

A. INTRODUCTION

This chapter examines the potential for the proposed project to cast new shadows on sunlight-sensitive resources, including publicly accessible parks, plazas and playgrounds, sunlight-dependent features of historic resources, and natural resources.

PRINCIPAL CONCLUSIONS

The assessment found that new shadows would fall on several sunlight-sensitive resources at certain times of day in certain seasons, but in no case would the new shadows significantly impact the use or usability of the resource or any vegetation within the resource.

B. DEFINITIONS AND METHODOLOGY

This analysis has been prepared in accordance with New York City Environmental Quality Review (CEQR) procedures and follows the guidelines of the 2014 ~~City Environmental Quality Review (CEQR)~~ Technical Manual.

DEFINITIONS

Incremental shadow is the additional, or new, shadow that a structure resulting from a proposed project would cast on a sunlight-sensitive resource.

Sunlight-sensitive resources are those that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity. Such resources generally include:

- *Public open space* such as parks, beaches, playgrounds, plazas, schoolyards (if open to the public during non-school hours), greenways, and landscaped medians with seating. Planted areas within unused portions of roadbeds that are part of the Greenstreets program are also considered sunlight-sensitive resources.
- *Features of architectural resources that depend on sunlight for their enjoyment by the public.* Only the sunlight-sensitive features need be considered, as opposed to the entire resource. Such sunlight-sensitive features might include: design elements that depend on the contrast between light and dark (e.g., recessed balconies, arcades, deep window reveals); elaborate, highly carved ornamentation; stained glass windows; historic landscapes and scenic landmarks; and features for which the effect of direct sunlight is described as playing a significant role in the structure's importance as a historic landmark.
- *Natural resources* where the introduction of shadows could alter the resource's condition or microclimate. Such resources could include surface water bodies, wetlands, or designated resources such as coastal fish and wildlife habitats.

Non-sunlight-sensitive resources include, for the purposes of CEQR:

- *City streets and sidewalks* (except Greenstreets);
- *Private open space* (e.g., front and back yards, stoops, vacant lots, and any private, non-publicly accessible open space); and
- *Project-generated open space* cannot experience a significant adverse shadow impact from the project, according to CEQR, because without the project the open space would not exist. However, if the condition of project-generated open space is included in the qualitative analysis presented in the Open Space chapter of the EIS, a discussion of how shadows would affect the new space may be warranted.

A **significant adverse shadow impact** occurs when the incremental shadow added by a proposed project falls on a sunlight-sensitive resource and substantially reduces or completely eliminates direct sunlight, thereby significantly altering the public's use of the resource or threatening the viability of vegetation or other resources. Each case must be considered on its own merits based on the extent and duration of new shadow and an analysis of the resource's sensitivity to reduced sunlight.

METHODOLOGY

Following the guidelines of the *CEQR Technical Manual*, a preliminary screening assessment must first be conducted to ascertain whether a project's shadow could reach any sunlight-sensitive resources at any time of year. The preliminary screening assessment consists of three tiers of analysis. The first tier determines a simple radius around the proposed building representing the longest shadow that could be cast. If there are sunlight-sensitive resources within this radius, the analysis proceeds to the second tier, which reduces the area that could be affected by project shadow by accounting for the fact that shadows can never be cast between a certain range of angles south of the project site due to the path of the sun through the sky at the latitude of New York City.

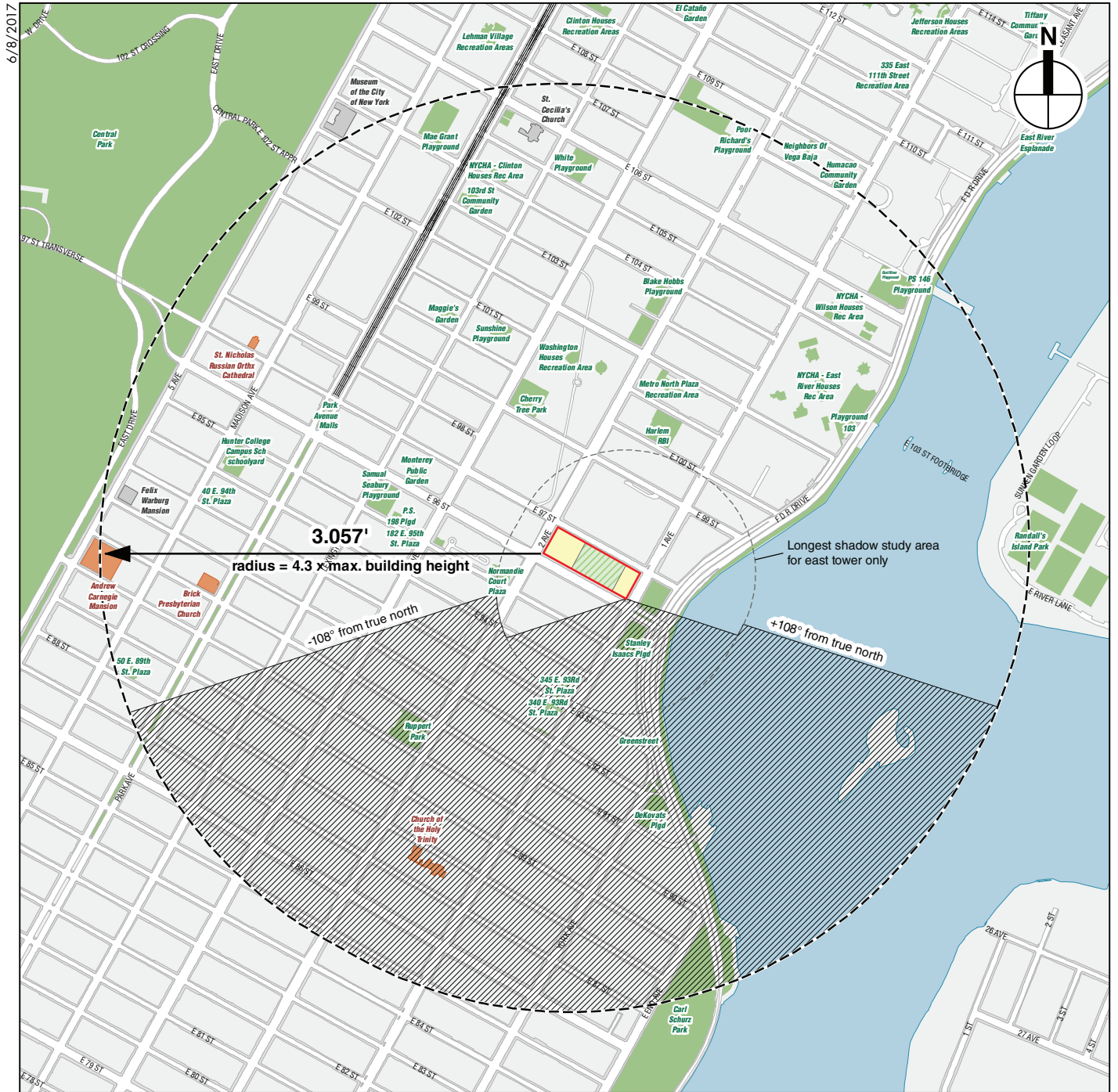
If the second tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a third tier of screening analysis further refines the area that could be reached by project shadow by looking at specific representative days in each season and determining the maximum extent of shadow over the course of each representative day.

If the third tier of analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a detailed shadow analysis is required to determine the extent and duration of the incremental shadow resulting from the project. The detailed analysis provides the data needed to assess the shadow impacts. The effects of the new shadows on the sunlight-sensitive resources are described, and their degree of significance is considered. The results of the analysis and assessment are documented with graphics, a table of incremental shadow durations, and narrative text.

C. PRELIMINARY SCREENING ASSESSMENT

A base map was developed using Geographic Information Systems (GIS)¹ showing the location of the proposed project and the surrounding street layout (see **Figure 6-1**). In coordination with

¹ Software: Esri ArcGIS 10.3; Data: New York City Department of Information Technology and Telecommunications (DoITT) and other City agencies, ~~and as well as~~ AKRF site visits.



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ECF EAST 96TH STREET

Tier 1 and Tier 2 Assessments
Figure 6-1

the land use, open space, and historic and cultural resources assessments presented in other chapters of this EIS, potential sunlight-sensitive resources were identified and shown on the map.²

TIER 1 SCREENING ASSESSMENT

For the Tier 1 assessment, the longest shadow that the proposed buildings could cast is calculated, and, using this length as the radius, a perimeter is drawn around the project site. Anything outside this perimeter representing the longest possible shadow could never be affected by project generated shadow, while anything inside the perimeter needs additional assessment.

According to the *CEQR Technical Manual*, the longest shadow that a structure can cast at the latitude of New York City occurs on December 21, the winter solstice, at the start of the analysis day at 8:51 AM, and is equal to 4.3 times the height of the structure.

Therefore, at a maximum height of ~~760~~approximately 710.75 feet above curb level, including rooftop mechanical structures, the proposed tower on the western end of the project block could cast a shadow up to ~~3,2683,057~~ feet in length (~~760~~710.75 x 4.3). Using this length as the radius, a perimeter was drawn around the project site (see **Figure 6-1**). The 185-foot-tall building on the eastern end of the project block could cast a shadow up to approximately 796 feet, and its Tier 1 study area falls entirely within the study area of the taller western tower. Since a number of sun-sensitive resources lay within the perimeter or longest shadow study area of the proposed project, the next tier of screening assessment was conducted.

TIER 2 SCREENING ASSESSMENT

Because of the path that the sun travels across the sky in the northern hemisphere, no shadow can be cast in a triangular area south of any given project site. In New York City this area lies between -108 and +108 degrees from true north. **Figure 6-1** illustrates this triangular area south of each project site. The complementary area to the north within the longest shadow study area represents the remaining area that could potentially experience new project generated shadow. A number of sun-sensitive resources lay within this remaining longest shadow study area, and therefore the next tier of screening assessment was conducted.

TIER 3 SCREENING ASSESSMENT

The direction and length of shadows vary throughout the course of the day and also differ depending on the season. In order to determine whether project-generated shadow could fall on a

² In regards to historic resources with sunlight-sensitive features, CEQR methodology advises that only the sunlight-sensitive features, such as stained-glass windows or highly carved ornamentation, rather than the entire resource, should be assessed for new shadows. Further, additional analysis was conducted for each historic resource of concern in the study area to determine whether it had sunlight-sensitive features that were facing toward, or open to, the project. Four of the resources of concern did, and were included in the analysis, while the other three did not, and were not included. Of the latter, the Felix Warburg Mansion (now the Jewish Museum) has deeply carved detail that could potentially be sunlight-sensitive on the south and west façades; the Museum of the City of New York has two loggias, a portico and a landscaped court on the west façade; and St. Cecelia's Church has stained glass windows on its north façade. See **Figure 6-1** for the location and orientation of these resources.

sunlight-sensitive resource, three-dimensional (3D) computer mapping software³ is used in the Tier 3 assessment to calculate and display the proposed project's shadows on individual representative days of the year. A computer model was developed containing three-dimensional representations of the elements in the base map used in the preceding assessments, the topographic information of the study area, and a reasonable worst-case three-dimensional representation of the proposed project.

REPRESENTATIVE DAYS FOR ANALYSIS

Following the guidance of the *CEQR Technical Manual*, shadows on the summer solstice (June 21), winter solstice (December 21) and spring and fall equinoxes (March 21 and September 21, which are approximately the same in terms of shadow patterns) are modeled, to represent the range of shadows over the course of the year. An additional representative day during the growing season is also modeled, generally the day halfway between the summer solstice and the equinoxes, i.e., May 6 or August 6, which have approximately the same shadow patterns.

TIMEFRAME WINDOW OF ANALYSIS

The shadow assessment considers shadows occurring between one and a half hours after sunrise and one and a half hours before sunset. At times earlier or later than this timeframe window of analysis, the sun is down near the horizon and the sun's rays reach the Earth at very tangential angles, diminishing the amount of solar energy and producing shadows that are very long, move fast, and generally blend with shadows from existing structures until the sun reaches the horizon and sets. Consequently, shadows occurring outside the timeframe window of analysis are not considered significant under CEQR, and their assessment is not required.

TIER 3 SCREENING ASSESSMENT RESULTS

Figures 6-2 and 6-3 illustrate the range of shadows that would occur, in the absence of intervening buildings, from the proposed buildings on the four representative days for analysis. As they move east and clockwise over the landscape, the shadows are shown occurring approximately every 60 minutes from the start of the analysis day (one and a half hours after sunrise) to the end of the analysis day (one and a half hours before sunset). The analysis showed that, without accounting for existing intervening buildings, the proposed buildings' shadows could potentially move across several publicly accessible open spaces on each analysis day, as follows:

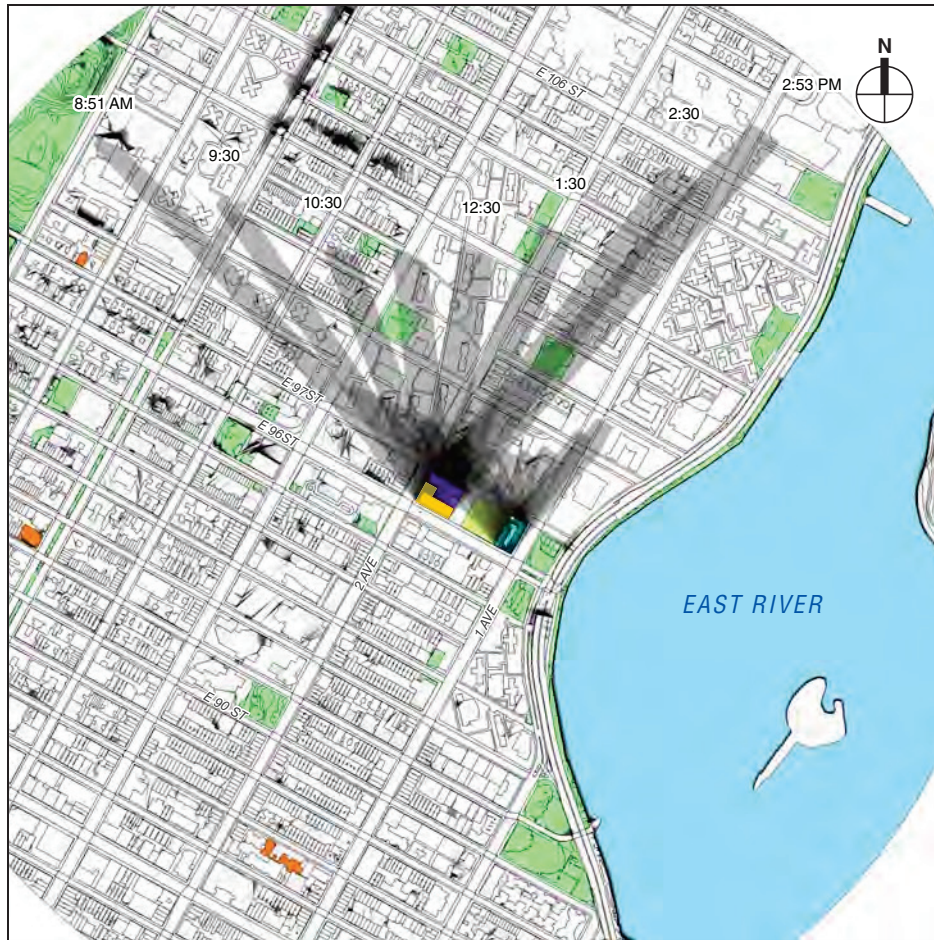
December 21 (see Figure 6-2)

~~Central Park~~, Maggie's Garden, Sunshine Playground, Cherry Tree Park, Blake Hobbs Playground, and the Harlem RBI open space.

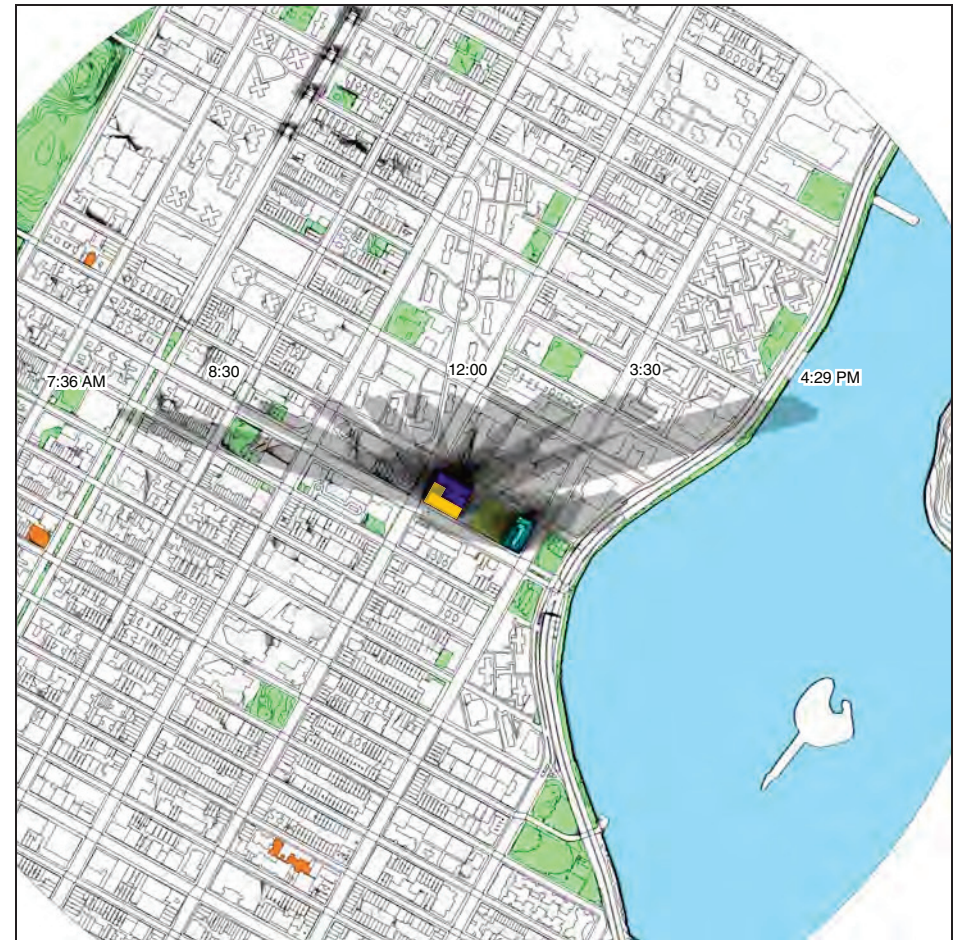
March 21 / September 21 (see Figure 6-2)

Park Avenue Malls, Samuel Seabury Playground and the adjacent P.S. 198 schoolyard, Monterey Public Garden, Stanley Isaacs Playground, East River Esplanade, and the East River.

