via existing monitoring wells and analyzed for PCBs by EPA Method 8082 and pesticides by EPA Method 8081. Groundwater was encountered at depths of approximately seven ftbgs during the November 2010 field work.

The soil analytical results revealed VOC and PCBs concentrationswere either non-detect (ND) or below New York State Department of Environmental Conservation (NYSDEC) Restricted Commercial Use Soil Cleanup Objectives (USCOs). SVOCs, Metals and Pesticides concentrations were detected above NYSDEC Recommended Soil Cleanup Objectives (RSCOs). The groundwater analytical results revealed metal concentrations exceeded NYSDEC Technical and Operational Series (TOGS) groundwater quality standards.

The November 2010 RAP proposes to install a vapor barrier/waterproofing membrane; disposal of excavated fill material not suitable for reuse on the site in accordance with NYSDEC Solid Waste Management Regulations, Part 360 and other applicable local, state, and federal regulations. On-site soil will be stockpiled and covered with polyethylene sheeting and the site will be covered with at least two feet of clean soil or capped with asphalt, concrete or any other impervious material. As proposed, underground storage tanks would be removed if encountered during remediation and or construction.

Kimmel Pavilion

The November 2010 Workplan proposes to conduct eleven soil borings and analyzed for Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260, Semi-Volatile Organic Compounds (SVOCs) by Method 8270, Pesticides by Method 8081, Polychlorinated Biphenyls (PCBs) by Method 8082 and Target Analyte List (TAL) Metals. Three groundwater samples will be collected via temporary well points and analyzed for (SVOCs) by EPA Method 8270, polychlorinated biphenyls (PCBs) by EPA Method 8082, pesticides by EPA Method 8081, and Target Analyte List (TAL) metals (total and filtered analysis). In addition, the HASP identifies appropriate protection of the on-site workers during the Phase II Environmental Site Investigation.

Based upon our review of the submitted documentation, we have the following comments/recommendations to BSA:

Kimmel Pavilion

DEP find the November 2010 Workplan for the ***Kimmel Pavilion*** acceptable. BSA should inform the applicant that soil and groundwater samples should be collected and analyzed by a

New York State Department of Health Environmental Laboratory Approval Program certified laboratory for the presence of VOCs by United States Environmental Protection Agency (U.S. EPA) Method 8260, SVOCs by U.S. EPA Method 8270, Pesticides/PCBs by U.S. EPA Method 8081/8082 and Target Analyte List (TAL) metals (filtered and unfiltered for groundwater samples).

- BSA should also inform the applicant that upon completion of the investigation activities, the consultant should submit a detailed Phase II report to DEP for review and approval. The report should include, at a minimum, an executive summary, narrative of the field activities, laboratory data and conclusions, comparison of soil and groundwater analytical result (i.e., NYSDEC**6NYCRR PART 375 effective** December 14, 2006 and NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values), updated site plans depicting sample locations, boring logs, and remedial recommendations, ifwarranted.

The Energy Building

DEP finds the November 2010 RAP and CHASP for the proposed project (***Energy Building)*** acceptable. The applicant that at the completion of the project, a Professional Engineer (P.E) certified Remedial Closure Report should be submitted to and approved by DEP for the proposed project. The P.E certified Remedial Closure Report should indicate that all remedial requirements have been properly implemented (i.e., proper transportation/disposal manifests and certificates from impacted soils removed and properly disposed of in accordance with all NYSDEC, proof of installation of two feet of DEP approved certified clean fill/top soil capping requirement in any landscaped/grass covered areas not capped with concrete/asphalt, etc.).

Future correspondence related to this project should include the following tracking number **11DEPTECH015M.** If you have any questions or comments, you may contact Ms. Mahalia Myrie at (718) 595-3212.

Sincerely,

Marie Switzer for

Gary C. Heath
Director, Bureau Operations and Environmental Analysis

Cc: G. Heath
M. Winter
M. Myrie
C. Chung
S. Vafadari
A. Popov
W. Yu
Files