³ Bentley MicroStation.



December 21

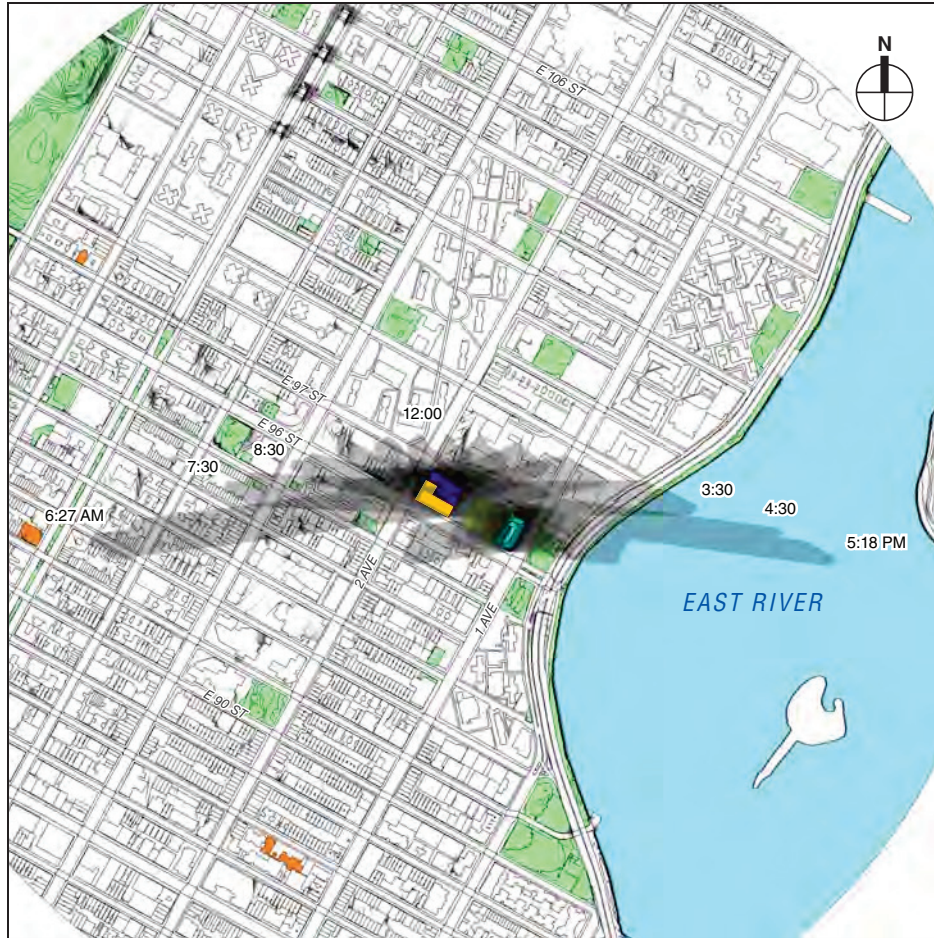


March 21 / September 21

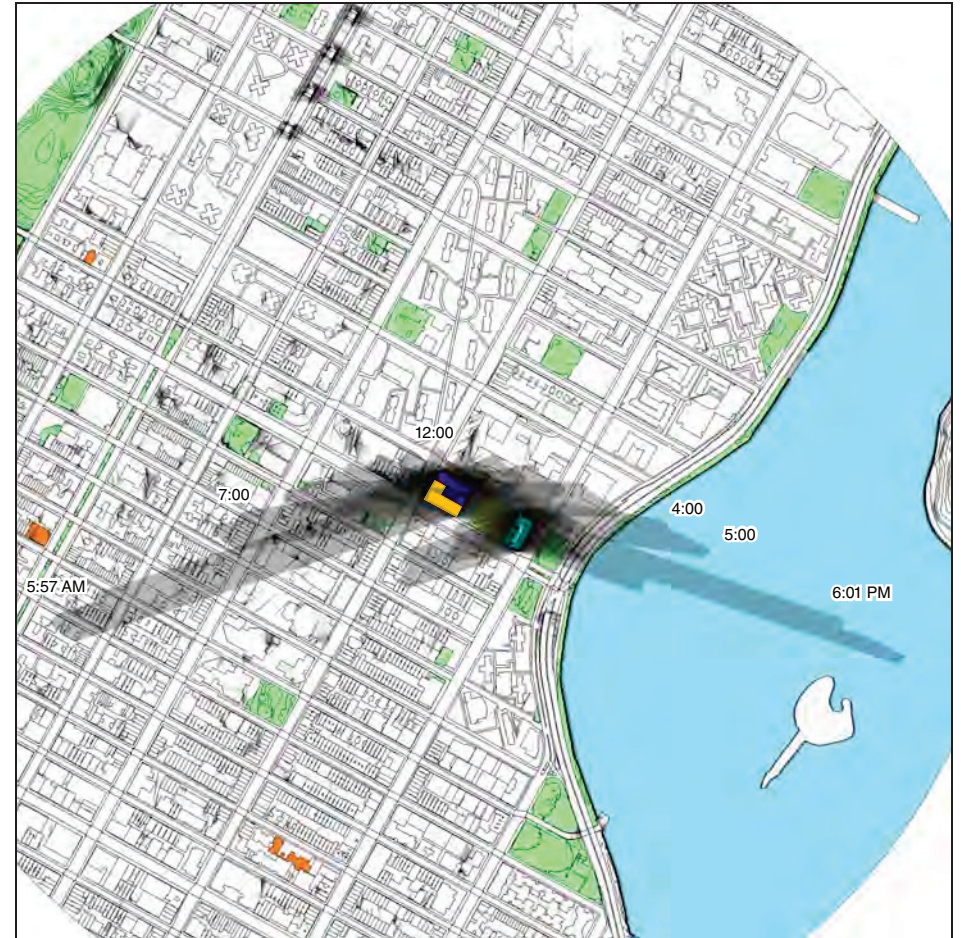
- Proposed buildings*
- Open space to be redeveloped as part of project*
- Publicly-accessible open space (see Figure 6-1)*
- Historic resources of concern (see Figure 6-1)*

This figure illustrates the range of shadows that would occur, absent intervening structures, from the proposed buildings on the winter solstice and spring and fall equinox analysis days. The shadows are shown occurring approximately every 60 minutes from the start of the analysis day (one and a half hours after sunrise) to the end of the analysis day (one and a half hours before sunset). The Tier 3 assessment serves to illustrate the daily path or “sweep” of the proposed building’s shadows across the landscape, indicating which resources could potentially be affected on that analysis day, absent intervening buildings, by project-generated shadow. Daylight Saving Time was not used, per *CEQR Technical Manual* guidelines.

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May 6 / August 6



June 21

- Proposed buildings*
- Open space to be redeveloped as part of project*
- Publicly-accessible open space (see Figure 6-1)*
- Historic resources of concern (see Figure 6-1)*

This figure illustrates the range of shadows that would occur, absent intervening structures, from the proposed buildings on the summer solstice and May 6 / August 6 analysis days. The shadows are shown occurring approximately every 60 minutes from the start of the analysis day (one and a half hours after sunrise) to the end of the analysis day (one and a half hours before sunset). The Tier 3 assessment serves to illustrate the daily path or “sweep” of the proposed building’s shadows across the landscape, indicating which resources could potentially be affected on that analysis day, absent intervening buildings, by project-generated shadow. Daylight Saving Time was not used, per *CEQR Technical Manual* guidelines.

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May 6 / August 6 (see Figure 6-3)

Normandie Court Plaza, a small plaza at 182 East 95th Street, Stanley Isaacs Playground, East River Esplanade, and the East River.

June 21 (see Figure 6-3)

Normandie Court Plaza, Stanley Isaacs Playground, East River Esplanade, and the East River.

A detailed analysis was therefore warranted for each of the four analysis days to determine to what extent and duration, if existing intervening and surrounding buildings were added to the model, new project-generated shadow would fall on these sunlight-sensitive resources.

In addition, a qualitative assessment of potential shadow effects on the open space that would be reconstructed and enhanced as part of the proposed project is also warranted.

D. DETAILED ANALYSIS

The purpose of the detailed analysis is to determine the extent and duration of new incremental shadows that fall on sunlight-sensitive resources as a result of the project, and to assess their potential effects. A future No Action condition is established, containing existing buildings and any future developments planned in the area, to illustrate the baseline shadows. The future condition with the proposed actions and its shadows can then be compared to the baseline condition to determine the incremental shadows that would result with the proposed project.

Three-dimensional representations of the existing buildings in the study area were developed using data obtained from the New York City Department of Information Technology (NYC DoITT) and photos taken during project site visits, and were added to the three-dimensional model used in the Tier 3 assessment. **Figure 6-4** shows a view of the computer model used in the analysis.

Shadows are in constant movement. The computer simulation software produces an animation showing the movement of shadows over the course of each analysis period. The analysis determines the time when incremental shadow would enter each resource, and the time it would exit.

Following the analysis framework described in Chapter 1, “Project Description,” the shadows assessment was performed for the analysis year of 2023, comparing the proposed development with the future No Action condition in which the site would remain as in the existing condition.

Shadow analyses were performed for each of the representative days and analysis periods indicated in the Tier 3 assessment.

Table 6-1 summarizes the entry and exit times and total duration of incremental shadows on each affected sun-sensitive resource. **Figures 6-5 to 6-16** document the results of the analysis by providing graphic representations from the computer animation of times when incremental shadow would fall on a sun-sensitive resource. The figures illustrate the extent of additional, incremental shadow at that moment in time, highlighted in red, and also show existing shadow and remaining areas of sunlight.



No Action



Proposed

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11:00 AM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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1:00 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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2:30 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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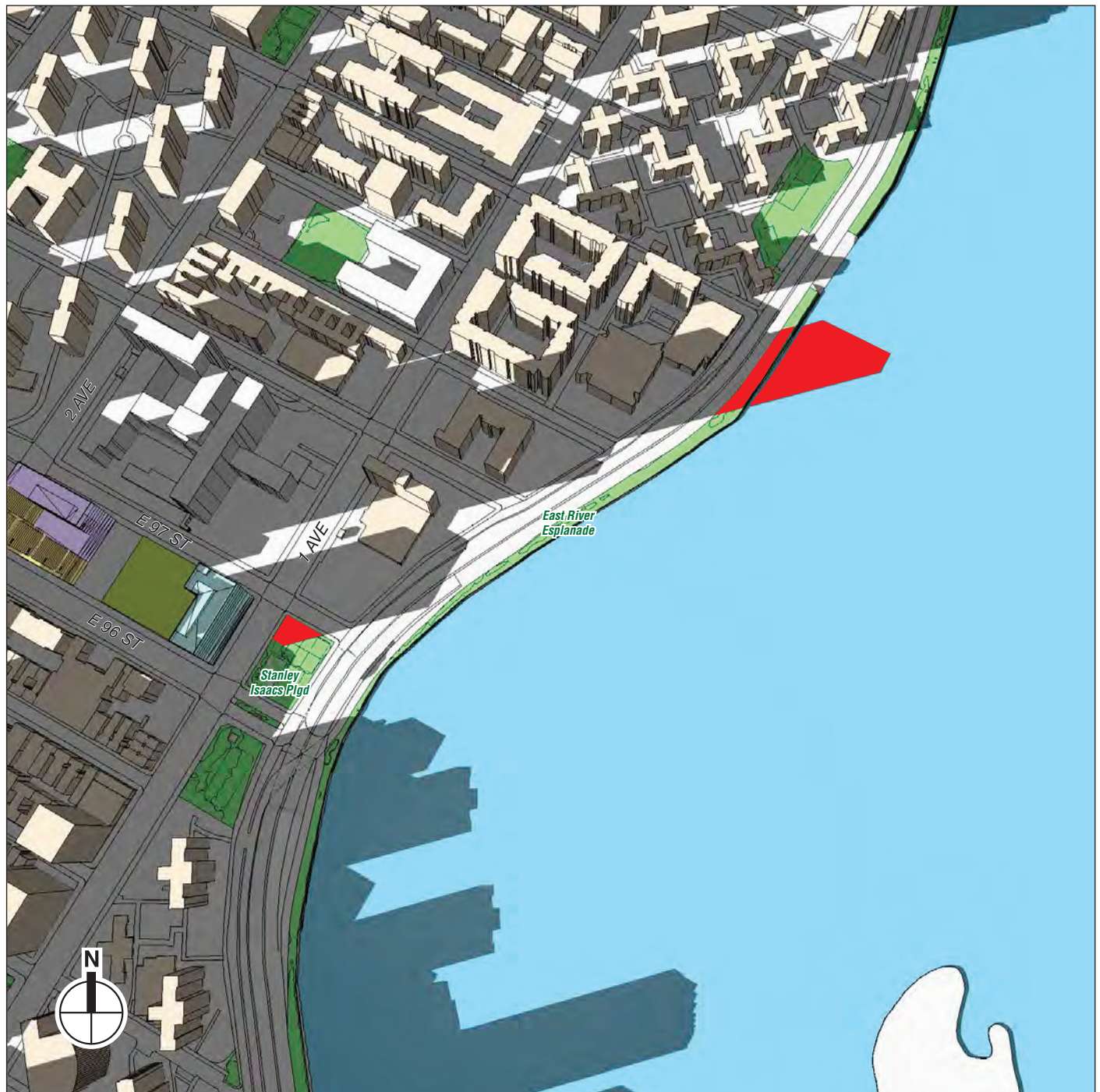


8:00 AM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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4:29 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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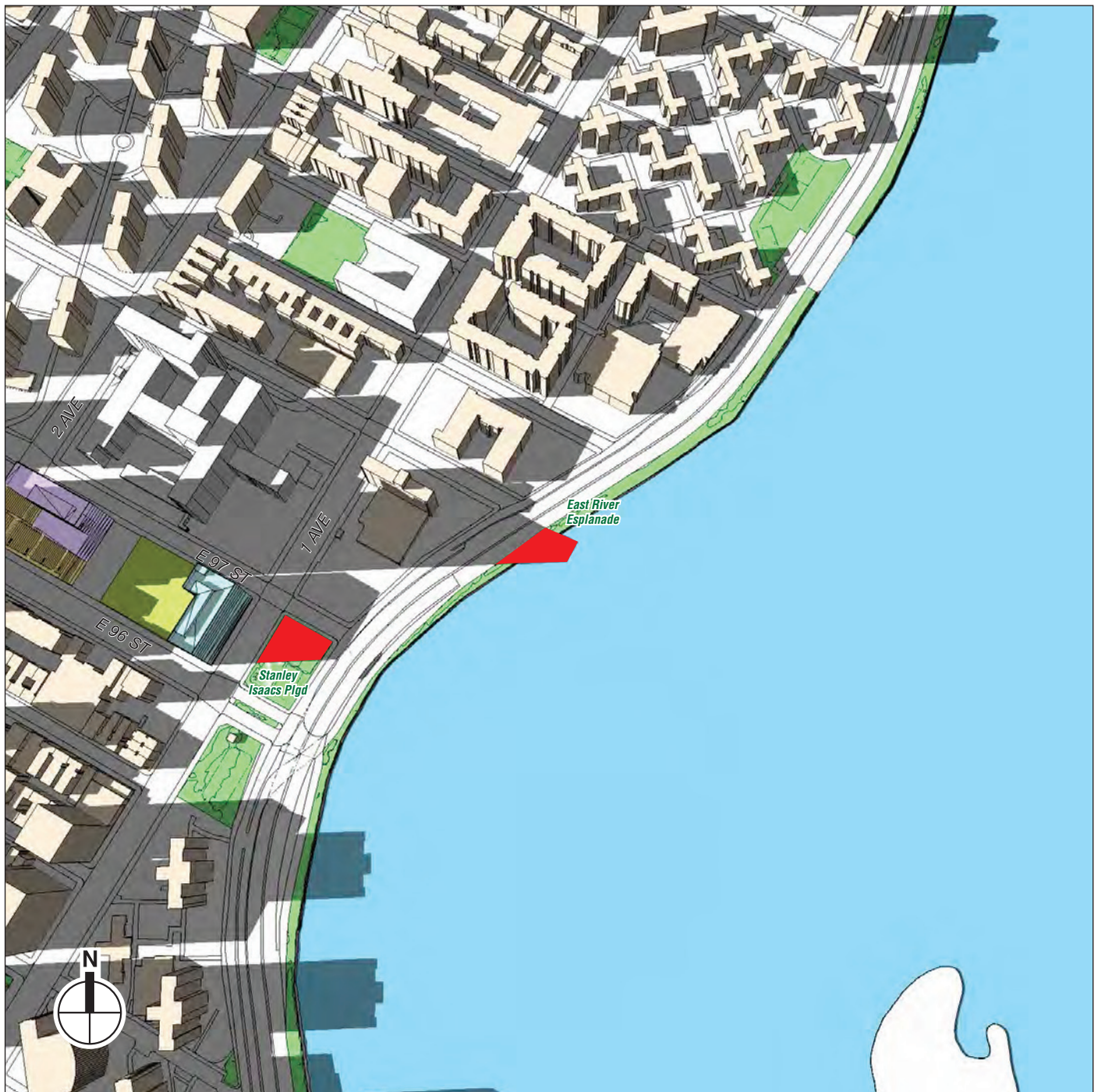


3:00 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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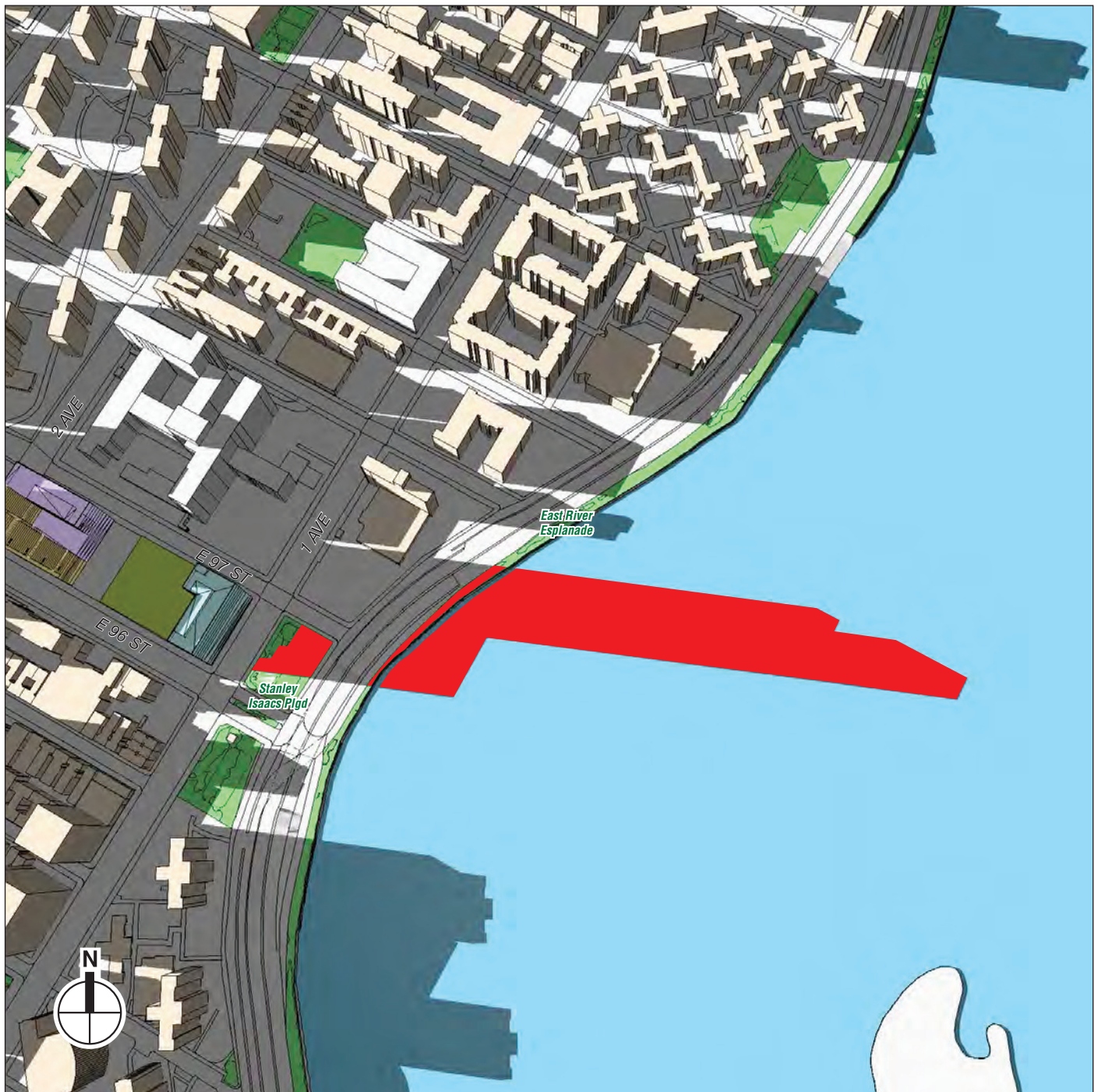


4:15 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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5:18 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

This figure has been updated for the FEIS



7:00 AM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

This figure has been updated for the FEIS



3:00 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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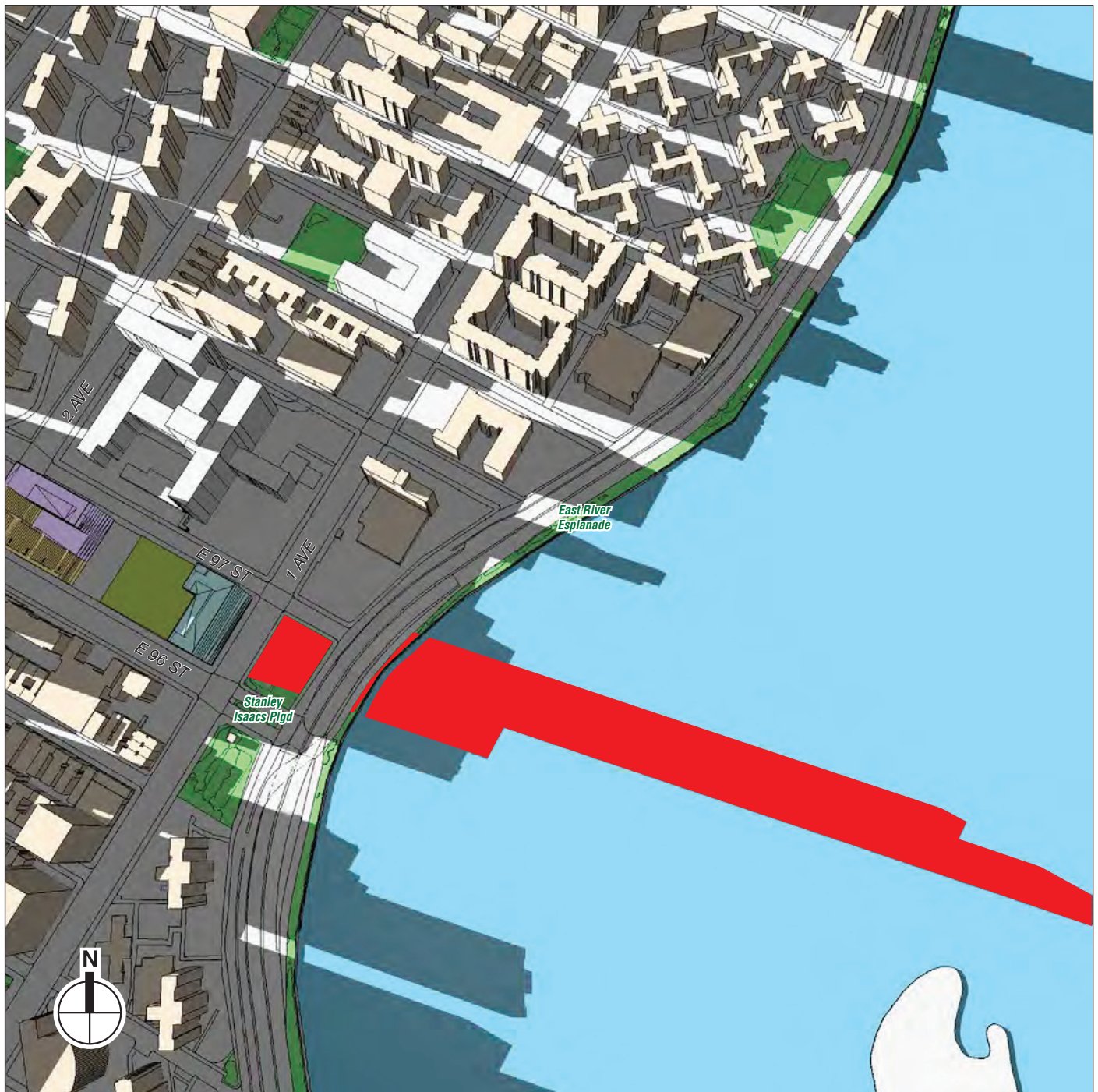


4:30 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

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6:00 PM

- Publicly-Accessible Open Space
- Project-Generated Open Space
- Incremental Shadow on Sun-Sensitive Resources

NOTE: All times are Eastern Standard Time.

This figure has been updated for the FEIS

Table 6-1
Incremental Shadow Durations

Analysis day and timeframe window	December 21 8:51 AM-2:53 PM	March 21 / Sept. 21 7:36 AM-4:29 PM	May 6 / August 6 6:27 AM-5:18 PM	June 21 5:57 AM-6:01 PM
Open Spaces				
Normandie Court Plaza	—	—	6:27 AM–6:40 AM Total: 13 min	5:57 AM–7:20 AM Total: 1 hr 23 min
Park Avenue Mall (at E. 95th St.)	—	7:36 AM–7:45 40 AM Total: 9 <u>4</u> min	—	—
Samuel Seabury Playground	—	7:36 AM–7:45 AM 8:00 AM–8:20 AM Total: 29 min	—	—
Sunshine Playground	10:45-55 AM–11:40 05 AM Total: 25 <u>10</u> min	—	—	—
Cherry Tree Park	10:25 AM–11:35 AM Total: 1 hr 10 min	—	—	—
Blake Hobbs Playground	12:50-55 PM–1:35 PM Total: 45 <u>40</u> min	—	—	—
Harlem RBI	2:10 PM–2:35 PM Total: 25 min	—	—	—
Stanley Isaacs Playground	—	3:05 PM–4:29 PM Total: 1 hr 24 min	2:35 PM–5:18 PM Total: 2 hr 43 min	2:40 PM–6:01 PM Total: 3 hr 21 min
East River Esplanade	—	4:40-15 PM–4:29 PM Total: 49 <u>14</u> min	4:00-05 PM–5:18 PM Total: 1 hr 48 <u>13</u> min	4:05-10 PM–6:01 PM Total: 1 hr 56 <u>51</u> min
Natural Resources				
East River	—	4:45-20 PM–4:29 PM Total: 49 <u>9</u> min	4:05-10 PM–5:18 PM Total: 1 hr 43 <u>8</u> min	4:40-15 PM–6:01 PM Total: 1 hr 54 <u>46</u> min
Notes: Table indicates entry and exit times and total duration of incremental shadow for each sunlight-sensitive resource. Daylight saving time is not used—times are Eastern Standard Time, per <i>CEQR Technical Manual</i> guidelines. However, as Eastern Daylight Time is in effect for the March–September, May–August and June analysis periods, add one hour to the given times to determine the actual clock time.				

DECEMBER 21

December 21, representing the winter months, does not fall within New York’s growing season, according to the *CEQR Technical Manual*. Shadow falling on vegetation in winter is not generally considered to cause a significant adverse impact. However, winter shadow can adversely impact users of open space who may rely on sunlight for warmth. In winter, shadows generally move more quickly but are of greater length than in other seasons.

~~Incremental shadow from the proposed project would not fall on Central Park, because the area where the proposed building’s shadow would otherwise fall would be in existing shadows. Similarly, no~~ No new shadow would fall on Maggie’s Garden, a community garden located on the west side of Lexington Avenue between East 100th and 101st Streets, because the area where the proposed building’s shadow would otherwise fall would be in existing shadows ~~due to existing shadows.~~

The Sunshine Playground, located on the south side of East 101st Street, between Lexington and Third Avenues, is partially or mostly in existing shadow for much of the winter analysis day. Project-generated incremental shadow would move across the playground from ~~10:45-55~~ AM to ~~11:40-05~~ AM, ~~eliminating the remaining sunlight for about five minutes at 11:00 AM (see Figure 6-5) but otherwise leaving some areas in sun during the 25-minute period that it passes across the space.~~ The extent of new shadow would be very small and some portions of the playground would remain sunlit during the 10-minute duration of incremental shadow.

Project-generated incremental shadow would move across Cherry Tree Park, a space containing a playground with seating and basketball courts located at East 99th Street and Third Avenue, over the course of an hour and ten minutes, from 10:25 AM to 11:35 AM. The incremental shadow would eliminate the remaining sun briefly around 11:00 AM, for five to ten minutes (see **Figure 6-5**). At other times during the affected period, sunlit areas would remain in both the playground and basketball court areas.

In the early afternoon, incremental shadow would pass across portions of Blake Hobbs Playground, which extends along the west side of Second Avenue on two consecutive blocks between East 102nd and 104th Streets. The southern block is entirely hard-surface ball courts, and the northern block is also primarily hard surface but contains playground equipment, seating areas and some plantings. Incremental shadow would move across a portion of the southern block ~~and a small portion of the northern block~~ between 12:50-55 PM and 1:35 PM, but sunlit areas would remain throughout the ~~45~~40-minute period (see **Figure 6-6**).

A very small incremental shadow from the proposed project would move across the northern edge of the Harlem RBI space, a through-block open space located between East 100th and 101st Streets and First and Second Avenues, for 25 minutes between 2:10 PM and 2:35 PM. This incremental shadow would eliminate the very small area of remaining sunlight in the northeast corner of the open space for five to ten minutes at 2:30 PM (see **Figure 6-7**). Small sunlit areas would remain at other times of the affected period.

MARCH 21 / SEPTEMBER 21

March is considered the beginning of the growing season in New York City, and September 21, which has the same shadow patterns as March 21, is also within the growing season. Shadows on March 21 and September 21 are of moderate length.

For the first ~~nine-five~~ minutes of this analysis day there would be a small incremental shadow on a portion of the Park Avenue Mall (planted median) on the south side of East 95th Street. No incremental shadow would occur on the Park Avenue Malls after that.

Incremental shadow would fall on Samuel Seabury Playground, located on the east side of Lexington Avenue between East 95th and 96th Streets, from 7:36 AM to 7:45 AM and again from 8:00 AM to 8:20 AM, for a total of 29 minutes (see **Figure 6-8**). The new shadow would eliminate the narrow band of remaining sunlight during those 29 minutes. No new shadow would fall on the adjacent P.S. 198 schoolyard, because it would be in existing shadow when new shadow would otherwise fall there.

New shadow would also fall on Monterey Public Garden, located on the north side of East 96th Street between Lexington and Third Avenues, for five minutes from 8:40 AM to 8:45 AM.

In the late afternoon, new shadow from the proposed building on the east side of the project block would fall onto the northern portion of Stanley Isaacs Playground, which is located on two adjacent blocks, between East 95th and 97th Streets and between First Avenue and the FDR Drive. The northern of the two blocks is located directly across First Avenue from the project site and contains handball courts on its northern half and basketball courts on its southern half. The southern block has a playground and a hockey rink and is too far south to ever receive project-generated shadow. Incremental shadow would move onto the northwest corner of the handball courts from 3:05 PM and would remain limited to a small area of the handball courts until the end of the analysis day at 4:29 PM (see **Figure 6-9**). Sunlit areas would remain on the handball courts and elsewhere in the playground throughout this period.

Incremental shadow would fall on a small section of the East River Esplanade between East 101st and 102nd Streets for the final ~~49-14~~ minutes of the analysis day (see **Figure 6-9**). To the north and south of this limited area of new shadow, the esplanade would remain in sun.

There would also be incremental shadow on the East River for final ~~49-9~~ minutes of this analysis day, limited to a small area of the river near the shore north of roughly East 100th Street (see **Figure 6-9**).

MAY 6 / AUGUST 6

May 6 falls halfway between the March 21 equinox and the June 21 summer solstice. August 6 falls halfway between the June 21 solstice and the September 21 equinox, and has the same shadow patterns as May 6. The May 6 / August 6 analysis day is representative of the growing season in the city. Shadows on this day are shorter than on the equinoxes, and the length of the day is longer.

Normandie Court Plaza is a residential plaza associated with 235 East 95th Street. The main portion of this plaza, and the only one affected by incremental shadows, is a fairly large, mostly featureless space at Second Avenue and East 95th Street. It would receive a narrow band of incremental shadow from 6:27 AM to 6:40 AM on this analysis day.

The small residential plaza at 182 East 95th Street would not receive any incremental shadow on this analysis day due to existing shadows.

In the afternoon, the northern block of Stanley Isaacs Playground would receive incremental shadows from 2:35 PM to 5:18 PM. Despite the long duration, only a portion of the space would be affected, primarily the handball courts, and the new shadow would not eliminate the remaining sun at any time (see **Figures 6-10 to 6-12**). There is no vegetation in this space.

New shadow would fall on the East River Esplanade from ~~4:00-05~~ to 5:18 PM, mostly between East 98th and 99th Streets (see **Figures 6-11 and 6-12**). This section of the esplanade is only a walkway between the highway and the river, with no seating or other features. Portions of this linear space to the north and south of the affected area are in full sun during this time.

Incremental shadow would fall on an area of the East River from ~~4:05-10~~ PM to 5:18 PM on this analysis day (see **Figures 6-11 and 6-12**). The new shadow would remain limited to an area near shore, adjacent to roughly East 98th Street, until near the end of the analysis day when it would extend further east.

JUNE 21

June 21 has the longest amount of daylight of the year, with an analysis period of 12 hours. Shadows fall to the southwest early in the morning and to the southeast late in the afternoon, and shadows at midday on June 21 are shorter than at any other time of year. June 21 is also in the growing season.

New shadow would fall on Normandie Court Plaza for the first hour and 23 minutes of this analysis day, from 5:57 AM to 7:20 AM. Most of the plaza would be in existing shadows at this time, early in the morning when shadows are long, and the incremental shadow would eliminate the remaining band of sun for most of this duration (see **Figure 6-13**). It would fall primarily across a featureless, paved part of the plaza, and partially on one section of a large planter with trees.

In the afternoon, incremental shadow would move onto the corner of the handball courts in Stanley Isaacs Playground at 2:40 PM and gradually extend farther across the handball courts over the remaining part of the afternoon (see **Figure 6-14** showing 3:00 PM). At 4:30 PM all the handball courts would be in incremental shadow but most of the adjacent basketball courts would still be in sun (see **Figure 6-15**). From 5:40 PM to 6:01 PM, the end of the analysis day, the incremental shadow would be small but would eliminate the remaining sun on this open space, because most of the handball courts and all of the basketball courts would be in existing shadow by that time (see **Figure 6-16**).

New shadow would fall on the East River Esplanade from ~~4:05~~10 PM to 6:01 PM, mostly between East 97th and 98th Streets (see **Figures 6-15 and 6-16**). This section of the esplanade is only a walkway between the highway and the river, with no seating or other features. Nearby portions of this linear space to the north and south of the affected area are in full sun during this time.

Incremental shadow would fall on an area of the East River from ~~4:40~~15 PM to 5:18 PM. The new shadow would remain limited to an area near shore, adjacent to roughly East 98th Street, until near the end of the analysis day when it would extend further east (see **Figures 6-15 and 6-16**).

E. CONCLUSIONS BY RESOURCE

NORMANDIE COURT PLAZA

This resource is primarily an open, featureless plaza paved with red brick. There is a waterfall and seating ledge at the northern end of the resource, but this area would not receive any incremental shadow from the proposed project. There is a wide planter with trees between the main, central open plaza area and the sidewalk along East 95th Street, and some benches on both the interior plaza side and the sidewalk side.

This resource would receive a brief 23 minutes of early morning shadow on the May 6/August 6 analysis day, and an hour and 23 minutes of new shadow from 5:57 AM to 7:20 AM on June 21. Given the early hour, when use of the space would likely be light the limited size of the incremental shadow, and most notably the lack of amenities where the incremental shadow would fall—primarily open paved area in front of retail frontages that are in the ground floor of the residential building—the new shadow would not substantially alter the use or usability of this resource. The limited duration and extent of the incremental shadow also would not significantly impact the trees in the planter at this resource.

PARK AVENUE MALL (AT EAST 95TH STREET)

~~Nine-Five~~ minutes of new shadow on the March 21/September 21 analysis day only would not significantly impact this resource.

SAMUEL SEABURY PLAYGROUND

The proposed project would result in 29 minutes of new shadow early on the March 21/September 21 analysis day, from 7:36 AM to 7:45 AM and from 8:00 AM to 8:20 AM. The playground would be almost entirely in existing shadows at this early hour with only a narrow band of sunlight remaining, and the incremental shadow would eliminate this narrow band for those 29 minutes. However, after 9:00 AM and until late afternoon the playground would be

mostly in sunlight. The limited extent and duration of new shadow, occurring early in the morning, would not significantly impact the use of this space or its vegetation.

SUNSHINE PLAYGROUND

~~Twenty-five~~Ten minutes of new shadow on the December 21 analysis day only would not significantly impact this resource. No new shadow would fall on this playground in the spring, summer or fall. Given its limited duration, the new winter shadow would not substantially change the usability of this playground.

CHERRY TREE PARK

This playground would receive an hour and ten minutes of new shadow in the late morning on the December 21 analysis day. The new shadow would not eliminate all the remaining sunlight on the resource during this time, with the exception of five to ten minutes around 11:00 AM. No new shadow would fall on this playground in the spring, summer, or fall. Given its limited duration, the new winter shadow would not substantially change the usability of this playground.

BLAKE HOBBS PLAYGORUND

New shadow would pass across a portion of this playground over the course of ~~45~~40 minutes on the December 21 analysis day. Sunlit areas would remain in the park throughout the ~~45~~40-minute period. No new shadow would fall on this playground in the spring, summer, or fall. Given its limited duration, the new winter shadow would not substantially change the usability of this playground.

HARLEM RBI

Twenty-five minutes of very small new shadow on the winter (December 21) analysis day only would not significantly impact this resource.

STANLEY ISAACS PLAYGROUND

The northern section of this playground contains handball and basketball courts and no seating, plantings or other features. Devoted entirely to active recreation, its use would not be significantly affected by new late afternoon shadows from the proposed project in the late spring and summer. The playground would continue to receive direct sunlight all morning and into the early afternoon. Even during the late afternoon period when incremental shadow and existing shadows would fall on it, its location adjacent to the waterfront ensures that it would continue to receive a lot of ambient light from the open sky over the East River directly to the east.

EAST RIVER ESPLANADE

Incremental shadows would fall on a portion of the esplanade after 4:00 PM in the fall, winter, and spring. The new shadow would be limited in extent and would fall on a part of the esplanade that is only a walkway, with no seating, plantings, or other features. Adjacent areas of this linear resource would continue to be in full sun during the late-afternoon period of incremental shadow. Due to its location adjacent to the waterfront, it would continue to receive a lot of ambient light from the open sky over the river throughout the day, even during times when incremental shadow would fall on portions of it. Therefore the project would not significantly impact this resource or its use.

EAST RIVER

Incremental shadows would fall on a small portion of the river after 4:00 PM in the fall, winter, and spring. The current flows swiftly in the East River and would move phytoplankton and other natural elements quickly through the shaded area. Therefore, project-generated shadows would not be expected to affect primary productivity. The areas that receive the new shadow would continue to receive direct sunlight for the vast majority of the day, because there are no structures to the east or south. Incremental shadows would therefore not be likely to significantly affect aquatic resources (plankton or fish) in these areas of the East River.

F. PROJECT-GENERATED OPEN SPACE

As described in Chapter 1, “Project Description,” the proposed project would relocate the existing Marx Brothers Playground, a jointly operated playground, to the center of the project block. The playground would be reconstructed as part of the proposed project, and its overall condition would be enhanced in comparison to the No Action condition. It is anticipated that it will include a new comfort station and maintenance building, along with play equipment and courts and fields for active recreation. The specific elements to be included and the overall design of the playground would reflect continued input from NYC Parks, DOE, Community Board 11, and the local community. In addition, the relocation of the playground to the midblock would buffer the playground use from the active First Avenue and Second Avenue corridors.

DECEMBER 21

On the analysis day representing the winter months, the open space would be partially in sun and partially in shadow throughout the day. Large areas of the open space would be in sun throughout the morning and early afternoon (see **Figures 6-5 to 6-7**). After approximately 2:00 PM, most of the open space would be in shadow, but some sunlit areas would remain until the end of the analysis day at 2:53 PM.

MARCH 21 / SEPTEMBER 21

On this analysis day, most of the open space would be in shadow from the proposed First Avenue building until around 10:00 AM (see **Figure 6-8**). Between 10:00 AM and approximately 3:30 PM, most of the open space would be in sun. For the final hour of the analysis day, much of the open space would be in shadow, from a combination of the building across East 96th Street to the south of the project site and the proposed Second Avenue building (see **Figure 6-9**).

MAY 6/_AUGUST 6

On the May 6/_August 6 analysis day, the open space would be mostly in sun throughout the morning and almost entirely in sun through the early afternoon. Large areas of sun would remain on the open space until around 4:00 PM (see **Figure 6-10** showing 3:00 PM). After 4:00 PM the available sunlit area would be smaller, approximately a quarter of the space or less (see **Figures 6-11 and 6-12**).

JUNE 21

The open space would be mostly in sun throughout the morning and almost entirely in sun through the early afternoon on the June 21 analysis day. Large areas of sun would remain on the

open space until around 4:00 PM (see **Figure 6-14** showing 3:00 PM). By 4:30 PM a little less than half the park space would remain in sun (see **Figure 6-15**). The park would be mostly in shadow for the final hour of the analysis day, from 5:00 PM to 6:01 PM (see **Figure 6-16**).

CONCLUSION

Most of the open space would be in sun for a minimum of five and a half hours throughout the growing season months. In winter, the open space would be partially in sun throughout the analysis day. Therefore, in the future with the proposed actions the open space would be an attractive resource for users seeking sun throughout the year, particularly during the middle of the day. *

A. INTRODUCTION

This chapter considers the potential of the proposed ECF East 96th Street project to affect architectural and archaeological resources. The proposed project would construct a new mixed-use tower on Second Avenue. This tower would containing a replacement facility for the existing School of Cooperative Technical Education (COOP Tech) as well as residential and retail uses, a new building on First Avenue that would house two public high schools, and would relocate the jointly operated playground currently on the western portion of the project site to the center of the block.

The analysis characterizes existing conditions, evaluates changes to historic and cultural resources that are expected to occur independent of the proposed actions, and identifies and addresses any potential impacts to historic and cultural resources associated with the proposed actions. As described in detail below, the proposed actions would not be anticipated to result in significant adverse impacts to historic and cultural resources.

B. METHODOLOGY

Consistent with the guidance of the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, in order to determine whether the proposed project could potentially affect architectural resources, this attachment considers whether the proposed project would result in a physical change to any resource, a physical change to the setting of any resource (such as context or visual prominence), and, if so, whether the change is likely to alter or eliminate the significant characteristics of the resource that make it important. More specifically, as set forth in the *CEQR Technical Manual*, potential impacts to architectural resources may include the following:

- Physical destruction, demolition, damage, alteration, or neglect of all or part of an historic property;
- Changes to an architectural resource that cause it to become a different visual entity;
- Isolation of the property from, or alteration of, its setting or visual relationships with the streetscape, including changes to the resource's visual prominence;
- Introduction of incompatible visual, audible, or atmospheric elements to a resource's setting;
- Replication of aspects of the resource so as to create a false historical appearance;
- Elimination or screening of publicly accessible views of the resource;
- Construction-related impacts, such as falling objects, vibration, dewatering, flooding, subsidence, or collapse; and
- Introduction of significant new shadows, or significant lengthening of the duration of existing shadows, over an historic landscape or on an historic structure (if the features that

make the resource significant depend on sunlight) to the extent that the architectural details that distinguish that resource as significant are obscured.

The study area for archaeological resources is defined as the area where subsurface disturbance would occur. In a comment letter dated June 24, 2016, the New York City Landmark Preservation Commission (LPC) has determined that the project site does not possess archaeological sensitivity (see **Appendix A**). As LPC has determined that the project site is not archaeologically sensitive, this chapter focuses on standing structures only.

To evaluate potential effects due to on-site construction activities, and also to account for visual or contextual impacts, the study area for architectural resources is defined as extending 400 feet from the project site (see **Figure 7-1**). As defined in the New York City Department of Building's (DOB) *Technical Policy and Procedure Notice (TPPN) #10/88*, adjacent construction is defined as any construction activity that would occur within 90 feet of an architectural resource.¹ Consistent with the guidance of the *2014-CEQR Technical Manual*, designated architectural resources that were analyzed include: New York City Landmarks (NYCL), Interior Landmarks, Scenic Landmarks, New York City Historic Districts (NYCHD); resources calendared for consideration as one of the above by LPC; resources listed on or formally determined eligible for inclusion on the State and National Registers of Historic Places (S/NR), or contained within a district listed on or formally determined eligible for listing on the Registers; resources recommended by the New York State Board for listing on the Registers; and National Historic Landmarks (NHL).

C. EXISTING CONDITIONS

PROJECT SITE

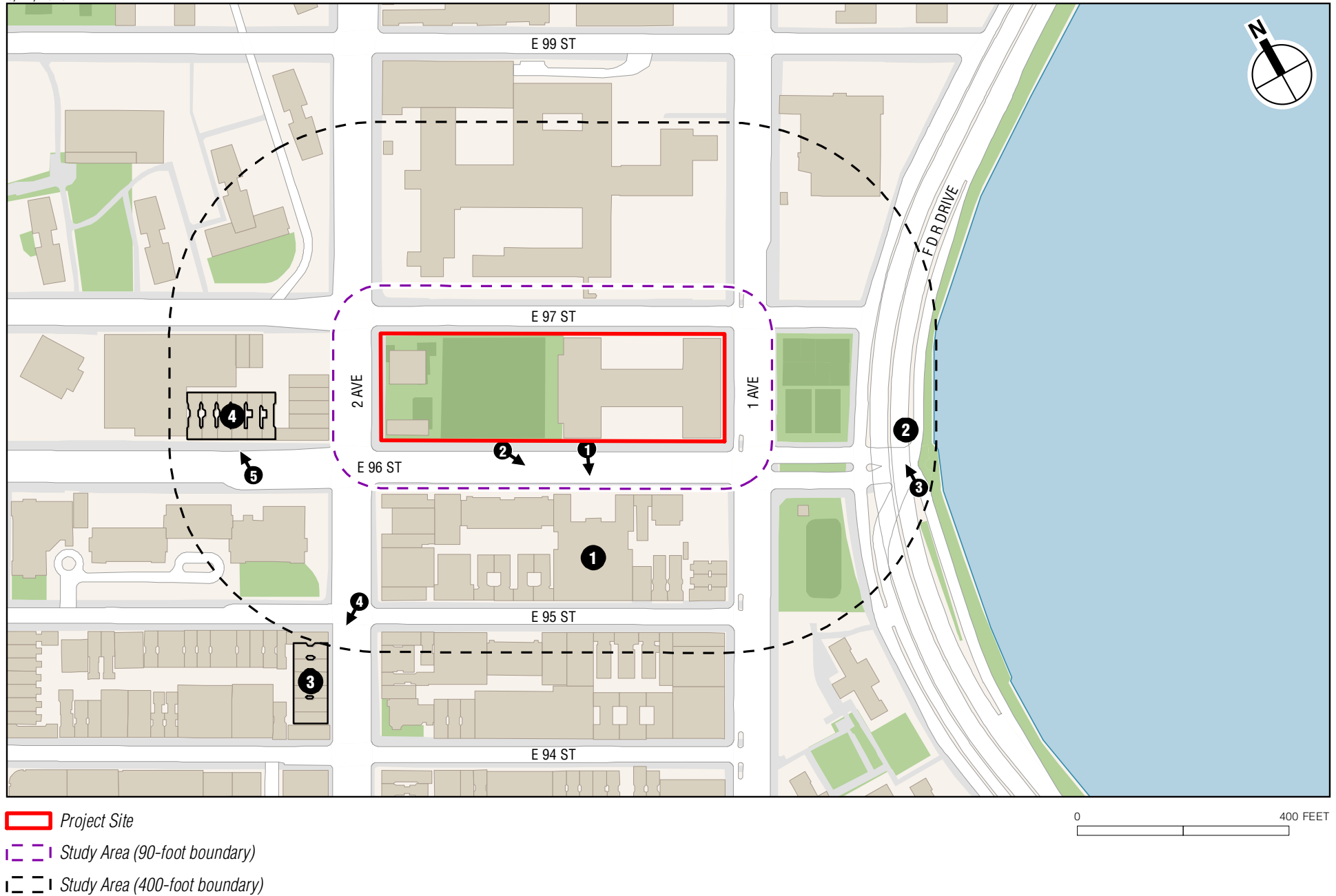
The project site is approximately 131,189.5 ~~130,546~~-sf in size and includes a jointly-operated playground, a portion of which is currently in use by MTA as a staging area for Second Avenue Subway construction. The eastern portion of the project site is occupied by a 4-story, 103,498-gsf school building, currently in use by the COOP Tech (see **Figure 7-2**). The school building was designed by Eric Kebbon and constructed circa 1941-1942 as the Machine and Metal Trades High School.

There are no known or potential architectural resources within the project site. In a comment letter dated June 24, 2016, LPC determined that the project site has no architectural significance.

STUDY AREA

There are four known architectural resources located within the study area. These resources are described below and mapped on **Figure 7-1**. No potential architectural resources were identified within the study area.

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.





Former P.S. 150, view south on East 96th Street

1



Former P.S. 150, view southeast
from East 96th Street

2

FORMER P.S. 150 (S/NR-ELIGIBLE)

The former P.S. 150—now the Life Sciences Secondary School, M655—is located at 320 East 96th Street, on the south side of East 96th Street opposite the project site (see View 1 of **Figure 7-2**). The H-plan building was constructed in 1903-1904 and designed by C.B.J. Snyder, the architect who was responsible for the reform of New York City school design and construction and was responsible for the design of a large number of New York City schools in the last years of the 19th century and first decades of the 20th century. In 1927, the building became the home of Hunter Model School (today known as Hunter Elementary School), as well as the exclusive Hunter College High School, which was then open only to girls. After Hunter left in 1940, the building was used by Machine and Metal Trades High School. The school is significant under National Register Criterion A as a representative example of the large number of school buildings that were erected in New York City in the late 19th and early 20th centuries in immigrant neighborhoods. The school is also significant under Criterion C as an example of school architecture in New York City, with a distinctive façade featuring Dutch Renaissance and Collegiate Gothic details.

FRANKLIN DELANO ROOSEVELT (FDR) DRIVE (S/NR-ELIGIBLE)

The Franklin Delano Roosevelt (FDR) Drive is 9.44 miles long, beginning at the end of the Battery Park underpass and running north along the East River to the 125th Street/Triborough Bridge exit (see View 3 of **Figure 7-3**). Originally known as the East River Drive, the FDR Drive meets National Register Criterion A in the fields of transportation and community/regional planning as an important link in New York City's transportation infrastructure. The FDR Drive, the West Side Highway, the Henry Hudson Parkway, the Harlem River Drive, and the Triborough Bridge approach form a crucial highway loop around Manhattan. Construction began on the FDR in 1934 under the direction of Robert Moses and was largely completed by 1967. Though segments of the structure have undergone alterations through the years, this linear resource has been determined to retain sufficient integrity overall to convey its historic significance.

1817-1829 SECOND AVENUE (S/NR-ELIGIBLE)

The six 5-story brick tenements located at 1817-1829 Second Avenue were constructed circa 1888 and designed by John C. Burne. The buildings have alternating patterns of building arches, varying types of decorative terra cotta panels located beneath most windows, corbelling beneath the cornices, and corbelled piers that extend from the fifth story between the windows to the cornice (see View 4 of **Figure 7-3**). The buildings also have bracketed cornices, embellished by dentils. The building at 1819 Second Avenue is missing its cornice. This group of tenements is significant under National Register Criterion C as an example of late 19th century Neo-Greg multiple dwelling design.

223-233 EAST 96TH STREET (S/NR-ELIGIBLE)

This six 5-story brick flats were built circa 1889 and all appear to have been designed by the noted New York architecture firm of J.C. Cady & Co. They meet Criterion C as a distinguished group of Romanesque Revival residential architecture with a relatively high degree of integrity of design, materials, and craftsmanship. Of special interest are the stepped, gabled parapets at 229-233 East 96th Street (see View 5 of **Figure 7-4**).



F.D.R. Drive, view north from East River Esplanade 3



1817-1829 Second Avenue 4



223-233 East 96th Street 5

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Absent the proposed actions, it is assumed that the project site will continue as in the existing condition, except that the MTA will vacate the western portion of the jointly operated Marx Brothers Playground and will reconstruct that portion for open space uses.

There are three planned development projects are expected to be completed within the 400-foot study area by the 2023 analysis year. On East 96th Street directly south of the project site, Block 1558, Lot 47 (302 East 96th Street) will be redeveloped with a 21-story, 48-unit residential building. To the northeast of the project site, the existing building at 1918 First Avenue is being converted from dormitory use to affordable housing for seniors, and the parking lot adjacent to this building also will be developed for new housing. None of the projects appear to be located within 90 feet of architectural resources, and thus would not be expected to have the potential to directly (*i.e.*, physically) affect historic resources during construction activities.

In the future without the proposed actions, the condition of other architectural resources within the study areas could change. Architectural resources that are listed on the National Register or that have been found eligible for listing are given a measure of protection from the effects of federally sponsored or assisted projects under Section 106 of the National Historic Preservation Act. Although preservation is not mandated, federal agencies must attempt to avoid adverse impacts on such resources through a notice, review, and consultation process. Properties listed on the State Register are similarly protected against impacts resulting from state-sponsored or state-assisted projects under the State Historic Preservation Act. Private property owners using private funds can, however, alter or demolish their properties without such a review process. Privately owned sites that are NYCLs or within New York City Historic Districts are protected under the New York City Landmarks Law, which requires LPC review and approval before any alteration or demolition can occur.

E. FUTURE WITH THE PROPOSED ACTIONS

PROJECT SITE

The proposed project would redevelop the project site with a ~~686~~3-story, approximately 1,175,000-gsf building on the western side of the project block facing Second Avenue, and an 8-story, approximately 135,000-gsf building on the eastern side of the block. The western building would include approximately 1,015,000 gsf of residential use (approximately 1,200 residential units); approximately 25,000 gsf of commercial retail use, and approximately 135,000 gsf of public school use to replace the existing COOP Tech, as well as potentially up to 120 accessory parking spaces. The eastern building would house two additional public high schools that would relocate from nearby locations within Manhattan Community Board District 11. The jointly operated playground currently on the western portion of the project site would be relocated to the center of the project block.

The proposed construction on the project site would not entail the demolition of any known or potential architectural resources. Furthermore, as discussed below, the proposed project would not have any direct, physical impacts on known or potential architectural resources in the study area, as a result of the implementation of a Construction Protection Plan (CPP).

STUDY AREA

DIRECT IMPACTS

Using the *CEQR Technical Manual* direct impact criteria noted above, the proposed development within the project site would not result in the replication of aspects of any of the architectural resources in the study area so as to cause a false historical appearance, or the introduction of significant new shadows or significant lengthening of the duration of existing shadows over historic landscapes or structures. There would be no physical changes to any of the architectural resources identified above.

The former P.S. 150 is located slightly more than 90 feet from the project site (see **Figure 7-1**). Therefore, to avoid inadvertent demolition and/or construction-related damage to this resource from ground-borne construction period vibrations, falling debris, collapse, etc.—and consistent with LPC’s letter dated June 24, 2016—the school would be included in a CPP for historic structures that would be prepared in coordination with LPC and implemented in consultation with a licensed professional engineer. The CPP would be prepared as set forth in Section 523 of the *CEQR Technical Manual* and in compliance with the procedures included in the DOB’s TPPN #10/88 and LPC’s *Guidelines for Construction Adjacent to a Historic Landmark and Protection Programs for Landmark Buildings*. Provisions of the 2014 New York City Building Code also provide protection measures for all properties against accidental damage from adjacent construction by requiring that all buildings, lots, and service facilities adjacent to foundation and earthwork areas be protected and supported. Further, Building Code Chapter 3309.4.4 requires that “historic structures that are contiguous to or within a lateral distance of 90 feet...from the edge of the lot where an excavation is occurring” be monitored during the course of excavation work. The CPP would be prepared and implemented prior to demolition and construction activities on the project site and project-related demolition and construction activities would be monitored as specified in the CPP. None of the other architectural resources in the 400-foot study area are located within 90 feet of the project site, and thus would not be included in the CPP.

INDIRECT IMPACTS

The proposed project would not isolate any architectural resource from its setting or visual relationship with the streetscape, or otherwise adversely alter a historic property’s setting or visual prominence. At ~~68~~63 stories, the proposed building fronting on Second Avenue would be taller than the buildings in the surrounding area, but there are tall buildings up to 43 stories in height in the surrounding area, particularly to the south. The proposed building fronting on First Avenue would be of a comparable height and footprint to other buildings in the study area. The proposed new buildings on the project site would not introduce incompatible visual, audible, or atmospheric elements to a resource’s setting. The proposed residential, school, and retail uses of the development are comparable with the use of many of the historic and modern buildings in the study area. The proposed project would not eliminate or screen significant publicly accessible views of any architectural resource.

In summary, the proposed project would not be anticipated to have any significant adverse impacts on historic and cultural resources with the preparation and implementation of a CPP for the former P.S. 150. *

A. INTRODUCTION

This chapter considers the effects of the proposed project on urban design and visual resources. The proposed project would construct a new mixed-use tower on Second Avenue containing a replacement facility for the existing School of Cooperative Technical Education (COOP Tech) as well as residential and retail uses; a new building on First Avenue that would house two public high schools; and would relocate the jointly operated playground currently on the western portion of the project site to the center of the block.

Under the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, urban design is defined as the totality of components that may affect a pedestrian's experience of public space. These components include streets, buildings, visual resources, open spaces, natural resources, and wind. An urban design assessment under CEQR must consider whether and how a project may change the experience of a pedestrian. The *CEQR Technical Manual* guidelines recommend the preparation of a preliminary assessment of urban design and visual resources followed by a detailed analysis, if warranted, based on the conclusions of the preliminary assessment. The analysis provided below addresses urban design characteristics and visual resources for existing conditions and the future without and with the proposed actions.

As described in detail below, the proposed actions would not be anticipated to result in significant adverse impacts to urban design and visual resources.

B. PRELIMINARY ASSESSMENT

Based on the *CEQR Technical Manual*, a preliminary assessment of urban design and visual resources is appropriate when there is the potential for a pedestrian to observe from the street level a physical alteration beyond that allowed by existing zoning. Examples include projects that permit the modification of yard, height, and setback requirements, and projects that result in an increase in built floor area beyond what would be allowed "as-of-right" or in the future without the proposed project.

The proposed project would require a rezoning, as well as height and setback waivers. Therefore, as the proposed project would result in physical alterations beyond that allowed by existing zoning, it would meet the threshold for a preliminary assessment of urban design and visual resources.

C. METHODOLOGY

According to the *CEQR Technical Manual*, the study area for urban design is the area where the project may influence land use patterns and the built environment, and is generally consistent with that used for the land use analysis. For visual resources, the view corridors within the study area from which such resources are publicly viewable should be identified. The land use study

area may serve as the initial basis for analysis; however, in many cases where significant visual resources exist, it may be appropriate to look beyond the land use study area to encompass views outside of this area, as is often the case with waterfront sites or sites within or near historic districts.

Consistent with the analysis of land use, zoning, and public policy, the study area for the urban design and visual resources analysis has been defined as the area within ¼-mile of the project site. This study area roughly extends from East 102nd Street to the north, the East River to the east, East 91st Street to the south, and Lexington Avenue to the west (see **Figures 8-1 and 8-2**).

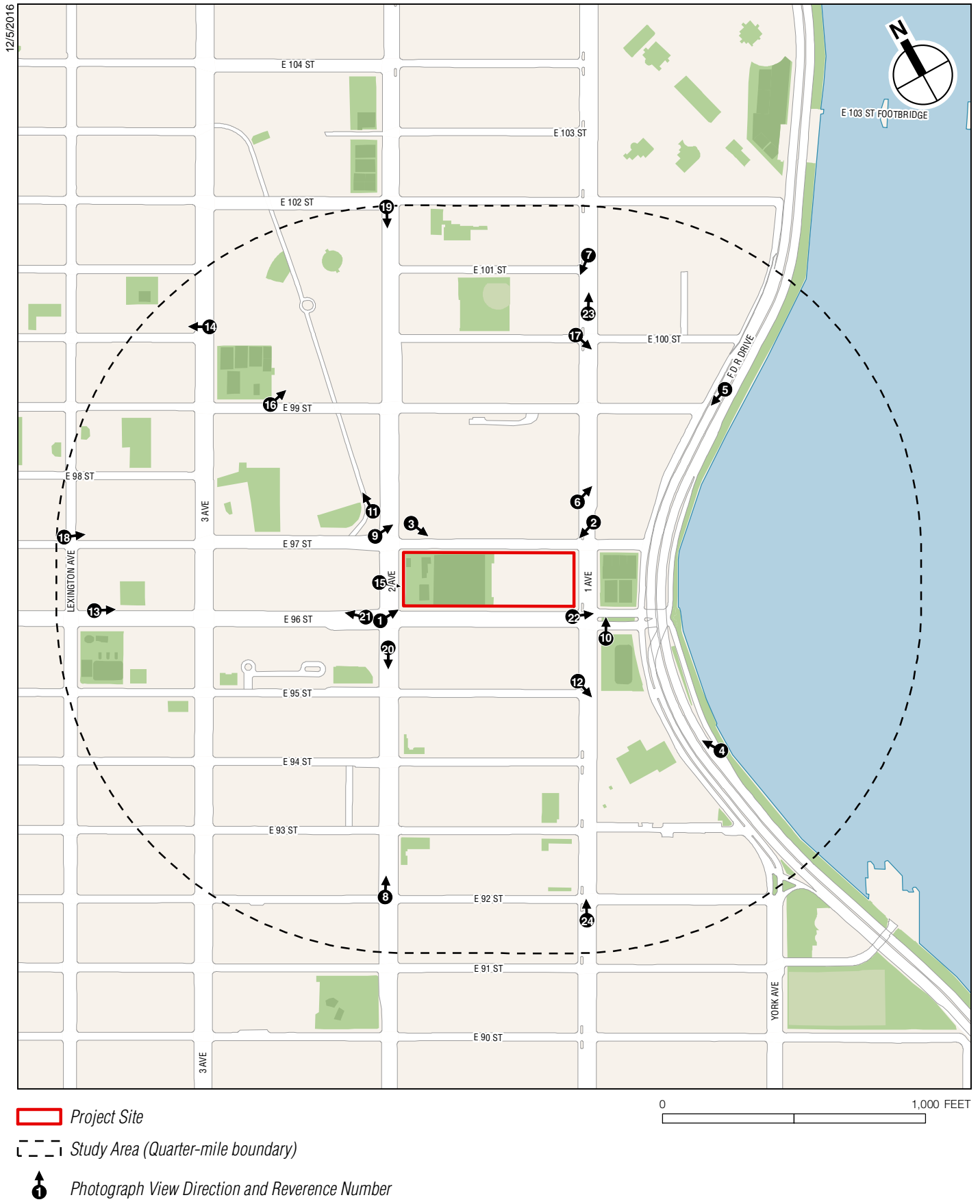
The *CEQR Technical Manual* recommends an analysis of pedestrian wind conditions in the urban design and visual resources assessment, for projects that would result in the construction of large buildings at locations that experience high-wind conditions (such as along the waterfront, or other locations where winds from the waterfront are not attenuated by buildings or natural features), which may result in an exacerbation of wind conditions due to “channelization” or “downwash” effects that may affect pedestrian safety. Factors to be considered in determining whether such a study should be conducted include locations that could experience high-wind conditions, such as along the waterfront; size, and orientation of the proposed buildings; the number of proposed buildings to be constructed; and the site plan and surrounding pedestrian context of the proposed project. The project site is not on the waterfront or in a location that could experience high-wind conditions. Therefore, an analysis of wind conditions and their effect on pedestrian level safety is not warranted under CEQR.

D. EXISTING CONDITIONS

URBAN DESIGN

PROJECT SITE

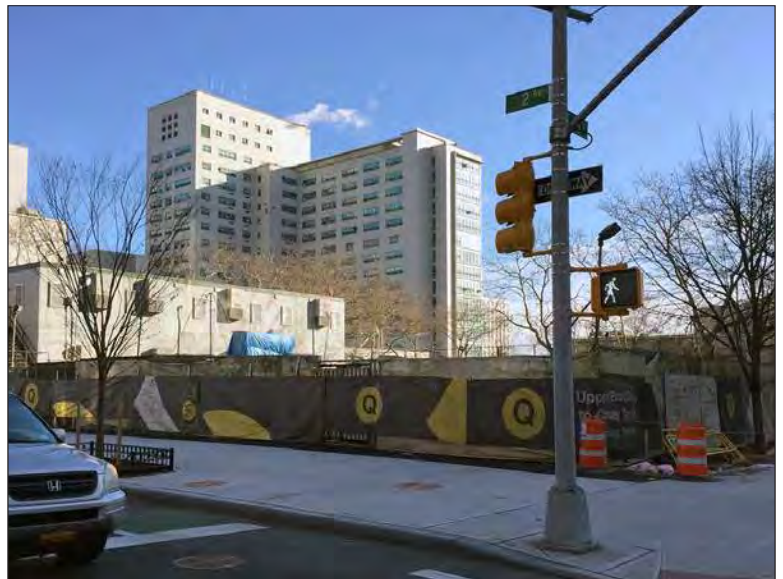
The project site is Block 1668, Lot 1, in the East Harlem neighborhood of Manhattan. As shown in **Figures 8-1 through 8-3**, the project site is the full block bounded by East 96th and 97th Streets and First and Second Avenues. The western portion of the project site (approximately 64,150 square feet) is currently occupied by the Marx Brothers Playground, which is jointly operated by DOE and NYC Parks. The playground includes a multi-purpose baseball and soccer field and is enclosed by a high chain link fence. The portion of the playground area facing Second Avenue (approximately 23,000 sf) is currently paved and fenced, and in use by MTA as a staging area for Second Avenue Subway construction. The eastern portion of the project site (approximately ~~67,039.56~~ 67,039.56, ~~396~~ 396 sf) is occupied by a 4-story (approximately 60-foot-tall), 103,498 gsf school building, currently in use by COOP Tech, a public technical high school. The school is set back from the street behind a circular driveway and landscaped area with trees on East 96th Street, and a paved area is used for informal staff parking on the north side of the site. There are street trees at the perimeter of the site, and seven curb cuts providing vehicular access to COOP Tech and the playground. The built floor area ratio (FAR) of the project site is approximately 1.48, compared to the maximum FARs allowable in the two zoning districts mapped on the site (4.0 and 10.0, respectively). As the only existing development on the project site is the COOP Tech structure, the lot coverage of the project site is low.





Project site, view northeast from East 96th Street and Second Avenue. MTA staging for Second Avenue Subway in foreground

1



Project site, view southwest from East 97th Street and First Avenue. School of Cooperative Technical Education in foreground

2



Project site, view southeast to Marx Brothers Playground from East 97th Street

3



STUDY AREA

The main streets in the study area are the avenues and East 96th Street, as well as the FDR Drive. Pedestrian traffic appears heaviest along these streets, with the exception of the FDR Drive; the East River Esplanade, which extends along the waterfront east of the FDR Drive, is also well used by pedestrians, runners, and bicyclists (see views 4 and 5 of **Figure 8-4**). The other streets in the study area are mainly one-way and are less busy. Several are discontinuous, due to the presence of the superblocks described below. The blocks in the study area are mainly roughly rectangular, except along the East River waterfront, which curves inland near the project site, and outward to the north and south. There are several superblocks in the area, mostly related to NYCHA housing developments. These include the Washington Houses development, located on three superblocks between East 97th and 102nd Streets and Second and Third Avenues; the Holmes Towers development, located on the block bounded by East 92nd and 93rd Streets, First Avenue and the FDR Drive service road; and the Isaacs development, on the superblock bounded by East 93rd and 96th Streets, First Avenue and the FDR Drive service road. Two other superblocks contain the River Crossing residential development, on the superblock bounded by East 100th and 102nd Streets, First Avenue and the FDR Drive service road, and the Metropolitan Hospital complex, which is located on the superblocks bounded by East 97th and 99th Streets and Second Avenue and the FDR Drive service road. The topography of the study area slopes downward from west to east, ~~sloping~~ particularly between Lexington and Second Avenues.

The study area is urban in character, with streets flanked by concrete sidewalks. Parallel parking spaces are available on most streets; there are bus shelters on the avenues and East 96th and 97th Streets; and there are subway station entrances at Lexington Avenue and East 96th Street, as well as at the southwest corner of Second Avenue and East 96th Street for the new Second Avenue Subway. There is also a dedicated bus lane on the east side of First Avenue, and a dedicated bike line on the west side of the avenue, separated from vehicular traffic by parked cars (see views 6 and 7 of **Figures 8-4 and 8-5**). On Second Avenue, there is a dedicated bus lane on the west side of the avenue, and a dedicated bike lane on the east side of the avenue (see view 8 of **Figure 8-5**). There is transportation signage on gantries above the FDR Drive, as well as on First Avenue for the dedicated bus lane. There are street trees throughout the study area, primarily along the east-west oriented streets and at the larger residential developments described above. Street furniture in the study area is mainly standard, including cobra-head lampposts. There are large surface parking areas north of the project site, on the Metropolitan Hospital campus (described below), adjacent to a Department of Sanitation garage facility on East 99th Street and First Avenue, and east of M.S. 244 facing the FDR Drive service road (described below).

Immediately north and northeast of the project site is the Metropolitan Hospital complex, which as noted above occupies the area between East 97th and 99th Streets, Second Avenue, and the FDR Drive. The hospital buildings, which are rectilinear in massing and up to 15 stories tall, are generally set back from the street behind chain link fencing, with driveways for patient drop-offs and surface parking areas (see view 9 of **Figure 8-5**). There are some landscaped areas along the perimeter of the complex. The portion of the complex east of First Avenue is currently being redeveloped, see discussion below under “Future wWithout the Proposed Actions.” East and southeast of the project site is the Stanley Isaacs Playground. The playground includes the block bounded by East 96th and 97th Streets, First Avenue, and the FDR Drive, as well as the northern portion of the block directly south. The northern portion of the playground includes handball and basketball courts, and is surrounded by a tall chain link fence and street trees; the southern

East River Esplanade,
view north towards project site

4



East River Esplanade,
view south towards project site

5



First Avenue, view north from East 97th Street

6





First Avenue, view south from East 101st Street

7



Second Avenue, view north from East 92nd Street

8



Metropolitan Hospital, view from
Second Avenue and East 97th Street

9

portion includes a playground and a roller hockey rink, and is surrounded by a low metal fence (see view 10 of **Figure 8-6**).

The areas to the northwest and southeast of the project site include three NYCHA housing developments. The Washington Houses development between East 97th and 102nd Streets and Second and Third Avenues includes 15 buildings, up to 14 stories tall, roughly rectangular in their footprint, and clad in red brick, as well as three playgrounds managed by DPR. The buildings are set back from and at an angle to the surrounding streets. The perimeter of the complex is defined with low metal fences. The buildings are surrounded by landscaped areas with trees, as well as surface parking areas and some open spaces with benches and play equipment (see view 11 of **Figure 8-6**). Pedestrian paths and private streets extend through the complex. The Holmes Towers and Isaacs developments are located on the blocks bounded by East 92nd and 96th Streets, First Avenue, and the FDR Drive service road, and collectively include six buildings (see view 12 of **Figure 8-6**). The Holmes Towers and Isaacs buildings are taller than those in the Washington Houses development—up to 25 stories in height—but are otherwise similar; they are rectilinear in their massing, clad in red brick, and are set back from and at an angle to the surrounding streets. At the periphery of the study area north of the project site are three other NYCHA housing developments: Lexington, a development with four 14-story X-plan buildings on the blocks bounded by East 98th and 99th Streets and Third and Park Avenues; Metro North Plaza, a development with three 7-story rectangular-plan buildings on the block bounded by East 101nd and 102nd Streets and First and Second Avenues; and the East River houses, a development with 11 buildings between six and 11 stories tall, on the block bounded by East 102nd and 105th Streets, First Avenue and the FDR Drive service road.

Other large residential developments in the study area include Normandie Court, Ruppert Yorkville Towers, and Carnegie Park—all of which are located between Second and Third Avenues south of East 96th Street—and the River Crossing development at the northeast corner of the study area. Normandie Court is located directly southwest of the project site. It is a four tower, 34-story development that occupies the entire block between Second and Third Avenues and East 95th and 96th Streets. The buildings in this development are rectangular, with their long sides parallel to the street. They are built generally to the lot line along East 96th Street and Third Avenue, and set back on East 95th Street, where there is a driveway entrance to the complex and a low one-story commercial wing, and Second Avenue, where an entrance to the new Second Avenue Subway has been created. At the southwest corner of the development, at East 96th Street and Third Avenue, there is a landscaped plaza with benches.

The Ruppert Yorkville Towers development, which is located on the two blocks bounded by East 90th and 92nd Streets and Second and Third Avenues, comprise a 42-story (422-foot-tall) tower and a 32-story (342-foot-tall) tower on the western end of the northern block, as well as two matching 32-story towers on the southern block, separated by the East 91st Street pedestrian plaza. These two sets of towers are oriented diagonally on their lots, forming two triangular plazas that face Third Avenue. The Ruppert Yorkville Towers contain retail on the ground floors, and match the architectural style of the adjacent 40-story Knickerbocker Plaza at the eastern end of the East 91st-92nd Street block. The buildings are red brick and modern in style, with vertical strips of windows and chamfered corners with cantilevers at various heights. The Knickerbocker Plaza and Ruppert Yorkville Towers developments both have low lot coverage with ample private open space. The eastern portion of the block containing the south tower of the Ruppert Yorkville Towers development is occupied by Ruppert Park.

Stanley Isaacs Playground,
view north from East 96th Street

10



Washington Houses, view northwest from
East 97th Street and Second Avenue

11



Isaacs NYCHA development,
view southeast from First Avenue
and East 95th Street

12



Carnegie Park, a 30-story (282-foot-tall) residential building, is located on Third Avenue between East 93rd and 94th Streets. The L-shaped building has horizontal bands of windows and a curved northern façade, where its tower is located. The building is faced in red brick and built to the lot line, with a nine-story base on the southern portion extending along Third Avenue to East 93rd Street and containing ground floor retail. The eastern portion of this block is occupied by Astor Terrace, a residential development that comprises a 32-story (329-foot-tall) tower fronting Second Avenue and three-story townhouses fronting East 93rd and 94th Streets. The tower and the townhouses are both clad in dark brick. The two components of the development are separated by a through-block driveway that provides access to a split-level, two-story parking garage topped with an above-grade private open space.

The River Crossing development is located on the superblock bounded by East 100th and 102nd Streets, First Avenue, and the FDR Drive service road. The development includes 13-story buildings built to the street line along East 100th and 102nd Streets and First Avenue, with 3-story segments in the interior of the site, forming two quads with central courtyards. On the east side of the development is a 3-story parking garage facing the FDR Drive and a 4-story school building, built at the same time as the rest of the development and of similar design.

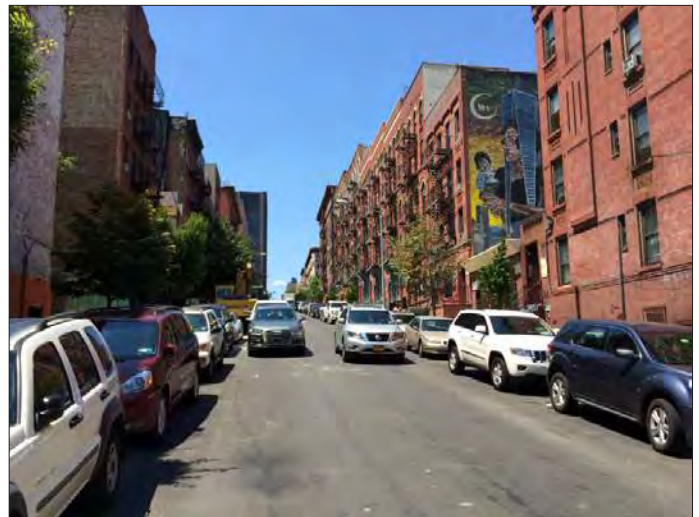
There are other tall, modern apartment buildings within the southern portion of the study area, along Second and First Avenues. These include: One Carnegie Hill, an 41-story, 425-foot-tall development on the north side of East 96th Street between Second and Third Avenues (see view 13 of **Figure 8-7**); the Waterford, a 45-story, 447-foot-tall building on East 93rd Street and Second Avenue; the 43- and 18-story Ruppert Houses and the Easton, a newly constructed 36-story (427-foot-tall) building, on the block bounded by East 92nd and 93rd Streets and Second and Third Avenues; and 32-story buildings at East 92nd and 93rd Streets and First Avenue. The other residential buildings in the study area include 4- and 5-story tenement buildings—including the historic resources on Second Avenue and East 96th Street (see Chapter 7, “Historic and Cultural Resources”)—and lower-scale apartment buildings, primarily on the east-west streets (see views 14 and 15 of **Figure 8-7**). In comparison to the large residential and NYCHA complexes described above, these smaller residential buildings are typically built to the lot line and occupy the majority of their lots. In general, the residential buildings in the study area are taller south of the project site, and shorter to the north.

As described in Chapter 2, “Land Use, Zoning, and Public Policy,” there are a number of school and community facility uses in the study area, many of which are housed in historic buildings. The El Barrio Artspace, on the NYCHA Washington Houses campus at 213 East 99th Street, is located in the historic 5-story, H-plan Collegiate Gothic-style former P.S. 109 building, built in 1899 (see view 16 of **Figure 8-7**). The Life Sciences Secondary School, M655, is located on the south side of East 96th Street opposite the project site, in the historic Dutch Renaissance/Collegiate Gothic style former P.S. 150 building (see Chapter 7, “Historic and Cultural Resources”). P.S. 198, on Third Avenue between East 95th and 96th Streets, has been determined eligible for listing on the State and National Registers of Historic Places for its mid-century Modern design. M.S. 244, the Manhattan East School for Arts and Academics, the Renaissance Charter High School, and Success Academy Harlem 3 (lower school) are co-located in a historic red brick, U-plan, 4-story building on East 100th Street between First Avenue and the FDR Drive service road. In general, although these buildings are visually interesting, they are not highly visible except along adjacent streets. There are ground-floor retail uses generally along the avenues and East 96th Street, as well as a few commercial developments, and a gas station directly southeast of the project site.

East 96th Street, view east from
west of Third Avenue 13



View west on East 100th Street from Third Avenue 14



View east on East 96th Street from Second Avenue 15



Open spaces in the study area include the parks and playgrounds noted above, notably the Stanley Isaacs Playground directly east of the project site and the Samuel Seabury Playground at East 96th Street and Lexington Avenue; sitting areas and playgrounds on the grounds of the various NYCHA developments; and public and private plazas associated with the large residential developments noted above. These include the Monterey Public Garden, a large, landscaped public plaza west-adjacent to the Monterey residential tower, on the north side of East 96th Street west of Third Avenue; Ruppert Park, at the southeast corner of the Ruppert Yorkville Towers development; the private open space associated with the Carnegie Park development, on East 93rd Street east of Third Avenue; and public plazas at the southwest and northeast corners of Third Avenue and East 95th Street, associated with large residential developments at those locations. There is a running track and sports field facing First Avenue, adjacent to the shared school building on East 100th Street, and a paved play area south-adjacent to the school on East 101st Street (see view 17 of **Figure 8-8**). As described above, the East River Esplanade extends along the waterfront east of the FDR Drive throughout the study area; however, it has limited access points. The esplanade, which can be accessed only at East 96th Street within the study area, is a paved path with lighting, benches, and some landscaping.

In general, the buildings in the study area appear to be consistent with existing zoning, which allows for larger FARs along the avenues and south of East 97th Street, and smaller FARs in the mid-blocks and north of East 97th Street. Some buildings have large lot coverage, while others—generally the larger residential and NYCHA developments—do not. Streetwalls in the study area are mixed, with weaker streetwalls in the areas around the larger residential and NYCHA developments, where buildings are set back and/or at an angle to the street, and stronger streetwalls particularly along the side streets with smaller-scale buildings.

VISUAL RESOURCES

Visual resources are an area's unique or important public view corridors, vistas, or natural or built features. These can include historic structures, parks, natural features (such as rivers), or important views.

PROJECT SITE

There are no visual resources on the project site. Views from the project site include the former P.S. 150—now the Life Sciences Secondary School, M655—on the south side of East 96th Street. From the sidewalks adjacent to the east side of the project site, limited views to the East River are available, beyond the elevated FDR Drive.

STUDY AREA

Within the study area, First, Second, Third, and Lexington Avenues and the East River Esplanade provide the most extensive view corridors. Views along the avenues generally extend for long distances, but without any notable focus or visual resources within those views (see views 18 through 24 of **Figures 8-8 through 8-10**). There are a few exceptions, including, on Third Avenue near East 96th and 97th Streets, views ~~of~~^{onto} the oxidized copper dome and landscaped grounds of the Islamic Cultural Center of New York. The mature trees and landscaping of some open spaces fronting on the avenues, including the Samuel Seabury Playground at Lexington Avenue and East 96th Street and Ruppert Park at Second Avenue and East 91st Street, also provide visual relief within these dense corridors. Views along the avenues are generally more constrained by tall development in the southern portion of the study area; in

El Barrio Artspace, view from East 99th Street

16



Sports field adjacent to M.S. 244, on First Avenue

17



View east on East 97th Street from near Lexington Avenue

18



View south on Second Avenue from
East 102nd Street

19



View south on Second Avenue from
East 96th Street

20



View west on East 96th Street
from Second Avenue

21





View east on East 96th Street from First Avenue **22**



View north on First Avenue from East 100th Street **23**

the northern portion of the study area, particularly along First Avenue, lower-scale development provides more expansive views to the surrounding area.

Views from the East River Esplanade within the study area include the river, the Robert F. Kennedy (Triborough) Bridge, the Wards Island Bridge, and the Queens waterfront (see **Figure 8-4** above). Close-up views of the project site from the esplanade are limited due to the FDR Drive, which is elevated on a viaduct from roughly East 93rd Street to East 98th Street within the study area. At the southern end of the study area, views from the esplanade include the historic parabolic arch of Asphalt Green (the former municipal asphalt plant) and a pedestrian bridge crossing the FDR Drive. As noted above, views to the East River and the East River Esplanade from within the study area are constrained by the elevated FDR Drive (see view 22 of **Figure 8-10**).

Views east on East 94th and 95th Streets end at the Holmes Tower superblock; views east on East 98th Street, and east/west on East 100th and 101st Streets, end with the Washington Towers superblocks; however, views east on East 100th Street also include a portion of the top of the Triborough Bridge anchorage. As described above, the historic resources in the surrounding area, including several school buildings, are visually interesting, but are not highly visible except along adjacent streets. From within the study area, views to the project site are mostly limited to Second and First Avenues and East 96th and 97th Streets. Views from First Avenue are more expansive due to the lower scale of development in this portion of the study area.

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS

Absent the proposed actions, it is assumed that the project site will continue as in the existing condition, except that the MTA will vacate the western portion of the jointly operated Marx Brothers Playground and will reconstruct that portion for open space uses.

As described in more detail in Chapter 2, “Land Use, Zoning, and Public Policy,” the No Action condition assumes that 11 No Build projects would be introduced to the study area by 2023 (see Table 2-2 and Figure 2-4). These projects would range in size from 6-story to 36-story residential apartment buildings or large mixed use buildings. Consistent with the pattern of existing development, the taller proposed developments will be located generally south of the project site. The projects nearest the project site—the redevelopment of the eastern block of the Metropolitan Hospital complex, and the development of a new 21-story building on the south side of East 96th Street, would be expected to change the context of this site, bringing even more density to the surrounding area and, on First Avenue, creating stronger streetwalls. By bringing new uses and buildings to sites that are currently vacant or underdeveloped, and by adapting existing buildings for future uses, the No Build projects would be expected to activate the pedestrian experience on surrounding streets.

F. THE FUTURE WITH THE PROPOSED ACTIONS

URBAN DESIGN

PROJECT SITE

In the future with the proposed actions, the project site is assumed to be redeveloped with the proposed project. The proposed project would develop a ~~6368~~-story building (~~7160~~ feet in height, including bulkhead and mechanical equipment) with approximately 1,175,000 gsf on the

western side of the project block, facing Second Avenue, and an 8-story building (185 feet in height, including bulkhead and mechanical equipment) with approximately 135,000 gsf on the eastern side of the block, facing First Avenue. The western building would include approximately 1,015,000 gsf of residential use, approximately 25,000 gsf of retail use, and approximately 135,000 gsf of replacement technical school use. It is possible that the western building also could include up to 120 accessory parking spaces in a below-grade facility. The eastern building would house two public high schools that would relocate from nearby locations within Community District (CD) 11. In total, the development on the site would be approximately 1,310,000 gsf. The existing jointly operated Marx Brothers Playground would be relocated to the middle of the block (Block 1668), between the two new buildings. The relocated jointly operated playground would be of an equivalent size and proportion to the existing jointly operated playground, with enhancements and new programming responsive to community needs. See Figures 1-4 through 1-9 for site and ground floor plans and massing diagrams showing the proposed development, and **Figures 8-11 through 8-17** for illustrative renderings of the proposed development in context.

In general, the urban design of the project site in the future with the proposed actions would differ from the ~~current existing~~/No-Action condition in several ways. The new buildings on the project site would be built closer to the lot line on First Avenue than the existing COOP Tech, and would be built to the lot line on Second Avenue, and thus would create cohesive street frontages and stronger streetwalls throughout the site. These stronger streetwalls would be expected to enhance the pedestrian experience along adjacent sidewalks. At ~~63~~68 stories, the height of the new residential tower would be considerably taller than the existing school facility; the 8-story (185 foot) building also would be approximately 125 feet taller than the existing COOP Tech structure. While the proposed buildings would be taller than the existing building on the site, ~~there are they would be compatible with~~ other tower developments in the southern portion of the study area, as described below. The school use of the proposed buildings would remain the same as in existing/No Action conditions, with the addition of retail and residential space along Second Avenue. In addition, the relocated open space would be improved in comparison to the existing/No Action condition, and its new mid-block location would provide a buffer from the busy Second Avenue corridor. The curb cuts serving the project site would be reduced, from seven to ~~four~~five, which would also be expected to enhance the pedestrian experience.

The proposed project would require a rezoning to allow for the development of additional floor area on the site, as well as a special permit to allow distribution of lot coverage and allow modification of height and setback restrictions, a special permit to reduce parking requirements, and certifications to modify restrictions on location of curb cuts, and a certification that a transit easement is not required. ~~These actions are driven by the programmatic needs of the project. The relocation of the playground at its current size and the square footage requirements of the public high school and technical school facilities—the proposed school buildings must contain 270,000 sf of floor area in order to adequately satisfy the spatial needs of the schools to be relocated—dictate the size and location of the residential tower.~~ The height and setback waivers requested in connection with the development of the building on Second Avenue would not facilitate an increase in the overall height of the building, but rather would primarily allow for the base of the building to exceed the maximum base height of 85 feet, in order to provide a sufficiently sized facility to house COOP Tech. Similarly, the waiver of lot coverage regulations applicable to the development of the building on First Avenue would not result in any additional height to the building, but rather would have the effect of compressing the overall height of the building. ~~The~~



Existing/No Action Condition



With Action Condition

This figure has been updated for the FEIS

ECF EAST 96TH STREET

Proposed Project in Context, Illustrative
View looking South on Second Avenue
Figure 8-11



Existing/No Action Condition



With Action Condition

Proposed Project in Context, Illustrative
View looking South on First Avenue
Figure 8-12



Existing/No Action Condition



With Action Condition

Proposed Project in Context, Illustrative
View looking North on First Avenue
Figure 8-13



Existing/No Action Condition



With Action Condition

This figure has been updated for the FEIS

ECF EAST 96TH STREET

Proposed Project in Context, Illustrative
View looking North on Second Avenue

Figure 8-14



Existing/No Action Condition



With Action Condition

This figure has been updated for the FEIS

ECF EAST 96TH STREET

Proposed Project in Context,
Illustrative View looking East on East 96th Street

Figure 8-15



Existing/No Action Condition



This graphic has been revised for the FEIS.

With Action Condition



Existing/No Action Condition



This figure is new to the FEIS.

With Action Condition

Proposed Project in Context, Illustrative View
Looking Southwest From East River Esplanade

ECF EAST 96TH STREET

Figure 8-17

size of the floor plates included in the proposed school buildings is the minimum necessary to meet the operational requirements of the schools.

STUDY AREA

The proposed project would not result in any changes to buildings, natural features, open spaces, or streets in the study area. In comparison with the No Action condition, the proposed project would alter the visual character of the surrounding area, but this character is already changing through the buildings currently under construction. As described above, the projects that will be introduced to the study area in the No Action condition by 2023 range in size from 6-story to 36-story residential apartment buildings or large mixed use buildings; consistent with the pattern of existing development, the taller proposed developments will be located generally south of the project site. The proposed project also would enhance the visual character of the project site as compared to existing/No Action conditions, and thus would enhance the pedestrian experience of the neighborhood. The proposed residential, institutional, and retail uses are consistent with the predominant land uses in the study area, and the proposed lot coverage is more consistent with the surrounding area than the lot coverage in existing/No Action conditions.

The new buildings on the project site would be built closer to the lot line on First and Second Avenues than the existing COOP Tech and would be built to the lot line on Second Avenue, and thus would create cohesive street frontages and stronger streetwalls along these corridors. These stronger streetwalls would be expected to enhance the pedestrian experience along adjacent sidewalks (see Figure 8-18). The proposed retail and school uses also would be expected to activate the streetscape along Second Avenue.

As described above, the project site is currently underdeveloped, with less floor area than even the current zoning districts allow, and less density than much of the surrounding neighborhood, which has maximum allowable FARs ranging from 4.66 to 12.0 for residential use with the Mandatory Inclusionary Housing (MIH) program. The proposed rezoning would provide maximum allowable FARs of up to 12.0, subject to the requirements of the MIH program. The proposed project would have a built FAR of approximately 9.69, less than the maximum allowable FAR of 12.0. At this built FAR, the overall density of the new development on the project site would not be out of scale with other tower developments in the surrounding area; however, in comparison to other developments, the majority of the density on the project site would be oriented along Second Avenue rather than distributed more evenly across the project block.

The height of the proposed Second Avenue building would be taller than existing buildings in the study area, by at least 263 feet; it would be the tallest building north of 59th Street. As such, it would be a prominent addition to surrounding view corridors; however, the sloping topography of the study area would serve to somewhat lessen the perceived height in east-west views (see Figure 8-15). The proposed Second Avenue building also would visually tie the site more to the southern side of the study area than the lower-scale northern study area. The placement of the residential tower along the Second Avenue corridor ~~is also consistent with~~ reflects the generally taller development along this street, in comparison to the First Avenue corridor.



View northeast from Second Avenue and 96th Street



View southeast from Second Avenue and 97th Street

This figure is new to the FEIS.

VISUAL RESOURCES

PROJECT SITE

As described above, there are no visual resources within the project site. In the future with the proposed actions, views from the project site would continue to include the former P.S. 150—now the Life Sciences Secondary School, M655—on the south side of East 96th Street. From the sidewalks adjacent to the east side of the project site, limited views to the East River would continue to be available, beyond the elevated FDR Drive.

STUDY AREA

In the future with the proposed actions, the proposed buildings would be prominent in views along surrounding streets, particularly along Second Avenue and East 96th Street, as well as from the East River Esplanade. In views looking south, the proposed development on the project site would be more consistent with residential towers to the south of East 96th Street than the lower-scale development to the north; the proposed Second Avenue building would be the tallest and most prominent building in these views. The height of the development on First Avenue would be visually consistent with surrounding buildings in views to the north and south on this corridor, and the proposed Second Avenue building would not be notable in these views except those nearest the project site. As described above, the height of the proposed Second Avenue building would be taller than existing buildings in the study area by at least 263 feet; however, the sloping topography of the study area would serve to somewhat lessen the perceived height in east-west views.

The proposed buildings would not obstruct or eliminate views to other visual landmarks in the surrounding area, including, on Third Avenue near East 96th and 97th Streets, views ~~of~~ the oxidized copper dome and landscaped grounds of the Islamic Cultural Center of New York. The expansive views from the East River Esplanade within the study area would continue to include the river, the Robert F. Kennedy (Triborough) Bridge, the Wards Island Bridge, and the Queens waterfront, as well as the project site development. The new buildings on the project site would be visible in close-up views of the project site from the esplanade; however, the lower portions of the development would be limited due to the elevated FDR Drive. Views along the esplanade from south of the project site would not include the proposed development, and would continue to include the historic parabolic arch of Asphalt Green (the former municipal asphalt plant) and a pedestrian bridge crossing the FDR Drive. The proposed buildings would change the immediate context of the former P.S. 150 building (now the Life Sciences Secondary School, M655), but this change in context is not considered to be a significant adverse effect on this visual resource, and the school building would continue to be visible from existing nearby vantage points. As described above, other historic resources in the surrounding area, including several school buildings, are visually interesting, but are not highly visible except along adjacent streets, and thus the proposed buildings would not be anticipated to adversely affect views to those resources.

The proposed project would not partially or totally block a view corridor or a natural or built visual resource. Therefore, the proposed project would not be expected to significantly adversely affect the context of natural or built visual resources, or any view corridors.

In conclusion, the proposed project would not significantly adversely affect urban design or visual resources. *

A. INTRODUCTION

This chapter presents the findings of the hazardous materials assessment and identifies potential areas of concern that could pose a hazard to workers, the community, and/or the environment during or after development of the proposed project. The proposed project would involve demolition of the existing School of Cooperative Technical Education (COOP Tech) building on the project site, excavation and construction related to the new mixed-use tower on Second Avenue, limited excavation and construction related to the proposed school building on First Avenue (no basement is planned for this structure), and the relocation of the existing jointly operated playground (currently partially occupied by staging/temporary offices used by the Metropolitan Transit Authority [MTA]) to the center of the project block.

A hazardous material is any substance that poses a threat to human health or the environment. Substances that can be of concern include, but are not limited to, heavy metals, volatile and semivolatile organic compounds (VOCs and SVOCs), methane, polychlorinated biphenyls (PCBs), and hazardous wastes (defined by the United States Environmental Protection Agency [EPA] as substances that are chemically reactive, ignitable, corrosive, or toxic). According to the *CEQR Technical Manual*, the potential for significant adverse impacts from hazardous materials can occur when: a) hazardous materials exist on a site, and an action would increase pathways to their exposure; or b) an action would introduce new activities or processes using hazardous materials.

The potential for hazardous material conditions was evaluated based on a Phase I Environmental Site Assessment (ESA) of the project site conducted by AKRF in November 2015. The ESA included the findings of a reconnaissance of the project site (from public rights-of-way), an evaluation of readily available historical information, and selected environmental databases and electronic records in accordance with American Society for Testing and Materials (ASTM) E1527-13.

PRINCIPAL CONCLUSIONS

The proposed project would entail demolition of the existing structure and excavation for the new development. As discussed below, the November 2015 Phase I ESA identified Recognized Environmental Conditions (the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property related to a release). Although excavation activities could increase pathways for human exposure, impacts would be avoided by performing the project in accordance with the following:

- Following completion of the EIS and prior to ground disturbance required for the proposed development, a subsurface (Phase II) investigation would be conducted that would include the collection of soil, groundwater, and soil vapor samples with laboratory analysis. Prior to such testing, a Work Plan for the investigation would be submitted to the New York City

Department of Environmental Protection (DEP) for review and approval. Following receipt of the sampling results, a DEP-approved site-specific Remedial Action Plan and Construction Health and Safety Plan (RAP/CHASP) to be implemented during construction would be prepared based on the results of the Phase II Investigation. The RAP/CHASP would specify procedures for managing any encountered underground storage tanks (USTs) and any encountered contamination (including procedures for stockpiling and off-site transportation and disposal of soil). It would also identify any measures (e.g., vapor controls) required for the proposed buildings. The CHASP also would address appropriate health and safety procedures, such as the need for dust or organic vapor monitoring. Plans for remediation, including any vapor controls for the proposed school buildings, also would be provided to the New York City School Construction Authority (SCA) for review.

- Removal of all known and any unforeseen petroleum tanks encountered during redevelopment would be performed in accordance with applicable regulatory requirements including New York State Department of Environmental Conservation's (DEC's) requirements relating to spill reporting tank registration, and tank removal procedures, as warranted.
- Prior to demolition, the existing building would be surveyed for asbestos by a ~~NYC~~-certified asbestos investigator and all asbestos-containing materials (ACM) would be removed and disposed of prior to demolition in accordance with local, state, and federal requirements.
- Demolition activities with the potential to disturb lead-based paint would be performed in accordance with applicable requirements (including federal Occupational Safety and Health Administration regulation 29 CFR 1926.62 - Lead Exposure in Construction, where applicable).
- Unless there is labeling or test data indicating that any suspect PCB-containing electrical equipment and fluorescent lighting fixtures do not contain PCBs, and that any fluorescent lighting bulbs do not contain mercury, disposal would be conducted in accordance with applicable federal, state, and local requirements.
- If dewatering were to be necessary for the proposed construction, water would be discharged to sewers in accordance with DEP requirements.

The New York City Educational Construction Fund (ECF) would require, through the terms incorporated into the ~~D~~development Agreement, that AvalonBay Communities, Inc. (AvalonBay) comply with and implement all measures outlined above into the proposed project with review and oversight by the appropriate regulatory agencies/authorities. With the measures outlined above, no significant adverse impacts related to hazardous materials would be expected to occur as a result of the proposed project.

B. EXISTING CONDITIONS

TOPOGRAPHY AND SUBSURFACE CONDITIONS

Topography at the project site slopes slightly downward to the east. Based on the U.S. Geological Survey (Central Park, NY Quadrangle) the elevation of the project site is approximately 10 to 20 feet above mean sea level (amsl). Groundwater is anticipated between approximately 10 and 15 feet below ground surface (bgs) and is assumed to flow in an east to southeasterly direction toward the East River, located approximately 560 feet to the east. However, actual groundwater depth/flow can be affected by many factors including past filling

activities, underground utilities and other subsurface opening or obstructions such as basements, subway tunnels, and other factors. Groundwater in Manhattan is not used as a source of potable water.

PHASE I ESA

The November 2015 Phase I ESA identified the following Recognized Environmental Conditions (RECs), i.e., the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property:

- Historical fire insurance maps indicated prior industrial and automotive uses at the project site, including a railroad company and car house, a Machine and Metal Trades High School, an automobile storage, an auto repair shop, and an auto auction house between circa 1896 and 2007.
- The project site (school) was registered with the DEC Petroleum Bulk Storage (PBS) database program (Facility ID No. 2-353639) with two 6,000-gallon No. 6 fuel oil USTs listed as closed and removed, one active 7,500-gallon No. 2 fuel UST, two active diesel fuel aboveground storage tanks (ASTs) (275 and 250-gallons in capacity, respectively); and one 280-gallon waste oil AST (MTA staging).
- The project site was listed in the DEC SPILLS database with numerous closed status spills on the eastern (school) and western (MTA staging) portions of the property.
- The project site (school) was listed as a RCRA Small Quantity Generator (SQG) of hazardous wastes including: solid waste that exhibited characteristics of either ignitability, corrosivity, or reactivity; barium; spent non-halogenated solvents; ethanamine; benzene, acetone; and tetrachloroethylene (TCE) between 1996 and 2014.
- Regulatory database information identified nearby facilities, including: a former Manufacturing Gas Plant (MGP) listed in the DEC Voluntary Cleanup Program with documented coal tar contamination at the Metropolitan Hospital (located on the north-adjacent block), and an active gasoline filling station located on south-adjacent block listed in the SPILLS, RCRA, PBS and Civil Enforcement Docket, and ADF databases.

The Phase I ESA also identified other potential environmental concerns including: the potential presence (typical of older buildings) of ACM, polychlorinated biphenyls (PCBs), mercury, and lead-based paint (LBP) at the existing school facility.

C. THE FUTURE WITHOUT THE PROPOSED ACTIONS

In the future without the proposed actions, the existing COOP Tech building on the eastern portion of the project block would remain in operation, the western portion of the jointly operated Marx Brothers Playground would be vacated by the MTA, and would be reconstructed and restored for open space uses, which might entail limited shallow ground disturbance. Unlike in the With Action condition (discussed below), there would be no requirement for subsurface investigation prior to excavation or a ~~Remedial Action Plan (RAP)~~ and associated ~~Construction Health and Safety Plan (CHASP)~~ during disturbance.

D. FUTURE WITH THE PROPOSED ACTIONS

The proposed project would involve demolition of the existing COOP Tech building; excavation and construction related to the proposed mixed-use tower on the western portion of the project

site, which would include one below-grade level; limited excavation and construction related to the proposed school building on the eastern portion of the site (no basement is planned for this structure); and relocation of the existing playground to the center of the project block.

Although both the demolition and excavation activities could increase pathways for human exposure, impacts would be avoided by performing the project in accordance with the following:

- Following completion of the EIS and prior to ground disturbance required for the proposed development, a subsurface (Phase II) investigation would be conducted that would include the collection of soil, groundwater, and soil vapor samples with laboratory analysis. Prior to such testing, a Work Plan for the investigation would be submitted to ~~New York City Department of Environmental Protection (DEP)~~ for review and approval. Following receipt of the sampling results, a DEP-approved site-specific ~~Remedial Action Plan and Construction Health and Safety Plan (RAP/CHASP)~~ to be implemented during construction would be prepared based on the results of the Phase II Investigation. The RAP/CHASP would specify procedures for managing any encountered USTs and any encountered contamination (including procedures for stockpiling and off-site transportation and disposal of soil). It would also identify any measures (e.g., vapor controls) required for the proposed buildings. The CHASP also would address appropriate health and safety procedures, such as the need for dust or organic vapor monitoring. Plans for remediation, including any vapor controls for the proposed school buildings, also would be provided to ~~the New York City School Construction Authority (SCA)~~ for review.
- Removal of all known and any unforeseen petroleum tanks encountered during redevelopment would be performed in accordance with applicable regulatory requirements including DEC's requirements relating to spill reporting tank registration, and tank removal procedures, as warranted.
- Prior to demolition, the existing building would be surveyed for asbestos by a ~~NYC~~-certified asbestos investigator and all ACM would be removed and disposed of prior to demolition in accordance with local, state, and federal requirements.
- Demolition activities with the potential to disturb lead-based paint would be performed in accordance with applicable requirements (including federal Occupational Safety and Health Administration regulation 29 CFR 1926.62 – Lead Exposure in Construction, where applicable).
- Unless there is labeling or test data indicating that any suspect PCB-containing electrical equipment and fluorescent lighting fixtures do not contain PCBs, and that any fluorescent lighting bulbs do not contain mercury, disposal would be conducted in accordance with applicable federal, state and local requirements.
- If dewatering were to be necessary for the proposed construction, water would be discharged to sewers in accordance with DEP requirements.

ECF would require, through the terms incorporated into the Development Agreement provisions, that AvalonBay comply with and implement all measures outlined above into the proposed project with review and oversight by the appropriate regulatory agencies/authorities. With the measures outlined above, no significant adverse impacts related to hazardous materials would be expected to occur as a result of the proposed project. *

A. INTRODUCTION

This chapter considers the potential for the proposed actions to result in a significant adverse impact to the City's sanitary sewage conveyance and treatment system. As described in Chapter 1, "Project Description," the co-applicants, the New York City Educational Construction Fund (ECF) and AvalonBay Communities, Inc. (AvalonBay), are proposing several discretionary actions to allow the construction of a mixed-use building, a replacement facility for an existing school, a new facility for the relocation of two existing neighborhood public high schools, and relocation of an existing jointly operated playground on Block 1668, Lot 1 (the project site), in the East Harlem neighborhood of Manhattan. According to the 2014 *City Environmental Quality Review (CEQR) Technical Manual*, projects that increase density or change drainage conditions on a large site require a water and sewer infrastructure analysis. Developments in a combined sewer area in Manhattan exceeding incremental development thresholds of 1,000 residential units or 250,000 square feet (sf) of commercial, public facility, institutional and/or community facility space require an analysis of potential impacts on the wastewater and stormwater conveyance and treatment system. The project site is in an area of Manhattan that is served by a combined sewer system, and the proposed actions would result in the construction of approximately 1,200 new residential units on the project site. Following the guidelines of the *CEQR Technical Manual*, an analysis of the proposed actions' potential impacts on the wastewater and stormwater conveyance and treatment system was performed. As described below, the proposed actions do not warrant an analysis of water supply.

PRINCIPAL CONCLUSIONS

The analysis finds that the proposed project would not result in any significant adverse impacts on the City's water supply or wastewater and stormwater conveyance and treatment infrastructure. The proposed project would result in an increase in water consumption and sewage generation on the project site as compared with the No Action condition. While the proposed project would result in an incremental water demand of 520,295 gallons per day (gpd), this would not represent a significant increase in demand on the New York City water supply system. An analysis of water supply is not warranted since it is expected that there would be adequate water service to meet the incremental demand, and there would be no significant adverse impacts on the City's water supply.

While the proposed project would generate 324,800 gpd of sanitary sewage, an increase of 315,190 gpd above the No Action condition, this incremental increase in sewage generation would be approximately 0.16 percent of the average daily flow at the Wards Island Wastewater Treatment Plant (WWTP) and would not result in an exceedance of the plant's permitted capacity. The proposed project would not require the rerouting of the existing conveyance system, except for the removal of the 8-inch pipe that was installed in 2013 to serve the MTA staging area on the western portion of the project site. In addition, the New York City

Department of Environmental Protection's (DEP's) approval and sign-off would be required to obtain building permits. The Final Environmental Impact Statement will include any additional information that may become available. Therefore, the proposed project would not result in a significant adverse impact to the City's sanitary sewage conveyance and treatment system.

With the incorporation of selected stormwater source control best management practices (BMPs) that would be required as part of the site connection approval process, subject to the review and approval by DEP, the peak stormwater runoff rates would be reduced.

B. METHODOLOGY

WATER SUPPLY

The *CEQR Technical Manual* recommends a preliminary water analysis if a project would result in an exceptionally large demand of water (over one million gpd), or is located in an area that experiences low water pressure (i.e., in an area at the end of the water supply distribution system such as the Rockaway Peninsula or Coney Island). The project site is not in an area that experiences low water pressure. While the proposed project would result in an incremental water demand of 520,295 gpd,¹ this would not represent a significant increase in demand on the New York City water supply system. Therefore, an analysis of water supply is not warranted since it is expected that there would be adequate water service to meet the incremental demand, and there would be no significant adverse impacts on the City's water supply.

WASTEWATER AND STORMWATER CONVEYANCE AND TREATMENT

As described above, the project site is in a combined sewer area in Manhattan, and the proposed project would exceed the *CEQR Technical Manual* threshold of 1,000 residential units. Therefore, this chapter includes an analysis of the proposed project's potential impacts on the wastewater and stormwater conveyance and treatment system. Existing and future water demand and sanitary sewage generation are calculated based on use rates set by the *CEQR Technical Manual*.² The DEP Flow Volume Calculation Matrix is used to calculate the overall combined sanitary sewage and stormwater runoff volume discharged to the combined sewer system for four rainfall volume scenarios with varying durations. The ability of the City's sewer infrastructure to handle the anticipated demand from the proposed project is assessed by estimating existing sewage generation rates and comparing these existing rates with the With Action condition, per *CEQR Technical Manual* methodology.

C. EXISTING CONDITIONS

CONVEYANCE SYSTEM

The project site is in a part of New York City served by a combined sewer system that collects both sanitary sewage and stormwater. In periods of dry weather, the combined sewers (sized to convey an amount of sanitary sewage that is based on density levels according to zoning regulations) in the adjacent streets convey only sanitary sewage. The project site is served by

¹ See Table 10-4, which includes calculations of the project site's total water demand in the With Action condition (547,500 gpd).

² *CEQR Technical Manual*, March 2014, Table 13-2.

sewer lines adjacent to the project site running along East 97th Street, East 96th Street, and First Avenue. These sewer lines connect to Regulator WI-16, located east of First Avenue at East 96th Street. Regulators are structures that control the flow of sewage to interceptors, i.e., larger sewers that connect the combined sewer system to the City's sewage treatment system. From Regulator WI-16, the flow is conveyed to an interceptor that connects to Wards Island WWTP. On the western portion of the project site, in the MTA staging area, there is an 8-inch pipe that was installed in 2013; the pipe leads to a manhole at the north-western corner of the project site and was likely installed as part of MTA construction activities in the area.

At the Wards Island WWTP, wastewater is fully treated by physical and biological processes before it is discharged into the East River. The quality of the treated wastewater (effluent) is regulated by a State Pollutant Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (DEC), which establishes limits for effluent parameters (i.e., suspended solids, fecal coliform bacteria, and other pollutants). Since the volume of flow to a WWTP affects the level of treatment a plant can provide, the maximum permitted capacity for the Wards Island WWTP is 275 million gallons per day (mgd). The average monthly flow to the WWTP over the past 12 months is 200 mgd,³ which is below the maximum permitted capacity of 275.

During and immediately after wet weather, combined sewers can experience a much larger flow due to stormwater runoff collection. To control flooding at the Wards Island WWTP, the regulators built into the system allow only approximately two times the amount of design dry weather flow into the interceptors. The interceptor then takes the allowable flow to the WWTP, while the excess flow is discharged to the nearest waterbody as combined sewer overflow (CSO). The project site is located within one CSO drainage area: in wet weather, sanitary flow and stormwater runoff is conveyed to a CSO outfall located at East 96th Street, where it is discharged into the East River.

SANITARY FLOWS

As described in Chapter 1, "Project Description," the project site currently contains the Marx Brothers Playground, the MTA staging area along Second Avenue for subway construction, and a 4-story, 103,498 gsf School of Cooperative Technical Education (COOP Tech). For purposes of analysis, the amount of sanitary sewage is estimated as all water demand generated by the occupied portions of the project site, except water used by air conditioning, which is typically not discharged to the sewer system. It is conservatively estimated that the current school tenant offers approximately 961 seats. Utilizing the demand and sewage generation rates as outlined in the *CEQR Technical Manual*, as shown on **Table 10-1**, the project site currently generates an estimated 9,610 gpd of sanitary sewage with a total water demand of 27,205 gpd.

Table 10-1
Existing Water Consumption and Sewage Generation

Use	Floor Area	Rate*	Consumption (gpd)
School Space			
Domestic	961 seats	10 gpd/seat	9,610
Air Conditioning	103,498 gsf	0.17 gpd/sf	17,595
Total Water Supply Demand			27,205
Total Sewage Generation			9,610
Notes: * Rates are from the <i>CEQR Technical Manual</i> , Table 13-2.			

³ 12-month period through July 2016.

STORMWATER FLOWS

The project site has a total area of approximately 3 acres. As noted above, a portion of the western half of the project site (approximately 41,150 sf) is currently occupied by the Marx Brothers Playground, which includes a multi-purpose artificial turf baseball and soccer field. The portion of the project site facing Second Avenue (approximately 23,000 sf), is currently in use by MTA as a staging area for Second Avenue Subway construction. For analysis purposes, it is assumed that the staging area is fully paved. The eastern portion of the project site (approximately 46,602~~437~~ sf) is occupied by the 4-story ~~School of Cooperative~~ COOP Technical Education building. Therefore, the surface area of the project site is comprised of paved areas, artificial turf, and buildings. **Table 10-2** summarizes the existing surface coverage of the project site, as well as the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff).

Table 10-2
Existing Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
WI-16	Area (percent)	36%	33%	31%	0%	100%
	Surface Area (acres)	1.07	1.00 0.99	0.94	0.00	3.01 3.019
	Runoff Coefficient ¹	1.00	0.85	0.70 ²	0.20	0.86
Notes: ¹ Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved September 2016. ² Runoff coefficient for the artificial turf field (Marx Brother's Playground) from 'Guidelines for the Design and Construction of Stormwater Management Systems,' NYC DEP; July 2012.						

D. THE FUTURE WITHOUT THE PROPOSED ACTIONS

As described in Chapter 1, "Project Description," in the future without the proposed actions (the No Action condition), the project area will continue as in the existing condition, except that ~~the~~ MTA will vacate the western portion of the Marx Brothers Playground and this area will be reconstructed for open space use.

CONVEYANCE SYSTEM

In the No Action condition, there would be no changes to the wastewater conveyance system serving the project site. However, the 8-inch pipe that was installed in 2013 to serve the MTA staging area on the western portion of the project site would be removed from the project site. Wastewater would continue to be conveyed to Regulator WI-16 and the Wards Island WWTP, and CSO would continue to be discharged to the East River through the outfall at East 96th Street.

SANITARY FLOWS

In the No Action condition, the project site would continue to generate an estimated 9,610 gpd of sanitary sewage with a total water demand of 27,205 gpd, as in existing conditions.

STORMWATER FLOWS

The No Action condition is expected to include the completion of MTA's use of the 23,000-sf Second Avenue staging area, and the reconstruction of this area for use as open space. This change is anticipated to result in the introduction of paved playground area and a small portion

of landscaped in the area that is currently paved for MTA sStaging. The analysis assumes the reconstruction, in kind, of the playground and comfort station that existed on site prior to MTA sStaging; the playground reconstruction would be slightly updated to include resiliency design standards.⁴ As a result, the weighted runoff coefficient of the project site, currently 0.86 (in the existing condition), is expected to decrease in the No Action condition to 0.83. Although the DEP Flow Volume Calculation Matrix considers changes from the existing surface coverage and does not account for changes that may occur in the No Action scenario, for informational purposes the estimated surface area coverage and the resulting stormwater runoff coefficient in the No Action scenario are presented in **Table 10-3**.

Table 10-3
No Action Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other	Grass and Soft Scape	Total
WI-16	Area (percent)	35 6 %	30 29 %	31%	4%	100%
	Surface Area (acres)	1.07	0.90 88	0.94	0.11	3.00 1
	Runoff Coefficient ¹	1.00	0.85	0.70 ²	0.20	0.83
Notes: ¹ Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved September 2016. ² Runoff coefficient for the artificial turf field (Marx Brother's Playground) from 'Guidelines for the Design and Construction of Stormwater Management Systems,' NYC DEP; July 2012.						

E. THE FUTURE WITH THE PROPOSED ACTIONS

As described in Chapter 1, "Project Description," in the future with the proposed actions (the With Action condition), the project site would be redeveloped with a mix of uses including approximately 1,200 residential units, approximately 25,000 gsf of retail use, approximately 270,000 gsf of public school use (comprising COOP Tech and two public high schools relocated from other sites), the 64,150-sf Marx Brothers Playground, and possibly up to 120 enclosed parking spaces.

CONVEYANCE SYSTEM

In the With Action condition, there would be no changes to the wastewater conveyance system serving the project site, except for the removal of the 8-inch pipe that was installed in 2013 to serve the MTA staging area on the western portion of the project site. Wastewater would continue to be conveyed to Regulator WI-16 and the Wards Island WWTP, and CSO would continue to be discharged to the East River through the outfall at East 96th Street.

SANITARY FLOWS

As shown in **Table 10-4**, the proposed project is expected to generate an estimated 324,800 gpd of daily sanitary sewage with a total water demand of 547,500 gpd.

⁴ Of the 23,000 sf of reconstructed playground, for analysis purposes, it is assumed that 80 percent would be paved playground (18,400 sf) and 20 percent would be landscaped (to include, tree pits and fenced vegetation [4,600 sf]).

Table 10-4

Proposed Project Water Consumption and Sewage Generation

Use	Floor Area/Units/Persons	Rate ¹	Consumption (gpd)
Residential			
Domestic	2,988 persons ²	100 gpd/person	298,800
Air Conditioning	1,015,000 gsf	0.17 gpd/sf	172,550
Retail			
Domestic	25,000	0.24 gpd/sf	6,000
Air Conditioning	25,000	0.17 gpd/sf	4,250
School Space			
Domestic	2,000 ³	10 gpd/sf	20,000
Air Conditioning	270,000	0.17 gpd/sf	45,900
Total Water Supply Demand			547,500
Total Sewage Generation			324,800
Notes: ¹ Rates are from the <i>CEQR Technical Manual</i> , Table 13-2. ² Residential population based on Community District 11 average household size of 2.49 persons per household (as of the 2010-2014 ACS), applied to the total number of proposed residential units (1,200 units). ³ Number of students at School of Cooperative Technical Education would be approximately 1,100; students at Park East High School would be approximately 450; students at Heritage School would be approximately 450.			

The incremental sanitary sewage generated by the proposed project, as compared with the No Action condition, would be 315,190 gpd. This incremental increase in sewage generation is approximately 0.16 percent of the average daily flow at the Wards Island WWTP (200 mgd) and would not result in an exceedance of the plant's permitted capacity of 275 mgd.

In accordance with the New York City Plumbing Code (Local Law 33 of 2007), the proposed project would be required to utilize low-flow plumbing fixtures, which would reduce sanitary flows to the plant. Therefore, the proposed project would not result in a significant adverse impact to the City's sanitary sewage conveyance and treatment system.

STORMWATER FLOWS

The proposed project would include approximately ~~67,686~~^{67,686,393} sf (1.5~~52~~⁵² acres) of impervious building rooftop surfaces, 18,400 sf (0.42 acres) of pavement and walkways, 41,150 sf (0.94 acres) of semi-pervious artificial turf field, and 4,600 sf (0.11 acres) of landscaping. Compared to the No Action condition, the proposed project would result in a slight increase in fully impervious rooftop area and a reduction of pavement and walkways on the project site. The weighted runoff coefficient in the With Action condition would be 0.86. The proposed project would include the addition of 18,400 sf of paved playground area, equipped with resiliency measures and a drainage system, and 4,600 sf of landscaped area in the proposed playground (to include landscaping such as, tree pits and fenced vegetation).

The proposed project's changes in surface coverage would not substantially increase the runoff coefficient as compared to the No Action runoff coefficient of 0.83. **Table 10-5** summarizes the proposed project's surface coverage and the weighted runoff coefficient.

Using the sanitary and stormwater flow calculations, the DEP Flow Volume Calculation Matrix was completed for the existing conditions and the proposed project (the With Action condition). The calculations from the Flow Volume Calculation Matrix help to determine the change in wastewater flow volumes to the combined sewer system from existing to With Action conditions, and include four rainfall volume scenarios with varying durations. The summary tables of the Flow Volume Calculation Matrix are included in **Table 10-6**.

Table 10-5

Proposed Project Surface Coverage

Affected CSO Outfall	Surface Type	Roof	Pavement and Walkways	Other ²	Grass and Soft Scape	Total ³
WI-16	Area (percent)	51%	14%	31%	4%	100%
	Surface Area (acres)	1.552	0.42	0.94	0.11	3.01
	Runoff Coefficient ¹	1.00	0.85	0.70	0.20	0.86
Notes: ¹ Weighted Runoff Coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the <i>CEQR Technical Manual</i> , retrieved September 2015. ² Runoff coefficient for artificial turf field (Marx Brother's Playground) from 'Guidelines for the Design and Construction of Stormwater Management Systems,' NYC DEP; July 2012. ³ Totals may not sum due to rounding.						

Table 10-6

DEP Flow Volume Matrix: Existing and Build Volume Comparison

Rainfall Volume (in.)	Rainfall Duration (hr.)	Runoff Volume to Direct Drainage (MG)	Runoff Volume to CSS (MG)*	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	Runoff Volume to River (MG)	Runoff Volume to CSS (MG)*	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	Increased Total Volume to CSS (MG)*
WI-16		Existing				With Action				WI-16 Increment
		131,189.5430,543_square feet (3.00 acres)				131,189.5430,543_square feet (3.00 acres)				
0.00	3.80	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.05
0.40	3.80	0.00	0.03	0.03	0.03	0.00	0.03	0.05	0.08	0.05
1.20	11.30	0.00	0.08	0.09	0.09	0.00	0.08	0.15	0.24	0.15
2.50	19.50	0.00	0.17	0.18	0.18	0.00	0.17	0.26	0.44	0.26
Notes: * Assumes no on-site detention or BMPs for purposes of calculations CSS = Combined Sewer System; MG = Million Gallons Totals may not sum due to rounding										

As shown in **Table 10-6**, in all rainfall volume scenarios flow to the CSO outfall on East 96th Street would increase. The increase in flow is attributable to the increase in sanitary flow resulting from the proposed project.

The Flow Volume Matrix calculations do not reflect the use of any sanitary and stormwater source control best management practices (BMPs) to reduce sanitary flow and stormwater runoff volumes to the combined sewer system. As noted above, the proposed project would incorporate low-flow plumbing fixtures to reduce sanitary flow in accordance with the New York City Plumbing Code. In addition, stormwater BMPs would be required as part of the DEP site connection approval process in order to bring the east and west buildings into compliance with the required stormwater release rate. Specific BMP methods will be determined for each building with further refinement of the building design and in consultation with DEP, but may include on-site stormwater detention systems such as planted rooftop spaces ("green roofs") and/or vaults.

The incorporation of the appropriate sanitary flow and stormwater source control BMPs that would be required as part of the site connection approval process, with the review and approval of DEP, would reduce the overall volume of sanitary sewer discharge and stormwater runoff as well as the peak stormwater runoff rate from the project site. Sewer conveyance near the project site and the treatment capacity at the Wards Island WWTP is sufficient to handle wastewater flow resulting from the proposed project; therefore, there would be no significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure. *

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